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DAKTARO DISERTACIJA

COMBINED MASS CUSTOMIZATION AND PERSONALIZATION METHODS TO MODEL END-USER BEHAVIOR IN DIGITAL INSURANCE PLATFORMS

SOCIALINIAI MOKSLAI, VADYBA (S 003) VILNIUS, 2023



Mykolo Romerio universitetas MYKOLAS ROMERIS UNIVERSITY

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MYKOLO ROMERIO UNIVERSITETAS

Gedas Baranauskas

MASINIO INDIVIDUALIZAVIMO IR PERSONALIZAVIMO KOMBINUOTIEJI SPRENDIMAI MODELIUOJANT VARTOTOJŲ ELGSENĄ SKAITMENINĖSE DRAUDIMO PLATFORMOSE

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ABBREVIATIONS

AR	-	Augmented Reality
AS	_	Actual Score
AL-B	_	Alternative-based online customization
		framework
AT-B	_	Attribute-based online customization framework
ATB	_	Attitude Toward Behaviour
ATT	_	Attitude Towards Use
AISAS	_	the model of Attention, Interest, Search, Action,
		Share steps
BI	_	Behavioral Intention
B2B	_	Business to Business
B2C	_	Business to Consumer
BBP	_	Behavior-Based Pricing
BDA	_	Big Data Analytics
BPMN	_	Business Process Model and Notation
CN	_	Choice Navigation capability
CFI	_	coefficients of Comparative Fit Index
CDM	_	Consumer Decision-Making models
CFA	_	Confirmatory factors analysis
CPR	_	Customers' Personalized Requirements
CRM	_	Customer Relationship Management
CODP	_	Customer Order Decoupling Point
C2B	_	Customer-to-Business
C2B2M-MC	_	Customer to Business to Manufactory based on
		Mass Customization
C2B2M-MP	_	Customer to Business to Manufactory based on
		Mass Personalization
DFDs	_	Logical data flow diagrams
EFA	_	Exploratory Factor Analysis
e-MC	_	Electronic version of Mass Customization
e-MCP	_	Electronic version Mass Customization and
		Personalization

eWoM	-	the model of e-Word-of-Mouth
EIDES	-	The European Index of Digital Entrepreneurship
		Systems
EIOPA	-	European Insurance and Occupational Pensions
		Authority
FS	_	Final Score
FMCG	_	Fast-Moving Consumer Goods
GWP	-	Gross Written Premiums
GDPR	-	General Data Protection Regulation
HCD	-	Human-Centered Design
HDCM	-	Hybrid Consumer Decision-Making models
IS	-	Information Systems
IT	-	Information Technology
IBB	-	Industrial Buyer Behavior models
IDT	-	the Innovation Diffusion Theory
ICT	_	Information and Communication Technologies
IPP	_	Insurance Purchase in Platform
III	_	Insurance Information Institute
KCN	_	Keyword Co-occurrence Network
ΙοΤ	_	Internet of Things
KPIs	_	Key Performance Indicators
MC	_	Mass Customization
MP	_	Mass Personalization
МСР	_	Mass Customization and Personalization
MMR	_	Mixed-Methods Research
MTPL	_	Motor Third Party Liability
NPS	_	Net Promoter Score
ODI	_	On-Demand Insurance
OSC	_	Online Self-Customization
OECD	_	Organisation for Economic Co-operation and
		Development
OWoM	_	the model of Online Word-of-Mouth Marketing
P&C	-	Property and Casualty insurance
PD	_	Product Design

PM	-	Product Manufacturing
PU	-	Perceived Usefulness
PCN	-	Process Chain Network
PEOU	-	Perceived Ease of Use
PIMM	-	Personal Innovativeness
ROI	-	Return of Investment
RPA	-	Robotic Process Automation
RPD	-	Robust Process Design capability
RMSEA	-	coefficient of Root Means Square Error of
		Approximation
SC	-	Supply Chain
SCP	-	Structure-Conduct-Performance analysis
SLA	-	Service-Level Agreement
SDA	-	Service-Dominant Architecture
SDL	-	Service-Dominant Logic
S-O-R	-	the model of Stimulus-Organism-Response
SSD	-	Solution Space Development capability
SSTs	-	Self-Service Technologies
SRMR	-	coefficient of Standardized Root Mean Square
		Residual
TS	-	Target Score
TAM	-	Technology Acceptance Model
TAM2	_	Extended Technology Acceptance Model
		(Venkatesh and Davis, 2000)
TAM3	-	Extended Technology Acceptance Model
		(Venkatesh and Bala, 2008)
TIB	-	the Theory of Interpersonal Behavior
TPB	-	the Theory of Planned Behavior
TRA	-	the Theory of Reasoned Action
TRI	-	the Technology Readiness Index
TTF	-	the Task-Technology Fit model
TAMM	-	New Technology Anxiety
TIME	-	the Theory of Interactive Media Effects
TLI-NNFI	-	Tucker-Lewis index, Non-Normed Fit Index

VCA	-	Value Chain Analysis
US	-	Users' Service
UI	-	User Interface
UX	-	User Experience
UBI	-	Usage-Based Insurance
UML	-	Unified Modeling Language
UTAUT	-	the Unified Theory of Acceptance and Use of
		Technology
UTAUT2	-	the extended Unified Theory of Acceptance and
		Use of Technology
Q-B	-	Question-based online customization framework
WoS	-	Web of Science

GLOSSARY OF MAJOR TERMS DEFINITION

Choice Navigation covers the meaning of a strategical capability of the Mass Customization concept that supports a customer in identifying their needs, specifying the desired solution using a simple, effective, and user-friendly product configuration and recommendation system.

Customization covers the meaning of practical outcomes of the Mass Customization concept. Customization is a strategical and operational organizational orientation to a competitive advantage acquisition through the configuration of Mass Production processes and systems on a consumer's knowledge, a user-centered design, and an application of combined technological innovations and management methods to produce a mass customized product or service (Baranauskas, 2019a).

Digital Business Platform covers the meaning of high and low level technological platforms which enable a collection and integration of capabilities of a business process and technology for product and / or service distribution in a digital format and business environment (Gartner Glossary, 2021).

Digitalization – cover the meaning of presuming digital technologies and solutions to transform an existing business process, a product or data toward a new business revenue and end-user value streams.

Digital solutions – cover the meaning of modern technological and application solutions applied in the process of digitalization.

Electronic Mass Customization and Personalization cover the meaning of a multidisciplinary operation management concept and a practical organizational orientation to a competitive advantage acquisition through combinations of technological, customization, and personalization related methods to deliver a large scale in¬dividualized product or service to a mass consumer, when at least 1 of 3 main dimensions of customer, product / service or process is in a digital format (Baranauskas, 2019b).

End-user covers the meaning of an individual, who can be both potential future and current users of a digital insurance platform, insurance service, or product.

Framework covers the meaning of a supporting structure of conceptual ideas, information, and principles that are used as the basis for making empirical judgments and decisions (Oxfords Learner's Dictionaries, 2021a; Cambridge Dictionary, 2021a).

Insurance consumer covers the meaning of an individual, who can be a consumer of an insurance product or service via digital and/or physical distribution chan-

nels in different time perspectives.

Insurance customer covers the meaning of an individual in the process of purchasing an insurance product or consuming service via digital and/or physical distribution channels.

Insurance digitalization covers the meaning of a broad range of digital transformation-related financial and technological outcomes in systems and processes of insurance service providers, which have a significant influence on the insurance specific-value chain, customer satisfaction, and improvements in speed and efficiency of processes, such as product distribution, underwriting, pricing, claim administration.

Insurance platforms cover the meaning of platform business model outcomes in insurance, which are digital insurance self-service solutions allowing insurance product customization, personalized access and management of personal insurance information and communication with insurer without any time or location restrictions.

Insurance products cover the meaning of a particular type of insurance agreement that is sold by an insurance service provider (Cambridge Dictionary, 2021b).

Insurance service covers the meaning of a particular type of insurance agreement and coverage-related services, available for insurance policyholders, such as claims reimbursement and renewal of a contract (Cambridge Dictionary, 2021c).

Insurance service providers cover the meaning of insurance companies, insurance intermediaries, and counterparts.

Integrated framework cover the meaning of a conceptual digital insurance decision-making process framework, which compounds the process logic and determinants of a traditional three stage purchase process, TRA model (1967, 1980), TAM model (1986, 1989), traditional and updated DeLone and McLean Information Systems Success Models (1992, 2003), HCDM (2002), E-S-QUAL model (2005), UTAUT model (2003), TAM3 (2008), UTAUT2 (2012) and an interpretation of key findings of insurance digitalization field researches.

Key Performance Indicators cover the meaning of most important measurement indicators and a part of a performance management system to measure the status and / or progress in a platform and / or in a process (Oxford Reference, 2021; Cambridge Dictionary, 2021d).

Mass Customization – a combined marketing, manufacturing and systems management concept and practical operational methods and frameworks for mass-produced tangible and intangible goods, oriented to a competitive organizational advantage by balancing Mass Production close operational costs and volumes, a diversified and flexible scope, and a high orientation to end-user's involvement in the customization process (Baranauskas, 2019a).

Mass Personalization – a combined communication and marketing concept and practical methods to support a tailored process experience and an on demand access to personalized information for an end-user in customization oriented processes and systems (Baranauskas, 2019a).

Mass Production – a concept and practical methods, oriented to manufacturing operations and assembly systems management, to produce high volumes of standardized tangible goods, oriented to a competitive organizational advantage through the mechanization of repetitive operations, low product pricing and a homogenous product scale.

Modeling covers the meaning of the process of using a computer and mathematical models to make a simplified description and visualization of a platform and / or process design to explain possible improvements (Oxfords Learner's Dictionaries, 2021b; Cambridge Dictionary, 2021e).

Non-life insurance covers the meaning of a type of direct insurance, whose contracts and activities are also known as general, property and casualty insurance, where a policyholder makes regular payments to the insurance service provider in return to a damage reimbursement for negative consequences of a specific uncertain financial and material type of a claim events (ESA, 2010).

Online customization framework covers the meaning of versions of practical and theoretical outcomes of the modern Mass Customization concept in organizational practice. An online customization framework is a technological and process setup of a digital business platform interface, which compound a well-technically and functionally integrated platform design, personalized content, support operations, and responsive product configurator (Baranauskas, 2020).

Personalization covers the twofold meaning of practical outcomes of the Mass Personalization concept. Firstly, Personalization is a supplementary dimension and practical features of a tailored experience of an end-user, personalized information access, and support solutions in a customization process. Secondly, Personalization is a distinguished stage in a customization process, with context-sensitive methods and outputs both for organizations and end-users of a customized product or service, and requirements for an implementation process (Baranauskas, 2019a). **Robust Process Design** covers the meaning of a strategical capability of the Mass Customization concept of reusing existing organizational and value-chain resources to deliver digitalized solutions with a high efficiency and reliability, so that an increased variability in customers' requirements would not significantly influence the overall operational efficiency.

Solution Space Development covers the meaning of a strategical capability of the Mass Customization concept. Solution Space Development stands for organizational efforts to understand their customer and their needs for products and services, by identifying valuable product attributes and developing products, services, or toolkits that effectively adapt to these individual requirements through the overall process standardization, service personalization, product platforms, etc.

Standardization covers the meaning of pre-built insurance products with same basic features, without end-user customization options, standardized insurance product terms and conditions, sales, and aftersales processes (Cambridge Dictionary, 2021f).

INTRODUCTION

Relevance of the topic. In the last three decades, terms and concepts of Mass Customization (MC) and Mass Personalization (MP) have received considerable attention at scientific research and have exerted a wide-spreading effect on different types of organizations and sectors at the practical application level. These stand-alone research domains have been advancedly overlooked and currently have become a combined, multidisciplinary operations management concept with a focus on applying combined Consumer Decision-Making (CDM) and Technology Acceptance Model (TAM) methods, and business models of digital platforms (Abdallah and Matsui, 2009). The practice of modern organizations also illustrates an increased orientation to a Human-Centered Design (HCD), Service-Dominant Logic (SDL) application, a sustainability domain, and value co-creation possibilities via digital business platforms (Gandhi, Magar and Roberts, 2013; Hu, 2013; KMPG, 2016; Tiihonen and Felfernig, 2017, Blaschke, Riss, Haki and Aaier, 2019).

Statistically, recent results of the Digital Economy and Society Index (52,45 %), The European Index of Digital Entrepreneurship Systems (EIDES) (48 %), and 90 % of households with an internet access demonstrate an improved level of digital performance in the European Union (EU-27) countries from both organizational and consumers perspectives (European Commission, 2020). The significant progress towards unlocking productivity of the digital entrepreneurship model, digitalized value co-creation, and collaborative networks are noticed on recent global data of digital platforms development. The Global Digital report, published in October 2021, revealed the pandemic affection towards the development of digitalization in the global society, including dynamic numbers of mobile, internet, and social media users. An almost double annual growth, from 7,2 % in 2019 to 13,2 % in 2020, in the number of global social media platform users was recognized, and the total number of active social media users reached 4.2 billion (DataReportal, 2021). The potential of digital business platforms in the Baltic region can be associated with the number of active users compared to the total population of the region, which resulted in the range from 65 % in the Eastern Europe and 79 % in the Northern Europe region (DataReportal, 2021). Finally, the discourse of insurance service digitalization development towards simplified and mobile-first design and multi-sided platforms is dictated by the natural demand, as 66,6 % of the world's total population are mobile users (DataReportal, 2021). The

discussed statistical trends above confirm not only the intensity of the ongoing 4th industrial revolution but also the practical potential of the digital and networked economy, and application of digital business ecosystem models in the insurance industry. Recent scientific research also outline the emergence of digital entrepreneurship and digital platforms approach and intensive service customization and personalization as highly influential factors to the model end-user attitude, preferences, and behavioral patterns in the digital environment. Accordingly, traditional principal-agent relationships and business models built on monolithic information system architecture are replaced by hybrid and collaborative network-based organizations and combined online customization framework-based platform business models (Reuver, Sørensen and Basole, 2018; Senyo, Liu and Effah, 2019; Pousttchi and Gleiss, 2019; George, Merrill and Schillebeeckx, 2020).

An increased inter-sectoral collaboration, technological advancement application, and emerging digital target audience reflect at the organizational level as an intensive automation and digitalization of traditional products and services as well as foster the behavioral and preferential changes on the consumer level. From the theoretical perspective, these practical trends influence the content and discourse of the MC and MP concepts development significantly, therefore, in the recent decade, the shift to the combined electronic version of Mass Customization and Personalization (e-MCP) has been recognized (Jitpaiboon, Dobrzykowskib, Ragu-Nathanb and Vonderembse, 2013; OECD, 2018). The e-MCP concept is driven by technology and data, where processes and systems are targeted to customization and personalization. Therefore, the concept has been widely applied in the practice of non-tangible products, including financial, design, and digital service platforms management (Jitpaiboon et al., 2013; Deloitte LLP, 2015, 2016; Chatzopoulos, 2017; OECD, 2018). It is important to outline that the version of e-MCP has shifted from a narrow understanding of being only a technological-instrumental tool and having a limited impact on specific manufacturing process steps and tangible products. It became mainly a placeholder for the direction towards strategic organizational decisions, operations maintenance, and support of digital business transformation processes. Accordingly, a combination of concepts have evolved to the business models of Mass Customization and Personalization (MCP) and online customization frameworks, which later have emerged to the area of electronic Business to Customer (B2C) and Business to Business (B2B) services (Kamis, Koufaris and Stern, 2004; Kamis, Stern and Ladik, 2008; Risdiyono, Imam and Affan, 2016). The

e-MCP not only reflects in practical needs of modern organizations within product / service, platform design and modeling of consumer behavior but also represents a holistic operations management approach, which compounds implications at strategical, tactical and operational management levels and is applicable within different types of organizations and sectors.

For a considerably long period of time, financial service organizations, including insurers, have relied on operational strategies determined by a product-oriented, broadly segmented, and multichannel approach. However, the COVID-19 situation, global economic trends, and rapid social changes in society have also had a remarkable influence on currently existing business models, including management of customer service and product distribution in the financial service industries. Studies of the past years outline the need for financial organizations to continue heavy investment into digital platform solutions, improvement of existing online customization frameworks and a personalized customer experience level (Dimitris, Ekaterini and Zogopoulos, 2018; Khanboubi, Boulmakoula and Tabaa, 2019; Lezgovko and Lastauskas, 2019). In the case of the non-life insurance market, the ongoing digital insurance transformation towards more personalized, Usage-Based Insurance (UBI) services and an increased availability of fully digital and customizable personal line insurance products are already noticed (Wiesböck, Matt, Hess and Li, 2017; Warg, Zolnowski, Frosch and Weiß, 2019; Schilirò, 2020). The Baltic non-life insurance market and incumbents follow global insurance industry trends in a form of both dynamic financial revenue numbers and increased practical attention to digital technologies and solutions. Nevertheless, the existing social-demographic and digital maturity level differences among Baltic nonlife insurance service providers and insurance consumers require a comprehensive and state-of-the-art market analysis. Continuous scientific investigations on outcomes of digitalization, customization, and personalization domains and new combined methods modeling in the light of the Baltic insurance market, products, digital distribution channels, and consumers' behavioral patterns are also required.

Research problematic. The real-time experience of the COVID-19 pandemic had a surprising and enterprise-wide influence on the global economy, society, and science. Significant consequences to behavior and preferences of end-users, strategies and methods of organizational sales, supply chain, and customer service management as well as the expansion of digital platform business models can be recognized (McK-

insey, 2020; Schilirò, 2020; Chang, Liu, Huang and Hsieh, 2019). According to McKinsey Global Survey (2020), global organizations have accelerated the digitization at customer and supply-chain operation levels by three to four years, while at the digitally enabled products level the acceleration is by seven years. Looking from the e-commerce and online sales perspective, the year of 2020 marked a notorious growth of users and sales orders. In the European Union, it increased by 30 % in April 2020 compared to April 2019; in the United States, the market share of e-commerce showed a growth from 11,8 % at Q1 of 2020 to 16,1 % at Q2 of 2020 (OECD, 2020a). This intensive period of technology-related changes required additional financial investments and re-focus onto technology-driven strategic and operational models in a timely manner. It also revealed gaps of data security management and disinformation, migration to new cloud and artificial solutions, and limited alignment among traditional and digital business platforms (McKinsey, 2020; European Commision, 2020). Due to a high competition among traditional and virtual peers and intensive development of modern information and communication solutions, an additional pressure naturally intensifies (Łyskawa, Kędra, Klapkiv and Klapkiv, 2019; Zariņa Cīrule, Voronova and Pettere, 2019; Baret, Celner, O'Reilly and Shilling, 2020).

All these trends are visible in managerial practices of modern organizations from financial sector and it reveals that a full fusion of electronic product customization and service personalization solutions, advanced digitalization, and integration of multiple analytical and automation solutions has become a dominant operation management strategy. The main practical challenges arise, where a high penetration of omnichannel-based distribution and digital platform solutions has become a global service standard and spread among all 3 operations management levels in the banking industry. To compare to the case of the insurance industry, it has a strong focus on the digitalization strategy but is still insufficiently aligned and vaguely spread within process and platform management at the operational level. This position is supported by studies on digital maturity that indicate that the status as-is is considered as a technological breakthrough and a pre-stage towards a full digitalization of the insurance industry (Mustafina, Kaigorodova, Alyakina, Velichko and Zainullina, 2020). On the theoretical level, the discussion arises where the background of MCP vaguely provides a sufficiently structured and consistent implementation logic and balanced frameworks for digitally customized products and systems. The legacy of traditional MC and MP concepts, which was built around the organization and product-orientated processes,

technology-driven attitude, and quantitative data indicators, is still vital and applicable in the practice of tangible and non-tangible products, including financial service. Therefore, multiple practical obstacles for organizational application and consumers' usage as well as confusion within scientific discussions are noticeable. From the scientific perspective, it results in numerous semantical interpretations of the concept content and application forms, which leads to the absence of a commonly agreed definition and application framework in the digital environment. Practically, users of insurance services also face the risk to experience a negative effect due to situations of information asymmetry, when a large quantity and variety of financial data and offers are presented by using not aligned customization and personalization-related solutions. In other words, digital insurance decision-making depends on multiple situation and environmental factors, including monetary and risk-based evaluation, personal considerations, and emotional-cognitive status. Therefore, it is important not to overwhelm platform users with customization options and personalized assistance requests. In a bad case scenario, the phenomenon of mass confusion may be triggered, resulting in an anxiety, regret, and finally, a not completed insurance-decision making. It is essential to outline that one or several bad user experiences might lead to long-term negative consequences resulting in a brand and technological solution rejection, where the rejection might even occur unconsciously.

These multidimensional issues of transition to the modern and combined MCP version based on technological management, and application limitations of traditional online customization frameworks require a continuous empirical investigation and modeling of new conceptual frameworks. Additionally, finding right and suitable elements from the conception to apply within a dynamic digital insurance-specific value chain might be a complicated, challenging, and time-consuming task. Therefore, this particular thesis comprises a problem, unraveled throughout the whole paper as follows: how to use combined methods of the Mass Customization and Personalization, Consumers-Decision-Making and Technology Acceptance models in order to analyze and model digital insurance consumers' behavior in digital insurance platforms?

The **research subject** of the thesis is application of combined digitalization, mass customization and personalization methods and their impact on the Baltic insurance consumers' behavior and an attitude to digital insurance platforms.

The **aim** of the thesis is to model a conceptual framework of digital insurance consumers' decision-making process in digital insurance platforms and develop guidelines on practical application of combined mass customization and personalization, technology acceptance and decision-making methods.

In order to achieve the aim of the thesis, objectives have been determined and listed as per below:

- 1. To examine and define a historical, semantical and bibliometric overview on the theoretical background of the Mass Customization and Personalization research domain.
- 2. To identify and synthesize theoretical links among the Mass Customization and Personalization concept, Consumer Decision-Making models, Technology Acceptance models and modern insurance domain.
- 3. To model and validate combined online customization frameworks and their usage options within digital business platforms.
- 4. To build and validate an integrated digital insurance decision-making process framework, applicable for analyzing and modeling consumers' behavior in digital insurance platforms.
- 5. To define and validate research methodology, methods and samples for empirical investigations.

6. To carry out an empirical investigation on the content, trends, and state-ofthe-art of the non-life insurance market, consumers' behavioral patterns, and digital insurance platforms in Lithuania, Latvia, and Estonia.

7. To prepare a combined model and usage guidelines for a practical application of the empirically validated integrated digital insurance decision-making process framework.

The thesis has several theoretical and empirical **limitations**, which should be taken under consideration as a research gap and a standpoint for future scientific researches:

 Period of scientific investigation. The scientific investigation of the Baltic insurance consumer decision-making process, the non-life market status as-is, and the spread of the customization and personalization domains has been carried out during the period of the COVID-19 pandemic. Dynamics and specifics of the COVID-19 pandemic significantly have impacted insurance consumers' behavioral patterns and accelerated intensive transition of insurance organizations to the digital business model.

2. Research subject. The research subject of the thesis is focused on a specific insurance market segment, i. e. non-life (P&C) insurance, individual consumer type, an emerging insurance region of three Baltic countries, and a distribution channel of digital sales platforms. Therefore, the outcome of the thesis might not fully cover practical needs of consumers and service providers from the Life insurance segment as well as may be limited in the application in other insurance markets, traditional (offline) retail distribution channels, and the legal consumers type.

Accordingly, above defined limitations of the period of investigation and research subject might have influenced empirical results and conclusions of the thesis as well as highlighted potential research directions in the scientific analysis. Such practical phenomena and trends like digital insurance platforms, an embedded insurance solutions, hybrid and personalized customer service models, and an emerging application of combined self-service technologies and customization solutions in daily insurance marketing and sales activities are still fragmentally analyzed on a scientific level and missing a more critical and holistic investigation. Moreover, the continuous and comprehensive analysis on digital insurance-decision-making process and users levels, combined platform frameworks and design development are required to support both practical efforts and a scientific interest of modeling attitudes and behavioral intentions of digital insurance end-users in insurance platforms. Finally, a comparative type of state-of-the-art case studies on different insurance markets and regions would be beneficial for insurers, which are facing with digital transformation and online customization implication.

Research methodology and methods. The methodology of the thesis follows best practices and well-grounded scientific approaches, designs, and methods of data collection and analysis of modern social science research. The author also aims for a novelty and methodological contribution within scientific studies of the operational management. General scientific methods are combined with methods of the art-based research, practical data sources, and analytical tools to identify digital behavioral patterns. The selection of the research methodology and methods focus on the structure of the thesis and can split into two groups. The first group arranges the analysis of the theoretical background and composes a theoretical foundation, while the second group is dedicated to the analysis of practical data and trends and conducts an empirical investigation.

The thesis follows pragmatism as key research philosophy, in combination with an objectivist epistemological paradigm, which reflect in the process of data analysis and sources of knowledge. This type of synthesis of the research philosophy and paradigm allows expecting an acceptable level of holistic scientific knowledge and empirical evidence. The research approach follows the logic of induction and supports the structure and objectives of the thesis. It allows to reveal points of the combination of mass service customization and personalization in digital service platforms as well as to create a universally applicable, multi-dimensional analysis framework for insurance service providers. Moreover, in this thesis, pragmatism is observed as a deconstructive paradigm, having strong linkages to a methodological pluralism in a form of Mixed-Methods Research (MMR) methods and research design during the whole research scope. Validation of the MMR suitability for the thesis is confirmed by 3 categories such as mixed sources of information and data, mixed data collection and analysis methods, and research strategy and methods applied in parallel procedures. The selection of epistemology is legitimated as this thesis focuses on the integration of three knowledge sources (authoritarian, logical, and empirical) uses an observable and subjective meaning of the phenomenon. The authoritarian source of knowledge is obtained by collecting and analyzing scientific research papers and then used in two initial theoretical parts of the thesis for the following types of analysis:

- 1. Semantical analysis, narrative, and thematic synthesis of the MCP concept meaning, content, and their combination options.
- 2. Retrospective and bibliometric analysis of the MCP concept.
- Identification of the theoretical foundation and causal-effect relations among online customization frameworks, Consumer Decision-Making models and Information Systems theories, models, Self-Service Technologies and modern insurance domain.

The logical, featuring conceptual modeling of combined online customization frameworks, and the empirical knowledge, featuring an objective investigation of statistical data and practical trends in the digital non-life insurance field, find a place in parts 3 of the thesis. The triangulation of methods is defined as follows:

1. Analysis of statistical data and practical trends of the non-life insurance market, insurance digitalization phenomenon, and digital platforms in Lithuania, Latvia, and Estonia. This part of the empirical analysis was grounded by using a combination of descriptive and comparative case studies, which follows the embedded single-case design, and used additional practical data sources and tools of Google Analytics and Google Trends.

- 2. Conceptual modeling of new combined online customization frameworks and integrated insurance consumers decision-making framework. This research part was completed by using a simplified Robinson (2008a, 2008b, 2015) conceptual modeling framework and the logic of Cartesian product creation by using the c-tuple method. Logical data flow diagrams (DFDs) and Framework-based synthesis were selected as supplementary methods for qualitative data analysis and visualization. In addition, analyses of the Explanatory and Confirmatory factors together with the Pearson correlation analysis, Logistic regression and SEM path analysis were conducted via the statistical analysis software IBM SPSS Statistics version 26 and R package lavaan version 0.6-9. These multiple statistical analyses determined the best factor's structure and reliability of the integrated insurance consumer decision-making framework.
- 3. Main primary data to investigate the practical status as-is level of insurance digitalization, customization, and personalization in the Baltic market were collected within a 4-stage investigation with the experts in the field, internal end-users (employees), and external end-users (consumers). A convergent parallel research design was applied within a combination of data collection and analysis methods and procedures:
- 3.1. Structured online surveys with a simplified Fuzzy and Likert scale-based questionnaire and visual expressions.
- 3.2. Visual expressions-prototypes of online customization frameworks by following an art-based research, A/B testing and Net Promoter Score (NPS) methods and using the design software Axure RP Pro (version 8).
- 3.3. A combination of embedded, explanatory, and interpretive types of case studies. Application of these mixed research methods and procedures not only produces a rigorous and credible source of empirical data, but also harmonizes in-depth, contextual, and qualitative evaluations on the research subject with broader quantitative generalizations of larger sample evaluations.

Defended statements:

- 1. Strategical Mass Customization capabilities of Solution Space Development, Robust Process Design, and Choice Navigation have a low spread within digital Baltic non-life insurance platforms, but are of a different scope at the country level and tend to affect the current setup of digital insurance platforms and lower an end-user's intention for insurance customization and personalization.
- 2. The level of the digitalization of the Baltic non-life insurance market and evaluations of digital insurance platforms are not homogenous and influenced by the socio-demographic factors.

3. Features of customization and personalization are widespread in the Baltic non-life digital platforms, but standardization is a predominant feature affecting the attitude of insurance consumers towards the insurance purchase process in digital platforms.

4. The digital insurance purchase decision-making process in the Baltics is mostly influenced by an evaluation on combined traditional individual financial and risk evaluation factors related to insurance, while an evaluation on platform-technological, social domain, and hedonic motivation factors is influenced by socio-demographic factors.

Logical structure and volume. The logical structure of the thesis reflects the aim and objectives. Part 1 is a theoretical foundation of the thesis and consists of 7 sub-sections, which are structured according to the 4 initial objectives. This part of the thesis is dedicated to critical examination and synthesis of scientific literature on semantical, historical, and content dynamics as well as identification of theoretic links among MC and MP concepts, Consumer Decision-Making and Technology Acceptance models, and digitalization phenomenon. Part 2 has 4 sub-sections, and the main focus on objective 5 and the presentation and validation of the empirical research methodology, research methods, design, sample and foundation of empirical research framework.. Part 3 is oriented to 6 objective of the thesis and empirical validation of the integrated digital insurance decision-making framework. Therefore, this third part of the dissertation has 6 sub-sections, where multi-phase empirical investigations of the research subject, results in analysis, and discussions are outlined. The dissertation research is concluded within the section of conclusions and recommendations. The volume of the dissertation is 227 pages, excluding technical appendixes and section of bibliography. In total, the volume of the thesis is 299 pages. A logical structure of the dissertation is provided in Annex 1.

Main theoretical findings can be divided and presented by the following perspectives on the research subject:

- MCP research perspective. The semantical, historical and bibliometric analysis
 on the MCP domain revealed six main historical transformation periods and
 three scientific development periods, closely associated with the digitalization
 phenomenon, platform business models and modern consumer behavioral patterns in the digital environment. The conceptual modeling of new online customization frameworks resulted in six combined online customization frameworks, referring to internal and external limitations in traditional customization
 frameworks, influence, and a role of the digitalization domain identified in theoretical analysis, practical results of analysis on market needs for innovative and
 customized products and services.
- 2. Modern insurance research perspective. Digitalization, customization, and personalization domains were identified as widespread within the modern insurance research domain, including primary and supportive type of activities in the insurance-specific value-chain. Digitalization, customization, and personalization appear to influence situation and dynamics of the insurance market structure and platform development as well. Additionally, the interdisciplinary nature of the modern insurance domain was confirmed after the completion of a simplified theoretical content-relational analysis and synthesis of Consumer Decision-Making and Information Systems theories and models, Self-Service Technologies reflections. Finally, by following findings of the theoretical synthesis, an integrated digital insurance decision-making process framework was conceptualized. The conceptual process framework compounds independent, latent and dependent variables and 4 evaluation dimensions, such as system, process, platform-technology, and individual. The process logic refers to the traditional three-stage model of a service consumption and customer-centricity-based approach. From the content point, the integrated digital insurance decision-making process framework refers to models of HCDM (2002), the extended Unified Theory of Acceptance and Use of Technology (UTAUT2) (2012), Extended Technology Acceptance Model (TAM3) (2008), TTF (1995), the traditional and updated IS success model of DeLone and McLean (1992, 2003), scales of e-service quality and success dimensions, and the interpretation of key findings of related field researches.

Main empirical findings can be divided and presented by the following perspectives and levels of the empirical research strategy:

1. Macro level-market perspective. The empirical investigation on digital nonlife insurance platforms in the Baltic market and the Baltic financial experts survey resulted in findings on the situation of insurance digitalization, customization and personalization, and practical implication of MC capabilities. The diverse situation was identified at the digital insurance platform level, where the combined online customization framework of ((AT-B) + (AL-B)) was noticed in Estonia, and variations of combined online customization frameworks of ((AT-B) + (AL-B)) and ((AL-B) + (AT-B)) were noticed in Latvia and Lithuania.. On the other hand, standardization was recognized as a predominant feature comparing to personalization and customization, and 3 MC capabilities received an evaluation in between Rather Weak and Neutral. Such findings partially confirmed the first defended statement. The general level of insurance digitalization was defined between Satisfied and Rather Good, which reflects on an insurer's preparation for the digitalization level as between Satisfied and Rather Good, but substantially falls behind the Baltic insurance consumers' needs and a demand for digital non-life insurance solutions, which is nearby the Good level. Such findings confirmed the third defended statement.

- 2. Mezzo level-organizational perspective. The empirical investigation on surveying Baltic insurance specialists regarding digital non-life insurance platforms in the Baltic market resulted in finding similarities with the Baltic financial expert survey, as the insurance digitalization level was also defined as between Satisfied and Rather Good. Evaluations on customization and personalization features concluded at the Satisfied level. Such findings confirmed the second defended statement. The evaluation on the digital insurance decision-making process outlined 3 most influential factor groups as well as statistically significant differences among factor groups and age groups of 18-25 years and 46-55 years.
- 3. Micro level-individual perspective. The empirical investigation on surveying Baltic insurance consumers (2021) regarding the digital non-life insurance decision-making process outlined six groups of 27 factors with a very strong positive or strong positive correlation. Similarly to the findings of Baltic insurance specialists, factors related to the monetary-risk, personal condition, and technical platform features were identified as the most influential. Such results
indicate that traditional economic benefits and rational behavior perspectives are relevant and applicable within the evaluation and modeling of the digital insurance decision-making process. Two main statistically significant differences between factor groups and the age group of 18-24 years as well as the presence of a digital insurance platform and the purchase of non-life insurance were identified. Such findings confirmed the fourth defended statement. Additionally, the statistical analysis also confirmed statistically significant differences on gender and resident country of Baltic insurance consumers and their personal attitude to usage and willingness to recommend combined online customization frameworks. Here, a non-standard combined framework of ((Q-B)+(AT+B)) received positive evaluations, indicating an ongoing market transition to a higher level of personalization and customization in digital insurance platforms. Such findings partially confirmed the second defended statement.

The methodological and theoretical contribution of the research will appear and be available in research fields of modern insurance and MCP domains. From the methodological point of view, it is expected to be an exploration example on how to combine and apply the logic of the art-based research, the visual drawing software and practical research methods A/B testing and NPS measurement for both current-state-focused and solution-focused analyses within modern insurance and customization research domains. From the theoretical point of view, significant contributions to the insurance research field were made by introducing conceptual interpretations of Porter Value Chain (1985), traditional Kamis (2004) online customization and Service Blueprint frameworks. Finally, the suggested modified Service Blueprint framework for analysis and modeling of the digital insurance decision-making process fosters a continuous scientific discussion on application of combined traditional UX mapping, UI modeling methods and modern practical tools for analysis and modeling of financial services, products and systems frameworks. In addition, provided recommendations of KPIs Measurement Table and KPIs Assessment Matrix outline a possible adoption of traditional project and process management tools, Risk Register and Risk Heat Map, within analysis and measurement of digital insurance platforms. Another important contribution is a theoretical extension of the previous state-of-the-art analysis on the MCP research domain by concluding a comprehensive automatic analysis, which relies on an investigation of bibliometric data of the 30 years research period,

from 1990 until 2020, and an interpretation of the traditional Gilmore and Pine II's (1997) model classification. An important theoretical novelty of the work relates to a renewal and an extension of past decade regional studies on the Baltic non-life insurance market and consumers behavioral patterns by introducing a new research subject of digital insurance platform and variables, such as Insurance literacy, Sustainability, Customization and Personalization, first time in empirical researches of insurance decision-making process. Finally, it is expected that results of the research would become a standpoint for future researches of modern MCP concepts within non-tangible product value chains and digital platforms as well as encourage a scientific discussion towards combined online customization frameworks and combined models of Hybrid Consumer Decision-Making, Technology Acceptance models and self-service technologies application for an analysis and management of non-life insurance-related products, purchase process, and digital platforms.

The practical contribution of the research. The empirically validated integrated digital insurance decision-making process framework is expected to have multiple practical application outcomes and a notorious contribution to casual practices of Baltic non-life insurance service providers. The following practical outcomes can be outlined as main recommendations for different levels and positions of insurance employees:

 Additional Key Performance Indicators (KPIs), KPIs Measurement Table, and KPIs Assessment Matrix of digital insurance platforms would be beneficial for insurance distribution service and platform managers, process and product analysts, digital platform designers, and support specialists. These recommended tools and their usage guidelines can serve as a foundation or a supporting data source in a comprehensive platform and market-level data collection, analysis, and reporting of the current status. In this way, the suggested evaluation process and tools of additional digital platform KPIs support findings of a traditional technological, financial or marketing type of analysis and their evaluation metrics, by introducing innovative combined content, customer-centricity, and functional perspectives.

2. The modified Service Blueprint framework would be beneficial for the insurance distribution service and platform managers, digital marketing and customers' support specialists, process and product analysts. The suggested modified framework integrates a conceptual digital insurance process logic and constructs into the practical insurance purchase process and results in a holistic map of key process stages, interaction touchpoints, and support types both from consumer and organizational perspectives. The application of the modified Service Blueprint framework can support a positive customer experience and platform design development tools, as a high scale and low investment solution-focused analysis tool.

3. Empirical findings on trends and content of digital Baltic non-life insurance platforms and behavioral patterns of Baltic digital insurance end-users would be beneficial for the insurance distribution service and platform managers, digital marketing and platform support specialists. Empirically validated most influential digital insurance decision-making factors can be practically applied on the multidimensional internal and market analysis and evaluation of digital insurance platforms. These empirical findings might support planning activities at both tactical and strategical levels as well as at operational level by improving digital branding, user experiences, communication activities and an discourse of operational actions. Findings on conceptual combined online customization frameworks validation confirms need of having diversified platform design based on country-factor as well as the introduction of a higher level of insurance customization oriented Question-based (Q-B) framework features in existing digital insurance platforms.

Dissemination of the research findings. Preparation of the dissertation as well as perception and illustration of research findings have been conducted in close relation to the professional occupancy and practical experience of the thesis' author. Therefore, the research covers a great variety of data sources, analysis methods, and dissemination of findings, which are presented in Annex 2.

Keywords: Mass Customization and Personalization, online customization, insurance digitalization, digital platforms, decision-making, non-life insurance, Baltic

1. THEORETICAL FOUNDATION AND RELATIONS AMONG MASS CUSTOMIZATION AND PERSONALIZATION, INSURANCE DIGITALIZATION AND USERS BEHAVIOR RESEARCH DOMAINS

1.1. Retrospective and semantical discourse on Mass Customization and Personalization research domain

The conceptual idea of the MC concept was described by Alvin Toffler in studies "Future shock" (1970) and "The Third Wave" (1980) while the term MC was first suggested by Stanley M. Davis in 1987. Soon it was popularized and developed for practical application in business by Pine II, Victor and Boynton (1993), mostly influenced by the best practices of companies such as Toyota and Dell (Piller et al., 2005a; Anišić et al., 2013; Brandão, Paio and Whitelaw, 2017). Over three decades of efficient adaptation, the MC concept has resulted in numerous practical transformations as well as gained a label of a suitable strategy and business model to apply in the constantly changing context of digitalization and sustainability trends. New research sub-domains of digitalization and MP, their combinations, and incorporation into the MC concept illustrate vitality and relevance of continuous scientific research. Additionally, global economic trends require financial service-orientated organizations not only demonstrating high results and broadly segmented market strategy on daily operational activities but also continuous adoption of new digital solutions or systems for management of customized and personalized customers' experience. These conceptual dynamics and practical issues undoubtedly have appeared as the root cause of new diffusions of MC and MP research domains towards customers' behavioral models, digital business platforms, and overall digitalization related outcomes in the past decade.

Retrospectively, six historical transformations of MC and MP background and content features can be identified. They are illustrated in Figure 1 as follows.



Figure 1. Historical development and background of the MC and MP concepts Source. Composed by the author by following Anišić et al., 2013; Kanama, 2018; Zhang, Chen, Tao and Liu, 2019, and published in Baranauskas, Raišienė and Korsakienė, 2020, p. 3.

Figure 1 illustrates the multifold approach to main transformation periods of MC and MP concepts. It compounds a historical timeline with key six dates and periods on the horizontal axis and combines a 4-grade scale of product variety and customer's involvement indication on the vertical axis. The logic of the vertical axis was developed by following the Gilmore and Pine II's (1997) model of 4 types of MC. The adaptive type stands for level 1, which is the lowest level of product customization and customer's involvement in the process. The cosmetic type, which in the scale stands for level 2, has a meaning of a standard product with limited options for customization (for instance, in packaging, advertising areas) and customer's influence. Level 3 has a link to the transparent-tailored customization type, where product configuration options and customer's involvement are of a medium scope and dynamically change according to product / service and a target audience. Collaborative-pure customization stands for level 4 on the scale and has a meaning of full customer's involvement in the process. This type of customization allows to create of a unique and bespoke product and ensure fully personalized assistance and information access during the whole process

(Gilmore and Pine II, 1997).

From the historical perspective, the first period dates back to 1850 and is closely associated with craft production, where low volumes and a manual manufacturing process limited the availability of customed production. This period is also defined as the initial stage for a large-scale (mass) production and is closely related to the Second Industrial Revolution and the Art and Crafts movement (Kanama, 2018). The historical beginning of the traditional Mass Production period is the year of 1913, which marks an essential manufacturing invocation of the first automatically moving assembly line. The transition from the business and risk management model of the "pull" logic to the new model of the "push" logic and sequential production techniques can be identified during this second historical period (Orošnjak et al., 2017). The third period, which lasted from around 1948 to 1955, illustrates a transition from traditional Mass Production to advanced-flexible Mass Production. This period appears strongly influenced by introduction to the Lean manufacturing and management concept as well as a peak period of Mass Production in the USA (Anišić et al., 2013). The period, which starts in between the years 1987-1989, is known for being the origin of the MC term and concept and as a starting point of a practical transition to a new multidimensional and combined business and manufacturing strategy.

Looking from the scientific perspective, the development of scientific researches within traditional and modern MC domains in the past 3 decades can be divided into 3 periods and sub-stages. The first research decade, which started in 1987-1989 and continued to the beginning of 2010s, captured the interest of researchers due to presentation of the traditional MC as a stand-alone concept of operations management in full scope. Here, a scientific discourse included sub-topics of the MC transition from the Mass Production concept, reflections of technological, economic, market specifics, and analysis of critical success factors for the MC implementation in the manufacturing field (Pine II et al., 1993; Gilmore and Pine II, 1997; Schubert and Ginsburg, 2000; McCarthy, 2004). A predominant approach towards critical success factors of MC was related to a degree of a product variety, modularity, and a stage and amount of customer's involvement while technological advancements and digitalization domain were understood only as complementary, assisting parts in customization processes (McCarthy, 2004; Daaboul, Bernard and Laroche, 2009; Morelli and Nielsen, 2010). In general, during this period MC was primarily recognized and analyzed as the next level differentiation and modularization strategy of the Mass Production concept to apply in

a linear and sequential format within product manufacturing and supply chain management. It should also be noted that the domain of MC received considerably high scientific attention due to a easy combination of topics of co-design or value co-creation. Moreover, researchers reflected on increasing practical popularity between organizations from manufacturing and retail spheres, which operated in large consumer market segments like Fast-moving consumer goods (FMCG). The scientific discourse was influenced by practical tendencies and innovations over social and technical infrastructures, intensive development of information and communication technologies (ITC), and their adaptation to back-office operations in organizations (Pieterson, Ebbers and Van Dijk, 2007).

In the second period, in 2000-2010, MC researchers focused on a more detailed examination of a multidimensional influence, variety of implementation processes, and possible outcomes of the concept within different types and sectors of organizations . During this period, the traditional MC version transformed to electronic versions of e-MCP and increased attention to practical usability in digital environments and online customization frameworks (McCarthy, 2004; Kamis et al., 2004; Kamis et al., 2008; Schubert, 2006; Daaboul et al., 2009; Morelli and Nielsen, 2010). The expansion of practical application boundaries stimulated scientific interpretations of new outcomes as MC combinations with subdomains of marketing, e-commerce, personalization, and digitalization (Rungtusanatham and Salvador, 2008; Morelli and Nielsen, 2010; Hu, 2013; Piller, Thorsten, Ihl and Salvador, 2014). It is important to note that sub-domains of personalization and digitalization can be also identified within first-period researches of MC, where these sub-domains were mostly analyzed interchangeably with the MC domain. They were identified as a possible solution to traditional customization obstacles, allowing to minimize a negative influence for end-users in customization processes and systems (Abdallah and Matsui 2009; Brandão et al., 2017). Substantial practical changes in technologies and organizational management, the rise of internet and high-tech organizations as well as diversified demand patterns of new digital end-users fostered continuous studies and development of the concept towards the third period.

In the last, third, period, which started around the year 2010 and lasts up until now, the focus has been switched to a synergy of interrelated scientific domains, which together with trends of globalization, digitalization and sustainability have become main drivers in the MC research field. This transition in the scientific discourse has outcomes of new concept versions like Smart Customization, Agile Mass Customization (further Agile MC), and e-MCP (Medini, Duigou, Cunha and Bernard, 2015; Hora, Hankammer, Canetta, Sel, Gomez and Gahrens, 2016; Grosso and Forza, 2019; Zhang et al., 2019). In practice, these versions have had multiple outcomes both at strategical business models and operational customization process levels. Firstly, the traditional production-inventory and business models of Mass Production and Business-to-Customer (B2C) have been prevailed over by new versions of the modern MC and overall Customer-to-Business (C2B) approach (Groß et al., 2018; Zhang et al., 2019). Secondly, it has resulted in high operational differentiation capabilities of the dynamic market demand, a more flexible, synchronic, and interactive process of customization, and promoted end-users for a constant and active engagement to co-production and co-design activities targeted to customization (Morelli and Nielsen, 2010; Piller et al., 2014; Zhang et al., 2019). Recent trends of automation, data management, and the 4th Data (industrial) Revolution should be amended to the definition as strong influential factors, which fostered changes in the MC concept content and orientation of the practical application (Forbes and Schaefer 2017; Rødseth, Schjolberg and Marhau, 2017; Wang, Y., Ma, Yang and Wang, K.S., 2017; Zhang et al., 2019). It is recognized that the MC concept clearly shifted towards intangible products' management, custom design, pro-active customer's involvement, and options for an organization to model the behavior of consumers in digital platforms (Risdiyono and Komsap 2013; Xu, Chen and Zheng, 2016; Xu, Landon, Segonds and Zhang, 2017 and published in Baranauskas, 2020, p. 120). It is also agreed that a customer value in modern MC concept versions is created on the information level by suggesting an information-based products, which can be easily and instantly customized to specific customer's needs in digital platforms (Wang et al., 2017; Zhang et al., 2019). To conclude, it is important to outline, that in spite of numerous historical transformations, changes in the practical application background, and dynamics in scientific researches of the MC and MP concepts, following key semantic features have remained:

a) Orientation to fulfillment of specific needs of customers as well as involvement of a target mass audience in the process;

b) Harmonization of diversity, costs, and quality of customized products and personalized services;

c) A competitive advantage within the combined (hybrid) methods application including best practices in operational management and technological innovations.

Although the content and research directions of MC and MP have clear bound-

aries, the semantical meaning still faces numerous interpretations, which reflect in cases of practical application as well as scientific discussions. As it is valuable to understand this contradiction in order to observe the context, main semantical meaning similarities and differences between these two concepts are summarized in Table 1.

CRITERIA	CONC	(0) (D (D)(0))	
	MC	MP	COMPARISON
Definition	Combined marketing and manufacturing operations concept and a practical set of operational techniques, allowing to gain a competitive advantage through a combination of Mass Production cost level and customer-oriented and individualized product and / or service	A combined communication and marketing operation concept and a set of personalized process experience, support, and information access created through a value creation chain, smart services, collaborative networks, and know-your-customer activities	No match
Key elements	The data-driven foundation of processes and systems	The data-driven foundation of processes and systems	Match
	The manageable and predictable outcome of the process	The manageable and partial predictable outcome of the process	Partial match
	Multiple interaction points within the process	Limited interaction points within a process	No match
	Demand-driven supply chain	Demand-driven co-creation	No match
Focus on	Balancing among diversity in scope, operational costs, and quality features	Provide personalized support and access to information	No match
	Tailored product or service experience	Tailored process experience	Partial match

Table 1. Semantical meaning similarities and differences between MC and MP conceptsSource. Composed by the author by following: Deloitte LLP, 2015; KMPG, 2016; Fels et al., 2017; Tiihonenand Felfernig, 2017; Dreyer et al., 2019 and published in Baranauskas, 2019a, p. 10.

As per Table 1, it can be identified that both concepts have a data-driven foundation and demand-driven operations, which both are used for a similar aim of ensuring a tailored product and service or an individualized system or process experience for end-users at any request moment. Keeping a balance among operational costs level and scope nearly to Mass Production, diversity in customized features and personalization outcomes, and an overall high-quality level are also recognized in MC and MP concepts (Skačkauskienė and Davidavičius, 2015; Dreyer et al., 2019; Tunn, Fokker, Luijkx, De Jong and Schoormans, 2019). Issues of MC and MP semantical interpretations can be identified on the definition level, where in practice these concepts are addressed from different angles and usually understood under definitions of typology, model, evaluation, and / or deployment frameworks. On the scientific discussion level, concepts of MC and MP also have multiple definitions including management concept, paradigm, stand-alone business model, operations or manufacturing strategy, or a product development approach (Broekhuizen and Alsem, 2002). Scientific discussions on the semantical meaning confirmed that the concept MC is simply related to the term Mass and its content. According to McCarthy (2004), the term Mass stands for key feature indicating that the concept excludes low volumes of products or services. This semantical position is supported by Joergensen et al. (2014) by stating that MC should be interpreted as a general, strategic level change model, while MP is a lower-level operation approach, which is most relevant towards the support of customer experience and practical clarification of service or product requirements for individual consumers or small groups. However, these interpretations are still an open question, taking into evaluation last developments of the MC concept, where new versions of Smart Customization and Agile MC evolved (Xu et al., 2016; Zhang et al., 2019). These new versions are accepted as a customer-centric and data-driven business strategy or model to cover highly heterogeneous, digitalized, and sustainable demand patterns and ensure value creation processes for the individual consumers and small and medium organizations (Elgammal, Papazoglou, Krämer and Constantinescu, 2017; Zhang et al., 2019). To conclude semantical interpretations of MC, it should be noted that this concept has a multifold meaning with the main focus on acquisition or keeping a competitive advantage through a maximum diversity of products and services supply by maintaining the best harmonization ratio between operational costs, combined management methods, and high-quality parameters (Skačkauskienė and Davidavičius, 2015; Orošnjak et al., 2017).

Otherwise, the concept of MC has clear limitations and differences comparing to the MP concept. Firstly, there is a standpoint of MC being a natural prolongation of the Mass Production concept. In other words, MC carry a meaning of internal production management concept and a configuration of processes and systems on customer's knowledge and new combined management methods, which can be partly recognized in the Mass Production concept as well. It is also identified that all these practical modifications and conceptual transitions are fulfilled sequentially, internally, and isolated from re-using existing resources and following limited predeterminations on customer's preferences (Tiihonen and Felfernig, 2017; Wang et al., 2017). Second, this fundamental shift from Mass Production to MC has been narrowly discussed at the scientific level from the side of negative consequences, such as situations of mass confusion and possible side effects of low-level personal assistance, information access, and on-demand support (Huffman and Kahn, 1998; Tiihonen and Felfernig, 2017). The last limitation is within organizational practices and cost-oriented approaches on MP and MC concept implementation. Limited understanding of MP as compounding only elements of the two-way communication process and Customer Relationship Management (CRM) appears to be accustomed and leads to a certain conclusion and decision-making. The MP concept from the financial perspective is interpreted as an only supplementary, costly, and time-consuming set of methods and processes, therefore, organizations express a preference over implementation of only the MC concept or partial implementation of the MP concept within existing sales or marketing strategies and daily operations (Gandhi et al., 2013; Deloitte LLP, 2015).

The issue of semantical interpretation was discussed by Watcharapanyawong, Sirisoponsilp and Sophatsathit (2011), closely relating to Piller with Müller (2004; 2014) and Salvador, Holan and Piller (2009) positions. The bipolar logic to simplify the classification of the MC terminology was suggested:

- MC terms and definitions, which are oriented to the capability of the Customer Decoupling Point and Choice Navigation (CN) by covering processes of twoway communication and support, tools for clarification of needs, customer's satisfaction, and relationship management.
- 2. MC terms and definitions, which are process-oriented and closely related to the Solution Space Development (SSD) capability. In detail, they cover such MC features as guidance in the customization process, management and transformations of the supply chain, production or service system, a setup of product configurators, customer data, and analysis of preferences.

This logic of classification is criticized for insufficiently considering one of the MC strategic capabilities, originally called a Robust Process Design (RPD). The RPD is treated as an intermediary capability of MC, which is related to MC features of processes robustness, the logic of product modularity, management of organization resources including human resource learnings, reallocation or re-use of resources in the customization related processes (Nielsen, Brunø and Storbjerg, 2013). On the other hand, it is also discussed that the additional classification category, which includes the RPD, seems to be unnecessary due to definitions and terms that MC sufficiently covers within fundamental MC capabilities of CN and SDD. Furthermore, practical attempts

to classify MC and MP on the process and content levels are identified (Deloitte LLP, 2015). A 5 stage model was suggested, which combines domains of standardization, personalization, and customization into one sequential process workflow. Figure 2 illustrates this 5 stage model.



Figure 2. Conceptual 5 stage model of MC and MP domains on the process level Source. Composed by the author by following Deloitte LLP, 2015.

From the process perspective, the personalization domain is the first stage after standardization and a supplementary pre-stage before the customization domain. The customization domain is an intermediary stage between personalized service and fully bespoke products and services. Additionally, the customization is classified into two types in regards to end-users participation level. The active participation-oriented customization is related to a customer's willingness to be actively involved in the whole customization procedure. This type of customization is more common in the high-end service or product categories like fashion accessories, clothing, jewelry, furniture, or vacation. The limited participation-oriented customization is defined as a standard MC where customers are more passive and have a low level of involvement in customization processes. Furthermore, a variety of customized products or services is limited and predefined in advance by organizations as product / service providers in regards to historical data of a customer's base and market trends. In practice, this second customization category is identified in vehicle and computer industries due to the complex, interrelated, and long-lasting production cycle. The bespoke service domain is associated with the final stage of the customization process workflow and is treated as a full customer's engagement to co-design and co-creation activities by ensuring the highest level of customization process experience, information access, and a unique result (Deloitte LLP, 2015).

It is also important to define main outcomes of considerations on the semantical meaning of the MP concept and Personalization term. Two main scientific approaches can be distinguished:

1. Personalization is a supplementary dimension and a hedonic feature of MC,

which reflect in various forms and stages to support organizational orientation towards customization at individual and target customers' group levels (Schubert and Koch, 2002; Piller et al., 2005a, 2005b; Joergensen et al., 2014; Anišić et al., 2013). This is rather a traditional approach to MC, following a common logic where a mass customizer should be well familiar with a target segment in a specific product or service group by operating historical data of customers' profile, behavior model, preferences, etc. (Hora et al., 2016). There is a position of MP outcomes to have a close relation to the Communication domain in manners of communication and data transfer methods, as well as to User Experience (UX) and User Interface (UI) features. This relationship logic is interpreted as a set of contingency factors to prevent negative consequences of MC, known as a mass confusion problem, the product variety paradox, or the burden of choice (Huffman and Kahn, 1998; Piller et al., 2005a, 2005b; Schubert and Ginsburg, 2000; Trentin, Perin and Forza, 2013). Therefore, the Personalization domain is used in different customization-related processes, models, and levels, incorporated practically into configuration or recommender systems, CODP. The combined version of the MCP concepts illustrates and summarizes scientific discussions within this approach. (Anišić et al., 2013; Hora el al. 2016; Risdiyono et al., 2016; Tiihonen and Felfering, 2017).

2. Personalization is a distinguished concept from Mass Production and MC concepts with context-sensitive methods and outputs both for organizations and end-users of a product or service, and requirements, both for a system and implementation process (Schubert and Ginsberg, 2000; Schubert and Koch, 2002; Xu 2013; Tiihonen and Felfering, 2017; Kanama, 2018). Within this approach, the MP concept has a process-based meaning of personalized information access and process experience, which is created by an organization via pre-analysis of customers' profiles and their behavioral data, modeling the customers' journey, and constant on-demand support. The transition from a demand-driven supply chain to a demand-driven co-creation chain, an increased level of customer-centric smart service, and personalized features of a system, process, or product are identified as major outcomes of the MP concept (Deloitte LLP 2015; KMPG, 2016; Fels et al., 2017; Tiihonen and Felfernig, 2017; Dreyer et al., 2019). The MP concept within this approach is also appreciable for supporting brand recognition and management of long-term customer relationship (Schubert

and Koch, 2002; Schubert, 2006).

From the semantical point of view, the MP concept also faces multiple interpretation issues. Synonymic terms of Individualization and Mass Customerization are used instead of personalization processes, an individualized setup of information, communication, and marketing (McCarthy, 2004, Schubert, 2006). To continue, the above-defined division of MC and MP concepts reflects on different business models in practice. Within the MC concept, a predominant business model is a Customer to Business to Manufactory based on MC (C2B2M-MC) with 5 specific operational stages: Customers' Personalized Requirements (CPR); Product Design (PD); Product Manufacturing (PM); Supply Chain (SC) and Users' service (US) (Zhang et al., 2019). The MP concept is associated with a modified C2B business model Customer to Business to Manufactory based on MP (C2B2M-MP) (Deloitte LLP, 2015; Zhang et al., 2019). From a practical application point of view, it is noticed that in the public sector, especially in the public service of heath or social care, e-government portals mostly follow the MP concept (Needham, 2011; Dvoriak and Savickaitė, 2018). Here, the MP concept is used not only to ensure a tailored experience for the customer but also as aiming the full implementation of the communication domain as a timely and transparent, a twoside information exchange in public communication. Applying the concept in this way mentioned above, public sector organizations expect to improve service quality and the cost ratio of public administration services (Homburg and Dijkshoorn, 2013). Citizens also show a need for the fully personalized service model and have an increasing expectation towards government bodies to provide a high level of interaction possibilities, transparency in the public service content and a rapid delivery time as well as simplified and user-friendly digital platforms. It is recognized that the implication of the MP fully or partly helps to manage standard issues in the public service management including reduced information overload and asymmetry and improved waiting-delivery time. Additionally, it creates suitable conditions for the deconcentration of the service provider network by delivering an equitable access to public goods without any specific time and location limitations (Homburg and Dijkshoorn, 2013; Christensen and Pilling 2014; Kant, 2014; Schwarz, 2016). Best case examples of personalized e-government service are identified in Canada, Netherlands, England (Homburg and Dijkshoorn, 2013; Dvoriak and Savickaitė, 2018).

To conclude semantical meaning variances, a selected interpretation for the research should be clarified. The practice of an interchangeable application of customization and personalization naturally requires a new combined scientific interpretation and methods within this field, therefore, the combined electronic version of the Mass Customization and Personalization concept is selected as a semantical foundation in the following analysis of the research subject. The selected position refers to key findings of the analysis on semantical, historical, and practical trends as well as is related to the research subject. The author supports the scientific position of MP as a supplementary process dimension and a fundamental feature of MC. In this way, the research refers to the positions of Fels et al. (2017) and Schlager et al. (2018) studies, where a need of consumers for multiple interaction points and a two-way personalized communication flow within the customization process was confirmed. The author also agrees with the conceptual 5-stage customization process model (Deloitte LLP, 2015), where the combined MCP stage is defined as a natural evolvement during the process. The selected research position is confirmed by the presented historical development of the MC and MP domains, whose latest shape is recognized to be the e-MCP and practical application trends, where the MP as a stand-alone concept is more noticed in public service organizations and their service administration. Looking from the semantical point of view, the e-MCP selection reflects on the insurance digitalization domain, which is analyzed further in this particular thesis, and compounds a modern approach to application of MC and MP concepts outcomes . Key elements and the focus on areas of both concepts, including the data-driven insurance processes and systems, demand-driven co-creation, online customization, and insurers' efforts to balance between tailored product and process experience within digitalization and platform development can be recognized both at future scientific research and practical levels. The author believes that the selected researched position allows performing a multilevel analysis of data and user-driven customization outcomes in digital business models, which have become a new standard in the practice of financial services and products management. In general, the selected research positions connotate to a modern organization orientation to an acquisition of a competitive advantage through combinations of technological-platform, customization, and personalization-related methods to deliver a large scale in¬dividualized product or service to a mass consumer.

1.2. Bibliometric analysis of scientific research level on Mass Customization research domain

The MC research domain on a scientific research level was vastly discussed as a supplementary part of the process and operational management, marketing, engineering, and other related scientific domains until the end of the 2000s. Only in the decade of 2010s, after getting practical approval as an efficient e-business approach and strategy of supply chain and customers' support process management, MC started to develop towards a separate interdisciplinary research domain, including interchangeable analysis and conceptual interpretations including the personalization sub-domain (Schubert and Ginsburg, 2000; Schubert and Koch, 2002; Piller et al., 2005a, 2005b; Schubert, 2006). Therefore, by referring to these development trends and the selected research, the following analysis is focused on the bibliometric analysis of the MC domain.

Firstly, the novel study and the position of Da Silveira, Borenstein and Fogliatto literature review (2001) should be outlined. This study stands for the first scientific effort to disclose historical research directions of the MC domain, relationship, and differences between Mass Production and MC as well as explains the duality and uniqueness of the MC phenomenon. It is claimed that this concept would never be appropriate for practical adaptation for all types of products and all kinds of consumers. This theoretical position partly reflects on followers of the state-of-art analysis of the MC concept defined in Table 2. Those studies resulted in finding that researchers and practitioners are still missing a coherent and universal framework for assessment and implementation, and an agreed position on the semantical meaning of MC and MP definitions. Table 2 summarizes key points of prevailing literature review studies of the MC research domain and indicates a need for a continuous but more comprehensive state-of-the-art analysis of the combined MCP research domain.

Author and Year	Research method	Aim and Scope
Da Silveira et al. (2001)	Literature review	 To disclose research directions of MC in the selected 10-year period. To identify points of relationship and differences between Mass Production and MC. Focused on a comprehensive and structured MC domain and frameworks and clarification of success factors and enablers within MC systems successful implementation in practice.
Fuerstner, Anišić, Cosic (2009)	Literature review	 To present an overview of research results, fields of interest, and practical reflections of the MC domain within the selected area. To disclose a framework for product configuration systems, product platform models, knowledge support system, and the role of a customer.
Anišić, Tudjarov, Tsigkas, Chatzopoulas and Freund (2009)	Web analytics (Google Maps)	 To investigate the status and trends of MC and MP strategies at research institutions at the scientific activity and practical implementation levels. Focused on the Central and Southeast Europe region and MC outcome in a form of the web-based product configurators and service customization.
Ferguson, Olewnik, Malegaonkar, Cormier and Kansara (2010)	Literature review	 To disclose past and future research directions of MC in the selected 10-year period. Focused on thr MC domain spread across 3 domains of interest (marketing, engineering, and distribution), practical application metrics, and barriers.
Fogliatto, Da Silveira and Borenstein (2012)	Literature review	 To disclose an updated review of the scientific literature on the MC domain, including success factors and enablers, MC implementation, operationalization and conceptualization. Focused on the update of Da Silveira et al. (2001) study.
Anišić et al. (2013)	Web analytics (Google Maps) Case study	 To present an overview of the implementation status of MC and MP strategies, historical development, and future trends. To model MC implementation into production systems within Small and Medium Enterprises (SMEs). Focused on the Southeast Europe region, SMEs, and MC outcome in a form of web-based product configurators service customization and case study of the furniture market in Serbia.
Sandrin, Trentin and Forza (2014)	Literature review	 To provide a comprehensive and structured overview of prior research on the MC domain and future research discourses. Focused on MC organizational antecedents and organization-related issues by using the framework of the organization design theory and the Galbraith's Star Model.
Chatzopoulos (2017)	Web analytics (Google Alerts)	 To disclose statistical results for the usage of 5 specific terms (Mass Customization; Open Innovation; Lean Manufacturing; Flexible Manufacturing Systems; Lean Flow), the trend of publication of these terms and statistical information concerning the rate and the ratio of their publication activity on the World Wide Web. Focused on the usage of 5 terms from the practice of the MC and interdisciplinary domains in the period of 2012-2016.
Brandão et al. (2017)	Literature review Mapping (under Sanders methodology)	 To create a visual map of relationships among different research discourses to MC, their relation to the Personal Fabrication (PF) domain, and to identify future research discourses. Focused on MC domain and PF domain researches concerning production and design control.

Table 2. The review of main state-of-the-art studies within MC research domain

Source. Composed by the author by following: Da Silveira et al., 2001; Fuerstner et al., (2009); Anišić et al., 2009; Ferguson et al., 2010; Fogliatto et al., 2012; Anišić et al., 2013; Sandrin et al., 2014; Chatzopoulos, 2017; Brandão et al., 2017.

From the methodological point of view, Table 2 presents an analysis conducted by using the modified 3-step scoping review process framework of Arksey and O'Malley (2005) and applying bibliometric analysis and interdisciplinary mapping methods. The scoping review has a more replicable, scientific, and transparent process of a theoretical synthesis with less bias in results compared to other types of literature analyses (Cook, Greengold, Ellrodt and Weingarten, 1997; Peterson, Pearce, Ferguson and Langford, 2017; Parida, Sjödin and Reim, 2019). The first stage of the process was an initial identification and definition of the analysis scope and investigation question, which was to identify and review what kind of state-of-the-art studies were completed within the MC research domain in the last 3 decades. The selected scope of the analysis period refers to the findings of the historical development of the MC domain (see Figure 1), which indicated that the first research had started between 1987-1989, while the analysis subject was limited to the MC concept by referring to the selected research position defined in section 1.1. The second stage of the review process was allocated to select relevant studies under predefined qualitative criteria by completing a bibliometric type of analysis. The bibliometric analysis allows disclosing the latest trends, provides a systematic overview of the scientific discourse development, and is suitable in the traditional user-driven data analysis and categorization of a large scope of scientific literature (Wang, Pan, Ke, Wang and Wei, 2014; Blanco-Mesa, Merigo and Gil-Lafuente, 2016; Radhakrishnan, Erbis, Isaacs and Kamarthi, 2017; Nunen, Li, Reniers and Ponnet, 2018). The usage of bibliometric indicators and analysis techniques also support the reduction of the researcher's bias, effort, and time required for a literature review and mapping (Blanco-Mesa et al., 2016; Radhakrishnan et al., 2017). Accordingly, 4 types of bibliometric clustering techniques were used in the analysis as follows: bibliographic coupling (of publications), co-occurrence (of keywords), and co-authorship (of countries). The selected data scope compounds scientific papers, retrieved from the database of the Clarivate Analytics Web of Science (WoS) Core Collection, under the timeline 1990-2020 and using keywords "mass customization" and "mass customisation". The data was retrieved in May 2020, from the Clarivate Analytics WoS Core Collection by assuring the scientific integrity of the data source (Bužavaitė, Ščeulovs and Korsakienė, 2019; Meng, Wen, Brewin and Wu, 2020). Notably, the search resulted in 1783 scientific papers, which were later reorganized and analyzed by using the MS Office Excel 2016 software and the graphical visualization software VOSviewer (version 1.6.15). The third step was dedicated to a final assessment and a content analysis of selected studies. The final list of 9 studies was selected after a manual evaluation process by using search keywords Literature review, Review, Overview, Mapping, Monitoring, and additionally completing screening of reference lists and authors of studies to identify any referring studies in search engines of Semantic Scholar, Google Scholar, and Microsoft Academic. The final assessment of finalized studies was completed by examination and comparison of each publication's content.

According to findings summarized in Table 2, a research gap and a scientific demand to provide a more comprehensive systematic review and meta-analysis can be identified. It is significant not only to disclose historical changes of the concept or relation to other scientific domains but also to present key statistical points of scientific research in this field including leading countries and researchers, publications, dynamics of research interests, and analysis subjects. Therefore, the VOSviewer (version 1.6.15) sotware was used to synthesize results from the above-defined data extraction process to visualize different types of bibliometric data networks in the format of two-dimensional maps.

Development of the MC research domain during the period of 1990-2020 can be presented from the historical and content perspective by evaluating dynamics of scientific publications. This type of analysis indicates that the scientific interest in MC in the period of 1990-1995 appears to be considerably low and only 7 scientific articles were published within 1992-1995. Secondly, two periods of different intensity can be identified:

- A growth of scientific popularity from 1992 until 2007, which resulted in a steadily increasing number of scientific articles.
- The dynamic period from 2007 until 2019, which resulted in a fluctuating number of articles, with a peak period in 2017-2019.



Figure 3. Development of scientific investigations in the Mass Customization domain (1992-2019) Source. Composed by the author by using Web of Science Clarivate Analytics (WoS) and published in Baranauskas, Raišienė and Korsakienė , 2020, p. 6.

Additional information: document type - article, research language - English.

Looking from the content perspective, the selection of topics in most cited publications within the last two decades reveal that the MC domain is prolific and addresses the research subject from numerous theoretical angles and methodological points. The most dominant subdomains were product engineering and manufacturing processes, business operations, and strategic management while the leading research topics were oriented to manufacturing systems, methods, and outcomes of the MC application. In the past decade, the MC researchers focus shifted to combined management and Information and Communication Technologies (ICT) methods, customer-centric approaches, Big Data and Big Data Analytics (BDA), and value co-creation in digital business platforms (Hora et al., 2016; Risdiyono et al., 2016; Tiihonen and Felfernig, 2017, Zhang et al., 2019).

The bibliographic coupling of publications is one of the selected bibliometric clustering techniques, which results in a visualization of actual referencing connections among separate studies. This type of visualization of bibliometric networks indicates the ratio of relational strength among publications and overlapping in the refer-

ence list of publications (Van Eck and Waltman, 2014). Seven predominating clusters with a threshold of 50 citations were identified by using this type of technique in the VOSviewer software. Figure 4 presents visualization and content of these predominating clusters:

- The red color cluster is led by Salvador, Forza and Rungtusanatham (2002) (citations n = 269) and Simpson, Maier and Mistree (2001) (citations n = 349).
- The green color cluster is predominated by von Hippel (2001) (citations n = 458).
- The blue color cluster is predominated by Fixson (2005) (citations n = 253).
- The dark khaki color cluster is led by Kotha (1995) (citations n = 288).
- The purple color cluster is led by Berman (2012) (citations n = 748).
- The light blue color cluster in the upper left corner is led by the Akkermans, Bogerd, Yucesan and van Wassenhove (2003) (citations n = 246).
- The light brown color cluster is led by Hanafy and ElMaraghy (2013) (citations n = 206).

To conclude, four highly influential clusters (red, green, blue, and khaki), which have clear visual boundaries, confirm the thematic foundation and boundaries of MC within the decades of 1990-2010 while 3 less influential and cross mixed purple, light blue and light brown clusters stand for the MC domain theoretical and practical transition to an interdisciplinary approach, which came into clear recognition in the decade starting from 2010. The interdisciplinary approach reflected in an increased researchers' focus on incorporating the MC domain into modeling of consumers behavior and experience, information systems management, and an overall combined methods application.



Figure 4. Bibliographic coupling of Mass Customization publications in 1990-2020

Source. Composed by the author using the VosViewer software and published in Baranauskas et al., 2020. Additional information: a circle shape indicates a specific publication while its size represents the number of overlapped citations. Lines and the distance among circles show the closiness of relation and similarity of publication pairs. Color marking stands for clusters of publications.

Looking from the publications' content perspective, key focus on practical application of the MC concept across a broad range of tangible products like automotive, food, and clothing industries and manufacturing-related processes can be identified. Here, it is worth to mention external factors of global economic and business market dynamics, automation-robotics application tendencies in the management of processes, services, and product lines, and the strong spread of digitization and digitalization, which have featured in the recent decade. These substantial development factors influence the extension of the geographic map of researchers to non-industrial countries and changes the interpretation of the MC concept. At the semantical level, apprehension of MC in researches has been observed. Now it is considered as a business model or a modern process and risk management, applicable by data-driven small and medium organizations by covering not only mass but also heterogeneous demand on an individual consumer level (Ferguson et al., 2010; Elgammal et al., 2017; Zhang et al., 2019). Together with theoretical changes, these external factors have significantly contributed to practical updates in organizational frameworks, operational logic and stimulated innovations in the MC field (Elgammal et al., 2017). Therefore, the predominance of 5 clusters in researchers' countries and tendencies in the most productive countries of MC studies should not result in a misleading interpretation and conclusions of modern

MC domain limitations and non-compatibility in application with modern technology, customers' experience management, or intangible goods.

The co-occurrence of keywords is one of the bibliometric clustering techniques grounded by a data mining procedure by extracting keywords from different parts of publication, resulting in keyword co-occurrence networks (KCNs). KCNs visualize dependencies of keywords or their pair and the weight of the link connecting a keyword or a pair of keywords in a selected period (Van Eck and Waltman, 2014; Radhakrishnan et al., 2017). In total, eleven predominant clusters were identified during analysis and visualized in Figure 5. Three most influential clusters are:

- The red color cluster, where the most influential keyword is "customization" (total link strength 113).
- The yellow color cluster, where the most influential keyword is "modularity" (total link strength 101).

The purple color cluster, where the most influential keyword is "additive manufacturing" (total link strength 67).



Figure 5. Co-occurrence of author's keywords in the Mass Customization domain (1990-2020) Source. Composed by the authors using VosViewer software and published in Baranauskas et al., 2020. Additional information: A benchmark of 5 keyword occurrences is used.

This variety and quantity of predominant clusters in the keyword co-occurrence network, presented in Figure 5, confirm the existence of a multidimensional approach to the MC domain and its relevance in different scientific fields. The most influential keywords can be divided into two main groups as being oriented to a standard technological-instrumental approach to MC and to a modern and extended concept interpretation, adjusted to the modern business environment, digital platforms, and support of highly heterogenous demand at the individual consumer level. This contrast of two groups refer to the historical context of the MC research domain, where the first decade of researches was strongly influenced by internal factors like standardization and modularity in product manufacturing processes and external factors as dominance of the made-to-order approach in the market. In general, a wide range and complexity of risks in the mentioned period affected a low practical adoption level of the MC concept, especially in service-oriented organizations, and triggered a parallel development of scientific methodologies and methods, which conflicted or diverted the scientific attention from the MC as a stand-alone operation management concept. Findings of the bibliometric analysis of the MC research domain in 1990-2020 support assumptions of the interdisciplinary MC research domain and outline three main development discourses and periods:

- Initial MC researchers focused on major influential external factors and their reflection in practical trends, which fostered a conceptual shift from Mass Production to MC. During this period, mainly investigated topics were related to features of the customization process and external risk factors of technological and economic changes or specifics of the market structure and consumer base. These elements were also defined as critical success factors for a business strategy or model transformation, assessment of organizational maturity, and capabilities of change. Otherwise, a part of publications was dedicated to the historical and semantical analysis of the MC origins.
- 2. The second discourse and period of the MC domain development targeted the MC implementation process and elements. Scientific publications on MC of this period analyzed influence and relations of multidimensional and combined topics such as supply or value chain management, employee training, marketing, resource management, and overall operational performance. Investigating and modeling coherent frameworks and factors towards a successful implementation of MC in the context of the digital environment demanded additional

effort. Retrospectively, periods of first and second discourses covered decades from the middle of the 2000s to the 2010s.

3. The latest discourse, which started around the middle of the 2010s, centered the dynamic consumer demand side and interconnected scientific domains such as information technology and systems, communication and marketing, environmental, and social dimensions. The new MC concept discourse in combination with globalization, digitalization, networking, and short product life cycles have been recognized and resulted in the concept's subversion called e-MC. Publications of this period interpreted MC as a multidimensional management concept, combined with the MP concept and reflected on practical trends of user and data-driven technologies' application, Big Data and e-commerce, and sustainability phenomenon (Morelli and Nielsen, 2010; Stojanova, Gecevska, Anišić and Mancev, 2013; Piller et al., 2014; Medini et al., 2015; Brandão et al., 2017; Tiihonen and Felfering, 2017; Zhang et al., 2019).

The existence of numerous interpretations on the definition level and the bipolar logic of the classification and interchangeable nature of MC and MP were supported both by the review of state-of-the-art studies of MC and more than 7 connected clusters, identified in the bibliometric analysis of the keyword co-occurrence network. In such way, findings in section 1.1 of the semantical analysis of MC and MP concepts and terms were confirmed. In general, the existence of a multidimensional MCP definition can be outlined as a gap in academic studies and seen as a standpoint for future scientific discussions. From the perspective of the research discourse, it should be outlined that the combined MCP research domain integrates theories and methods of the traditional psychology, operational management, IS, network science, and behavioral economic fields as well as resonates with practical trends and technological advancements of digitalization in organizations. Therefore, the theoretical content-relational and state-of-the-art analysis of the digitalization domain and platform business model influence on the practical development of MCP is required as well.

1.3. Synthesis of Mass Customization and Personalization research domain development within traditional and modern operation management theories and practical phenomena

Recent organizational management trends of operational synergy and sustainability, digital intelligence, and platforms business model shaped the form of MCP and stimulated continuous development of MC and MP domains in modern and combined concept versions of e-MCP, Smart Customization, and Agile Mass Customization (Zhang et al., 2019; Yan, Gupta, Schoefer and Licsandru, 2020; Wang, X., Wang, Y., Tao and Liu, 2021). The practical spread and approval of these modern MC versions within the management of both tangible and non-tangible product operations confirm a long-lasting vitality and existence of a multidisciplinary nature of the MC concept. Historically, in the past two decades, major semantical and theoretical content changes of the traditional MC concept were driven by the synthesis of Mass Production, supply chain and process management theories, and technological-instrumental approach application (Ferguson et al., 2010; Fogliatto et al., 2012; Brandão et al., 2017; Kanama, 2018). However, modern MC and MP versions already have incorporated a combination of constructs from psychology, sociology, and behavioral finance theories as well as are driven by a practical popularity of the Human-Centric approach and SDL application to product and platform development (Jitpaiboon et al., 2013; Kuzgun and Asugman, 2015). Therefore, next to the investigation of semantical, retrospective, and bibliometric discourses, a simplified theoretical content-relational analysis is required, synthesizing the development of MC and MP research domains within traditional and modern management theories and models. The influential factors are summarized in Table 3.

MC and MP	Influenced by		
development perspectives	Traditional research domains	Modern research domains	
Functional perspective	 Standardization Postponement Product Cannibalization Mass Production 	 Platform economics Agile and smart manufacturing Internet of Things Industry 4.0 and Industry 5.0 BDA, Augmented Reality (AR), 3D printing 	
Customer perspective	 Affordance Theory Social Identity Theory Gestalt Psychology Theory 	 The Value-Dominant Theory The IKEA effect The Theory of Interactive Media Effects (TIME) 	
Organizational perspective	 Configuration Theory Hotelling line and Salop Circular model Nash equilibrium Servitization 	 Behavior-based pricing (BBP) Service-Dominant Logic (SDL) 	

Table 3. Influential research domains of MC and MP research domains development**Source.** Composed by the author.

Standardization, postponement, and Mass Production define essential functional features and practical drivers of the traditional MC concept development (Jiang, Lee and Seifert, 2006; Jost and Süsser, 2020; Qi, Huang, Dincer, Korsakiene and Yüksel, 2020). In other words, the standardization is an enabler of cost-effective MC implementation and appears in forms of time and modularity-based manufacturing practices. According to Lampel and Mintzberg (1996), standardization presents a quality-based norm for goods and services in different geographical markets and industries (Wolf and Zang, 2016). From the customization process perspective, features of standardization have been borrowed from the Mass Production concept and identified on the make-to-stock (mass) phase, where limited versions of product lines are presented concerning the base of the core product and general forecasts of the market demand (Jiang et al., 2006). Otherwise, the MC practical focus on the commonality feature of the product family with shared components and sub-assemblies defines the new standardization, which allow the production differentiation by offering several standards and customizable product lines (Jiang et al., 2006; Jost and Süsser, 2020). From the theoretical perspective, the standardization-oriented operational approach can be identified within the classification of MC offered by Gilmore and Pine II (1997), where four types of MC are presented by including determinants of the scope of customizable product features and availability to participate in the customization process. Additionally, the influence of the Mass Production concept is noticeable within several aspects of MC capabilities, where a high-volume customization ability is related to new standardization feature implementation while the cost-efficiency customization ability reflects on traditional Mass Production (Qi et al., 2020). In general, the MC term reflects a paradox by combining the customization availability with cost-efficiency and standardization from Mass Production (Huang, Kristal and Schroeder, 2010; Xu et al., 2017; Modrak, Šoltysová and Pavol, 2021). The feature of postponement known as a delayed product differentiation is also an important operational functionality and a strategy for successful MC implementation. It defines a Customer Order Decoupling Point (CODP) and organizational orientation to an optimal decision-making point in regards to the customizable product demand (Tookanlou and Wang, 2020). From the customization process perspective, the postponement feature is identified on the maketo-order (customization) phase, where numerous versions of product lines are presented concerning assembling of versions or components from the make-to-stock (mass) phase to an individual demand (Jiang et al., 2006). Development of the traditional MC concept has been also related to theoretical constructs of servitization of manufacturing and the Servitization Business Model, which were introduced in 1988 by Vandermerwe and Rada (Kowalkowski, Gebauer, Kamp and Parry, 2017). The empirical phenomenon of servitization defines a transition of manufacturers' business models from asset ownership to asset utilization and from Mass Production-oriented operations to Mass Customization-oriented operations (Farsi and Erkoyunc, 2021). In more detail, servitization stands for a service-oriented business model, which integrates knowledge about customers and markets, intangible services, and tangible products into a common product-service system and allows avoiding the commoditization trap (Qi et al., 2020). Latest empirical studies of Farsi and Erkoyunc (2021) and Qi et al. (2020) identified that the direct effect of the MC capability on servitization is insignificant, but it improves servitization indirectly through a product innovation capability. Moreover, it was outlined that the intensity of customization's strategy is positively associated with the level of service offering. It is important to acknowledge the influential factor, product cannibalization, also recognized under terms of market or corporate cannibalism. Product cannibalization defines functional development of the traditional MC concept within the practical problem of the design of a customizable product line (Tookanlou and Wang, 2020). The product cannibalization factor is relevant for organizations, which offer at least two customization levels and distinct pricing for high and low-quality products (Tookanlou and Wang, 2020). A potential risk prevails that customers

from the segment of a high-value and financial affordability may purchase a product of low customization and cost (Tookanlou and Wang, 2020). Therefore, the traditional MC concept was challenged to expand theoretical boundaries towards the marketing domain by increasing a functional focus on possession of full information about their customers' base and considering factors of acceptance of customization, market standards of lead / delivery time, optimal production, and inventory costs (Tookanlou and Wang, 2020). Looking from the practical perspective, functional features of the MC concept were guided by modern data and technological factors as BDA, AR, and 3D printings, and practical trends of data-driven agile and smart manufacturing (Zhang et al., 2019; Wang et al., 2021). Accordingly, new versions of Smart or Agile Customization, together with Big Data and BDA, have become primary operational capabilities and MC and MP domain outcomes in organizations. (Zhang et al., 2019; Wang et al., 2021). The practical widespread of the Internet of Things, Industry 4.0 and Industry 5.0, platform economics, and collaborative networks also feature as influential factors, affecting the functional side of MC and MP domains. The phenomenon of Industry 4.0 and the upcoming Industry 5.0 have revealed an increased demand for smart, sustainable products and production technologies (Torn and Vaneker, 2019; Saniuk, Grabowska and Gajdzik, 2020). Furthermore, it created new options for MC and MP practitioners to achieve product and process sustainability by both full horizontal integration across the entire value creation network and product life cycle as well as vertical integration within manufacturing systems and processes (Saniuk et al., 2020).

Retrospectively, an increased orientation to the customer's perspective within the MC research domain was more explicit in the second period of the MC concept development; when the traditional MC concept experienced a practical transition to digital environments, platform economics, and online customization frameworks. From the content side, the customer's perspective was evidently identified within e-MCP and the MP concept, while, in the first period of MC development, this perspective was analyzed from the angle of traditional customization obstacles and negative impact on end-users in customization processes and systems (Abdallah and Matsui, 2009; Brandão et al., 2017). Elaboration of the customer's discourse within the MC and MP research domains was fostered not only by practical trends and technological advancements of manufacturing organizations but also by traditional psychology theories as Affordance Theory, Social Identity Theory, and Gestalt Psychology Theory. The Affordance Theory, introduced by James J. Gibson in 1966, explains an individual interaction and behavioral intention with the object (system) under the analysis of the affordance factor (Alshawmar, 2021). In detail, system interactions between a human and an object are interpreted as an individual-level process, where one takes goal-oriented actions towards the object (system), but the affordance understanding is heavily impacted and can be changed by situational and contextual factors (Pozzi, Pigni and Vitari, 2014, Alshawmar, 2021). This theoretical position has reflected within the traditional MC type of the transparent-tailored customization, where customer's involvement in the customization process is moderated following specifications of customizable product / service, IT systems, and market factors. Further development of the Affordance Theory resulted in a transition to the field of Human-Computer Interaction, technical design, and socio-technical systems; and these fields are already important features of the combined e-MCP concept version and MP domain (Wang, H., Wang, J. and Tang, 2018; Alshawmar, 2021). In modern times, the Affordance Theory has shifted to relationships among IT artifacts, people, and organizations, and is interpreted as a middle ground of social constructivism and technological determinism approaches (Wang et al., 2018). On MC and MP research domain levels, the Affordance Theory supports the development of the combined e-MCP concept version and collaborative-pure customization type, where a constant and pro-active customer's engagement is presented under a flexible, interactive, and fully digitalized customization and personalization process. The shared affordance and affordance actualization are important practical features looking from the practical customization's perspective, as they define similar behavioral patterns of technological users and allow an efficient control of customization and personalization related-operations after IT changes are implemented (Pozzi et al., 2014). A similar contribution comes from the Social Identity Theory, which defines customers' actions and their behavioral intention as a social perception of membership to a specific social group (Kwon, Ha and Kowal, 2017). By following the theoretical position of Social Identity Theory, modern versions of the MC concept encompasses an approach of modularity, while practitioners of customization invest in marketing activities to promote customized products / services and customization process as a characterization of a high need for uniqueness and belonging to a distinctive social group (Kwon et al., 2017; Wolf and Zang, 2016; Farsi and Erkoyunc, 2021). The Gestalt Theory or configurationism is another theory from the psychology discourse, which have integrated both theoretical and practical contributions to development of the customer's perspective in the MC research domain. This theory declares a position

of a user's perception and satisfaction towards an object or action, which is a processing of a perceived value at a more unified and holistic level rather than analyzing separate components or factors at the atomic level (Wan, Wang, Zhang and Cao, 2017). This position plays an important role in the evaluation of Online Self-Customization (OSC) processes. Accordingly, Kamis et al. (2004) suggested a traditional classification of online customization frameworks. OSC processes in digital platforms are related to the organizational efforts to combine experiential, knowledge, functional, and symbolic value into the common construct of the perceived value of customization (Kwon et al., 2017; Wan et al., 2017). In the case of online customization frameworks, presented by Kamis et al. (2004), the approach of configurationism can be identified in the Alternative-Based (AL-B) framework and its modern multiplications, as per elaboration in section 1.6. of thesis. The customization process is simplified and shortened by presenting pre-defined customized product or service alternatives in an early stage of the process. Therefore, it is expected that by limiting additional attributes, questions, or actions to do in the customization process, cognitive efforts of the user will be reduced while the attitudinal experience and perceived value will be improved. On the other hand, the opposite perspective to a customer role and their needs towards the customization process, customized products, and pricing, is presented by the modern Value-Dominant Theory, the IKEA effect, and the Theory of Interactivity Media Effects (TIME). The IKEA effect, opposingly to the Social Identity Theory or the Gestalt Theory, stands for explaining the customer's effort on valuations as preferences for self-assembled products compared to objectively similar products, which are pre-made (Norton, Mochon and Ariely, 2012). According to Pallant, Sands and Karpen (2020), the IKEA effect is relevant in the context of customization and the co-production of value. First, it defines a customer's intentions for a perceived ownership both of a customized item and a process of participation and control of customization. Second, it presents customized products or services as higher-value goods for which customers intent to pay more (Norton et al., 2012, Pallant et al., 2020). A more holistic and marketing based-position on a subjective value creation, consumer centricity, and service economy outcomes within modern organizational marketing and operations was presented within the theory of SDL of Vargo and Lusch (2004) and its recent evolvement to the theory of Value-Dominant Logic of Hasting, D'Andrea and Bylund (2019). The theory of SDL stands for a combined, organizational and consumer-centered view to value creation in the service economy model, where the value is unique and phenomenologically determined by the consumer's interaction in service ecosystems, sharing experience and information with the service provider (Hasting et al., 2019). In opposite, the theory of Value-Dominant Logic expands the explanation of modern value co-creation in platform economy. Without prevailing subjective experience, active engagement, and a service-for-service exchange process as a focal point, the Value-Dominant Logic also considers the technological domain, as technical knowledge and capabilities, equally to the domain of consumer knowledge. This new combination of operant resources can be used by an organization as value facilitators and a unique value proposition (Hasting et al., 2019; Peltier, Dahl and Swan, 2020). To conclude, both the theory of SDL and the theory of Value-Dominant Logic focus on a value construct as an exclusively personal, subjective, and unique notion. This position is opposite to the socially constructed demand and the need of belonging to a specific segment of the population, as presented by analyzed theories from the psychology field above. Additionally, modern (digital) value creation depends on environmental, situational, technical and emotional factors as well as can be partially moderated by organizational efforts, toolkits, and exchange processes (Hasting et al., 2019, Peltier et al., 2020). A contribution of these theories on MC and MP domains can be identified within the development of the traditional Attribute-based (AT-B) and Question-based (Q-B) online customization frameworks and practical OSC toolkits of 3D product modeling and visualization. Moreover, strategical MC capabilities of CN and SSD and their practical outcomes in forms of online sales configurators, product recommenders, and personalized guidance in the customization process support follows positions of SDL and Value-Dominant Logic theories. Finally, the influence of theories might be identified in following five components of the perceived value within online customization, presented by Merle, Chandon, Roux and Alizon (2010): utilitarian value, uniqueness value, self-expressiveness value, hedonic value, and creative achievement value (Wan et al., 2017). The TIME, presented by Sundar, Jia, Waddell and Huang (2015), combines four theoretical constructs of the MAIN model and defines the effect of modality, agency, interactivity, and navigability in media platforms towards users' attitude, knowledge, and behavior (Sundar et al., 2015; Ahn, Park, Lee and Noh, 2021). From the content perspective, this theory may be interpreted as an extension of the traditional Affordance theory, but having a distinguished orientation to the interactivity of platform design, structural aspects of media technology, and the importance of the communication domain (Ramírez, 2019). Therefore, the TIME together with AR advancements has a significant

impact on the modern MP domain and implications of online customization frameworks in digital business platforms. Combined online customization frameworks introduce an increased number of customization functions, customizable options, and interactive and personalized information into a platform design, enhancing the source and modality interactivity, a sense of agency, and resulting in a higher user satisfaction and positive behavioral intention (Ahn et al., 2021).

The organizational perspective is closely related to the first period of MC researches and semantical interpretation of MC as a combined business and manufacturing strategy, which mainly orients to organization, product or a system of co-production (Franke and Piller, 2003; Kaplan and Haenlein, 2006). In detail, during this historical period, development of the organizational discourse in MC and MP research domains was impacted by theories and methods of IS, network science, and behavioral finance fields as the Configuration theory, Hotelling location model, or its variation in the Salop Circular Model as well as game-theoretic models and strategies as the Nash equilibrium. From the content point of view, MC researchers were more focused on dilemmas of optimal pricing, balanced operations, and technical aspects of the product-service system and their configuration to support customization and personalization (Brandão et al., 2017). In the case of the Configuration theory, the main influential point can be identified in defining the complicated and interrelated value exchange process between the customer and organization in simplified structural clusters (Pallant et al., 2020). Moreover, the theoretical construct of a causal asymmetry as a behavioral outcome dependency on structural and conditional configurations in the process is used by customizers within the evaluation of customization availability of high-quality products and possible influence on customers (Pallant et al., 2020). The logical assumption is that the availability of high-quality product or service customization would not itself guarantee a positive attitude and behavioral intention of a customer; and it strongly depends on a product and system configuration, which impacts the whole customer's process experience and satisfaction (Pallant et al., 2020). The optimal ratio between a price and quality is another important research stream within the organizational perspective in the MC domain, investigated under the scientific development and analysis of game-theoretic models for competing markets and BBP by applying traditional modeling methods of the Hotelling location model, the Salop Circular model, and the Nash equilibrium. Application of the Hotelling location model, the Salop Circular model, and the Nash equilibrium logic, in the context of customization, plays an important role not only to define pricing and profit levels on different market competition scenarios but also to determine the degree of product or service flexibility and availability to be customized (Jost and Süsser, 2020). It is also relevant for an analysis and setup of pricing and configuration under different channels of customization, both online and offline (Jost and Süsser, 2020). Recent studies on this topic, carried out by Fei and Zhao (2019), have shown that the recent emergence of Big Data, cloud computing technologies and an omnichannel-oriented business strategy requires a new type of modeling of optimal pricing and product / service differentiation, which would result in the BBP construct. Dynamics of the BBP application, instead of the static uniform pricing (UP) approach for mass customizers, allow reducing a product variety, lead time, and pricing by analyzing historical data of customers' purchase process and accordingly making customers' segmentation (Li, 2018; Fei and Zhao, 2019; Ma and Song, 2020). Otherwise, the timing effect of the BBP application is crucial to consider, because, in the case of a long-term application, it can have negative consequences as the price conflicts among organizations and in such way intensifies the overall market price for customized goods and decreases the profit level and customer loyalty (Ma and Song, 2020). Summarizing the historical development periods of the MC research domain, the scientific attention to the organizational perspective decreased in later periods and was replaced by research streams of the application of customer-driven innovations, integration, and satisfaction in customization processes and platforms (Franke and Piller, 2003, Brandão et al., 2017). In general, during these periods MC developed to e-MC and the combined e-MCP version, and was heavily altered by practical trends of globalization, digitalization, and sustainability. On the other hand, the organization and product-oriented perspective can be still recognized in modern versions of Smart Customization, Agile Mass Customization, in practical applications of BBP, servitization, and SDL constructs.

To conclude, the identification and synthesis of theoretical links among the MCP concept, traditional and modern Consumer Decision-Making and Technology Acceptance models, and the practical business and technology development outcomes, result in the crystallization of functional, customer, and organizational perspectives. These perspectives are essential discourses of the theoretical analysis of the MCP concept, illustrating different historical development periods and serving as the theoretical foundation and a linkage between managerial and technological research domains for further scientific studies. On the other hand, the customer and organizational per-

spectives theoretically link to marketing, psychology, sociology, and behavioral finance theories and models, but they tend to miss a proper scientific investigation from the functional perspective and its practical outcomes within the MCP research domain. In addition, the human-centric approach and SDL application, platform economics, collaborative networks, and technological factors of BDA and AR are identified as the most influential factors in the MCP practical development, still holding a scattered content and limited number of analyses on the scientific level of all 3 types of the perspectives. Finally, it can be stated that the identification of the functional, customer, and organizational perspectives confirm the scientific vitality, multidimensional nature, and possible conceptual and practical combinations within this research domain.

1.4. Modern outcomes of the Mass Customization and Personalization: combined online customization frameworks

Origins of the MC drawback to the second half of 1990s, but major changes in the theoretical foundation and content development have been identified in the last 2 decades. The MC was recognized as a multidisciplinary customer-centric concept within academic researches of supply-value chain management, product design, marketing, and operational process improvement fields (Skačkauskienė and Davidavičius, 2015 and published in Baranauskas, 2020, p. 120). Moreover, there are vital scientific discussions on this concept considering it as reducing a knowledge gap of the suitable platform design, online customers' participation, and communication need, and supporting behavioral modeling through combined management and technology innovations (Risdiyono and Komsap, 2013; Xu et al., 2016; Xu et al., 2017). From the perspective of practical outcomes, the MC during this period has resulted in numerous transformations within business organizations' practice and "gained a label of a suitable strategy and business model to apply in the constantly changing context of digitalization and sustainability trends" (Baranauskas, 2020). Additionally, in the past decade, global trends in organizational management and society, related to application of new combined technology and management solutions, intensive digitization, digitalization, and digital transformations, have shifted the academic and practical discourse of the concept. The concept became more oriented to intangible products management, customers' involvement, and value co-creation via digital platforms. Theoretically, an important role of the digitalization domain is identified in the SSD capability, where it is associated with information distribution and assistance platforms. Outcomes of digitalization within SSD have mutual influence and benefits both to the organization as an intermediary technological toolkit to identify and translate a large scale of preferences of customers' at an early stage design as well as to the customers as it provides possibilities to make a virtual testing of customized products. The role and impact of digitalization in the RPD capability are mostly observed internally, on a process management level. Process automation elements, features of the process, and system agility and flexibility are inherited from the digitalization domain and, thus, result in a reuse or recombination of existing organizational resources for a higher process modularity and better supply chain management. An influence of the digitalization domain in the CN capability is mostly observed on the external customers' level. Insights from BDA are applied in order to personalize communication and are integrated into web-based automatic recommender systems to minimize a risk of mass confusion. Digital solutions unquestionably support the UI in decision-making and encourage a more active user participation in co-creation and co-design processes (Kamis et al., 2008; Salvador et al., 2009; Piller et al., 2014; Risdiyono et al., 2016).

A tremendous effect on the concept content and discourse was made by digitalization, combined factors of a complex organizational environment, and hybrid management methods as Lean and Agile (Vekić, Borocki, Fajsi and Moraca, 2018). A dynamic and rapid development of the internet, Information and Communication technologies as well as e-commerce solutions stimulated the emergence of traditional online customization frameworks and maintained a continuous need for more flexible, combined versions of online customization frameworks. Yet the practical application of online customization frameworks as modern outcomes of the e-MCP concept requires overcoming additional internal and external challenges, which are specified in Table 4.

Internal challenges	External challenges
Trade-off among standardization, customization, and personalization	Increased customer's awareness and knowledge level
Modularization in product and services, organizational resources, and supplementary processes and systems	Influence of the circular and Sharing Economy
Limited organizational capabilities to transit and apply advanced versions of customization	Higher requirements for corporate social responsibility and environmental sustainability
Transition to the platform business model with new value proposition elements	Demographic cohorts to Generation Y, Generation Z, and Generation Alpha

Table 4. Main internal and external challenges of online customization frameworks application

Source. Composed by the author by following: Salvador et al., 2009; Piller et al., 2014; Pourabdollahian, Taisch and Piller, 2014a; Pourabdollahian, Steiner, Rasmussen and Hankammer, 2014b; Risdiyono et al., 2016; Francis and Hoefel, 2018; Vekić et al., 2018; Zhang et al., 2019.
Organizations, aiming for a successful implementation of online customization frameworks, might overcome internal obstacles such as a selection of the right trade-off between standardization, customization, and personalization level on existing products and processes. They also need to ensure a full scope of the modularization logic within product development, distribution service and platforms, organizational resources, and supplementary processes and systems. Traditional B2C organizations have additional challenges such as dealing with limited organizational-technical capabilities for a transition to data and customer-driven digital processes and qualifications of e-MCP. Together with the above listed internal challenges, a strong preparation for a higher digital customer's awareness, knowledge, and requirements level for product customization or service personalization is required. Recently, advanced tech-savvy skills have become an integral feature of behavior of generations Y and Z. Consequently, service providers are naturally expected to follow this new standard in behavioral patterns of the upcoming generation Alpha. Although the generation Alpha is currently at a pre-stage of becoming active customers, they already face a strong influence by their millennial parents on changing their financial behavior and stimulating a need for customized online services or products (Carter, 2016; Francis and Hoefel, 2018). There are global trends that affect the popularity and widespread of online customization frameworks. Outcomes of the circular and sharing type economy have increased a demand for more active corporate social responsibility and sustainability activities which naturally collocate with digitally customized products, process automation, and platform economy (Rungtusanatham and Salvador, 2008; Gandhi et al., 2013; Hu, 2013; Hankammer and Steiner, 2015; Medini et al., 2015; Tiihonen and Felfernig, 2017). Looking from the holistic position, organizations are recognized to struggle underlining the full potential and benefits of the MC domain, therefore, they tend to adopt this combined technological-management approach by inertia and implement it only partially. On the operational level, the insufficiently contemplated implementation results in practical obstacles within complex systems of customers' interaction management, a low level of customer experience, or design solutions of product co-creation and customization configurators. A lack of a setup of complementary processes such as customization-oriented training for customer service teams, product rebranding, communication campaigns, higher standards for data quality, and security management are identified as well (Piller et al., 2014; Wang, Q., Wang, Z. and Zhao, 2015; Hora et al., 2016). In general, it is noticed that this transformation in business management and models progresses slower in traditional manufacturing organizations and markets with low-tech specifics. This type of organizations have a lower successful adoption rate of the MC

concept due to homogeneous needs of customers and Mass Production effectiveness (Broekhuizen and Alsem, 2002; Kanama, 2018). Thus, implementation of modern MC ideas and frameworks requires not only having a strong technological foundation and large customers' base but also multidimensional changes in organizational resources and process management, a different approach to value creation systems, new knowl-edge, methods, and tools application to improve supply chain and interaction points.

Next to the well-known influence and role of the digitalization domain, the application of combined online customization frameworks is accepted as a favorable solution to stay competitive in the mass market and support a demand for innovative and customized products. Three online customization frameworks, which were firstly introduced by Kamis et al. (2004, 2008) at the theoretical level, extended tradition-al Task-Technology Acceptance models as well as refined Rational Behavior theories (Kamis et al., 2008; Karwatzki et al., 2017; Lai, 2017; Weber and Chatzopoulos, 2019 and published in Baranauskas, 2020, p. 122). From the theoretical perspective, these hypothetical frameworks cover different operational and organizational contexts by combining different levels of Personalization, Customization, and Mass Production domains. The content and differences of the three traditional online customization frameworks are presented in Table 5.

Framework and hav footures	Level of:		
Framework and key leatures	Customization	Personalization	Standardization
An alternative-based (AL-B): 1. Applicable for product or service with limited and low customization and / or personalization possibilities. 2. A customer has a passive role by selecting options of predefined customized products or services.	Low	Low	High
Attribute-based (AT-B): 1. Applicable for product or service with high customization possibilities. 2. Personalization features are used to assist customers in the product / service customization process. 3. A customer has a more active role and partly engages in co-design activities.	High	Middle	Middle
Question-based (Q-B): 1. Applicable for a bespoke type of product or service, where the operational approach Make By Your Own is available. 2. A customer has non-limited and active participation in all stages of the customization process.	High	High	Low

Table 5. Content of 3 traditional online customization frameworks

Source. Composed by the author by following Kamis et al., 2004.

A selection of the online customization framework depends on multiple factors, including the context of the application, internal and external organizational challenges, evaluation of micro features. Examples of the application context can be such as market specifics in the structure and pricing, legal regulations, while micro features to consider are the complexity of product or service, availability and management of customers' data, a setup of CRM and marketing strategy, a role and capabilities of customer's participation in the customization processes (Kamis et al., 2004; Park and Yoo, 2018; Wang, 2019 and published in Baranauskas, 2021, p. 75). From the practical perspective, these three traditional frameworks bring focus on digital customers and their experience management, personalized communication and information management solutions, and usability of gamification elements in a platform design (Kamis et al., 2004, 2008; Karwatzki, Dytynko, Trenz and Veit, 2017; Lai, 2017; Weber and Chatzopoulos, 2019). Furthermore, practical outcomes of frameworks are identified in online product configurators, platforms of sales recommenders, and social networking technologies. A significant impact on sales revenues, cost structure and cost level management of e-retailers are also noticed (Küster et al., 2016; Vekić et al., 2018; Grosso and Forza, 2019). Within the influence of these multiple factors and a dynamic business environment, organizations naturally search for new practical solutions of online customization frameworks, which would be more flexible and had a wider scope of application options. Several additional factors can be categorized as per below, which fostered the development of these three traditional frameworks and the overall e-MCP concept in the recent COVID-19 pandemic years:

- 1. Organizational extra efforts to maximize the Return of Investment (ROI) and other quantitative operational indicators by aligning and combining features of a platform business model and standardization, customization, and digitalization domains.
- 2. COVID-19 have influenced changes in customer behavior, digital knowledge level, and attitude to fully online customized products or services, therefore, organizations have to increase operational competencies and efficiency in a digital area as well as follow technological innovations .

Therefore, next to three theoretical frameworks suggested by Kamis et al. (2004), six combined frameworks can be added, which are interconnected and incorporate three-level values of application of customization, personalization, and standardization domains. New theoretical frameworks were created by using a modified Robinson's (2008a, 2008b, 2015) conceptual modeling framework and by following a simplified logic of creating a Cartesian type of product with the c-tuple method. The conceptual modeling framework carries a meaning of a high-level abstraction process of a real system simulation model, which, in this case, is three traditional online customization frameworks, as per Kamis et al. (2004). The modified Robinson's (2008a, 2008b, 2015) conceptual modeling framework is presented in Figure 6.



Figure 6. Modification of Robinson's (2008a, 2008b, 2015) conceptual modeling framework Source. Composed by the author by following: Robinson, 2008a, 2008b, 2015 and published in Baranauskas, 2020, p. 127.

The main modification is moving a feedback loop from the Outputs part via Model Objectives to Inputs parts, ensuring a continuous evolvement of the framework. Consequently, an urge to implement this modification is closely related to the aim to provide a clear and closed theoretical standpoint for future researchers within the customization domain. The problem situation and the context in this conceptual framework reflect the above-defined practical situation where modern organizations aim for a continuous improvement and search of new design formats and functionalities of online sales and customer service platforms. Inputs or experimental factors are composed of three values, which are traditional frameworks of (AL-B), (AT-B) and (Q-B). The stage of the simulation model is conducted by following the logic of the c-tuple method. The c-tuple method means using 1 of 3 traditional online customization, personalization, and standardization level. The application of the c-tuple method logic allows combining a new set of objects with unique features by choosing one value from each framework and comparing it to values of features in another framework. The formula applied within the c-tuple method is provided in Formula 1.

$$\begin{split} F(x) &= F^{1} + Fn = \{C^{1}, P^{1}, S^{1}\} + \{Cn, Pn, Sn\} \\ F(x) &= F^{2} + Fn = \{C^{2}, P^{2}, S^{2}\} + \{Cn, Pn, Sn\} \\ F(x) &= F^{3} + Fn = \{C^{3}, P^{3}, S^{3}\} + \{Cn, Pn, Sn\} \end{split}$$

Formula 1. Of c-tuple method for multiplication process

Source. Composed by the author by following Haag, 2017; Haag and Haag, 2019 and published in Baranauskas 2020, p 123.

Where characters have the following values:

Fx – new online customization framework

F1 – Alternative based online customization framework

F2 – Attribute-based online customization framework

F3 – Question based online customization framework

Fn – in one of Alternative based, Attribute-based, or Question-based online customization frameworks

C1 – level of customization in Alternative based online customization framework

C2 - level of customization in Attribute-based online customization framework

C3 - level of customization in Question-based online customization framework

Cn – level of customization in one of Alternative based, Attribute-based or Question based online customization frameworks

P1 - level of personalization in Alternative based online customization framework

P2 - level of personalization in Attribute-based online customization framework

P3 - level of personalization in Question-based online customization framework

Pn – level of personalization in one of Alternative based, Attribute-based or Question based online customization frameworks

S1 - level of standardization in Alternative based online customization framework

S2 – level of standardization in Attribute-based online customization framework

S3 - level of standardization in Question-based online customization framework

Sn – level of standardization one of Alternative based, Attribute-based or Question based online customization framework

The outcome of the multiplication process is at a high abstraction level and stands for six Cartesian type products, which, in this research, mean six new combined online customization frameworks. High-level prototypes as visualized outcomes of the conceptual modeling are provided in Figures 9, 10 and 11 as a supplementary material

Types	Alternative-based (AL-B)	Attribute-based (AT-B)	Question-based (Q-B)
Alternative based (AL-B)	(AL-B)	((AL-B) + (AT-B))	((AL-B) + (Q-B))
Attribute based (AT-B)	((AT-B) + (AL-B))	(AT-B)	((AT-B) + (Q-B))
Question based (Q-B)	((Q-B) + (AL-B))	((Q-B) + (AT-B))	(Q-B)

to the Modeling summary, provided in Table 6.

 Table 6. 9 theoretical combinations of online customization frameworks

Source. Composed by the author by following Kamis et al., 2004 and published in Baranauskas, 2020, p. 120.

First, two new combined online customization frameworks are identified in the case, where a predominant online customization framework is an Alternative based (AL-B). Here, the framework (AL-B) + (AT-B) compounds the level of the customization domain, which varies in a full scale from Low to High, the personalization domain varies from Low to Middle, and the standardization domain varies from High to Middle. In the case of the framework (AL-B) + (Q-B), the level of the customization and personalization domain varies from Low to High, while the standardization domain varies from High to Low. From the content point of view, these two newly generated combined online customization frameworks are mostly relevant for the organizations, which operate in the field of the low and middle level of complexity of products or services and have a diversification strategy with Product / Service Add-Ons components-oriented content. Practically, the application of the (AL-B) + (AT-B) and (AL-B) + (Q-B) leads to more agile and flexible customers' involvement and gives versatility through the customization process.

The suggested foundation of 3 selection options (see Option 1, Option 2 and Option 3 in Figure 7, Figure 8 and Figure 9) refers to the traditional B2C marketing and sales research domain, where the decoy-asymmetric dominance effect defines the situation in decision-making processes when "an asymmetrically dominated alternative is dominated by one item in the set but not by another. Adding such an alternative to a choice set can increase the probability of choosing the item that dominates it". (Huber, Payne and Puto, 1982). The validity of this effect within the analysis and modeling of insurance consumer behavior was also confirmed by research of Ulbinaite et al. (2011). Therefore, the introduction of options 1, 2 and 3, by following visualizations of combined online customization frameworks, stands for the hypothetical choice sets of insurance features starting with the lowest scope of coverage in Option 1 and full scope of coverage in Option 3. According to the logic of decoy-asymmetric dominance effect, a

consumer is expected to select a partially dominated option (in this case Option 2) or a dominated option (in this case Option 3). On the other hand, the findings of Ulbinaitė et al. (2011) confirmed that, in the case of insurance consumers, multiple factors, including the decoy effect based insurance price-quality comparison, social-cultural and social network parameters influence a decision to purchase insurance. Therefore, by following both above defined findings of the insurance consumer behavior and the content specifics of online customization frameworks, a menu type of choice set was introduced in the visualization of (AL-B)+(AT-B) framework (see in Figure 7), combined (AT-B) + (AL-B) and (AT-B) + (Q-B) (see in Figure 8), and combined (Q-B) + (AT-B) and (Q-B) + (AL-B) online customization frameworks (see in Figure 9). Moreover, such setup refers to an interpretation of a well recognized concept of building offers in packages named as Multiple Equivalent Simultaneous Offers (MESOs) (Geoffrey, Leonardelli, McRuer, Medvec and Galinsky, 2019). In this case, the menu type of a choice set illustrates full product customization availability to select any referable feature and build a unique insurance package simultaneous to availability to select predefined offers in packages and in such way reducing potential customer's bias, negotiator dilemmas and supporting the experience of choice (Geoffrey et al., 2019). Finally, the introduction of the "Question" box in all 3 visualizations of combined online customization frameworks refers both the nature of (Q-B) framework and personalization domain outcomes in a form of ensuring a tailored service experience during an online customization process. A number of questions, their format and answers outcomes are hypothetical and not defined in details due to a holistic analysis standpoint and ambiguity of possible application outcomes in the case of insurance products. It should be emphasized that the setup of Option X in all below provided visualizations is also a result of hypothetical modelling on possible user selections during the insurance buying process in a digital platform under different types of the customization frameworks.

Visualizations of combined online customization frameworks and their definitions are provided below, starting with the combined (AL-B) + (AT-B) and (AL-B) + (Q-B) framework in Figure 7.



Figure 7. The visualization of combined (AL-B) + (AT-B) and (AL-B) + (Q-B) online customization frameworks

Second, two new combined online customization frameworks are identified in the case, where a predominant online customization framework is Attribute based (AT-B). The framework (AT-B) + (AL-B) covers the customization domain in a decrease type of scale from High to Low, the personalization domain varies from Middle to Low, while the standardization domain varies from Middle to High. In the case of framework (AT-B) + (Q-B), the level of customization is High, the personalization domain varies from Middle to High, while the standardization domain varies from High to Low. Accordingly, the first combined customization framework of (AT-B) + (AL-B) is understood as a reversed version of (AL-B) + (AT-B) combined customization framework. The framework (AT-B) + (AL-B) can be applied if organizations select a diversification strategy oriented to an unrelated operational domain and follow

Source. Composed by the author by using draw.io

a logic of fixed pricing and content type of Product / Service Add-Ons. Application of this framework may benefit for organizations, which are in a transition period from a bricks-and-mortar business model type to a platform business model. Organizations in early transition stages still follow a balanced multichannel business approach, therefore, the combined framework of (AT-B) + (AL-B) allows navigating through new customization and personalization-related operational challenges. The combined online customization framework of (AT-B) + (Q-B) illustrates an opposite practical situation and is more suitable for organizations that are digitally mature and aim for improvements within the existing online customization framework and omnichannel-oriented business model. The visualization of combined (AT-B) + (AL-B) and (AT-B) + (Q-B) is provided in Figure 8.



Figure 8. The visualization of combined (AT-B) + (AL-B) and (AT-B) + (Q-B) online customization frameworks

Source. Composed by the author by using draw.io

Finally, in the case of modeling within the (Q-B) framework, two new combined online customization frameworks can be distinguished. At the new framework (Q-B) +

(AL-B), the level of customization and personalization varies in a full scale from High to Low, while the standardization domain varies from Low to High. The second new combined online customization framework (Q-B) + (AT-B) compounds the customization domain at the High level, the personalization domain varies from High to Middle, and the standardization domain varies from Low to Middle. Practically, both combined frameworks (Q-B) + (AL-B) and (Q-B) + (AT-B) can be used in organizations, which have strong foundations and well-defined practices of products customization and personalization in client support. The application of these new combined online customization frameworks can offer pre-defined customized product or service alternatives and present additional attributes simultaneously, therefore, cognitive efforts of customers are reduced and attitudinal experience is improved. The visualization of combined (Q-B) + (AT-B) and (Q-B) + (AL-B) is provided in Figure 9.



Figure 9. The visualization of combined (Q-B) + (AT-B) and (Q-B) + (AL-B) online customization frameworks

Source. Composed by the author by using draw.io

To conclude, the conceptual modeling of new online customization frameworks revealed that traditional online customization frameworks are difficult to apply due to the rapidly changing attitude of customers towards product customization and service personalization, operational specifics, and business environment of modern financial service organizations. Additionally, an analysis of online customization frameworks and their usage options revealed ongoing scientific discussions about the MC concept and traditional online customization framework suitability for digital business platform management and design development. Moreover, the theoretical analysis shows that three traditional online customization frameworks, suggested by Kamis et al. (2004), do not reflect on dynamics of technological, operational, and situational factors, an attitude of a modern customer, preferences towards product customization and service personalization, and hybrid business models of modern retail and manufacturing organizations. On the other hand, the new combined online customization frameworks can supplement an existing customer-centered design approach by features of participatory and service design approaches (Saad-Sulonen, De Gotzen, Morelli and Simeone, 2020).

1.5. Analysis on reflections of digitalization and mass customization and personalization within the modern insurance domain

The meaning and importance of insurance products and services for the financial wellbeing of both individuals and society have been recognized for a long time, but in practice it prevails as a low level of insurance literacy, insurance decision-making skills, and numbers of underinsured persons and objects (Allodi, Cervellati and Stella, 2020). Key reasons behind are boundaries and the nature of the insurance concept and the non-life insurance industry. Both factors stand for a static, provider-centric management approach and service blueprint model, where a homogenous focus on operational efficiency and cost-service level dichotomy is dominant (Ponsignon, Smart, Phillips, 2018; Tueanrat, Papagiannidis and Alamanos, 2021). In general, the traditional insurance business model and value chain can be defined as a combination of management on stochastic claims, diversification of unsystematic risks, and inverse production cycle application in insurance services (Wiesböck et al., 2017; Klapkiv, Lyubov and Zarudna, 2018). Moreover, the underwriting and pricing of traditional insurance products are grounded by a detailed analysis of the market interest and revenue profitability by using actuarial methods, following traditional classification and regression methods (Albrecher, Bommier, Filipović, Koch-Medina, Loisel and Schmeiser, 2019). To elaborate on the context, the traditional insurance business model is built around predefined assumptions about insurance customer's needs for assets protection, timeless claim management, and reasonable, comparable, and transparent pricing (Zolnowski and Warg, 2017). In the past decade, an intensive development of the digital environment and internet technologies together with social media and collaborative networks increased a recognition of non-life insurance products and services as well as rapidly embedded into daily insurance operations and the value co-creation chain. These practical trends also revealed that non-life insurance organizations require both technological and conceptual transitions to a decentralized, digitalized, and individual-centric approach in organizational management, product configuration, and customer service management (Ulbinaitė and Moullec, 2010; Ulbinaitė, Kučinskienė and Moullec, 2011; Allodi et al., 2020). Additionally, the position for incremental insurance concept changes has been supported by the emerging prominence of the customer-centric philosophy and holistic design frameworks. Both the philosophy and frameworks require the availability of individual-level real-time data, innovative touchpoints with customers, and personalized experience management (Ponsignon et al., 2018; Tueanrat et al., 2021).

Recent several years of the COVID-19 pandemic as well as economic lockdowns have notoriously affected the continuous adaptation of technological innovations in the insurance industry, and the technological evolvement is predicted to intensively expand to the post COVID-19 period. It is argued that the prolonged global health crisis would have a long-lasting and enterprise-wide influence on the global economy's future, including considerable consequences to business models applied in financial institutions (Chang, Survant, Walch and Wo, 2020; Schilirò, 2020). In the case of the non-life insurance, a technological breakthrough and a pre-stage towards full digitalization are expected (Mustafina, Kaigorodova, Alyakina, Velichko and Zainullina, 2020). Due to COVID-19, insurers have been naturally forced to review their products' business logic, architectural setup, operational models of communication, sales and marketing, and then quickly adapt to changes regarding the customers' behavior. New behavioral patterns have increased a need for a platform-based business model and Service-Dominant Architecture (SDA), which already reflect in new insurance products, more personalized, UBI services. Enablement of openness and co-creation-based processes, resource integration, and orchestration have also arisen as necessary components (Wiesböck et al., 2017; Stoeckli, Dremel and Uebernickel, 2018; Warg et al., 2019; Schilirò, 2020). Overall, it is expected that, in the post-COVID-19 period, insurance organizations would keep the focal point on the development of hybrid service-based and customer-driven business models, sustainable and innovative digital products. A consolidation of continuous digitization and distribution with InsurTech and technology companies and a competition with non-traditional insurance service providers like BigTech and product manufacturers are predicted as well (Łyskawa et al., 2019; Montalbo and Rush, 2019; Zariņa Cīrule et al., 2019). Practical outcomes are dynamics in the market structure where a high and increased competition among traditional insurance incumbents and new, fully digital peers have already been noticed (Łyskawa et al., 2019; Zariņa Cīrule et al., 2019; Baret et al., 2020). Another practical illustration and potential development direction are advanced digital self-service platforms, where a combination of technological advancements with techniques of personalization and customization create a new cognitive framework of insurance. This type of framework embraces the intrinsic security need for customers and leads to a simpler creation, usage, and exchange of insurance knowledge and information (Germanakos, Tsianos, Lekkas, Mourlas, Belk and Samaras, 2009; Łyskawa et al., 2019; Tueanrat et al., 2021).

The 4th Industrial Revolution, intensive digitization, and digital transformations within the past decade have experienced a multidimensional and worldwide extension in public and private sector organizations, including organizations from the insurance market, and have become new operational standards of data-driven and combined business management models, network, and ecosystems (Hu, 2013; Ogrean, 2018; Orenga-Roglá and Chalmeta, 2019). Furthermore, a proliferation of new combined cyber-physical systems and practical convergence of technological invitations and data sources of Internet of Things (IoT) and BDA resulted in customized and personalized digital solution businesses in terms of CRM, marketing, and sales strategies (Dimitris et al., 2018; Anshari, Almunawar and Al-Mudimigh, 2019; Khanboubi et al., 2019). Financial companies have also exploited and continued to heavily invest into new technologies and design new platform business models, which allow adaptation and integration of the information generated from Big Data application, analytics, social media, and IoT platforms into daily operations (Dimitris et al., 2018; Khanboubi et al., 2019). These platform business models show and support an ongoing transition of financial organizations from standardization and product-oriented business models to

a high level of personalization and customization of services as well as in their constant optimization.

Considering the application of the digitalization domain in the insurance industry, it should be outlined that prevailing scientific studies within the digital insurance field have met multiple changes in research directions, periods, and different positions towards semantical interpretations. The digitalization domain, represented by terms digitization, digital transformation, digital technology, online insurance, digitalization of insurance in combinations with urbanization, individualization, and population aging topics, have lead the scientific interest in the modern insurance research field (Klapkiv et al., 2018; Bohnert, Fritzsche and Gregor, 2019; Łyskawa et al., 2019). These above mentioned terms and their combinations carry different definitions at the semantical level, where one connotation stands for an interpretation of the expression digitization of insurance that is limited to implementation of Information and Communication technologies into insurance in a wider context of digitalization processes (Stoeckli, Uebernickel and Brenner, 2016; Cappiello, 2018). This position is partly supported by practical application, where main effects of digital transformation in the insurance industry are recognized in digitized sales of personal line insurance products and distribution channels, or automation of back-office operations. Historically, insurance digitization in a narrow, technology-based approach, was most analyzed in the late 2000s and for the decade until the 2010s. A more holistic and combined technological-management approach, closely related to terms digitalization of insurance and digital transformation, have spread both at theoretical and practical levels in the decade after 2010. It has been observed that the effect and influence of the application of digital insurance technologies cannot be acknowledged by using an isolated semantical division into several subcategories. The subcategories in consideration are internally oriented technical solutions, supporting insurance business at the operational level, and externally oriented technical solutions, interacting with an end-user or partners and supporting an end-user journey (Nicoletti, 2016; Bohnert et al., 2019). Recent scientific studies reveal that the semantical interpretation and practices of digitization, digitalization processes, and digital transformation strategies in the insurance field, are not only determined by the above mentioned subcategories but also influenced by global insurance business tendencies, technological development, cost-cutting, and definitely correlate to external factors, such as a regional economic growth and an index of internetization (Klapkiv et al., 2018; Łyskawa et al., 2019; Zariņa Cīrule et al., 2019).

According to researchers, the current period can be defined as a technological breakthrough towards a fully digitalized insurance industry and business models (Mustafina et al., 2020). Studies conducted by Wiesböck et al. (2017), Klapkiv et al. (2018), Zariņa Cīrule, Voronova and Pettere (2018), Zariņa Cīrule et al. (2019) and Shubenko (2020) in different countries, including Germany, Poland, Ukraine, Latvia, show that the phenomenon of digitalization is widespread over all insurance-specific value chain and activities, for instance, in strategic management and planning, claim operations management, sales distribution, and product underwriting. Researchers Bohnert et al. (2019), Łyskawa et al. (2019) and El Arif (2020) have conducted a more comprehensive case on digital agendas implementation and development studies from the financial perspective within insurance organizations in Europe. However, the prevailing studies present research subjects in a separate and highly abstracted category of technologies, processes, or customers, which are concentrated on digitalization, information, data, communication technologies, or a behavior of an insurance end-user without a holistic standpoint and analysis. Additionally, these researches were limited in an orientation to specific segments of the insurance industry, such as life and non-life insurance, geographically considering cases of only distinctive countries, and, from the content perspective, considering main personal line insurance products, primary or supportive activities of the insurance-specific value chain. In general, an increase of a scientific attention to fully digital, bespoke-type and customizable goods also play an important role in the recent elaboration of modern MC and MP concepts versions (Medini et al., 2015; Hora et al., 2016; Dissanayake, 2019). Historically, the transition of the scientific discourse from the traditional MC concept to e-MC and e-MCP started in late 2000s and were most driven by external factors, such as an increase in the customer demand for an e-service model and an application of the customer-centricity approach within digital business platforms (Hu, 2013; Walczak, 2014; Tiihonen and Felfernig, 2017).

Currently, the practical status as-is of the digitalization domain in the insurance industry shows that insurers firstly benefit by supporting dynamic on-demand needs of insurance customers. Typically, these needs are stable and easy to track, but behavioral models have become enough complicated to predict and highly influenced by preceding personalized experience from tangible product markets such as FMCG and intangible products and services of the banking industry . In addition, digital solutions and digitalization outcomes shape primary and supporting types of activities in the modern insurance-specific value chain and operational IT infrastructure. This is illustrated by the recent adoption and popularity of agile approaches to manage existing legacy infrastructures and organization in-house IT resources (Bohnert et al., 2019). It is expected that due to the COVID-19 situation traditional insurers will change their current mindset and try eliminating the internal tension among IT operations and capabilities, business development, and financial limitations. Therefore, building digital fully customizable products and personalized service platforms or a cooperation with digital service providers or intermediaries, which are both cost-effective and sales promoting, has become the new reality and main goal in the insurance market (Stoeckli et al., 2018). The digitalization domain has an overall positive impact on the price of insurance service, distribution formats, and market structure, which later influences decision-making at a strategical level. However, the ongoing global pandemic as well has revealed weak sides of insurance organizations and must-to-be practical improvements towards a full scope implication of digital insurance transformation and modern insurance concept as per below:

Dominant management models, legacy infrastructure, and customer service systems are focused on traditional financial computing and long-term planning methods. The insurance industry appears to remain in a transition stage towards a higher level of customization and personalization processes compared to tendencies in the banking industry.

- Insurance organizations have not yet reached the target digital maturity level to fully and easily integrate new technological innovations and results of BDA into their daily processes, products, or service management systems. Besides, currently, insurance organizations seem to focus on the identification and definition of heterogeneous data sources. The evaluation on the need for updates of a technological, legal, process management base, human resources competences, or preparation for possible structural and process changes, has become a focus as well (Chen, Preston and Swink, 2015). In general, it is recognized that insurers have a fragmented, limited, and non-holistic approach to digital transformation strategies.
- Insurers demonstrate insufficient flexibility, emotional connection, and data harmonization in fulfilling casual needs of customers, thus, it leads to a low level of personalized, situation-based, and easily customizable insurance (Wiesböck et al., 2017; Warg et al., 2019). The background and legacy of the insurance service may be an explanation of the drawback described right above, as it requ-

ires an accurate knowledge level, data-based decisions, and conceptual models. Therefore, a predominant feature of products or services is undoubtedly standardization (Koutsomitropoulos and Kalou, 2017).

• Technical resources, compatibility, and knowledge limitations reflect in difficulties developing a unified digital distribution and service platform for direct sales and distribution partners. Moreover, it reduces accessibility to external digital data sources, which are compulsory for a proper management of digital product pricing, risks, and marketing-related activities (Wiesböck et al., 2017; El Arif, 2020).

Challenges of moderating legal compliance to the GDPR law and digital information asymmetry. First, insurers still face obstacles in alignment with legal compliance procedures or requirements of personal data privacy and availability, which came into force due to the GDPR law in the European Union and its worldwide legal equivalents. Second, it is important to reduce the possibility of digital information asymmetry situations between a customer and an insurer under reasonable and transparent conditions of rising costs and risk management (Klapkiv and Klapkiv, 2017; Albrecher et al., 2019; Łyskawa et al., 2019). Potential risks of the information asymmetry in digital insurance products pricing, sales, and after-sale operations or platforms cover insufficient access to information or understanding of the product, service, or its provider, and data security. Customers can suffer due to a minimal physical contact and be mistaken or mislead by an overload of information from multiple online data sources, as the content may be misleading to decide unbiased (IAIS, 2018 and published in Baranauskas and Raišienė, 2021a, p. 189-190). Finally, both challenges of compliance due to the GDPR law and digital information asymmetry can trigger potential practical situations of personal data misuse or exclusion of certain consumer segments due to a granular risk categorization. Overall, positive and negative impacts of insurance digitalization are summarized in Table 7.

Advantages	Disadvantages
Foster changes in organizational and industry structure:	A weak digital leadership model and e-reputation of
new positions / units, dedicated to digital	insurance companies.
transformation, digital intermediaries.	
A transition from the transaction and standardization-	Processes and separate personal product lines are only
based insurance concept to the combined online	partialy focused on digitalization.
customization and personalization-based insurance	
concept.	
The shift from the distribution and supply-driven	A low compatibility between the traditional
product design to the consumer and demand-driven	multichannel distribution strategy, IT infrastructure, and
product design.	the new personalized omnichannel marketing, sales
	strategy, and digital service platforms.
An introduction to modern omnichannel and multi-	Low technical capabilities to access, exploit, and apply
access solutions-based sales and customer service	sales and risk-related big data on a large scale.
platforms.	
Improving operational efficiency and cost level in sales	Legal environment with strict and intense regulations on
claims management, and back-office operations.	customers' data and rights protection in digital
	platforms.
More secure and transparent management of customers'	New operational-legal risks and additional investment
data and a higher level of access right protection in	due to strict and intense regulations of the General Data
digital platforms.	Protection Regulation (GDPR) law.

Table 7. Key advantages and disadvantages of digitalization in the insurance industry

Source. Composed by the author by following: Wiesböck et al., 2017; Stoeckli et al., 2018; Albrecher et al., 2019; Bohnert et al., 2019; Zariņa Cīrule et al., 2019; El Arif, 2020 and published in Baranauskas and Raišienė, 2021a., p. 189.

Table 7 presents both advantages and disadvantages of the digitalization domain on structural and conceptual levels of the insurance industry. Digital enablers and outcomes of insurance modernization are noticed only fragmentary at a process level and in separate personal product lines. A struggle to overcome the nature and dominant features of traditional insurance processes, systems, and products, is apparent as well. Low in-house IT capabilities and difficulties within management of new technical and legal compatibility requirements also slow down the digitalization of insurance organizations, thus, negatively influence their e-reputation and brand. On the other hand, positive examples of digitalization widespread in the insurance industry are organizational restructuration, oriented to digital transformation units and new positions, such as Chief Digital Officer, Digital Product Owner or Head of Transformation (Wiesböck et al., 2017). Advantages of the application of digital technologies and digital sales platforms are best recognized in the field of product underwriting and sales of private lines products, such as Motor Third Party Liability (MTPL) or travel insurance (Klapkiv et al., 2018). More complex non-life insurance products, such as property and CASCO insurance, have gained popularity from digital customers and service providers at a considerably slower pace. In comparison, rapid technological advancements have made

the health insurance as the leading digitalization-affected line of the insurance business (Mitrovic, Trifunovic and Ranđelović, 2019; Zariņa Cīrule et al., 2019).

To conclude, a high penetration of e-services and its rapid increase have become a global standard of services and products in the financial sector and have considerably shifted the digitalization strategy of insurance companies. However, an insufficient alignment and a vague spread within the operational level of product underwriting and distribution channels are observed (Mustafina et al., 2020). An extensive entry of new digital intermediaries and service providers is identified in parallel to these internal challenges mentioned above. These Insurtechs aim to take over control of all four key intermediary roles such as information aggregation, facilitation of processes, matching, and building trust in branding, thus, traditional incumbents face an additional pressure for modernization and apply agile and combined solutions of customer service management (Stoeckli et al., 2018).

Looking from the scientific research perspective, prevailing studies within the digital insurance field illustrate dynamic changes in research directions and emphasize different positions towards semantical interpretations, which can be divided into periods of the decade 2000-2010 and the decade after 2010. In the first period, researchers mostly focused on the technological application by examining the influence and spread of digital innovations across primary insurance activities of product underwriting, sales operations, and legal domains. The main research domain during this period, at the product level, was product differentiation and presentation through electronic distribution channels. At the legal level, topics that received exceptional scientific attention were mostly related to legal regulation and protection of customers in e-insurance distribution channels, platforms, and sales processes. Multiple domains were investigated at the technological level, including application of emerging technology in insurance distribution channels, influence of new e-insurance distribution channels and digital platforms on internal insurance sales agent network and external end-user experience, and compatibility and transition from non-agile legacy data processing systems and infrastructure to a new generation of digital technologies, systems, and infrastructure (Stoeckli et al., 2018; Bohnert et al., 2019). In the past decade, researchers mostly worked on a combined analysis of digital insurance outcomes at operational and strategical levels in insurance organizations and the influence of insurance networks. Dominant research topics at the operational level were related to insurance products and processes including development of new personalized, UBI and On-Demand Insurance (ODI) mass insurance products. Insurance of cyber risks or sachet insurance (bite-sized insurance) products, as pets or cyclist insurance, is a practical example of these main scientific research topics. A shift to automatic algorithmic decision-making processes that are oriented to product underwriting was observed as well. At the strategic level, a transition to a platform-based interaction and systemic value creation, a change of organizational mindset in insurance organizations, and overall cultural barriers for a digital transformation in the insurance industry were analysed intensively. Researchers also showed an interest in a new mass customers' base, which is now strongly influenced by a growing Millennial and Z cohorts, shared economy principles, and demand-driven insurance needs. Besides, investigation of development and deployment of multi-channel or multi-access technical solutions and their integration to the omnichannel-based insurance business model were carried out. Ensuring personal data protection and access management as well as reducing a negative influence of digital information asymmetry situations or extreme forms of dynamic pricing received additional focus in the late 2020s as well (Wiesböck et al., 2017; Bohnert et al., 2019; Łyskawa et al., 2019; Baumann, 2020; El Arif, 2020 and published in Baranauskas and Raišienė, 2021a, p. 189-190). The following scientific works, which define the stateof-the-art of digital insurance studies and shape the research discourse in this field in Europe, should be considered essential. Researchers such as Wiesböck et al. (2017), Klapkiv et al. (2018), Zarina Cīrule et al. (2019), and Shubenko (2020) have contributed by case studies of the digitalization input to specific insurance value chain parts by including strategical management, claims management, sales distribution, product digitization. Bohnert et al. (2019), Łyskawa et al. (2019), and El Arif (2020) have selected a more comprehensive and holistic approach by evaluating digital agendas, their implementation, and development in Europe. Researchers Zolnowski and Warg (2017), Stoeckli et al. (2018), and Warg et al. (2019) have conducted multidimensional investigations, presenting the status of digital intermediaries, Insurtech and their influence on the insurance industry as well as the shift from standardization and product-based insurance business model. Another group of scientists, including Lyubov (2018), Kaigorodova, Mustafina and Alyakina (2018), Albrecher et al. (2019), and Baumann (2020), have focused on literature reviews and case studies by using a technological point of view and revealed key directions, challenges, and impact of digital technologies and data science application on insurance processes and services. A significant contribution to this field has been also made by Eling and Lehmann (2018), Mitrovic et al. (2019),

and Weingarth, Hagenschulte, Schmidt and Balser (2019), who have conducted case studies of digital transformation frameworks, strategies, and process steps from both a holistic point of view in the insurance industry and a value chain, and an empirical evidence point of view. These researches listed above also feature certain limitations by holding analysis at a relatively high empirical level and in separate contextual silos, which are oriented to specific insurance types (life and non-life insurance), regions, product groups, or insurance activities.

In recent years, insurance industry and organizations have been strongly affected not only by trends and advancements of digitalization, process automation, and BDA, but also by an increased customer's demand for user-driven customization, personalization, and bespoke service solutions in the insurance-specific value chain. Here, the focus of the digital business-to-customer model, oriented to the e-Mass Customization concept and combined online customization frameworks, are identified as the main practical reflection form. In the insurance practice, this type of business models allows to minimize negative consequences of obstacles of the traditional MC concept version, find an optimal outcome in the situation of the high customer demand variety and internal complexity of insurance products and processes, and shorten a service delivery time (Kamis et al., 2008; Daaboul, Bernard and Laroche. et al., 2012). Figure 10 concludes the spread of the digitalization domain and MC capabilities in the insurance-specific value chain.

Support activities	Primary ac	tivities
General Management: RPD D	Marketing:	SSD CN D
Wesböck et al., 2017; Klapkiv and Klapkiv, 2017; Bohnert et al., 018; Eling and Lehmann, 2018; Kaigorodova et al., 2018; Albrecher	(El Arif, 2020)	
t al., 2019; Lyskawa et al., 2019; Warg et al., 2019; Bauman, 2020)	Product Development:	RPD D
CN SSD RPD D	(Klapkiv et al., 2018; Mitrovic et al., 201	9, El Arif, 2020)
Zolnowski and Warg, 2017; Klapkiv and Klapkiv, 2017; Eling and ehmann, 2018; Kaigorodova et al., 2018; Weingarth et al., 2018;	Sales:	SSD CN D
yskawa et al., 2019; Mitrovic et al., 2019; Warg et al., 2019)	(Klapkiv et al., 2018; El Arif, 2020)	5
luman Resource	Underwriting:	RPD D
Controlling: RPD	(Abrecher et al., 2019, Mitrovic et al., 2	2019; Bauman, 2020)
legal Department	Contract Admin & Customer Sei	rvice: D
	(Shubenko, 2020)	
Public Relations: SSD CN	Claims management:	D
D Digitalization	(Mizgier et al., 2018; Zarina et al., 2019	0
CN Choive Navigation capability	Asset & Risk Management:	D
RPD Robust Process Design capability	(Albrecher et al. 2019)	
SSID Solution Space Development capability		
nsurtech	(CN SSD RPD D
Zolnowski and Warg, 2017; Stoeckli et al., 2020)		

Figure 10. Digitalization domain and Mass Customization capabilities in the insurance-specific value chain

Source. Composed by the author by following: Porter, 1985; Salvador et al., 2009; Eling and Lehmann, 2018 and published in Baranauskas and Raišienė, 2021a., p. 187.

Figure 10 summarizes directions of recent theoretical analyses and presents a conceptual framework, combining digitalization outcomes and three key MC capabilities in primary and support activities of the insurance field. Additionally, this theoretical extension stands for an ongoing insurance industry transition from standardization and product to the platform-based business model and SDA (published in Baranauskas and Raišienė, 2021a, p. 197). Prevailing studies within this topic revealed that outcomes of digitization and digitalization-related processes became an integral part of the IT area, a fundamental operation feature of Insurtechs, and a complementary part of the majority of support and primary type activities. Otherwise, the potential modernization of insurance organizations and insurance market is still placed in the support type of activities. A different situation is observed within strategic MC capabilities, which are only marginally applied in the context of the primary type of activities in marketing, product development, underwriting and sales areas. The main concentration of MC capabilities is located within the support type of activities in the IT and public

relations areas. The practical illustration might be a fully digital insurance self-service platform, which is flexible in the frontend design, well-integrated, and has a backend structures-based customization toolkit, and proper content. Such digital insurance platforms provide a balanced and necessary amount of information, additional personalization services, and a convenient access to personal information for various types of customers. Overall, these new synergy forms of digitalization and MCP¬ domains in the insurance service and platforms not only indicate a discourse of modern insurance studies but also reveal recent practical outcomes of digital insurance transformation implications and the COVID-19 situation (published in Baranauskas and Raišienė, 2021a, p. 198).

1.6. Analysis on reflections of Consumer Decision-Making models within the modern insurance domain

Recent decades of the globalization process, intensive digitization, and digitalization together with socio-economic changes due to the global COVID-19 situation have brought a multifold impact on the financial service market, organizations, and customers, including the insurance industry . Consequences of the COVID pandemics are expected to reflect practically in a short term period by new trends in consumer behavior and changes in organizational management and culture as well as to accelerate innovations and evolvement of IT and products architecture, and digital business platforms . In the case of insurance organizations, the ongoing global situation has outlined improvable sides of business management, including the legacy infrastructure of IT systems, and customer service models that are still built around stability, traditional financial computing, and long-term planning methods, outdated Tech Stack application (Wiesböck et al., 2017; Warg et al., 2019).

On the theoretical level, it is recognized that modern insurance-related decisions and consumer behavior patterns cannot be sufficiently explained by applying traditional neoclassical economic and financial theories, and ignoring cognitive and emotional factors. The current approach of using combined and sophisticated quantitative risk analysis techniques, financial and economic theories, and the traditional CDM models is insufficient to apply in the modern, digitalized financial service, oriented to the platform business model (Milner and Rosenstreich, 2013). The modern financial analysis and modeling of the optimal financial decision-making process should be supported by the application of Behavioral Reasoning Theory (BRT), forecasting, multi-tier factor evaluation, and multi-agent-based model simulations (Zopounidis and Doumpos, 2002; Sahu, Padhy and Dhir, 2020). Additionally, theoretical assumptions of behavioral finance and economy theories and methods orient to qualitative data, behavioral and cognitive factor evaluations, and also influence general concepts of probability and risk (Allodi et al., 2020). In general, new theoretic models and conceptual frameworks within the financial service should reflect both technical specifications and capabilities of digital platforms and practical behavioral patterns of full digital end-users.

The traditional consumer CDM and Hybrid Consumer Decision-Making models (HCDM) (2002) have been widely applied in practice since 1960s. However, a paucity of research within the theoretical synthesis of CDM and HDCM models is identified, concerning a modern insurance-specific value chain and decision-making processes. The insurance-related decision-making process in digital platforms is no longer a linear progression through process stages but an iterative and simultaneous process (Milner and Rosenstreich, 2013). A brief overview on main CDM models and their influence on digitalized insurance decision-making processes is presented in Table 8.

Model	Key content points to consider	
Nicosia's model (1966)	 A mutual relationship between an organization and a consumer. 	
	 Feedback area. 	
	 An interactive repurchase cycle. 	
	 Consideration of interactions between both internal and external inputs, 	
Engel, Kollat, and Blackwell (EKB) model (1968)	information retrieval.	
	 Presence of consumer's perspective, feedback-search loop, and partial 	
	decision-making.	
	 Postponement of decision-making. 	
Howard and Sheth model (1969)	 Inclusion of marketing, social influence, and exogenous variables. 	
United Committee and 41 (1000)	 Stage of Awareness Set. 	
Chi and Crompton model (1990)	 Passive and active information acquisition. 	
Katlan madal (1007)	 Identification of suspected target groups. 	
Kotter moder (1997)	 Differentiation and transformation of first-time and repetitive customers. 	
McCarthy, Perreault and Quester model (1993)	• Impact of social, situational, and mental factors.	
Walker and Ben-Akiva model	 Flexible disturbances and irrational behavior. 	
(2002)	 Combination of latent psychological factors. 	
Kotler and Keller model (2006,	 Post-purchase stage and behavior. 	
2012)	 Allow of skipping or reversing some stages. 	

Table 8. The influence of main CDM models on digitalized insurance decision-making processesSource. Composed by the author by following: Milner and Rosenstreich, 2013; Vij and Walker, 2013;Goodhope, 2013; Gómez-Díaz, 2016; Ragothaman and Shanmugam, 2017; Holland 2019 and published inBaranauskas and Raišienė, 2021b., p. 5-6.

For a long period, the CDM models presented in Table 8 together with the Expected Utility Theory have been accepted as a dominant paradigm by researchers of

economy and marketing domains, and used by organizations to determine and model consumers' responses to product or service, purchase offering and motivational appeals (Goodhope, 2013; Holland, 2019). Holistically, the content and development of the traditional CDM and HDCM models are significantly influenced by dynamics in demographics and webographics of target consumers. Practical trends in organizations, which feature increased attention to the improvement of customer value and consideration points within existing sales and marketing strategies, and distribution channels, are also important influential factors (Karimi, Holland and Papmichail, 2018; Baek and Lee, 2021).

The new target audience in the financial service has become Generation Y, also referred to as Millennials, and Generation Z, which emphasizes both similar and unique expectations towards digital financial services and platforms. Looking from an age range perspective, an empirical separation of different generations cohorts is done on the premise of the period of birth date, but there are situations recognized of cross-overs of cohorts among people born at the end or the start of the generation age range (Goh and Lee, 2018; Skinner, Sarpong and White, 2018). Although, according to studies of Goh and Lee, 2018 and Skinner et al., 2018, there are different age clasifications on those two generations, in the thesis further the author follows their suggested separation for Generation Y defining people born in between of 1977 to 1998 and for Generaztion Z - in between of 1995 to 2009. According to studies from the digital banking field by Ruangkanjanases and Wongprasopchai (2017), Shams, Rehman, Samad, S. and Oikarinen (2020) and Windasari, Kusumawati, Larasati and Amelia (2022) following characteristics and end-user preferences can be outlined and applied to the digital insurance field. Both generations are significantly influenced by a combination of financial, social, and marketing features of platforms such as received economic value, ease of use experience of platform, reward, social influence and marketing in the form of person to person oral communication and positive recommendations about product and.or service, also know as a positive Word Of Mouth (WOM), and a brand reputation level (Ruangkanjanases and Wongprasopchai, 2017; Windasari et al., 2022). On the other hand, some distinct characteristics of Generation Y and Generation Z for digital platforms should be outlined. It is recognized that Generation Y prefers the functional side and attributes of the platform while Generation Z prefers UI and customization options (Shams et al., 2020). Additionally, according to Ruangkanjanases and Wongprasopchai (2017), both generations are positively influenced by factors such as platform compatibility, perceived usefulness, and self-efficacy in using the platform while Generation Z is significantly influenced by the social environment. From the user perspective, Generation Z, compared to Generation Y, has a higher level of need for public information and knowledge sharing, participation, and decision-making through social and online cooperation, and features high penetration rates in social platforms and mobile applications (Dimitriou and AbouElgheit, 2019; Kim and Kim, 2020). Finally, both above-defined generations become a target audience in financial industries due to continuous increases in market size and income numbers. Practical escalation of Internet technologies, mobile devices, and digital business models together with a rapid growth of social media users and new brands in the market have initiated a re-conceptualization of existing models in terms of consumer buying stages, information search, and share processes. These practical trends also have fostered a re-consideration of existing knowledge of customers' satisfaction and their preference towards information layout and frameworks (Dimitriou and AbouElgheit, 2019; Baek and Lee, 2021). Popularity of the standardization of functional and product attributes in a standard sales process has allowed to create a new type of online frameworks, where diversity of predefined alternatives, customization options, and an overall dynamical design response to individual characteristics and situational factors are combined and ensured (Baek and Lee, 2021). Therefore, current decision-making models demand a need for adjustment to both complexity and speed of the digital environment and a variety of digital platform frameworks (Karimi et al., 2018). Additionally, the marketing domain should be definitely re-orientated to support interactive and personalized experiences within a platform business approach, mobile devices, and characteristics of consumers from the Generation Z (Dimitriou and AbouElgheit, 2019). The marketing paradigm transition to customer-centric and long-term relationships has a meaningful role in the content of the above-presented models. The following outcomes of the theoretical investigations in the parallel research domain, which were made in the middle of the last century and the 1990s, are considerable aspects as well:

- The concept of Perceived Values. The importance of economic and cognitive-emotional perspectives is defined as a combined set of factors. Perceived Values is defined as consumer's behavior under perceived product or service quality, certain psychological-emotional state, and monetary sacrifice, known as the dilemma of cost-lost and benefits (Kim and Kim, 2020).
- Multi-Loyalty, Variety-Seeking behavior, and Choice Repertoire. The main idea

of consumers' polygamy is defined by following practical tendencies of consumers having more than one favorable brand in one product or service category and switching the most favorable brand due to a certain stimulus in the decision-making moment. This theoretical assumption can be identified in traditional behavioral models under terms of Consideration Set, Evoked Set, or Choice Set and in pre-stages of modern models, where consumers reduce the number of selected brands to one or two (Baek and Lee, 2021).

All these factors listed above naturally evolve to new modern behavioral models such as AISAS (Attention-Interest-Search-Action-Share), S-O-R (Stimulus-Organism-Response), and process models of e-Word-of-Mouth (eWoM) and Online Wordof-Mouth Marketing (OWoM) (Xue, Shen, Morrison and Kuo, 2021). In these models, key idea of the search and sharing behaviors in the digital environment and the influence of online reviews in social media were introduced. One of the latest discourses in the service marketing and consumer decision-making field has been identified by the Hoffman and Bateson model (2016). Here, the importance of the environmental perspective and factors of marketing activities, physical needs, and social cues are outlined and presented as an additional stage to the traditional five-stage model (Hoffman and Bateson, 2016). Traditional sequential models of consumer decision-making, presented in Table 9, are still widely accepted and applied practically, but it is crucial to note that they were developed in the pre-Internet era. Thus, these traditional sequential models are insufficient to accurately explain the online decision-making process outcomes and support designing of efficient and modern digital business platforms (Karimi et al., 2018; Xue et al., 2021).

Evaluation of the financial attitude and models of the decision-making process in digital platforms have unique circumstances to consider. First, the stage of initial problem, problem recognition, or need arousal has specific psychological and monetary risks, internal and external biases, associated with certain consequences of financial decision-making (Milner and Rosenstreich, 2013; Gómez-Díaz, 2016). In general, the behavior and purchase decision-making of insurance customers can be defined as a continuous sequence of mental considerations and physical actions, which can be divided into two main groups and stages. One group contains a perception of a need for insurance, while another group contains a perception of affordability (Ulbinaité and Moullec 2010; Ulbinaité et al., 2011; Åkesson, Edvardsson and Tronvoll, 2014; Weedige and Ouyang, 2019). Second, looking from the practical point, the importance of nonlife insurance products for individuals and society financial wellbeing has been recognized, but numbers of underinsured individuals and objects are observed. Specifically in developing insurance markets, customers tend to lack a proper insurance literacy and general financial decision-making skills (Allodi et al., 2020). Moreover, financial organizations, including ones operating in the non-life insurance market, continue focusing on only favorable customer experience management with limited attention and analysis on the multifaceted concept of customer experience and journey management (Åkesson et al., 2014). These particular circumstances of financial decision-making and specific characteristics of insurance organizations' practices require reframing processes and variables of existing CDM and DCDM models towards the digital insurance decision-making process. In a parallel way, the re-conceptualization of the traditional 3 stages model of purchase decision-making with new combined customer experience drivers, and customer's integration in value co-creation within the insurance-specific value chain is needed (Rosebaum, Otalora and Ramírez, 2017). Thus, it is essential to identify and apply fundamentals of consumer behavior models to the comprehensive examination of the insurance service consumers' engagement and characteristics. The following focal points of the traditional CDM can remarkably contribute to a conceptual framework of the digital insurance decision-making process. Fundamental outcomes of the Nicosia's (1966) model, as a decomposition of the buying process to multiple stages, iterative and constant connection between the organization and the customer in a form of the feedback area, and repurchase cycle, can be identified in the insurance domain. Relevant factors of considering various endogenous and exogenous variables, marketing stimuli components and process options of partiality and postponement of decision-making were presented in EKB (1968) and Howard and Sheth (1969) models. These factors support the content and the context of the modern insurance and decision-making process but are also limited in applying at a full scope due to the logic of a linear process and unmeasured relationships among variables (Muzondo, 2016; Holland, 2019). Later revisions and elaborations of these limitations in the Choice Set Model of Um and Crompton (1990) and Hybrid Choice Model of Walker and Ben-Akiva (2002) have introduced relevant factors of possible disturbances, irrational behavior, an unreliable memory of consumers, and the initial stage of Awareness Set (Goodhope, 2013; Vij and Walker, 2013; Holland, 2019). Furthermore, simplified models of Kotler (1997); Kotler and Keller (2006, 2012), and McCarthy, Perreault, and Quester (1993) reflect early complex models of buyer behavior and in this way support the holistic

approach to the decision-making process. Overall, these models outline pre-purchase and post-purchase stages, customer-oriented activities of identification differentiation, and transformation of target groups, which are also important parts of the modern insurance concept and customer experience. The holistic customer experience evaluation approach and CDM indicate that the customer value and experience are context-dependent, systematic, and interactive within all stages of the purchase model (Ulaga and Eggert, 2006; Åkesson et al., 2014).

An insurance-specific value chain and customer experience management depend on features of the core offering in the purchase stage but are also shaped by numerous internal and external factors in the pre-purchase and post-purchase stages. The customer's sourcing and support, socio-demographic, economic, and environmental features, the level of insurance literacy, and social reality are high-level factors, which influence the content of insurance service and processes in decision-making (Ulbinaitė and Moullec, 2010; Ulbinaitė et al., 2011; Klauss, Edvardsson and Maklan, 2012; Åkesson et al., 2014; Allodi et al., 2020). In general, the modern insurance combines derivatives from multiple theories and models of information systems, customer behavior, and risk management:

- Derivates from the perspective of risk management. It can be identified in the management of relationships among insurance service counterparties, the obligation of exchanging the consumer's risks, application of risk handling methods, and the overall management of the asymmetric dominance effect in legal and ethical ways (Ulbinaité et al., 2011, Weedige and Ouyang, 2019).
- Derivates from the perspective of CDM and HCDM (2002). It can be identified in the management of mental considerations and physical actions, behavioral and cognitive decision-making biases, a purchase decision process, and the CODPs (Åkesson et al., 2014; Weedige and Ouyang, 2019). It is important to outline that non-life insurance organizations show increased attention to customer experience management within specific steps of the purchase process but pay limited attention to the multifaceted concept of customer experience and the comprehensive customer journey management implication (Åkesson et al., 2014). This situation confirms a need for the re-conceptualization of the traditional insurance decision-making model and existing evaluation categories. The modern insurance consumer value creation and experience are highly context-dependent, systematic, and interactive within all stages of the decision-making process, therefore, the holistic evaluation approach and categories are required (Ulaga and Eggert, 2006; Åkesson et al., 2014).

• Derivates from the perspective of information system theories and models of technology acceptance and self-service technologies. It can be identified in the forms of constructs of behavioral intention, attitude towards behavior, actual decision-usage behavior, and determinants of technological and content features of the digital platform. Following factors of behavioral intentions and actual decision-usage behavior can be identified as slightly modified, but reflecting on both traditional (face-to-face) and digital insurance distribution channels: platform performance expectancy, personal effort expectancy, social norms and influence, facilitating conditions including the level of organizational and technical infrastructure, and personal conditions including attitude factors, cognitive processes and emotional reactions toward insurance and digital insurance platform (Taherdoost, 2018; Momani, 2020).

All above-presented types of derivatives outcomes are combined and reflected in the background and content of the modern insurance decision-making process, presented in Figure 11.



Figure 11. Features and background of the modern insurance decision-making process Source. Composed by the author by following: Ulbinaitė and Moullec, 2010; Ulbinaitė et al., 2011; Allodi et al., 2020; Łyskawa et al., 2019 and published in Baranauskas and Raišienė, 2021b, p.4.

Figure 11 illustrates the background, main process logic, and influential drivers-factors, which affect the insurance customer journey within the insurance purchase process and decision-making stages. Influential drivers-factors can be divided into two groups. The first group is internal factors, which are related to a personal evaluation of an insurance need and financial affordability. The factor group of perception of need covers the meaning of multiple social and cultural parameters of an individual, such as ownership of property, security need, social (family) status, insurance culture in a family and society. This factor group compounds the following factors:

- Insurance literacy, which stands for a meaning of personal knowledge, skills, and understanding level regarding insurance products, processes, and systems.
- Personal insurance experience, which stands for a meaning of past and ongoing experience and interrelationships regarding insurance provider's service level, communication, insurance contract issue, and / or claims administration processes.
- Recommendations, which stand for the meaning of recommendations from close social groups as relatives, friends, or colleagues regarding an insurance service provider, product, or service platform.
- Lost and gains probability, which stands for a meaning of the possible mental consideration in insurance gain-loss situations. For instance, if an insurance will not be purchased but a claim event occurs, or an opposite situation where an insurance will be purchased and a claim does not occur.

The second important factor group is the perception of affordability, which is closely related to factors of personal and family well-being in the moment of insurance decision-making and potential financial savings due to selecting a specific scope of insurance cover, service provider, or purchasing insurance in the digital insurance platform.

The external factor group defines an objective and a holistic perception of insurance as an evaluation of the insurance decision-making process from legal, marketing, and technical points of view. Customization, personalization, and marketing-oriented factors have key role in the pre-purchase stage, where the final decision to purchase is made. Here, the marketing domain is presented by the advertising as active digital and non-digital marketing outcomes, including special pricing campaigns, personalized offers, promotes via multiple touchpoints. Another factor is an insurance service provider brand, which covers a meaning of awareness and associations as public visibility, corporate responsibility and sustainability actions, an image of professional skills and knowledge, legal status. Opposing to legal, marketing, relational, or general social-demographic factors, the digitalization domain and factors are recognized equally important within the entire value chain and all three stages of the insurance decision-making process. It should also be outlined that technological factors of technical platform features, graphical UI features, and the overall digital environment have a significant influence on the development of modern insurance concepts, consumer decision-making, and experience management. Key technical platform features are understood as a digital platform availability, speed, safety, compatibility, design, and functional simplicity. The factor of graphical UI features covers a part of the online framework combined with multiple graphical elements, for instance graphical icons and audio indicators, through which end-users interact with the service / product provider. In general, it is recognized that recent technological advancements and development of the internet technology, mobile devices, and digital platforms business model have become critical enablers to balance the quality of service delivery, insurance personalization, and customization in different customer expectations and experience levels. At the level of operational activities, product, and the platform, the factor of graphical UI features reflects in a customer journey by a personalized easy-access to information, customization toolkit, and on-demand information exchange. At the level of customer experience management and activities, this factor reflects in a form of a well-designed purchase process in the graphical interface solutions, situations of flow interruptions or an overwhelm of information. This factor also promotes a continuous positive social interaction and an emotional brand connection after the purchase stage (Tueanrat et al., 2021). These outcomes of digital operational capabilities are a compulsory part of value co-creation processes and product customization options in the modern insurance concept.

To conclude, Figure 11 suggests a theoretical process framework simplifying the complexity of the modern non-life insurance concept, which is related to a continuous but not a simultaneous sequence of the insurance-related processes and influence of multiple internal and external factors towards the insurance decision-making. Additionally, recent trends of the non-life insurance industry require a decentralized, digitalized, and individual-centric approach to organizational management, product configuration, and customer experience management (Ulbinaitė and Moullec, 2010; Ulbinaitė et al., 2011; Allodi et al., 2020). The emerging prominence of the customer-centric philosophy and holistic design frameworks, availability of individual-level real-time data factors foster the development of innovative, and personalized touch-points on customer values and experience management (Ponsignon et al., 2018; Tuean-rat et al., 2021). Practically these frameworks reflect on advanced digital self-service platforms, which compound ideas and methods of personalization and customization and create a new cognitive perspective-oriented framework. Moreover, these frameworks embrace an intrinsic security need from customers and leads to a simpler creation, usage, and exchange of insurance knowledge and information (Germanakos et al., 2009; Łyskawa et al., 2019; Tueanrat et al., 2021). All these trends confirm both the shift of traditional insurance concept boundaries and the non-life insurance market from a traditional approach, grounded by provider-centric management and service blueprint model, and the focus on the operational efficiency and cost-service level dichotomy (Ponsignon et al., 2018; Tueanrat et al., 2021 and published in Baranauskas and Raišienė, 2021a, p. 197-198).

1.7. Analysis on reflections of Information Systems theories, models and Self-Service Technologies (SSTs) within the modern insurance domain

The 4th Industrial Revolution has gained popularity within the modern insurance domain and practically reflected as digital transformations and movement towards digital platform business models. The artificial intelligence, robotic process automation, and data drive in back-office operations, product management, and customer service are the most recognizable practical outcomes. The theoretical foundation of above mentioned practical outcomes relies on adoption of numerous Information Systems (IS) theories including the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) (1985), models of the TAM, and the Task-Technology Fit (TTF) (1995), their extensions, and Self-Service Technologies (SSTs) (Kim and Kim, 2020, Safaeimanesh, F., Kılıç, Alipour and Safaeimanesh, S., 2021). Understanding behavioral patterns of digital insurance consumers, their preferences, a satisfaction level, and designing of successful digital self-service platforms requires an additional analysis of demographic, economic, and psychographic factors, digital decision-making process outcomes, and preferences for digital service layout / framing (Karimi et al., 2018; Baek and Lee, 2021; Khan, Haider, Al-Hmouz and Mursaleen, 2021). This type of investigation would reveal the influence and role of the before mentioned factors and characteristics within the insurance consumer behavior, their orientation towards insurance products, and the need for an insurance cover (Khan et al., 2021). Furthermore, such examination would contribute to identifying the structure and profiles of a potential consumers' base and targeting them by developing a more accurate platform design and directing the operational strategy for a sustainable growth (Khan et al., 2021).

Application of IS theories, models, and SSTs within the modern insurance is also closely related to general researchers' findings of the human perception of a purchase object, consideration logic, and practice trends. It is agreed that consumers possess similar behavioral patterns while the perception and mental consideration are influenced by general factors of product / service quality, price, marketing (Khan et al., 2021). Global trends of automation and modernization of back-office operations, mobile technologies, socialization, new service distribution channels and forms, and concepts of MCP have affected the behavior of insurance consumers and changed the traditional understanding of service design and consumers in insurance organizations as well (Gbongli, Xu and Amedjonekou, 2019; Lin and Lin, 2020; Khan et al., 2021). Scientific research of the modern insurance domain follows these trends and results in a diversified standpoint of explaining an insurance product demand and consumer behavior. In the context of life insurance, novel findings within the purchase decision-making were made by seminal works of Ferber and Lee (1980), Bernheim (1991), Outreville (1996), and Chen, Wong and Lee (2001), who have identified a positive influence of a combination of a set of demographic factors, such as age, cohort, education as well as economic factors like savings. On the other hand, researchers Duker (1969) and Hammond, Houston and Melander (1967), Burnett and Palmer (1984), and Gandolfi and Laurence (1996) have pointed out an absence of relations among demographic and psychographic characteristics of insurance consumers and their intention to buy insurance products (Khan et al., 2021). In the context of the non-life insurance, a significant contribution was made by Hsee and Kunreuther (2000), Kunreuther and Pauly (2005) while Ulbinaitė and Moullec (2010), Ulbinaitė et al. (2011), Ulbinaitė and Kučinskienė (2013), Zariņa Cīrule et al. (2019) as they solely have focused on determinants of insurance decision-making in the developing insurance market of the Baltic region. The recent COVID-19 period in the insurance industry is marked by intensive digital transitions and an increasing popularity in applying combined technological and customization solutions in marketing and sales-based activities (Baret et al., 2020).

Unfortunately, these practical phenomena are investigated at the scientific level only fragmentarily, therefore, a research gap of the comprehensive analysis on insurance consumer behavioral patterns, intentions and decision-making factors in the digital environment is noticed. A complementary focus field of the scientific analysis in the insurance field is identified on internet technologies, social media, mobile-first design, and simplified content-based financial services, whose combination is confirmed to have an important role in future financial service organization management (Gbongli et al., 2019; Naffa, 2019; Baek and Lee, 2021).

In recent five decades, numerous psychological and social studies on the behavioral decision field have resulted in new or extended economic, marketing and information system theories, intentional models, and measurement scales and indexes (Gbongli et al., 2019). Thus, the most prominent theories, models and scales-indexes, explaining user acceptance, engagement, and adoption of new IT systems, products or innovative technologies, are listed accordingly as per below:

- Theory of Innovation Diffusion (IDT) (1962), the TRA (1967, 1980), The Utility Theory (1968), the Lancaster's Consumer Theory (1971), the Random Utility Theory (1974), the Theory of Interpersonal Behavior (TIB) (1977), the TPB (1985), the Social Cognitive Theory (SCT) (1986), the combined form of TAM and TPB (C-TAM-TPB) / the Decomposed Theory of Planned Behavior (DTPB) (1995), the Unified Theory of Acceptance and Use of Technology (UTAUT) (2003) and UTAUT2 (2012) (Alomary and Woollard, 2015; Wani and Ali, 2015; Iqbal, Hassan and Habibah, 2018; Ajzen, 2020; Momani, 2020; Jimenez , Garcia, Marcolin, Violante and Vezzetti, 2021; Safaeimanesh et al., 2021).
- Technology Acceptance models (TAM; Extended Technology Acceptance Model (TAM2) and TAM3) (1986, 2000, 2008), the TTF (1995), the Extended Web Assessment Model (2002, 2003), the Model of PC Utilization (MPCU) (1991), the Motivational Model (MM) (1992) (McKechnie, Winklhofer and Ennew, 2006; Jimenez et al., 2021).
- The SERVQUAL (1988), the Technology Readiness Index (TRI) (2000), the SITEQUAL (2001), the E-S-QUAL (2005), the E-RecS-QUAL (2005), and the SSTQUAL (2011) (Taylor, Kevin and Goodwin, 2002; De Leon, Atienza and Susilo, 2020).

Due to the complexity of interaction situations and possible combinations of social-behavioral factors and technical characteristics, researchers have compiled a

variety of above mentioned theories and models, which explain and rationalize behavioral patterns and adoption of technological innovations from different theoretical angles. Retrospectively, predecessors of these technology acceptance theories, models, and scales / indexes date back to behavioral studies at the beginning of the XX century. In detail, around 1940s, there were two research streams determined: psychological studies and social studies (Momani, 2020). In spite of this historical separation, different terminologies and constructs, technology acceptance theories and models have continued to mature combined psychological and behavioral viewpoints (Alomary and Woollard, 2015; Momani, 2020). The historical development, key differences in the content among technology acceptance theories and models are summarized in Table 9.

Theories and models	Authors and year	Key points
TRA	Fishbein and Ajzen (1975) Ajzen and Fishbein (1980)	Introduced three combined cognitive components to explain user behavior: attitude, social norms / influence, intentions. User's behavior is a volitional, systematic, and rational consequence of their behavioral intention. Established evaluation methods of generality, target, action, context, and time horizon.
TIB	Triandis (1977)	Introduced factors of habits, facilitating conditions, and an affect in order. The most variance in total is accounted for. Three-level evaluation on user's behavior.
TPB	Ajzen (1985)	Introduced the variable of Perceived Behavioral Control (PBC). Focused on mandatory situations. Defined the perception of internal and external variables.
TAM	Davis (1986, 1989)	Integrated technological characteristics with factors of organizational behavior concepts. Factors of perceived usefulness (PU) and perceived value presented next to the factor of the attitude towards the use of a system. Eliminated users' subject norms, interestingly and social influence.
MPCU	Thompson, Higgins, Howell, Taylor, Kevin and Goodwin (1991)	Eliminated components of behavioral intention, habits and evaluated only actual behavior. Focused on situations of the personal computer (UT) utilization, the direct influence of factors, and long-term consequences. Identified six determinants in technology acceptance.
MM	Davis, Bagozzi and Warshaw (1992)	Introduced factors of intrinsic and extrinsic motivation. Focused on psychological aspects as pleasure, satisfaction, playfulness of technology acceptance and usage.
DPTB C-TAM- TPB	Taylor and Todd (1995a,b)	Combined logic and factors of TPB and TAM. Decomposed constructs of subjective norms and PBC with constructs of innovation. Introduced constructs of a superior influence and peer influence to define the construct of subjective norms.
Theories and models	Authors and year	Key points
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TTF	Goodhue and Thompson (1995)	Focused on evaluation of information system success and value and measurement of technological influence on users' tasks performance. Introduced the technology-to-performance chain, user evaluation construct, and design guidance for a technology or task.
TAM2	Venkatesh and Davis (2000)	Focused on antecedents of PU and behavioral intention. Introduced two additional groups of constructs / determinants: social influences and cognitive instrumental processes. Removed the variable of attitude.
UTAUT	Venkatesh, Morris, Davis, G.B. and Davis, F.D. (2003)	Unified components and constructs / determinants of eight technology acceptance theories and models. Focused on four constructs / determinants of usage and intention and four moderating variables of gender, experience, age, and voluntariness of use.
TAM3	Venkatesh and Bala (2008)	Introduced four evaluation dimensions of computer self-efficacy, perception of external control, computer anxiety, and computer playfulness, and two adjustment variables of perceived enjoyment and objective usability. Synthesized prior research and findings of TAM models. Redefined constructs / determinants of Perceived Ease of Use (PEOU) and PU.
UTAUT2 Venkatesh, Thong Focused on the consumer-technology use conte UTAUT2 and Xu Introduced three independent variables of hede (2012) and habit.		Focused on the consumer-technology use context. Introduced three independent variables of hedonic motivation, price value, and habit.

Table 9. Review on development and content of main technology acceptance theories and modelsSource. Composed by the author by following: D'Ambra, Wilson and Akter, 2013; Alomary and Woollard,2015; Taherdoost, 2018; Momani, 2020.

To conclude results of the analysis in Table 9, following constructs and determinants of the behavioral intention and usage behavior can be identified as repeating or slightly modified. Thus, performance expectancy, effort expectancy, social influence / norms, facilitating conditions, including organizational and technical infrastructure, and attitude factor, including cognitive processes and emotional reaction, might be considered for investigation within the research of modern insurance platforms and consumers (Taherdoost, 2018; Momani, 2020). Clarification of these dominant constructs and determinants of consumers' intentions and decision-making expands the existing understanding of trust-based Consumer Decision-Making models. This holistic model also refers to trends of the Perceived Privacy Protection (PPP) phenomenon. and Four main categories of antecedents of consumer trust and perceived risks in digital business models and online purchase process, such as Cognition (observation)-based, Affect-based; Experience-based, and Personality-oriented, are identified under this holistic model (Kim, Ferrin and Rao, 2008). Furthermore, the review of theories and models in Table 10 revealed the importance of a unified research standpoint, which is constructed not only by IS theories, IS Success Models, and SSTs, but also by constructs and determinants from social science, psychology, and behavioral economic theories and models. Social psychology, in a form of SCT, contributed by introducing a triadic and an in-separated structure of behavioral, personal, and environmental factors and fostering a bi-directional approach integration to technology usage evaluation (Taherdoost, 2018). The IDT pointed out a holistic standpoint to discuss adoption of technological innovations on a micro (individual), mezzo (organizational), and macro levels (global social system) as well as a contrary approach by considering research subject to be the product, innovation, or system instead of a user (Alomary and Woollard, 2015; Wani and Ali, 2015; Taherdoost, 2018). A contribution to understanding user's behavior and choices have been made by numerous normative theories from behavioral economics as the Utility Theory (1968), the Lancaster's Consumer Theory (1971), the Random Utility Theory (1974), and the Expected Utility Theory. The traditional Utility Theory emphasized the focal point that consumer's utility of service, product, or system may be reached not only on a qualitative but also on a quantitative dimension by offering a greater variety of products and services (Safaeimanesh et al., 2021). The Lancaster's Consumer Theory outlined the idea of the value summation, which defines a satisfaction reason as a combination of consumption object characteristics and attributes but not the process of consumption. The basis of the Random Utility Theory and Expected Utility Theory is focused on a rational choice towards a maximum receivable utility, which is achievable through the procedure of considering probability, random variables, and possible utility values in the decision-making moment (Safaeimanesh et al., 2021). In general, since the beginning of the XX century, all these behavioral theories have been considered as major paradigms for risky decision modeling and predictive or prescriptive analysis in scientific fields of economics, finance, and management (List and Haigh, 2005).

The number of traditional theories, models, and their extensions, presented in Table 9, has limitations due to different terminology, the logic of the process, and evaluation constructs. However, TAM (1986, 1989) and UTAUT (2003) and their predecessors are still recognized as highly parsimonious and persuasive theoretical frameworks and used as a theoretical background within research of information and communication technology acceptance (Gbongli et al., 2019). The reliability of TAM (1986, 1989) is confirmed by statistical studies, which demonstrate the possibility of around 40 % to explain variations of consumers' behavioral intentions and actual usage of IT system, platform or process, by using TAM (McKechnie et al., 2006; Nurhayati and Hidayat, 2018). To compare, TPD is suitable to explain only around 20-30 % of consumers behavioral cases in the selected area in the USA and United Kingdom (Alhamad and Donyai, 2021). Looking from the theoretical perspective, TAM (1986, 1989) as a standalone evaluation model has received a lasting popularity and lead to several extensions, including latest transitions to UTAUT (2003) and UTAUT2 (2012), and approved combinations with TTF (1995), TRI, or the updated DeLone and McLean Information Systems Success Model (2003) (D'Ambra et al., 2013; Koivisto, Makkonen, Frank and Riekkinen, 2016; Nurhayati and Hidayat, 2018; Prasetyo, Ong, Concepcion, Navata, Robles, Tomagos, Young, Diaz, Nadlifatin and Redi, 2021). Historically, TAM (1986, 1989) was created to explain the adoption of computer technologies and technological innovations, but, while applying, the validity of TAM (1986, 1989) and its predecessors have proven to consolidate not only within the IT and Internet domains, but also in fields of health, energy, learning, e-commerce and financial service industries (Naffa, 2019; Jimenez et al., 2021). The initial version of TAM (1986, 1989) has been imposed by the theoretical basis of TRA, but currently it is also observed to feature unique determinants of PU and PEOU, which affect the determinant of the Attitude Towards Use (ATT) and actual user behavior and acceptance of the technology / system (Jimenez et al., 2021). One of key limitations of TAM (1986, 1989) was the absence of evaluation on an information system or other research subject from the perspective of prior factors, such as personal self-efficacy, prior usage, and contextual-moderator factors, including demographics and technology characteristics (D'Ambra et al., 2013). Therefore, the combination of TAM (1986, 1989) and TTF (1995) was brought to attention, and an analysis of a functional, platform, content aspects and value creation of the technology or IT system use have become an integral part of the acceptance evaluation (D'Ambra et al., 2013; Spies, Grobbelaar and Botha, 2020; Alyoussef, 2021). However, the most robust and notable models, accounting for around 70 % of the variance, have been developed by Venkatesh et al. in 2003 and 2012 (Chang et al., 2019; Ayaz and Yanartas, 2020; Momani, 2020). UTAUT (2003) and UTAUT2 (2012) emphasize the importance of the utilitarian value and voluntarily determine the acceptance and use of the technology or system as well as unify theoretical standpoints from eight theories and models as follows: TRA (1967, 1980), SCT, TAM (2003), TPB (1985), MM, MPCU, C-TAM-TPB, and IDT (Ravangard, Kazemi, Abbasali, Sharifian and Monem, 2017; Chang et al., 2019). Within the extended version of UTAUT2 (2012), next to four independent variables of Performance Expectancy (PE), Effort Expectancy (EE),

Social Influence (SI), Facilitating Conditions (FC), and moderators of age, gender, and experience, three additional independent variables of hedonic motivation, price value, and habit were added, but interchangeably the moderating variable of Voluntariness of Use was removed (Ain, Kaur and Waheed, 2015; Alomary and Woollard, 2015; Nor-dhoff, Louw, Innamaa, Lehtonen, Beuster, Torrao, Bjorvatn, Kessel, Malin, Hapee and Merat, 2020). In the extended model, all seven constructs are direct determinants of the Behavioral Intention, while only two variables of Habit and FC are determinants of the Use Behavior. The logical process workflow of UTAUT2 (2012) visualized in Figure 12 as follows.



Figure 12. Visualization of UTAUT2 model logical process workflow Source. Composed by the author by following: Ain et al., 2015; Chang et al., 2019.

A review of scientific research and literature of CDM, HDM, and technology acceptance theories and models confirmed that consumers' behavior and preferences could be standardized and defined under a specific set of independent variables, moderators, and a sequential process logic. On the other hand, the recent analysis on the new generation of consumers' perception towards newly developed technology, digital platform, or products indicates both non-standard behavioral patterns and the need for inclusion of additional external and internal variables. According to Baek and Lee (2021), the current market environment resulted in the phenomenon of information explosion, intensive development, and functional similarity among brands, which have influenced consumer decision-making moments and reduced the value of loyalty and strong brand factors. Modern consumers tend to pursue a personal evaluation on their previous experience and usage habits, but, in parallel, they continuously reconsider their decision strategy in response to a dynamic exposure to new information (Karimi et al., 2018; Baek and Lee, 2021). Therefore, an additional analysis on external variables, such as social media platforms, quality, price, marketing and customization of the product, personalization of different user-profiles and segments and, interactivity and design of the information layout / framing in the website, is required (Naffa, 2019; Park and Park, 2020; Baek and Lee, 2021; Khan et al., 2021; Noh et al., 2021). Consumer's perception and a need for protection of personal and transactional or other confidential information, influence of New Technology Anxiety (TAMM) and Personal Innovativeness (PIMM) factors, past behavior, and user feedback reflected in forms of WOM or group support in social platforms, have also proven their importance in recent studies (Aziz, Husin and Hussin, 2017; Gbongli et al., 2019; Park and Park, 2020; Safaeimanesh et al., 2021). Next to these above listed general variables, specific characteristics of financial services and industry, including insurance, products, consumer base, and digitalization level, should be considered separately. For instance, a number of earlier researches have shown that the phenomenon of PPP in the context of financial service reflects different outcomes, understanding and has a lower level of influence (McKechnie et al., 2006). This is closely related to the financial service gradual and long-lasting adoption strategy of technological innovations, strict legal standards, and an increased attention to security and privacy areas as well as high experience and knowledge of consumers on financial products and platforms (McKechnie et al., 2006). In addition, different influential factors are identified in the case of using online financial platforms, where consumer's behavior and considerations depends on "relative advantages or benefits of the delivery vehicle, the relative advantage of the banking services and the perceived congruence of fit between the two", according to McKechnie et al. (2006). Financial institutions, specifically from the banking industry, are early adopters of technological, business models, or hybrid innovations in technological and business models, therefore, it becomes complex and confusing to measure the actual value of new solutions and apply standard models of CDMs or technology acceptance (De Leon et al., 2020). Finally, the theoretical content analysis on the main Technology Acceptance and Consumer Decision-Making theories and models revealed a lack of a unified research standpoints towards the analysis of behavior of insurance consumers in digital platforms by ignoring an influence of cognitive, emotional, and situational factors.

In the perspective of evaluating technical factors of the system or task fit to the users and their corresponding tasks, limitations of technology acceptance theories and models have been widely discussed. The discussions resulted in TTF (1995) and its combinations, but the relation with factors of SSTs have not been vastly investigated. Moreover, the SSTs research domain is limited in providing a holistic standpoint of modern customer's value perception and its creation (Vakulenko, Oghazi and Hellström, 2019). The majority of previous studies in this field primarily focused on the SST's service quality, characteristics, and analysis on influential factors, consumer behavioral patterns, segmentation, and perception. These limitations resulted in findings of extended SERVQUAL (1988) and E-S-QUAL (2005) scales and SSTQUAL (self-service technology service quality) dimensions (2011) (Vakulenko et al., 2019; De Leon et al., 2020; Rinta-Kahila and Penttinen, 2021). These research trends and gaps can be explained by a diversity of SSTs and their service setups, where the appearance and dynamics of technological innovations in the field of SSTs reflect on the existing service setups. In general, SSTs became both new practical tools for value creation and new scientific data sources to investigate (Vakulenko et al., 2019). Retrospectively, the phenomenon of SSTs has a long-lasting and fruitful development, starting in 1970s with the launch of automated teller machines, ATM, or cash machines in Japan, the United Kingdom, and the United States. Later, the phenomenon of SSTs spread in versions of online and mobile banking, interactive and automatic self-check-in and self-checkout kiosks in retail and tourism services, voice response systems, and internet-based, personalized self-service systems, used widely in the e-commerce field (Babaei, Kkodamoradi and Saiedy, 2015; Iqbal et al., 2018; Vakulenko et al., 2019; Rinta-Kahila and Penttinen, 2021). In the case of the modern insurance domain, reflections of SSTs can be identified in the following forms of e-insurance distribution and information access. The forms are digital sales platforms, which include customer's support solutions like

a live chat or a chatbot, product configurators / price calculators, online claim notification forms, and personalized self-service portals, where a customer can check and manage insurance-related information (Tia, 2021). Another reflection form of SSTs is noticeable in embedded insurance integrations with non-insurance service partners and separate technological solutions for the digital onboarding process of customers or Know Your Customer (KYC) activities. From the theoretical perspective, the founding of the self-service concept drawback to four decades ago, in the study of Toffler (1980). Main scientific clarifications of the SSTs definition and measurement scale of the service quality, rendered by SSTs, were developed in 2000 by Meuter, Ostrom, Roundtree and Bitner, and in 2011 by Lin and Hsieh respectively (Considine and Cormican, 2017; Iqbal et al., 2018). In general, the SSTs are interpreted as an umbrella of various technological service tools and automated service delivery systems with a focus on "technological interfaces which allow customers to get services free from the direct involvement of service firm's employees" (Meuter et al., 2000; Considine and Cormican, 2017; Vakulenko et al., 2019). The SSTs have also compound categorizations, which refer to the internet SSTs, also known as off-site SSTs, illustrated by online banking, and non-internet SSTs, also known as on-site SSTs, illustrated by self-service kiosks (Considine and Cormican, 2017; Vakulenko et al., 2019). The primary categorization was presented by Meuter et al. (2000) and was oriented to the interface of SSTs, which can be telephone / interactive voice response based, online / internet access based, or independent interactive kiosks. The importance of the SSTs are proven not only by the continuous growth of the scientific interest but also in the practice of the service sector industries. The adoption of SSTs has become an emerging and trending business phenomenon and the value of the global non-internet-based SSTs market was expected to reach \$31.75 billion in 2020 (Iqbal et al., 2018; Vakulenko et al., 2019). The popularity of SSTs' application is influenced by twofold benefits to organizations and customers as per below:

- At the organization level, SSTs brings benefits of improved SLA and characteristics of service design and convenience perception, reduced cost level comparing to direct service delivery, supported growth of multi-channel marketing and digitalization processes, increased geographical service availability range comparing to the physical location and standard business operating hours.
- At the customer level, SSTs provides location convenience, higher service delivery speed and the scope of personalized support, better options of co-creation

in the forms of products customization, and enhance of joyfulness, satisfaction, and loyalty (Iqbal et al., 2018; Vakulenko et al., 2019; Rinta-Kahila and Penttinen, 2021; Safaeimanesh et al., 2021).

However, while SSTs were recognized as a useful and valuable operational tool within organizations from different industries, a significant part of consumers from these industries still rate highly and prefer human-provided service options (Lian, 2018). This situation might be explained by critical factors of personal technology anxiety, TRI, and the level of perceived satisfaction with SSTs (Koivisto et al., 2016; Lian, 2018). In the case of financial service, including insurance, other influential factors may be a possible depersonalized atmosphere within difficult financial decision-making, and a demographical diversity of customers, which require hybrid service formats and have a high need for interpersonal interaction (Babaei et al., 2015). According to Yang (2014), another reason is related to the customer's perception that e-insurance is "high risks and high premiums with respect to utilitarian motives but lacks information and performs unsatisfactorily in terms of hedonic motives". Therefore, financial organizations, oriented to SSTs adoption on daily operations, should have not only sufficient financial and IT assets but also a strategy how to turn traditional customers into hybrid or SSTs customers. To complement above listed critical factors of SSTs use intentions and behavior, situational factors, incumbent habit, perceptions of SSTs, demographic and psychographic factors, and dual-thinking system, compounded of the reflexive system and the reflective system, have a significant influence towards applying SSTs in financial organizations as well (Rinta-Kahila and Penttinen, 2021).

2. METHODOLOGY AND METHODS OF EMPIRICAL BALTIC LEVEL RESEARCH

2.1. Definition of the empirical research process, strategy, and design

The empirical investigation of complex research subject and contexts requires a comprehensive research strategy and research design, following primary and secondary data sources and combined research methods of operational management, information theories, and research on customers' behavior. Therefore, the following empirical Baltic-level research process was divided into 5 empirical investigation stages. The investigation started with the case study of the Baltic non-life insurance market and afterward consequently 4 stage investigations of Baltic financial experts, insurance specialists, and consumers, and in a parallel way case studies were completed. The selected research process logic supports the main aim and objectives of holistic empirical research subject investigation on 3 research levels (macro, mezzo, and micro) and accordingly on 3 analysis perspectives (market, organizational and individual). In general, the empirical research methodology is defined and validated in accordance with a general thesis methodology. A pragmatism and objectivist epistemological paradigm can be identified in the form of a research philosophy, methodological pluralism in the form of MMR methods for data collection, and the inductive reasoning logic for data analysis and summary of results. In addition, the research strategy and design are shaped around the defended statements and practical objectives to empirically investigate and identify the state-of-the-art content and trends of the non-life insurance market, insurance consumers' behavioral patterns, and features of digital insurance platforms in Lithuania, Latvia, and Estonia.

The following empirical research strategy compounds domains of insurance digitalization, customization, personalization, and existing solutions of digital insurance platforms in the Baltic countries and their multidimensional practical investigation at functional, product, and system levels by following a convergent parallel research design. The selected research design also contributes to the scientific research field on modern insurance by providing a versatile empirical validation of a conceptual framework of the Baltic digital insurance consumer decision-making process. The application of the concurrent triangulation design (single-phase) approach allows collection of qualitative and quantitative data simultaneously and produces a rigorous and credible source of primary data. It also contributes by converging and subsequent interpreting of secondary data and more contextual and in-depth generalizing of theoretical assumptions within larger sample researches and datasets. Finally, the multilevel qualitative and quantitative analysis, including descriptive statistics, factor, and correlation analyses, and path analysis ensure a proper examination of the validity of theoretical constructs and the consistency of research instruments, sampling adequacy, underlining structures, and relationships among latent variables (factors) (Dhillon, Zain, M., Zain, A. Z., Quek, Singh, Kaur and Nordin, 2014; Koyuncu and Kılıç, 2019)

In detail, procedures of data collection and analysis were conducted by using the

methodological triangulation of qualitative and quantitative research methods within a continuous, multi-stage empirical investigation within 2020-2022. The logic of the selected research strategy, its sequence and reflections on different research levels and methods are illustrated in Annex 3. As per Annex 3, in order to understand the background and related objectives of the 5-stage strategy of empirical investigations, it is essential to elaborate on a detailed explanation as follows:

The first stage of the empirical investigation follows the empirical research objective to present an as-is status in the Baltic non-life insurance market and clarify insurance platforms' compatibility at practical product and functional levels. The investigation compounds a multidimensional qualitative comparative analysis by analyzing global statistical data sources, completing a statistical mapping of selected search keywords, and conducting a modified Baltics' market and platform analysis from functional and product perspectives.

2. The second stage of the empirical investigation follows the empirical research objective to empirically investigate the status, content, and tendencies of the digitalization phenomenon and the application of the MCP concept within digital platforms of the Baltic non-life insurance market. The investigation compounds a structured online survey of 15 close-ended questions and statements, conducted by following a simplified Fuzzy and Likert scale questionnaire logic, with the Baltic financial service experts as a target audience. The survey has aimed to examine the state-of-the-art level of insurance digitalization, customization, personalization, and standardization domains, and the inclusion of MC capabilities within digital non-life insurance platforms in the Baltic countries. Looking from the perspective of research strategy levels, this stage of the empirical research has been oriented to the Macro level of research implementation.

3. The third stage of the empirical investigation follows the empirical research objective to identify and analyze the most influential factors for the behavioral intention of Baltics insurance customers towards decisions in digital insurance platforms from an organizational perspective. This stage of research supports key findings and subjects of the first stage investigation and introduces a new subject of the digital insurance decision-making process. This stage encloses a structured online survey of 24 close-ended questions and statements, conducted by following a simplified Fuzzy and Likert scale questionnaire logic and visualizations under the art-based research logic, with the Baltic insurance

specialists as a target audience. The survey has aimed to identify the practical level of insurance digitalization, customization, and personalization domains in digital non-life insurance platforms, and pre-dominant features of the digital insurance purchase decision-making process in the Baltic countries from the internal users' side. Looking from the perspective of research strategy levels, this stage of the empirical research has been oriented to the Mezzo level of research implementation.

- 4. The fourth stage of the empirical investigation supports the same empirical research objective as in the third stage, just from an individual evaluation perspective. The objective is to identify and analyze the most influential factors for a behavioral intention and attitude of insurance customers towards decisions in digital insurance platforms in the Baltic region. Therefore, the research follows the structure and key findings of the digital insurance decision-making process features as well as extends them by introducing new theoretical constructs. This stage encloses a structured online survey of 32 close-ended questions, conducted by following the Likert scale questionnaire logic, with the Baltic insurance consumers as a target audience. The survey has aimed to identify the most influential factors and validate the conceptual framework of the digital insurance purchase decision-making process in the Baltic countries from the external users' side. Looking from the perspective of research strategy levels, this stage of the empirical research has been oriented to the Micro level of research implementation.
- 5. The fifth stage of the empirical investigation supports the empirical research objective to conceptualize and practical investigate the acceptance of combined online customization frameworks in digital insurance platforms. The research follows results of the conceptual modeling of combined online customization frameworks in the section 1.4 as well as key findings in the case study analysis on reflections on customization, personalization, and digitalization in the Baltic non-life insurance market in the section 3.1.1. This stage encloses a structured online survey of 4 close-ended questions, conducted by following the modified methodological logic of the Human-Computer Interaction (HCI) research, combining the process design of a randomized controlled experiment (A/B testing) and loyalty measurement (NPS indicator). The survey has aimed to identify the preferable design logic of online MTPL product configurator in the Baltic

countries and validate the visualization of the 3 selected combined online customization frameworks in digital insurance platforms. Looking from the perspective of research strategy levels, this stage of the empirical research has been oriented to the Micro level of research implementation.

It should be emphasized that a combination of embedded, explanatory, and interpretive types of case studies was conducted based on results of the above defined empirical researches. Case studies were supplemented with secondary data sources of the Global Insurance Markets Trends made by the Organisation for Economic Co-operation and Development (OECD) for 2017-2020, as well as primary data sources and tools Google Trends and Google Keyword Planner for the period from 1 January 2017 to 1 January 2020, and datasets of online surveys. This part of the empirical investigation has aimed to identify and analyze features and trends of the non-life insurance market and insurance consumers' behavioral patterns at the Macro level.

2.2. Data collection and analysis methods

Data collection instruments, selected and used in all 5 stages of the empirical investigation and analysis in parallel, follow both methodological pluralism approach and pluralism of methods, which are also hampered by the selected epistemological foundation in the research philosophy and sources of knowledge. From the perspective of research methods, the application of the method triangulation is accepted due to the content and context of the research subject, whose dynamics and complexity require a multidisciplinary analysis. The selection of the methodological pluralism and method triangulation follows general findings on pluralism benefits in scientific studies as minimizing biases and a confirmation of odd-based theoretical assumptions. Such assumptions are expected within the application of stand-alone qualitative methods, a limited possibility to recognize and evaluate dynamics of the research subject and context, a lack of flexible and responsive research development, dependencies on separate method limitations (Midgley, Nicholson and Brennan, 2017). Therefore, following combinations of quantitative and qualitative methods of data collection and analysis were selected.

2.2.1. Data collection and analysis methods in the case study of customization, personalization, and digital solutions in the Baltic non-life insurance market

The selection and application of multiple methods of data collection and analysis in the case study of customization, personalization, standardization domains, and digital insurance solutions in the Baltic non-life insurance market are related to practical research objectives and defended statements to present an as-is status and clarify their compatibility at practical product and functional levels. Therefore, the case-study method by following a combination of a descriptive embedded single-case design and the state-of-the-art method was applied. From the research process perspective, both selected data collection methods were used independently with an unbiased application. The state-of-the-art method contributes by providing a comprehensive practical as-is status of insurance digitalization outcomes and an application of online customization frameworks, which strongly influence behavioral patterns of Baltic insurance consumers.

First, a multilevel qualitative comparative analysis was conducted by analyzing global statistical data sources of the period 2017-2021, provided by the OECD, Insurance Information Institute (III), European Insurance and Occupational Pensions Authority (EIOPA), World Bank, and local statistical data sources provided by Lithuanian Bank, Lithuanian Insurers Association, Latvian Insurers Association, Estonian Insurance Association, and Statistics Estonia. Second, the practical status as-is of digital insurance trends and end-users' behavior was identified by analyzing the statistical data available at Google Keyword Planner and Google Trends tools and then completing a statistical mapping of selected search keywords. Google Keyword Planner and Google Trends were selected as a well-recognized keyword research and evaluation tool deployed in practice, used to analyze volumes, content, tendencies of web users data search, and accordingly to support the creation of targeted digital marketing campaigns and search engine optimization (SEO) activities (Google Ads, 2020; Google Ads Help, 2020). These tools are also accepted as suitable and sufficient to visualize annual dynamics and trends of digital consumers' behavior within selected research keywords. The main difference between these tools and their data sources is kept in the statistical data counting logic. Google Trends rely on the relative search volume data comparing to all search volume data in the Google search engine, while, in the case of Google Keyword Planner tool, it relies on the detailed estimation of a specific keyword search

volume data in an inserted date and location ranges (Google Support, 2020b). Additionally, the application of Google Keyword Planner and Google Trends tools and data sources is also related to the aim of investigating practical outcomes of the insurance digitalization situation in the Baltic non-life insurance market. The analysis revealed the presence of different digital insurance penetration levels and behavioral patterns in the Baltic countries, which influence the application of both multichannel and omnichannel distribution-oriented strategies in digital insurance platforms. Accordingly, these new digital insurance solutions have a primary focus on sales operations and product availability improvements, while personalized customer support, information access, and integration to customization processes are developed in a limited scope. This situation and trends affect the behavior and preferences of digital insurance consumers as well as reflect on predominant search keywords.

Finally, the case study was completed by conducting a modified market analysis, which allowed confirming the theoretical assumption about the spread of the practical e-MCP concept in the Baltic non-life insurance market. The multidimensional assessment matrix was created and applied to analyze the practical application of customization and personalization features from functional and product perspectives in digital Lithuanian, Latvian, Estonian insurance platforms.

		Features					
			Cus	tomization:	F	Personal	ization:
Country	Product	Standardization	Insurance options	Additional insurance risks and / or attributes	Self- service system	Chat	Multilanguage
	MTPL						
XXXXX	Travel						
	Property						

Table 10. Sample table of the multidimensional assessment matrixSource. Composed by the author and published in Baranauskas 2021, p 75.

The multidimensional assessment matrix, presented in Table 10, is comprised of the following layers and screening criteria:

- The practical layer, consisting of country, product, and functional evaluation levels. The objectivity of the evaluation process is ensured by comparing same three categories of insurance products and three functional features of digital insurance platforms in all 3 countries.
- The theoretical layer, referring to combined online customization frameworks

and their reflections in the selected evaluation criteria. The sub-feature of Insurance options is grounded by the content of the (AL-B) online customization framework and stands for a meaning of minimum 2 pre-defined insurance options to select for users in a digital platform. The sub-feature Additional insurance risks and / or attributes refers to the (AL-B)'s online customization framework and stands for a meaning of a possibility to fully customize insurance products or modify a provided insurance offer by selecting different insurance conditions or features as a payment schedule, a payment method, etc. The selection of the feature Standardization is grounded by the dominance of the standardization-oriented approach within insurance operations and product offering in the Baltic non-life insurance market. Moreover, it stands for a meaning of strictly defined insurance product content and limited options for customization by the user. In practice, it can be illustrated by the MTPL insurance product, which is legally compulsory in all three Baltic countries and has standardized content features. The feature Personalization refers to three well-known and recognizable practical features and functionalities of digital insurance platforms, such as a personalized account, a personalized assistance via chat functionality, and a personalized-localized information access by using a multilanguage functionality. All these features have a reference to a fundamental basis or logic of the (Q-B) online customization framework.

• 2 main screening and sampling criteria, applied for digital insurance platforms to be included in the multidimensional assessment. Firstly, the platform should belong to the insurance service provider, which has a fully established operation model and legal status in one of the Baltic countries. Secondly, the platform does not compound the feature of a multisided representation of different insurers and the status of being a price aggregator, white-label, or brokerage insurance solutions-based platform. It is expected that the selected digital insurance platform represents products and services of a specific insurance organization.

According to these criteria, the following insurance organizations and their digital platforms were selected for analysis:

Contraction	I	The web address of the
Country	Insurance organization	digital platform
	Kindlustusselts BTA Baltic Insurance Company	www.bta.ee
	ADB Compensa Vienna Insurance Group	www.compensa.ee
	ERGO Insurance SE	www.ergo.ee
	ADB Gjensidige Eesti filial	www.gjensidige.ee
Estonia	If P&C Insurance AS	www.if.ee
Estonia	PZU Kindlustus on Leedu kahjukindlustusseltsi AB Lietuvos draudimas	www.pzu.ee
	Eesti filial	www.salva.ee
	Salva Kindlustus AS	www.seesam.ee
	Seesam Insurance AS	www.swedbank.ee
	Swedbank P&C Insurance AS	
	AAS BALTA	www.balta.lv
	Baltijas Apdrošināšanas Nams AAS	www.ban.lv
	Apdrošināšanas akciju sabiedrība BTA Baltic Insurance Company	www.bta.lv
	ADB Compensa Vienna Insurance Group	www.compensa.lv
Latvia	ERGO Insurance SE Latvijas filiale	www.ergo.lv
	ADB Gjensidige Latvijas filiāle	www.gjensidige.lv
	If P&C Insurance AS Latvijas filiāle	www.if.lv
	Seesam Insurance AS Latvijas filiāle	www.seesam.lv
	Swedbank P&C Insurance AS	www.swedbank.lv
	Balcia Insurance SE Lietuvos Filialas	www.balcia.lt
	AAS BTA Baltic Insurance Company filialas Lietuvoje	www.bta.lt
Lithuania	ADB Compensa Vienna Insurance Group	www.compensa.lt
	ERGO Insurance SE Lietuvos filialas	www.ergo.lt
	AAS "Gjensidige Baltic" Lietuvos filialas	www.gjensidige.lt
	If P&C Insurance AS filialas	www.if.lt
	AB Lietuvos draudimas	www.ld.lt
	Seesam Insurance AS Lietuvos filialas	www.seesam.lt
	Swedbank P&C Insurance AS	www.swedbank.lt

Table 11. Baltic non-life insurance organizations and digital platforms included in the multidimensional assessment

Source. Composed by the author and published in Baranauskas, 2021, p. 76.

2.2.2. Data collection and analysis methods in the Baltic financial expert-based investigation and evaluation

The selection and application of data collection and analysis methods in the case of the Baltic expert-based investigation have references to the practical research objective to empirically investigate the status, content, and tendencies of the digitalization phenomenon and the application of the MCP concept within digital platforms of the Baltic non-life insurance market. Findings of the analysis also support the validation of defended statements about the extension of MC capabilities in the insurance-specific value chain and identification of digitalization, customization, and personalization embedment levels both into the Baltic non-life insurance market and digital platforms. Overall, the analysis and its results also have a scientific value by extending studies of previous decades on digital insurance transformations in European and Baltic insurance markets as well as contributing to the modern insurance research field by adding a research perspective, which combine domains of customization and digital business platforms.

Methodologically, this part of the empirical analysis was conducted by following a triangulation logic of combining a qualitative online survey, a non-parametric statistical analysis of results, and an embedded, exploratory case analysis with a single case design. Current digital non-life insurance online platforms and 11 insurance experts from all three Baltic countries were selected as a research subject. The selection of a single case study design with multiple participants is grounded by several methodological reasons. Firstly, it allows employing a systematic manipulation procedure for hypothesis testing. Later, measurements of dependent variables are recorded under a rigorous experimental evaluation across time and varying levels of an independent variable (Lobo, Moeyaert, Baraldi, Cunha and Babik, 2017). Secondly, the application of this type of design and techniques of the analysis results in a strong basis of findings, which can be easily presented numerically and graphically, and used for a continuous replication and improve generalizability degree (Lobo et al., 2017). The structured online survey with a simplified Fuzzy and Likert scale-based questionnaire was carried out due to overall advantages of the rating scales method comparing to using an unstructured questionnaire logic and a nominal scale, typically resulting in a higher time consumption and semantical bias both in the survey process and interpretation of results. It is also confirmed a more valuable analysis tool and data source of qualitative information, complementing with deeper insights to the information extracted by using only traditional quantitative techniques and data sources (Quirós, P., Alonso, J. M. and Pancho, 2016). Overall, the application of a simplified and combined logic of Fuzzy Logic Techniques (FTL) to the Likert scale questionnaire provides followings benefits:

- A varying height of related fuzzy sets reduces a possibility of imprecision, uncertainty, and subjective question interpretation for respondents (Gómez, F.G., Gómez, M.D.P.M. and Gans, 2012; Quirós et al., 2016).
- Received answers can be easily adapted to the statistical analysis by using computing techniques of MaxQData or RStudio programs, as well as support more comprehensive descriptive and comparative analyses (Quirós et al., 2016).
- Allows measurement of latent variables and an estimation on varying data interval ranges, therefore, reduces an influence of the conventional Likert scale inflexibility (Rattanalertnusorn, Thongteeraparp and Bodhisuwan, 2013; Von-

glao, 2017).

The detailed presentation of the questionnaire structure, content, and distribution process is provided in Table 12 and the example of the questionaire in Annex 4.

Structure	Methodological foundation	Distribution
 15 close-ended type of questions and statements, applied in following proportions: 3 socio-demographic questions. 3 questions oriented to the digitalization domain. 3 questions oriented to MC capabilities. 6 questions oriented to digital insurance platforms. 	 A combination of the full-blown Likert 10 point scale and Fuzzy methods: A full-blown Likert scale applied in 9 questions. A simplified Fuzzy logic used in 3 statements. 	Created via Typeform survey tool and distributed directly approaching experts via personal / working emails and LinkedIn messaging tools.

Table 12. Main information about the questionnaire in the Baltic expert-based investigationSource. Composed by the author and published in Baranauskas and Raišienė, 2021a, p.190.

As per Table 12, the questionnaire had 15 close-ended questions and comparative statements, such as 3 questions of a screening type, dedicated to collecting socio-demographic information including working experience, a working field and a residence country of the respondent; 12 questions, dedicated to collecting evaluations of respondents on 3 sub-topics, such as digitalization domain outcomes in the Baltic non-life insurance market, reflections of strategic MC capabilities in digital insurance platforms and key features of digital insurance platforms. The questionnaire was compiled in the English language by using the Typeform survey tool and then distributed by contacting selected experts via personal, working emails, as the Linkedin platform. The survey lasted from 12 July to 17 August 2020. The 10 point judgment scale with the values presented in Table 13 was used in the questionnaire to identify experts' positions towards research subjects.

The quantitative rate in scale	The qualitative equivalent of the rate	Additional information
1	Very low	Evaluation object is favored the lowest by experts
2	Low	
3	Weak	
4	Rather weak	
5	Neutral	Evaluation object has a neutral evaluation by experts
6	Satisfied	
7	Rather good	
8	Good	
9	Very good	
10	Excellent	Evaluation object is favored the highest by experts

Table 13. The values of the judgment scale

Source. Composed by the author and published in Baranauskas and Raišienė, 2021a, p. 191.

The selection of the 10 point rating scale with qualitative equivalents of rates, presented in Table 13, referred to the traditional Saaty's (2008) 9 point scale and fundamental scales of the analytic hierarchy process (AHP), which are used for pairwise comparisons with unequally dispersed weights (Goepel, 2019). Methodologically, the 10-point range scale follows the Saaty and Ozdemir's recommendation (2003) to select the scale by keeping the maximum criteria of magic numbers +7 or -2 (Goepel, 2019).

2.2.3. Data collection and analysis methods in the Baltic insurance specialists and insurance consumers based investigation and evaluation (2021)

The selection and application of data collection and analysis methods in investigations on Baltic insurance specialists and consumers relate to a division of the research into two stages. Data on positions of 157 Baltic insurance specialists regarding the research subject was collected and analyzed. As a continuity, an examination was conducted on 390 Baltic insurance consumers, where data analyses were carried out afterwards. In both investigation parts, selected research methods reference research objectives and defended statements. The application of the structured online survey method allowed identifying the most influential factors for a behavioral intention and attitude of insurance customers towards decisions in digital insurance platforms in the Baltic region both from internal, as organizational, and external, as from the point of insurance consumers, user's perspectives. A factorial, a correlation, and a path analysis of survey results allowed validating the suggested integrated framework of the insurance customers' decision-making process and preparing recommendations and usage scenarios for a practical application and further scientific investigations within the modern insurance domain. Results of the data analysis support the fourth defended statement, claiming that the digital insurance purchase decision-making process is influenced by a unique set of combined factors and their groups, but not unified at a socio-demographic level. Results of the presented multi-step data collection and analysis have a scientific contribution to the Baltic non-life insurance research field as well by providing an empirically validated framework and factor groups on the digital insurance consumer decision-making process.

From the research design perspective, procedures of the data collection and analysis were conducted by using a convergent parallel research design and the research methods presented in Table 14. The selection of the convergent parallel research design and a triangulation of scientific methods has been grounded by the availability of a simultaneous collection, analysis, and interpretation of quantitative data and qualitative evaluations in a single research study. It is also supported by the fact that, in such research design and selection of methods, a complementary data can be used while the final findings can be transformed to a more holistic understanding of the research phenomenon (Edmonds and Kennedy, 2017; Razali, Aziz, Rasli, Zulkefly and Salim, 2019).

Part of the investigation	Research methods		
Theoretical foundation	 Descriptive thematic analysis and information synthesis. Conceptual modeling by following a simplified logic of Robinson's (2008a, 2008b, 2015) conceptual modeling framework and logical data flow diagram (DFDs). 		
Empirical validation	 The structured online survey with the close-ended type of questions and statements and a full-blown Likert scale. Art-based visual analysis Descriptive statistics, factors, and correlation analyses. SEM path analysis 		

Table 14. Research methods in the Baltic insurance specialists and insurance consumers based investigation and evaluation of results

Source. Composed by the author.

As per Table 14, a combination of qualitative and quantitative data collection and analysis methods were applied for the theoretical foundation and empirical validations. Regarding the theoretical foundation setup, the descriptive thematic analysis and synthesis methods were selected to summarize key findings of earlier scientific investigations on the insurance digitalization phenomenon, consumers' decisions and TAMs. Afterwards, modeling a conceptual process flow and framework of the digital insurance purchase-decision making was completed by applying a simplified logic of the Robinson's (2008a, 2008b, 2015) conceptual modeling framework in combination with a logical data flow diagram. The modeling process is summarized in Figure 13.



Figure 13. A simplified logic of Robinson's (2008a, 2008b, 2015) conceptual modeling framework Source. Composed by the author by using draw.io

Figure 13 illustrates a high-level 4 stage simulation process framework. The construct Problem Situation stands for the identified requirement of defining and conceptualizing the integrated digital insurance decision-making process framework and reflecting the research gap in the analysis of the consumers' decision-making process in digital insurance platforms. The Simulation construct is used as the beginning of the theoretical simulation and modeling process, and compounds a setup of general objectives for the simulation process, a selection of format, an application scale, and problem structuring. The Simulation construct also serves as a connecting link between inputs and outputs of the conceptual modeling process and ensures a continuous improvement of the framework during empirical investigations. The introduction and definition of expected modeling outcomes and requirements for input data result within the Simulation construct as well. In this case, inputs for the conceptual modeling process and expected outputs are constructs of a qualitative type. Accordingly, the input of the process is experimental factors of independent, latent, dependent variables, and 4 evaluation dimensions. The output of the process compounds a critically theoretical analysis on a combination and application of these variables within the modern insurance research domain and the conceptualization of an innovative integrated digital insurance decision-making process framework.

Regarding the empirical validation of the conceptual framework, two structured

online surveys were conducted with the research subject of positions of 157 insurance specialists and 390 insurance consumers across all three Baltic countries on the digital insurance purchase decision-making and digital insurance platforms. To explain questions of the survey on Baltic insurance specialists to ensure a better perception of their content, an art-based research logic was selected to present visualizations on an application of online customization frameworks in the digital insurance platform. Visualizations were created by using the design and prototyping software Axure RP Pro (version 8). A structured questionnaire with the close-ended type of questions and statements and a combined full-blown 9-point Likert scale was used as well-balanced and approved gradual assessment methods for data collection and a further statistical analysis (Quirós et al., 2016). Details on questionnaires used in both surveys are provided in Table 15.

Element	Survey of Baltic insurance specialists	Surveys of Baltic insurance consumers
Structure	 24 close-ended questions and statements: 3 socio-demographic-type questions about the geographic location, age group, and gender. 4 practical status as-is questions about insurance digitalization, preparation levels of an insurance service provider for digitalization, customization, and personalization in digital insurance platforms. 4 questions oriented to the conceptual framework of the consumer decision-making process in digital insurance platforms. 3 comparative statements about the visualized prototypes of 3 online customization frameworks. English version of questionnaire is available in Annex 5. 	 First survey of Baltic insurance consumers (2021): 32 close-ended questions and statements: 3 screening questions about respondents' attitude and experience with non-life insurance products and digital insurance platforms. 29 questions oriented to the conceptual framework of the consumer decision-making process in digital insurance platforms. English version of questionnaire is available in Annex 6. Second survey of Baltic insurance consumers (2022): 4 close-ended questions and statements: 2 screening questions about respondents' experience with non-life insurance products and digital insurance platforms. 2 questions oriented to the online customization frameworks conceptualization in digital insurance platforms.

Element	Survey of Baltic insurance specialists	Surveys of Baltic insurance consumers	
Distribution	 Created via the Typeform survey tool. Distributed by directly approaching insurance service providers via publicly available emails and by using the professional network in the insurance industry. A supplementary distribution channel and form involved messaging and posting on the Facebook platform. The introductory section and the questionnaire were translated to English and local languages of the Baltic countries, Lithuanian, Latvian, and Estonian. Translations were conducted in collaboration with native speakers of each local language and a qualified English linguist. The survey was held from 16 February 2021 to 22 May 2021. 	 Created and distributed via the Pollfish survey tool (https://www.pollfish.com). The questionnaire was translated into English. The translation was handled in collaboration with a qualified English linguist. The first survey was held from 16 February 2021 to 22 May 2021. The second survey was held from 16 April 2022 to 30 April 2022 	
Methodological foundation	A combined full-blown Likert scale and a Fuzzy set of 9 points with numerical and linguistic values in the survey of Baltic insurance specialists and in the first survey Baltic insurance consumers (2021). Reichheld (2003) a likelihood-to-recommend 0-10 scale in the second survey of Baltic insurance consumers (2022).		



The selection of the combined judgment scale of nine points range (from 1 to 9) and linguistic equivalents has methodological references to the multi-criteria decision making (MCDM) approach and the logic of the analytic hierarchy process (AHP). The validation of the research subject of the conceptual consumer decision-making process framework and factors requires an application of the MCDM approach with an interval or ratio type scale for measurement. The evaluation of multiple factors' influence level is not aligned to the application of a classical set theory, binary terms, or bivalent conditions logic. The examination of multiple factors requires an objective comparison and evaluation as a gradual membership expression, and a combined linguistic and visual analog scale for an easier interpretation and perceptions of given questions (Peculis, Rogers and Cambell, 2007). This type of judgment scale together with specific wording techniques and reversed forms belongs to the improved scales category, recommended to apply in order to reduce risks of uncertainty, subjective interpretation, and bias within responses of the MCDM approach-based surveys (Suárez-Álvarez, Pedrosa, Lozano, García-Cueto, Cuesta and Muñiz, 2018). It is also argued that an improved scale as a combination of full-blown Likert and fundamental AHP 1 to 9 is relevant to apply under the cross of the threshold at n = 10 criteria, which is relevant in both surveys (Goepel, 2019). The selection of the Reichheld's (2003) likelihood-to-recommend 0–10 scale in the second survey of Baltic insurance consumers (2022) refers to the traditional NPS metric measurement, where respondents are requested to provide a recommendation rank on a presented product, service or organization in the following logic: the rank 0 stands for the meaning of unlikely to recommend, rank 5 – neutral position, and rank 10 – very likely to recommend (Korneta, 2018).

The empirical validation part was concluded by conducting a descriptive statistical, Exploratory Factor Analysis (EFA), a Confirmatory Factors Analysis (CFA), and a Pearson correlation analysis with a help of the SPSS statistical software (version 26). Findings of factors and results of the correlation analysis were summarized by building an updated framework of the digital insurance purchase decision-making process, which is the outcome of the SEM path analysis in the SPPS statistical software (version 26). This combination of statistical techniques and the analysis flow logic is recommended within the applied research type due to a possibility of simplifying an interpretation of quantitative variables and ensuring a comprehensive examination of the empirical dataset (Koyuncu and Kılıç, 2019). It is also agreed that this type of multi-level qualitative and quantitative analysis allows examining the validity of theoretical constructs and the consistency of research instruments, sampling adequacy, underlining structures and relationships among latent variables (Dhillon et al., 2014; Koyuncu and Kılıç, 2019). Overall, the logical sequence and content of statistical analysis procedures is illustrated in Figure 14.



Figute 14. The logical sequence and content of the statistical analysis in the Baltic insurance specialists and insurance consumers based investigation (2021)

Source. Composed by the author and published in Baranauskas and Raišienė, 2021b, p. 9.

2.2.4. Data collection and analysis methods in the Baltic insurance consumersbased investigation and evaluation (2022)

The conceptualization and practical investigation of combined online customization frameworks follow the foundation of a 2-week duration A/B testing as an online randomized controlled experiment featuring a modified logic of NPS measurement and an estimation of statistical significance afterwards by using IBM SPSS Statistics 26. The A/B testing is a practically approved research methodology, which was established to evaluate and make practical data-driven optimization decisions toward different types of web-based products, including search engines, software, social networks, and platforms (Auer, Ros., Kaltenbrunner, Runeson and Felderer, 2021; Deng, Yicheng, Lu and Ramamurthy, 2021). It is agreed that the usage of this type of an interdisciplinary and User-Centered Design (UCD) oriented research approach in user researches of Human-Computer Interaction (HCI) allows compounding art-based methods, computer science, psychology, and social sciences domains. According to Nave, Romão, and Correia (2019), this approach is highly valuable both on the theoretical investigation level, where respondents are more engaged and open, and on the practical level, where it results in a better understanding of actual users and more relevant recommendations for design improvements. Moreover, the A/B testing is recognized as integral to the continuous experimentation logic, which is crucial for a continuous delivery, deployment, and agile development practices (Auer et al., 2021). It should be outlined that the well-known bias of the post-selection estimation validity in the following research was reduced by applying a logic of pseudo replication pair investigation. In detail, the overall received 317 experiment data points were each split into 2 equal size samples of respondents, where the sample A is treated as the experimental run, while the sample B is treated as a replication (Deng et al., 2021). Results of 26 respondents were eliminated due to a limited objectivity and simulation in the survey by selecting maximum evaluations in all questions. Limitations of the setup of reasonable Overall Evaluation Criteria (OEC) in the short A/B testing duration were reduced by implying a methodological combination with the NPS measurement logic, where two likelihood-to-use and recommend questions on the 0-10 scale were used (Kohavi and Longbotham, 2017; Auer et al., 2021). Afterwards, received results were evaluated by the following methodological logic of nonparametric dependence tests of Kruskal-Wallis H and Dunn test by using IBM SPSS Statistics 26. This type of tests was utilized to determine whether there are any statistically significant differences among 3 independent variables of combined

online customization frameworks, visualized in prototypes X, Y and Z, and dependent variables of sociodemographic characteristics of respondents, their previous experience on holding insurance and using platform, and their likelihood-to-use and recommend presented frameworks in the future.

In general, the following online survey has aimed to identify and validate the preferable design logic of the online customization framework in the case of online MTPL product configurators by comparing prototype X ((AT-B)+(AL-B)) (see proto-type X in Annex 8), which is close to the current market practice of digital insurance platforms, with new designed combined platform frameworks ((AL-B)+(Q-B)) (see prototype Y in Annex 9), and ((Q-B)+(AT-B)) (see prototype Z in Annex 10). From the content perspective, presented prototypes refer both to results of the practical spread of combined online customization frameworks in Baltic digital insurance platforms, presented in section 3.1. and most influential decision making-factors of insurance purchase for Baltic consumers, identified in section 3.5.2. In detail, features, which were included in the modeling of prototypes, are defined in Table 16, while visual outcomes of these features are presented in Annex 8, Annex 9, and Annex 10.

		Features
Type	Feature	Meaning of the feature
	Pricing: 1.1. Final price 1.2. Discount information	Presentation of the final price of the selected insurance option and \prime or condition, discount, and loyalty-related information.
	2. Recommendations:	Presentation of automated cross-selling recommendations and friend-based
	2.1. Automated	ranking recommendations on buying and / or using insurance options and / or conditions
Content		Presentation of Corporate Social Responsibility as insurer compliance with
oriented	3. Branding	legal and ethical standards, environmental sustainability, economic
		responsibility.
	A Tannana madalaan	Presentation of useful statistical information and Frequently Asked
	4. IIISUI AIICE USEIUIIESS	Questions (FAQ) of insurer and insurance.
	 Tasurance information: 	Presentation of general insurance information of insurance coverage scope,
	5.1. Terms & Conditions	start data, insurance object, and availability of detailed insurance terms $\&$
	6. Personalization:	Presentation of personalized assistance and information functionalities of
	 Delf-service solutions Personalized assistance 	robo-advisory and / or live chat and self-service account.
User-	7 Customization.	Presentation of online insurance product customization solutions including
oriented	7.1 Online customization	the availability of pre-defined insurance options, and partial or full scope
		customization insurance products.
	8. Integrations: 8.1. Payment	Presentation of technical availabilities of different types of payment
	service integration	service options and logic (e. g. payment installments).
	0 Consists and activate	Presentation of insurers and platforms compliance with technological and
Eventionality	2. Security and privacy	legal standards and requirements for personal data security and privacy.
r uncuonancy oriented	Design quality:	Presentation of UI features, which refer to requirements of W3C standard
noncentro	10.1. W3C	and recommendations for web platforms, including a focus on a possible
	10.2. Automated navigation	need of users with disabilities.

Table 16. Content features of Prototypes X, Y, and Z

Source. Composed by the author by following theoretical and empirical research results.

2.3. Sample selection and validation in the stages of empirical investigation

The multi-stage and cross-country empirical investigation requires not only a strong methodological foundation of research strategy, design, or methods, but also objective and valid sampling procedure and outcomes. The complexity of the research area on digital insurance consumers, and noticeable social-demographic, behavioral and attitudinal differences among the target population create a bias in the selection of research samples, which can naturally evolve in a biased and compromised validity of substantive findings of empirical investigations (Cuddeback, Wilson, Orme and Orme-Combs, 2004). Moreover, a scientific novelty of the research area on digital insurance platforms both influence a lack of methodological sampling examples and the need for an innovative approach. Therefore, in the case of the first stage of empirical investigation, the author introduces and follows 2 sampling criteria, which are defined in detail in section 2.2.1. In the case of the rest empirical investigation stages, which are based on traditional respondents' research methods, the step-by-step sampling process was applied and is described in detail in Table 17.

Process step	Definition of step	Reflection in the stages of empirical
		investigation
Definition of the target population	The target population of the research is the total number of people, living in the selected geographical location.	The general target population of all empirical investigation stages based on respondents is a population of 3 Baltic countries, Lithuania, Latvia, and Estonia. In 2020, the total population was 5.9 mln. (Statista, 2020).
Selection of sampling frame	The sampling frame is a representative number of accessible parts of the target population, from which a sample is compiled.	 The sampling frame in different empirical investigation stages is selected as follows: In the second stage - Baltic experts of financial services. In the third stage - Baltic insurance specialists. In the fourth and fifth stages - Baltic non-life insurance consumers.
Selection of sampling technique	The sampling technique is a broad logic and a specific type of method, used in the determination of the research sample: non- probability and probability random sampling.	 The sampling technique in different empirical investigation stages is selected as follows: In the second stage – a non-probability sampling logic and a judgmental-purposive sampling method. In the third stage – a probability sampling and a simple random sampling method. In the fourth and fifth stages – a probability sampling and a stratified random sampling method.

Process step	Definition of step	Reflection in the stages of empirical
		investigation
Determination of sample size	 Determination of the sample size is a procedure of estimating an adequate size of the sample in order to conduct a research, relative to the target population and allowing avoiding sampling errors or finding biases. 3 main indicators are used in the estimation process: 1) A level of precision or a margin of an error, where the value of 5 % is acceptable in the social research. 2) A level of confidence, where values of 95 % or 99 % are acceptable in the social research. 3) A variance or heterogeneity of the population, where the value of 50 % is acceptable in the social research. 	 The sample size in different empirical investigation stages is estimated as follows: In the second stage - 11 Baltic financial experts. In the third stage - 157 Baltic insurance specialists. In the fourth stage - 390 Baltic insurance consumers. In the fifth stage - 317 Baltic insurance consumers.

Table 17. Reflection of sampling process steps in empirical investigations

Source. Composed by the author by following: Taherdoost, 2016; Etikan and Bala, 2017.

As per Table 17, the initial step in the sampling process was the identification of the general target population as a whole population of 3 Baltic countries in 2020. In the case of Lithuania, the population was 2.72 mln., in the case of Latvia – 1.89 mln., and in the case of Estonia – 1.32 mln. (Statista, 2020). The definition of the sampling frame resulted in a set of respondents units from which a final sample has been drawn. 3 sampling units were identified, such as Baltic experts of financial services, Baltic insurance specialists, and non-life insurance consumers.

Afterwards, according to empirical investigation stages, different sampling procedures and techniques were applied to finalize the research sample. In the stage of investigation on Baltic experts, the non-probability sampling logic and the judgmental-purposive sampling method were applied. The selection of this sampling logic and method was grounded by the purpose of the research to analyze the specific knowledge and judgment of the target audience. Methodologically, it is also confirmed that this type of a sampling logic and method is acceptable under a small scope survey and a specific profile of respondents by following pre-defined socio-demographic and qualitative requirements as a working experience and a knowledge level (Etikan and Bala, 2017).

In the stage of the investigation on Baltic insurance specialists, the research sample was formulated under the logic of a probability sampling and using a simple sample method. The selection of this combination is grounded by the specific research target population and a setup of respondents' selection criteria and methodological reasons of reducing the sample bias and gathering higher, unbiased data quality. A similar methodological combination of the sampling logic and method was used in the third stage of the investigations of the Baltic insurance consumers. The probability sampling logic was applied due to the same methodological reason for a higher quality of the dataset.

A stratified random sampling method was applied within the Baltic insurance consumers' research (2021) in a simplified form of a proportional allocation into 3 stratum: the Lithuanian stratum with the expected number of 185 respondents, the Latvian stratum with the expected number of 130 respondents, and the Estonian stratum with the expected number of 90 respondents. This method was applied due to the demographical heterogeneity of the target population as well as a confirmed availability of more precise estimations and generalizations of results (Etikan and Bala, 2017).

A determination of the sample size was the last step of the sampling process, conducted by following both methodological recommendations and unique selection criteria. From the methodological perspective, all 4 stages of the respondents' based empirical investigations accepted the level of 5 % of the margin of error, 95 % level of confidence, and 50 % level of the variance of the target population. The sample size for Baltic financial experts' investigation also followed methodological recommendations to have a higher number of experts at least by 1 than the total number of evaluation indicators. The implementation of this requirement allows increasing the accuracy level of findings and reducing the possibility of anomalies or subjectivity in responses. It is also agreed that, in the case of an equal-weighted composite judge, the actual validity and a higher than 90 % level of accuracy are obtained by aggregating evaluations from 3 to 7 judges. An increase of experts' number has a low influence to an increase of the accuracy indicator; and the value of 100 % is reached with a participation of at least 17 experts (Libby and Blashfield, 1978; Baležentis and Žalimaitė, 2011). Additionally, the sample size of experts was affected by the following selection criteria:

- Working experience. An expert should have at least 5 years of working experience in the non-life insurance field.
- Professional occupancy. An expert should work in the financial service industry, preferably in insurance or at least in banking, with the main workplace physically located in the Baltic region.
- Working field. The working field of an expert should be related to primary activities of the insurance value chain. Therefore, experts from Sales, Marketing,

IT, including IT project management, process development, and product underwriting, were selected, and in this way the presentation of research subject from operational, product, process, and technological perspectives is ensured. An inclusion of the working field criterion also relies on findings from the theoretical analysis, indicating digitalization and MC domains most widespread and identified in primary activities of the insurance-specific value chain. Details on profiles of experts are listed in Table 18.

Code	Country	Working experience	Working field
IE 1	Estonia	11-16 years	Marketing
IE 2	Estonia	5-10 years	IT (including IT project management)
IE 3	Estonia	11-16 years	Product underwriting and process development
IE 4	Latvia	11-16 years	Sales
IE 5	Latvia	11-16 years	Sales
IE 6	Latvia	5-10 years	Sales
IE 7	Latvia	11-16 years	Sales & Marketing
IE 8	Lithuania	5-10 years	Sales & Marketing, IT (including IT project management)
IE 9	Lithuania	16+ years	Sales
IE 10	Lithuania	11-16 years	IT (including IT project management)
IE 11	Lithuania	11-16 years	Product underwriting and process development

Table 18. Information about respondents from the expert-based investigationSource. Composed by the author and published in Baranauskas and Raišienė, 2021a, p. 192.

In total 11 Baltic experts with the following geographical representation accepted to participate in the online survey: 4 experts from each Lithuania and Latvia, 3 experts from Estonia. Important reliability indicators are a long working experience and a variety of working fields. The majority of surveyed experts (7) indicated to have from 11 to 16 years of a working experience in financial service industries. 6 experts declared to work in the field of sales including Sales, Sales & Marketing, and Marketing, 2 experts declared to work in the field of IT including IT project management, 2 experts declared to work in the fields of Product underwriting and Process development.

The modified criteria of the working experience and the professional occupancy were applied for the determination of the target sample in the second stage of the empirical investigation. The criterion of the working experience was limited to the requirement to be in the non-life insurance field while the criterion of the professional occupancy was limited to the requirement to be an insurance service provider, physically located and operating in the Baltic region. The sample size of the investigation on Baltic insurance specialists also followed a critical selection criteria offered by Guadagnoli and Velicer (1988), which stands for 150 respondents as an adequate sample size if factor loads of several items in the factorial analysis exceed the value of 0.80 (Koyuncu and Kılıç, 2019; Guadagnoli and Velicer, 1988).

In the case of the first investigation on Baltic insurance consumers (2021), the sample size was determined by the above-defined requirement of the proportional allocation by country and following methodological recommendations. Firstly, the target population size is over 5 mln., therefore, the recommended sample size, under requirements of 95 % of the confidence level, 5 % of the margin error level, and 50 % of the variance of the population, is 384 respondents (Taherdoost, 2016). Secondly, the Nunnally's (1978) Rule of Thumbs, widely used in researches based on a factor analysis, where the number of variables (factors) in the questionnaire is multiplied with 10 participants per factor, is applied in this particular research and results in a minimum sample size of 290 respondents (Osborne, 2014). In the case of the second investigation on Baltic insurance consumers (2022), the sample size was determined by following general requirements of 95 % of the confidence level and 5 % of the margin error level, and specific Deng et al. (2021) methodological recommendations for a certain number of observations in the A/B testing implementation. Accordingly, from 50 to 100 historical experiment data points are required for a proper parameter estimation in the A/B testing research (Deng et al., 2021).

2.4. The foundation of empirical research framework of consumers' behavior in a digital insurance platform

Results of the theoretical MCP and modern insurance domain analysis resulted in identification of a research gap in this field. A combined analysis towards an end-user behavior within insurance purchase-decision-making in digital platforms and an attitude towards the insurance customization and platform design are missing. Therefore, in the following empirical research part of the thesis a conceptual integrated process framework and combined online customization frameworks for digital insurance platforms will be presented and validated. The conceptual research framework, presented in Figure 17 and Annex 11, was constructed as a result of the multidimensional theoretical synthesis of selected CDM, TAM, service quality models, and scientific researches on insurance consumers' decision-making and technology acceptance, presented in Figure 15, Figure 16 and summarized in Annex 12, which was completed in the theoretical part of the thesis.

First, the proposed integrated framework follows the conceptual process log-

ic and determinants of HCDM (2002), which take a standard discrete choice, latent and observed variables into consideration and allows evaluation of psychometric-perception, behavioral, and environmental (situational and contextual) factors within the same decision-making. In detail, a theoretical extension of the traditional model of three stages, of pre-purchase, purchase, and post-purchase, and static evaluation constructs to the field of modern insurance end-users' behavior and purchase decision-making in digital platforms is suggested in the thesis. The conceptual process logic and determinants, defining the digital insurance-decision-making process as a continuous, but not a simultaneous sequence of three stage processes and multiple interrelated factor groups, which combine variables of consumer experience, decision-making, and technology acceptance, is introduced. Theoretically, the presented extension on traditional evaluation constructs refers to the holistic marketing concept and a process evaluation approach based on customer-centricity, and contributes by outlining that value-creation, experience, and behavior of insurance end-users are context-dependent, systematic, and interactive within all stages of the purchase process. The process level modeling is presented in Figure 15.



Figure 15. Process level modeling of conceptual integrated insurance decision-making process framework

Source. Composed by the author by using draw.io.

Furthermore, the suggested process workflow of the cause-and-effect relationship logic, three stages, and numerous interconnected dependent and interdependent variables is expected to extend the current scientific and practical approach to the insurance-specific value chain. Here a value co-creation in a digital platform is defined as depending on the rational monetary evaluation dimension and characteristics of the core offering-purchase stage. Practically, the conceptual process logic and determinants refer to complex and non-linear non-life insurance market specifics, which require a decentralized, digitalized, and individual-centric approach to organizational management, product configuration, and consumer experience management. It reflects on the emerging prominence of digital self-service insurance platforms, which combined recent technological advancements and behavioral patterns of fully digital insurance consumers, who seek not a static framework and linear progression throughout different process stages but iterative, personalized, and customized decision-making options.

Second, the proposed integrated framework consists of 13 constructs in the cause-and-effect relationship logic, from which 6 are dependent variables and 7 are independent variables. Six dependent variables are Perceived Ease of Use of Platform, Perceived Usefulness of Insurance, Attitude Towards Behavior, Behavioral Intention, Actual Insurance Purchase / Usage in Platform, Individual Benefits and Impact, and Organization Benefits, and Impact. Seven independent variables are external and internal variables of Perceived Value, Performance Expectancy, Effort Expectancy, Personal Conditions, Facilitating Conditions, Social Conditions, and control variables of gender, age, country, a technological framework of the platform. The content level modeling is presented in Figure 16.



Figure 16. Content level modeling of conceptual integrated insurance decision-making process framework

Source. Composed by the author by using draw.io.

In general, both types dependent and independent variables are developed in accordance to:

- E-service quality and success dimensions, presented in the E-S-QUAL model (2005) and the traditional and updated IS success model of DeLone and McLean (1992, 2003).
- The purchase process logic and determinants of HCDM of Walker and Ben-Akiva (2002), and IS theories and TAMs, including variables from UTAUT2 (2012) and TTF (1995) models.
- Key findings from researches of Taylor et al. (2002), Ulbinaitė and Moullec (2010), Ulbinaitė et al. (2011), Santouridis, Trivellas and Tsimonis (2012), Ulbinaitė and Kučinskienė (2013), Ulbinaitė, Kučinskienė, Moullec (2013), Kiyak

and Pranckevičiūtė (2014), Aziz et al. (2017), Zolnowski and Warg (2017), Rocha and Botelho (2018), Gbongli et al. (2019), Lin, Wu, Lim, Han and Chen (2019), Łyskawa et al. (2019), Naffa (2019), Weingarth et al. (2019), Allodi et al. (2020), Liu, Chow and Zhao (2020).

This type of theoretical synthesis also reflects on findings in researches of the previous decade on behavioral patterns of insurance consumers. The findings indicate that modern insurance decision-making is still influenced by a misperception of the risk probability and insurance concept, and is driven by the use of simplified heuristic decision rules, bias, and variables of the social domain. The inclusion of digital insurance platforms as a stand-alone research subject is oriented to the existing research gap of the insurance domain and research limitations, in the case of the developing insurance market. In other words, a combined analysis of digital multi-sided insurance platforms and behavioral modeling on insurance consumers in a digital environment is scattered and vague as well as scientific investigations of the Baltic insurance market are rare. From the practical perspective, the suggested research framework benefits by highlighting main factors of risks and trust-enhancing towards a successful completion of insurance purchase in digital platforms as well as by identification of potentially important determinants of consumers' trust, satisfaction, and quality expectations on the acceptance of digital insurance platforms. The empirical study, which follows the suggested research framework, creates a standpoint for a further application of combined determinants from UTAUT2 (2012), TTF (1995), the traditional and updated IS success model of DeLone and McLean (1992, 2003), and E-S-QUAL (2005) models within the analysis of the digital insurance purchase and overall Baltic insurance market.

The final empirical analysis was conducted using a structured questionnaire of 32 questions, with the Likert scale of 9 points for a proper item measurement, by operating the online survey platform Pollfish. The questionnaire replicates variables of the integrated framework and refers to results of the previous elicitation study in this particular insurance field of the thesis' author, completed in February-May 2021 with a sample of 157 professionals from the insurance-related working fields in the Baltics. The questionnaire comprises the following distinct sections and constructs:

- The section of socio-demographics. Composed of three questions to capture information of age, gender, and geographical location of respondents.
- The section of e-service quality, process, and technology acceptance. Composed of seven questions referring to a platform and process level and external vari-
ables of the purchase task and technology-platform characteristics, quality of insurance information, and distribution platform. This section of questions is dedicated to reveal a perception of the Baltic insurance consumers towards the usage of digital insurance platforms and, in general, the effect of these variables on their attitude and behavioral intention in the self-service platform.

• The section of social domain influence, facilitating conditions, and hedonic motivation. Composed of thirteen questions referring to an individual-perceptional level and external and internal variables of a user's perceived value, performance, effort expectancy, social domain norms, facilitating and personal conditions. This section of questions is dedicated to reveal a perception of the Baltic insurance consumers towards the perceived usefulness and a need of insurance products from personal and social domain perspectives and, in general, the effect of these variables on their attitude and behavioral intention in the self-service platform.

The questionnaire follows the logical structure of the integrated framework. The section of socio-demographic questions is covered under the construct of Control Variables, which, together with common logical constructs of external and internal variables and sub-variables, and the cycle of purchase, are the foundation of the proposed research framework. In detail, the foundation level and constructs of the research framework are defined in Table 19 as per below.

Constructs	Meaning	Sources	Reflections in the framework
External sub-variables External variables	External sub-variables are a theoretical construct, which reflects situational, system, and contextual level factors. External variables is a theoretical construct, which reflects on grouped situational, system, and contextual factors.	Elaboration by following:UTAUT2 model (2012)	In the pre- purchase step
Internal sub-variables Internal variables	Internal sub-variables are a theoretical construct, which reflects personal, cognitive-emotional, and behavioral factors. Internal variables is a theoretical construct, which reflects on grouped personal, cognitive-emotional, and behavioral factors.	Elaboration by following: researchers of Ulbinaité and Moullec (2011) and Ulbinaité et al. (2013)	In pre-purchase and post-purchase steps
Control variables: - Gender - Age - Country - The framework of the platform	Control variables are a theoretical construct, which reflects on social- demographic and technology-platform framework factors.	Elaboration by following: UTAUT2 model (2012)	In pre-purchase, purchase and post-purchase steps

Table 19. The constructs of the foundation level in the integrated framework

Source. Composed by the author by following: Ulbinaité and Moullec, 2011; Venkatesh. et al., 2012; Ulbinaité et al., 2013.

As a foundation, the research framework utilizes the model UTAUT2 (2012) by using constructs of External variables and Control variables. The author's contribution is the theoretical extension of previous studies in the field of Ulbinaitė and Moullec (2011) and Ulbinaitė et al. (2013), by introducing a new construct level of sub-variables and a separation of Internal variables. This methodological subdivision of variables into two groups and sub-groups is valuable due to several reasons. First, it represents the convergent-parallel approach, which involves the collection of different but complementary data on the same phenomenon. Second, it is convenient for continuous data categorization, converging, and subsequent interpretation.

The second group of constructs belongs to the platform and technology level, which defines research subject from dimensions of e-service and information quality, user satisfaction, and technology acceptance. This construct group is also related to the second section of the above-defined questionnaire, where seven external variables were used to measure the influence of e-service quality, process, and technology acceptance in the digital insurance decision-making process. To systemize insights, the platform-technology level and constructs are defined in Table 20.

Constructs	Meaning	Sources	Reflections in the framework
External sub-variables: Task characteristics: - Digital insurance purchase Technology characteristics: - Security and privacy - Design and user interface	Task characteristics are the complexity of processes in the digital insurance platform, which influences the decision to purchase insurance. Technology characteristics are key technical platform features such as the level of security and privacy, design and user interface solutions, including combined multiple graphical elements, digital platform availability, and speed.	Elaboration by following: Task- Technology Fit (TTF) model (1995), SSTs characteristics (Kim and Kim, 2020) and research of Lin et al., (2019)	In the pre- purchase step
External sub-variables: Insurance information quality: - Functionality - Efficiency - Simplicity - Fulfillment Insurance service quality: - Customization Self-service platform quality: - Personalization	Insurance information quality is the quality of insurance information content, functionality fulfillment, efficiency and functional simplicity. Insurance service quality is the quality of fully or partly customized insurance products, additional insurance options, and / or participation options in insurance customization processes. Self-service platform quality is the quality of tailored and personalized user experience and solutions in digital insurance processes and self-service systems.	Elaboration by following: DeLone and McLean Information Systems (IS) Success Model (1992), Updated DeLone and McLean Information Systems (IS) Success Model (2003), E-S-QUAL model (2005) and SSTs characteristics (Kim and Kim, 2020)	In the pre- purchase step
External sub-variables: Insurance information satisfaction Insurance service satisfaction Self-service platform satisfaction	Insurance information satisfaction is a satisfaction of an end-user, related to the insurance information quality level on digital insurance platform. Insurance service satisfaction is a satisfaction of an end-user, related to the insurance service quality level on digital insurance platform. Self-service platform satisfaction is a satisfaction of an end-user, related to the overall quality of digital self-service insurance platform.	Elaboration by following: DeLone and McLean Information Systems (IS) Success Model (1992) and Updated DeLone and McLean Information Systems (IS) Success Model (2003)	In the pre- purchase step

Table 20. Constructs of the platform evaluation level in the research framework

Source. Composed by the author by following: Delone and McLean, 1992, 2003; Parasuraman, Zeithaml and Malhotra, 2005; Goodhue and Thompson, 1995; Lin et al., 2019; Kim and Kim, 2020.

Constructs of the platform level in the proposed research framework partially comprise external variables and sub-variables of the TTF model (1995), the traditional and updated DeLone and McLean IS Success Models (1992, 2003), e-service quality dimensions presented in the E-S-QUAL model (2005), and SSTs characteristics. Sub-variables of Task characteristics as a digital insurance purchase process and four Technology characteristics refer to both the TTF (1995) and the E-S-QUAL (2005) models and define the relation between technical features of a digital platform and a user's perceived value and performance expectations towards the platform. Six external variables of insurance information quality and satisfaction, service quality and satisfaction, and platform quality and satisfaction stand for six success dimensions to measure the suc-

cess of a system in the e-services domain and refer to the DeLone and McLean (1992, 2003) suggested models. Investigation of these six success dimensions contributes by assessing the influential effect of insurance platform quality facilitators towards user satisfaction, the perceived value of using insurance platforms, and identifying their performance and effort expectancy towards the platform usage. Inclusion of sub-variables of information, service, and modified system-platform allows measuring the desired characteristics of system-platform, service content issues, and an overall users' opinion on the system-platform in the entire purchase cycle. The inclusion of these external variables of technological features is supported by results of the elicitation study, presented in the section 3.2. The study revealed that factors of key technical platform features, including platform availability, speed, safety, compatibility, design-functional simplicity, and graphical UI features, including online framework, combined multiple graphical elements as graphical icons and audio indicators, belonged to the second influential factor group. Theoretically, the synthesis of three models and SSTs characteristics into a unified conceptual approach refers to positions of the Expectations Disconfirmation Theory (EDT), where the satisfaction of IT system users is explained through expectations and a perceived quality of products or services within the full cycle of the purchase process. Moreover, this unified conceptual approach on insurance technology acceptance allows to examine the validity of the traditional interpretation of insurance from a new theoretical angle as a service, where the purchase process is led by particularly utilitarian and risk reduction motives. Recent findings on multi-sided platforms (MSP) influence towards insurance value creation and reduction of information asymmetries also support the need for investigation on technological factors (Pousttchi and Gleiss, 2019). Methodologically, the integration of three theoretical IS and TAMs is grounded by the research of Lin et al. (2019), where models of UTAUT, TTF (1995), and DeLone and McLean IS Success Models (1992, 2003) compound into a conceptual research model. The suggested methodological extension in the thesis is the merge of the E-S-QUAL model (2005) and SSTs characteristics next to TTF (1995), and DeLone and McLean IS Success Models (1992, 2003). The multi-model integration method allows compensating limitations of the three individual models and providing a more explanatory power in later path analysis of results via the SEM method (Lin et al., 2019).

The third group of constructs belongs to the personal level, which defines research subjects from the personal evaluation dimension, perceived value, and multiple internal variables. The third construct group together with the fourth group of system-level constructs are also related to the third section of the above-defined questionnaire of the final empirical analysis. 13 combined variables were selected for investigation of the influence of the social domain, facilitating conditions, and hedonic-personal motivation towards using digital insurance platforms and making the insurance purchase decision. Details of the personal level and constructs are defined in Table 21.

Construct	Meaning	Sources	Reflections in the framework
Internal variable: Perceived Behavioral Control: - Self-efficacy - Resource Facilitation	Perceived Behavioral Control – defines the control of an end-user over behavior and resources during the process.	Elaboration by following: DTPB (1995) model and research of Aziz et al. (2017).	In the pre- purchase step
Internal variable: Perceived Interactivity	Perceived Interactivity – the extent to which an end-user can control the context and information of a technology or system.	Elaboration by following: Research of Naffa (2019)	In the pre- purchase step
Internal variable: Perceived Enjoyment	Perceived Enjoyment – the degree to which the use of the system is entertaining and pleasant independently from any other consequence derived from the usage.	Elaboration by following: TAM3 model (2008) and research of Jimenez et al. (2021)	In the pre- purchase step
Internal variable: Perceived Value	Perceived Value – the extended overall personal assessment of perceived process control, benefits, and costs of using digital insurance platforms and purchasing insurance products.	Elaboration by following: research of Santouridis et al. (2012)	In the pre- purchase and post- purchase steps
Internal variable: Performance Expectancy Effort Expectancy	Performance Expectancy – a capability of a technology to provide benefits and enhance the performance according to user's expectations. Effort Expectancy – end-user's expectations about the ease of use of a technology.	Elaboration by following: UTAUT2 model (2012) and research of Momani (2020)	In the pre- purchase step
Internal variable: Personal conditions: - Personal innovativeness and technology readiness - Insurance literacy - Curiosity - Loyalty - Habit - Perceived Risks - Perception of Need - Perception of Affordability - Experience	Personal conditions – a combination of internal sub-variables, which reflect on cognitive biases, heuristic processes, and experiential / hedonic value and influence a personal evaluation on insurance products, behavioral intention for technology-platform usage, and purchase decision making.	Elaboration by following: Scale of TRI (Parasuraman, 2000); models of UTAUT2 (2012) and extended TPB (2020) and researches of Taylor et al. (2002); Ulbinaité and Moullec (2010); Ulbinaité et al., (2011); Kiyak and Pranckevičiūté (2014); Rocha and Botelho (2018); Gbongli et al. (2019); Naffa (2019); Allodi et al. (2020); Pallant et al. (2020)	In the pre- purchase step

Table 21. Constructs of the personal evaluation level in the research framework

Source. Composed by the author by following: Ajzen, 1985; Parasuraman, 2000; Taylor et al., 2002; Venkatesh and Bala, 2008; Ulbinaitė and Moullec, 2010; Ulbinaitė et al. 2011; Santouridis et al., 2012; Venkatesh et al., 2012; Kiyak and Pranckevičiūtė, 2014; Aziz et al., 2017; Rocha and Botelho, 2018; Gbongli et al., 2019; Naffa, 2019; Allodi et al., 2020; Momani, 2020; Pallant et al., 2020; Jimenez et al., 2021.

Constructs of the individual evaluation level in the proposed research framework partially comprise variables of the technology acceptance theories of DTPB (1995), UTAUT2 (2012), the model of TAM3 (2008), and the scale of TRI (2000). The selection of the above-listed theories is grounded by the technology-oriented content and a confirmed usage in the financial services industry. The DTPB model is a combination of TAM (1986, 1989) and TPB (1985), which decomposed variables of subjective norms, attitude, and perceived behavioral control to be more applicable by determining behavioral intentions of users towards the financial service, including insurance and a usage of Information Technology (IT). Similarly, TAM3 (2008) and UTAUT2 (2012) are recognized as focusing on the usage context, technology evaluation dimensions, and variables of consumer-technology. Findings of insurance digitalization and researches on decision-making from the previous two decades, including Taylor et al. (2002), Ulbinaitė and Moullec (2010), Ulbinaitė et al. (2011), Kiyak and Pranckevičiūtė (2014), Rocha and Botelho (2018), Naffa (2019) and Allodi et al. (2020), are considered. A significantly valuable theoretical contribution to the insurance research field has been made by the suggested extension of the Perceived Value construct and the introduction of Insurance literacy as a stand-alone variable in empirical research. Findings of Santouridis et al. (2012), Aziz et al. (2017), and Naffa (2019) are merged with the variables of Perceived Behavioral Control from TPB (1985) and Perceived Enjoyment from TAM3 (2008) to form a combined construct of Perceived Value. In general, the proposed combined construct of Perceived Value represents the extended overall personal assessment of a perceived process control, benefits, and costs of using digital insurance platforms and purchasing insurance products. Practically, the investigation of this combined construct is important to insurers due to not only an identification of loyalty intentions and expectations at a product-level, but also a measurement of e-service quality, behavioral patterns, and competitive advantage possibilities at the platform level. Another theoretical extension at the individual evaluation level is the proposed setup of an independent construct of Personal Conditions with 10 variables. The setup of the Personal Conditions construct is grounded by the above-listed studies of the recent decade on insurance consumers' behavior and attitude towards insurance both in the Baltic market and worldwide. In detail, this theoretical extension refers to findings of the last decade on the insurance consumers' behavior as mostly influenced by habits, cognitive biases, heuristic processes, emotional, and situational factors. Prior researches in this field also have showed that a positive attitude towards insurance and

an actual purchase action are related to a higher perception of a need for insurance and insurance itself, personal concerns on the individual financial situation in the future, and the tolerated level of perceived risks. Any experience with insurance, a perception of affordability, income level, possession of any property, or recommendations appear to be less influential factors. Therefore, by the suggested theoretical extension, it is expected to check relationships among variables of Personal Conditions and identify whether they work independently or in combinations with other constructs of the framework to influence the attitude towards insurance and behavioral intentions in digital MSP. Additionally, the importance of personal-individual evaluation factors is confirmed by the Baltic level research (Baranauskas and Raišienė, 2021b), where factors of personal evaluation and consideration, including variables of a perception of a need for insurance, financial well-being, potential financial savings, consideration of lost and gains probability, and insurance literacy, were recognized as most influential towards the purchase decision-making in digital insurance platforms.

The fourth group of constructs belongs to the process level, which allows evaluating research subjects from the perspective of the traditional three-stage model and determinants of the purchase decision-making. The presented theoretical constructs at this level are an extension of variables from TAM, TRA, traditional and updated DeLone, and McLean Information Systems (IS) Success Models (1992, 2003) as well as follow key findings of Ulbinaitė and Moullec (2011), Ulbinaitė et al. (2013), Aziz et al. (2017), Rocha and Botelho (2018), Gbongli et al. (2019), Lin et al. (2019), Liu et al. (2020). This construct group also reflects on second and third sections of the above-defined questionnaire, where external and internal variables measure the influence of process and individual-perceptional level factors on the attitude and behavior of the Baltic insurance consumers. Details of the individual level and constructs are defined in Table 22.

Construct	Meaning	Source	Reflections in the framework
Perceived Ease of Use of Platform	Perceived Ease of Use of Platform – beliefs of a consumer on easy and convenient operating in digital insurance platforms and purchase processes.	Elaboration by following: TAM model (1986, 1989)	In the pre- purchase step
Perceived Usefulness of Insurance	Perceived Usefulness of Insurance and Platform – beliefs of a consumer on financially and personally beneficial insurance purchase and a value-adding usage of a platform.	Elaboration by following: TAM model (1986, 1989)	In the pre- purchase step
Attitude Toward Behavior	Attitude Toward Behavior – one's persistent assessment of a positive or negative preference towards a decision to purchase insurance in the digital platform, which combines the influence of emotional, contextual, and situational factors.	Elaboration by following: TRA model (1967, 1980) and researches of Aziz et al. (2017); Rocha and Botelho (2018); Gbongli et al. (2019); Lin et al. (2019)	In the pre- purchase step
Behavioral Intention	Behavioral Intention – an immediate determinant of one's actual behavior, which compounds variables of the attitude towards behavior and subjective norms.	Elaboration by following: TAM model (1986, 1989) and researches of Ulbinaité et al. (2013); Naffa (2019)	In the pre- purchase step
Actual Insurance Purchase / Usage in Platform	Actual Insurance Purchase and Usage in Platform – rational behavior of insurance customers by using an available and evaluated information about an insurance service provider, product, purchase process, and digital self- service platform.	Elaboration by following: TAM model (1986, 1989) And researches of Ulbinaité and Moullec (2011); Ulbinaité et al. (2013); Liu et al. (2020)	In the purchase step
Individual Impact and Benefits	Individual Impact and Benefits – a positive or negative impact on an insurance customer experience and a satisfaction towards the insurance purchase process and usage of the platform, which results in individual-level benefits.	Elaboration by following: DeLone and McLean Information Systems (IS) Success Model (1992) and Updated DeLone and McLean Information Systems (IS) Success Model (2003)	In the post- purchase step
Organization Impact and Benefits	Organization Impact and Benefits – a positive or negative impact on an insurance service provider reputation, operational chain, and financial results, and overall organizational- level benefits of a digital distribution channel, directly influenced by individual-level benefits.	Elaboration by following: DeLone and McLean Information Systems (IS) Success Model (1992) and Updated DeLone and McLean Information Systems (IS) Success Model (2003)	In the post- purchase step

Table 22. Constructs of the process evaluation level in the research framework

Source. Composed by the author by following: Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980; Davis, 1986, 1989; Delone and McLean 1992, 2003; Ulbinaitė and Moullec 2011; Ulbinaitė et al. 2013; Aziz et al., 2017; Rocha and Botelho 2018; Gbongli et al., 2019; Lin et al., 2019; Naffa, 2019.

The constructs of Perceived Ease of Use of Platform and Perceived Usefulness of Insurance are a result of the re-conceptualization of two main determinants of the TAM (1986, 1989) model. The suggested theoretical extension follows the logic in the TAM (1986, 1989) model of a causal relationship between these two determinants, but presents integrated research subjects from different angles, as Perceived Usefulness of Insurance and Perceived Ease of Use of Platform. Additionally, the position of Davis et al., (1986, 1989) regarding constructs of PEOU and PU to be the main factors is supported, as it directly affects and utilizes relations among consumers' beliefs, attitude, intention, and behavior towards the specific object. The construct of Attitude Toward Behavior is a theoretical variable, which compounds the effect of emotional, contextual, and situational factors in an individual's persistent assessment of a preference for or against a decision object. In the case of insurance products and platforms, this variable defines positive and negative attitudes on the willingness to use digital insurance platforms, purchase and pay for the insurance product. The inclusion of this variable into the presented integrated framework is based on the findings of Rocha and Botelho (2018), Gbongli et al. (2019), and Lin et al. (2019). These researchers as precedes have outlined the importance of this construct and claimed that the positive attitude towards insurance is influenced by emotional, contextual, situational factors, and a utilitarian approach to risk reduction. However, the positive attitude towards the usage of the digital financial platform is stated to have formulated numerous factors, including platform convenience, digital processes simplicity, information quality, personal innovativeness, effort, and system performance expectancy levels. The constructs of Behavioral Intention and Actual Insurance Purchase and Usage in Platform are also theoretical extensions of determinants from TAM, which define the level of rational behavior of an insurance customer by using the available information about an insurance product, a purchase process, and a digital self-service platform. These two determinants also have a strong causal relationship where the construct of Behavioral Intention compounds the attitude and subjective norms to predict and shape the construct of the Actual Behavior towards a specific decision and usage of the system. The inclusion and extension of constructs of Behavioral Intention and Actual Insurance Purchase and Usage in Platform are also grounded by findings of researches, oriented to insurance decision-making, such as Ulbinaitė and Moullec (2011), Ulbinaitė et al. (2013), and Naffa (2019). According to findings of Ulbinaitė and Moullec (2011), Ulbinaitė et al. (2013), the inclination to purchase an insurance service is brought as a separate step, which

strongly depends on endogenous variables such as a monetary attitude towards insurance and a positive insurance experience, while the actual decision to purchase strongly depends on exogenous variables of the service provider's competence and acceptability of insurance conditions. According to Naffa (2019), key factors, which influence the behavioral intention to purchase an insurance in the digital environment, are a self-efficacy, a PU, a PEOU, and an interactivity, while the actual purchase of a digital insurance is fostered by factors such as a perceived risk level, a self-efficacy, and an interactivity of the platform. In general, the selection of determinants of the TAM (1986, 1989) model has been grounded by the confirmed validity of this model not only within computer technology and information system adoption but also in understanding, behavior, and general acceptance of new internet-based technologies and platforms in health, learning, energy and financial services (Nurhayati and Hidayat, 2018; Kim and Kim, 2020). The post-purchase constructs of Individual and Organization Benefits and Impact are a theoretical combination of the Individual Impact, Organizational Impact, and Net Benefits dimensions from traditional and updated DeLone and McLean Information Systems (IS) Success Models (1992, 2003). This combination reflects on DeLone and McLean's (2003) findings, where it is stated that quality, system quality, and service quality both positively or negatively impact the level of consumer experience and satisfaction, which finally results in individual, organizational, and systemic (market and society) level benefits.

The fifth group of constructs belongs to the system level, which defines research subjects from a general market situation and social evaluation dimensions. Details of the individual level and constructs are defined in Table 23.

Construct	Meaning	Sources	Reflections in the framework
External variable: Social conditions: - Social media and network - Word of Mouth (WOM)	Social conditions – a combination of external sub-variables, which reflect on social influence and norms generated by social media, users' network and Word of Mouth (WOM) (recommendations), and influence start or continue using of technology-platform and purchase decision-making.	Elaboration by following: UTAUT model (2003) and researches of Ulbinaité and Moullec (2010); Ulbinaité et al. (2011); Kiyak and Pranckevičitite, (2014); Aziz et al. (2017).	In the pre- purchase step
External variable: Facilitating Conditions: - Price value - Brand - Terms & Conditions - Insurance digitalization - Sustainability	Facilitating conditions – a combination of external sub-variables, which reflect on an organizational and market infrastructure in terms of price, marketing, technology, and legal domains, and influence the positive attitude towards insurance and rational purchase decision-making.	Elaboration by following: UTAUT model (2003) and researches of Ulbinaité and Kučinskienė (2013); Ulbinaitė et al. (2013); Kiyak and Pranckevičiūtė, (2014); Zolnowski and Warg, (2017); Łyskawa et al. (2019); Weingarth et al. (2019)	In the pre- purchase step

Table 23. Constructs of the system evaluation level in the research framework

Source. Composed by the author by following: Venkatesh et al., 2003; Ulbinaitė and Moullec, 2010; Ulbinaitė et al., 2011; Ulbinaitė and Kučinskienė, 2013; Ulbinaitė et al., 2013; Kiyak and Pranckevičiūtė, 2014; Aziz et al., 2017; Zolnowski and Warg, 2017; Łyskawa et al., 2019; Weingarth et al., 2019.

Constructs of the system evaluation level in the proposed research framework partially comprise variables of the technology acceptance UTAUT (2003) model and interpretation of findings from Ulbinaitė and Moullec (2010), Ulbinaitė et al. (2011), Kiyak and Pranckevičiūtė (2014), Aziz et al. (2017), Zolnowski and Warg (2017), Łyskawa et al. (2019), Weingarth et al. (2019). From the content perspective, the setup of constructs of Facilitating Conditions refers to main findings of the above-listed researchers, who have claimed that the positive attitude towards insurance and the final decision to purchase insurance services are not only strongly affected by personal and situational factors, but also moderated by a rational monetary motivation and general-system level factors such as a competence, flexible pricing of insurance service provider, and trust of the industry. Researches of the past decade in the Baltic market of Ulbinaitė and Moullec (2010); Ulbinaitė et al. (2011); Kiyak and Pranckevičiūtė (2014) also revealed the importance of a corporate social responsibility and post-service quality factors. The inclusion of Insurance digitalization, Sustainability variables, and the construct of Social Influence / Norms reflect on recent practical development directions of the insurance industry. A significant influence of issues of social-demographic changes, persistent low-interest rates, and digital transformations of insurance organizations structures, processes, and the insurance-specific value chain, is recognized.

Moreover, studies on the Baltic market (Baranauskas and Raišienė, 2021a, 2021b) show that the variable of Insurance digitalization belongs to the most influential factor group, while the overall digitalization level in the Baltic non-life insurance market is between Satisfied and Rather Good. Among less influential factor groups, the marketing domain, including variables of advertising and branding, has been identified, while the acceptability of insurance product terms and conditions acceptability, appear to belong to less influential factor groups.

Finally, the in Figure 17 presented conceptual integrated framework was generated as a result of the multidimensional theoretical synthesis and modeling of above defined content and process constructs and validated empirically.



Figure 17. Conceptual integrated insurance decision-making process framework

Source. Composed by the author by using draw to and following: Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980; Ajzen, 1985; Davis, 1986, 1989; Delone and McLean 1992, 2003; Goodhue and Thompson, 1995; Parasuraman, 2000; Taylor et al., 2002; Venkatesh et al., 2003; Parasuraman et al. 2005; Venkatesh and 2014; Aziz et al., 2017; Zolnowski and Warg, 2017; Rocha and Botelho 2018; Gbongli et al., 2019; Lin et al., 2019; Lyskawa et al., 2019; Weingarth et Bala, 2008; Ulbinaité and Moullec, 2010; Ulbinaité et al., 2011; Santouridis et al., 2012; Venkatesh et al., 2012; Ulbinaité et al. 2013; Kiyak and Pranckevičiūté, al., 2019; Allodi et al., 2020; Kim and Kim, 2020; Momani, 2020; Pallant et al., 2020; Jimenez et al., 2021.

3. EMPIRICAL INVESTIGATION OF BALTIC INSURANCE MARKET, PLATFORM AND CONSUMERS AND RESULTS EVALUATION

3.1. Practical outcomes of customization, personalization, and digitalization in the Baltic non-life insurance market

Multidimensional digital transformations and transitions together with the adoption of combined digital technologies and solutions spread in organizations of different public and private sectors worldwide within the past decade, including insurance service providers from the Baltic insurance market. It is important to outline that a high penetration of e-services and digital business models has become an operational standard in the banking service sector, however, it seems to stay in a pre-stage and maintain a considerably vague spread within e-service options for end-users of the insurance service. A strong orientation and investments on digitization and digitalization-related projects are noticeable at a strategic management level as a focus on gradual integration of online services and e-sales platforms into daily business operations and models. On the other hand, the orientation on digitization is still insufficiently aligned and appears to be used in a limited scope by leaving best practices of value co-creation, MCP aside. The real-time experience of the COVID-19 pandemic is an additional factor next to the digitalization-related trends, having a global and enterprise-wide effect. The trends are predicted to expand to the post-COVID-19 era in social, economic, and technological outcomes as well. It is also expected that, within a short period, it would reflect new consumer behavioral patterns, organization management, working culture as well as an intensive development of a platform-based business model and architecture. In detail, significant consequences to business models of financial institutions, including insurance service providers, are noticeable and result in improved business operations, legacy IT infrastructure, and consumers service systems (Chang et al., 2020; Schilirò, 2020).

In the case of the non-life insurance market in Lithuania, Latvia, and Estonia, it is expected that a practical combination of customization and personalization methods and digital solutions can be a prerequisite to attain an additional competitive advantage and lead to an operational cost optimization in the long term. Practical implications illustrate a goal of insurers to ensure a high variety of products in digital platforms and their customization options with limited options to access personalized information or assistance in the customization process. This situation requires to consider scientific findings of Huffman and Kahn (1998), Piller et al. (2005a, 2005b), Trentin et al. (2013) towards the Mass Confusion phenomenon as a negative consequence of the unmoderated customization process, where consumers are overwhelmed with the complexity and variety of processes, products, or overloaded with information; and this may finally lead to dissatisfaction with a service provider, a decreased loyalty, and a dropped interest in the customization process and customizable goods. Therefore, the following case study aims to contribute by extending and compiling earlier scientific investigations by presenting a combined analysis on digital insurance, MC, and personalization, their compatibility, and identifying the practical as-is status of digital self-service platforms and user preferences for platform frameworks in the Baltic non-life insurance market.

3.1.1. Case study of customization, personalization, and digital solutions outcomes in the Baltic non-life insurance market

In the case of the Baltic non-life insurance market, similarly to trends of the global insurance market, 2 distinct periods can be identified, which impacted both financial and technological developments of the industry. In the first, pre-COVID-19 period, the Baltic non-life insurance market showed a remarkable financial development in numbers of gross written insurance premiums (GWP), with a high record in 2018 in all three region countries. On the global scale, the year 2018 also resulted in a premium raise of 1.5 % and bypassed a new benchmark of 5 trillion US dollars (Swiss Re Institute, 2019; Insurance Information Institute, 2019). In a nutshell, main reasons to enable this stable period of growth were combined circumstances of dynamic price corrections in motor insurance lines, an active consolidation in the market structure lead by Vienna Insurance Group AG, a refurbishing brands identity by the optimization and modernization of distribution channels, an active transition to digital technologies and solutions as well as a stable growth of Baltic economies (BTA Baltic Insurance Company AAS, 2018; 2019). The COVID-19 period has a twofold consequence to the Baltic non-life insurance market and insurance service providers. From the technological perspective, this period not only has fostered improvements in the current legacy IT infrastructure, customer service and claims administration systems, but also has increased an availability of digitally customizable insurance products, a personalized information access, and support systems. From the financial perspective, unprecedented economic lockdowns in 2020-2021 due to the COVID-19 pandemic have resulted in a slowdown of the financial growth. The annual real growth rates (%) in the non-life insurance markets of Baltic countries, varied in a range from -13.5 in Estonia, -11.5 in Latvia and 3.2 in Lithuania (OECD, 2021).

The analysis on statistical indicators of the Baltic non-life insurance market was conducted, by evaluating OECD annual reports on global insurance market trends in the pre-COVID-19 period (2017-2019) and the COVID-19 period (2020). Key statistical data are provided in Table 24.

Indianton	Veen	Country					
Indicator	Iear	Lithuania	Latvia	Estonia			
The event event	2017	16.6	20.0	11.7			
The annual growth	2018	10.1	18.9	12.4			
rate of direct gross	2019	4.4	0.7	3.8			
premiums, 70	2020	3.2	-11.5	-13.5			
T1 1 1	2017	29.8	7.9	4.0			
I he annual real growth rate of gross	2018	-0.9	13.4	17.4			
	2019	4.7	25.4	7.3			
cianns payments, 76	2020	7.2	-18.7	-14.4			

Table 24. Country-level evaluation of non-life insurance market performance indicators in 2017-2020Source. Composed by the author by following annually OECD reports from 2017, 2018, 2019, and 2020.

Statistical indicators, provided in Table 25, confirm initial assumptions about two distinct periods, which have had a significant influence on the financial status and technological progress within the Baltic non-life insurance market. In the pre-COV-ID-19 period, positive but dynamic growth tendencies were identified in all 3 countries, where the year 2017 marked the highest increase in gross written insurance premiums in all 3 countries during the selected 3 year period. The year 2018, except the case of Estonia, was identified as the beginning of a slowdown in annual turnaround in premiums, finalized in a significantly low growth rate in the year 2019. High numbers in the period of 2017-2018 are related to the following conditions in the Baltic market and economies:

- An intense competition and implementation of an increase in premium tariffs in the segment of motor vehicle insurance.
- A growth of the motor vehicle fleet and, in accordance, an increase in demand for short and long-term motor insurance policies.
- A favorable macro-economic environment in a form of persistently low interest rates, which also have had a notorious impact on the positive development of

the regional life insurance sector.

The year 2019 marks a turnaround for gross premiums of non-life insurance in the Baltic region. However, comparing to the global scale, all three Baltic countries were among 32 of 50 countries in the OECD report, in which gross premiums increased in both life and non-life insurance sectors (OECD, 2020b). Additionally, in the year 2019, the growth rate of Lithuania and Estonia was higher than the average rate (3.6) of all countries listed in the OECD. Latvia was identified with a record of 53.7 (OECD, 2020b). Considering numbers of gross claims payments in the period 2017-2019, no common pattern can be identified in all three countries. Nevertheless, fluctuating tendencies are observed, where, in the year 2017, this indicator rose and fell in 23 countries, and in 2018 it rose in 26 and fell in 20 countries, listed in the OECD report. The year 2019 is related to several climate catastrophes, therefore, 40 out of 49 countries of OECD reported an increase in gross claims paid by insurers in real terms (OECD, 2020b). An additional important indicator of the short-term profitability situation in a specific insurance market is a Combined Ratio, which, according to the OECD methodology, consists of "the sum of gross claims paid, the variation in outstanding claims provisions, gross operating expenses and gross commissions divided by gross premiums written", excluding reinsurance pay-outs (OECD, 2020b). In 2017-2019, the Combined Ratio in Estonia has not overcome 85 %. The identical result is identified in Lithuania in 2018-2019. However, in Latvia, after an unprofitable result (102.5 %) in 2018, the situation changed to a positive result (93.2%) in 2019. According to the preliminary OECD report data, 2020 stands for a difficult period in the non-life insurance market of both the Baltic region, especially Latvia and Estonia, and globally, where the average annual growth of direct gross premiums reached only 1.2 % (OECD, 2021). Following conclusions about the situation in the Baltic and global non-life insurance markets can be delivered:

- Insurance service providers experienced a slowdown in gross premiums written as only in 15 of 53 countries have identified an increase, as per OECD reports. The majority of countries in the OECD reporting appeared to hold a negative ratio due to a continuous competition in the low pricing strategy, financial loss related to the closing of traditional distribution channels, a decreased market demand of travel and vehicle insurance products.
- Globally, an annual real growth rate of direct gross claims decreased in the non-life insurance claims segment and reached the ratio -4.8, while, in the case

of all three Baltic countries, this indicator varied in a range from -18.7 in Latvia, -14.4 in Estonia and 7.2 in Lithuania (OECD, 2021).

Moreover, COVID-19 restrictions on a physical contact and, accordingly, in-person business meetings have affected the traditional distribution process and naturally accelerated consumers' usage of digital insurance platforms. An intensive development of technological and marketing solutions to promote sales has been encouraged as well.

The analysis on digital behavioral patterns of the Baltic insurance consumers and digital marketing activities of insurance service providers was conducted by applying Google Keyword Planner and Google Trends tools. The usage of these tools and the analysis itself are a supplementary part of the digital marketing analysis, where researchers aim to evaluate and understand organizations, their competitors, and the target audience in the digital environment. In the case of the Baltic non-life insurance market, as per Table 26, the heterogeneity in the development is observed, which may be related to different levels of digital maturity and technical solutions penetration in the insurance field and accordingly reflect on the attitude and behavior of an insurance consumer within digital insurance platforms. Therefore, an analysis on pre-dominant search terms and search volumes is conducted. Main criteria applied for the analysis are discussed as per below:

- 1. A search volume index. It is higher than 0 and reaches a required minimum of 1000 searches to get 1 point in the index.
- 2. Geographical location. The extraction of a search interest is limited to country-level, in this case Lithuania, Latvia, and Estonia.
- 3. Data exploration logic. The data exploration procedure is carried out by using the selection of Search Term, while the selection of Search Topic is not used. The selection of the exploration logic is based on the fact that the Search Topic includes all related search terms, while the Search Term is unique and results only show a relative volume of the term (Google Support, 2020a).
- Used search indicators. Custom time range (1 January 2017-1 January 2020), all categories, web search were selected as indicators. Results of the data exploration procedure are provided in Table 25.

	Indicators									
Securit Term	Lith	Jania	La	tvia	Estonia					
Search Term	Competition	Avg.	Competition	Avg.	Competition	Avg.				
	rate*	searches**	rate*	searches**	rate*	searches**				
insurance	isurance 69		83	3,535.00	74	3,472.00				
online insurance	77	11,060.00	-	-	71	89				
insurance calculator	44	4,735.00	70	172	62	752				
car / MTPL insurance	81	7,581.00	84	1,418.00	91	9,503.00				
car insurance online	82	1,503.00	-	-	43	12				

 Table 25. The popularity of insurance-related search terms in the Baltic countries within 2017-2020

 *Indexed value. It shows how competitive ad placement is for a specific keyword in the selected location, time, and Search Network targeting options. The level of competition is from 0 to 100.

**Per month. The average number of times people have searched for a keyword and its close variants based on the month range, location, and selected Search Network settings.

Source. Composed by the author by using keywords planning the functionality of Google AdWords tool.

Results of the research on short-tail keywords, presented in Table 25 show a notorious deviation in average search numbers when comparing them on a country level. The table reveals different digital marketing and branding activities. In the case of Lithuania, among the most popular search terms by numbers of a search volume, only 1 term has a direct relationship to a brand of a specific insurance service provider. To compare to the case of Latvia, under the same evaluation conditions, brands of three insurance service providers can be identified, from which Swedbank Latvija has the highest ranking. However, the strongest digital branding effect was observed in the case of Estonia, where each of six most popular search terms has a direct relationship to a specific insurance or banking service provider. After conducting the initial analysis on insurance-related search keywords within Baltic countries, the analysis on digital marketing activities was carried out with a help of the Google Keyword Planner tool. This continuous analysis was completed by taking equivalents of terms insurance, insurance calculator, and car / MTPL insurance in the Lithuanian, Latvian and Estonian languages, as these terms showed a high-level recognition among Baltic internet users in the selected analysis period of 2017-2020. The selected equivalents are listed in Table 26.

-									
Research Keyword	1	Equivalent in Baltic languages							
in English	Lithuania	Latvia	Estonia						
insurance	draudimas	apdrošināšana	kindlustus						
	denudimos intornotu	androžināžana tiežusistā	veebi kindlustus,						
insurance calculator	draudimas internetu	aporosinasana nessaiste	e.kindlustus						
ACTDI	A		autokindlustus,						
car / MTPL insurance	Automobilio draudimas	octa aporosinasana	liikluskindlustus						

Table 26. Research Keyword equivalents in Baltic languages

Source. Composed by the author.

A summarized data of search volume index for the selected keywords and period are provided in Table 27.

	Search periods and average search numbers (per month)										
Kesearch		Lithuania			Latvia			Estonia			
keywords	2017	2018	2019	2017	2018	2019	2017	2018	2019		
insurance	78.23	78.21	80.54	72.75	72.35	70.83	63.28	62.63	71.65		
insurance	25.10	22.22	26.27	10.22	16.12	17.17	17	21.11	17 34		
calculator	55.19	33.33	20.27	10.52	10.12	17.17	17	21.11	17.24		
car / MTPL insurance	61.85	57. 9 8	54.38	40.60	34.40	32	59.60	57.77	47.17		

Table 27. Average search volume index of most popular insurance research keywords in Baltics within 2017-2019

Source. Composed by the author by using the keywords planning functionality of the Google AdWords tool and published in Baranauskas, 2021, p. 73.

Several digital behavior tendencies of Baltic insurance consumers can be identified following results presented in Table 27. Baltic insurance consumers show a preference for using stand-alone insurance-related search keywords as insurance and this is visible by observing the growth of the search volume index of this term. In Lithuania the index grew by 2 points, while in Estonia it grew by 8.47 points within the period of 2017-2019. In general, the keyword insurance was among three most popular insurance-related short- and long-tail keywords in all three countries within the selected period. The research keyword insurance calculator can be interpreted as the closest to the phenomenon of digital insurance platforms and online customization from the content perspective. Results of the search volume index of this combined keyword are relatively low comparing to other 2 selected research keywords and show a decrease tendency in all three countries. The third selected research keyword car / MTPL insurance, which is a short-tail keyword, experienced decrease tendencies of interest in all three countries as well. During the selected period, in Lithuania the value of the search volume index dropped by -7.47 points, in Latvia the index dropped by -8.6 points, while in Estonia the index dropped by -12.43 points. This situation of the decrease of the internet users' interest in specific combined research keywords can be explained through the glance of digital marketing activities of insurance service providers and their actions in promoting their brand or a specific insurance product. The re-orientation of digital marketing activities and resources to branding promotion campaigns appear to be stronger in Latvia and can be identified in 2017-2018, when the number of average monthly searches of the term Swedbank insurance in local language (Swedbank apdrošināšana) increased by 34.65 %, or from 592.50 to 906.66. A similar encouragement to attract the attention of internet users and increase a brand visibility is observed in the case of the insurance service provider Baltic Insurance Company AAS (BTA), where average monthly searches increased by 42.28 % or 399.16 to 690.83. It should be outlined that in Estonia the Swedbank bank and the e-broker company IIZI Kindlustusmaakler AS led the re-orientation of digital marketing activities, and no specific pattern or tendencies of changes in digital marketing and branding actions could be identified within insurance companies. According to the analyzed volume of insurance-related research keywords in Estonia, it can be stated that insurance companies selected different strategies by not only focusing on the short-tail and generic research keywords, but also supporting combined research keywords, which present the organization brand in relation to a specific insurance product or service. This direction is explained by tendencies of recent years on an increased attention of insurance customers to buy in digital platforms not only traditional and legally compulsory MTPL insurance, but also insurance products such as travel, building, and property, CASCO, or health insurances. Additionally, changes in a variety of consumer preferences and marketing activities support the assumption of having a heterogeneity of digital insurance platforms and online customization solutions in the Baltic non-life insurance market as well as the presence of different Baltic insurance consumers' behavioral patterns and influential factors toward their purchase decision-making process. To conclude, numbers of the search volume and research keyword popularity in the Baltic non-life insurance market indicate a potential for a higher penetration level of constructs of long-tail research keywords and, accordingly, a practical possibility for a re-orientation of existing digital marketing and branding activities towards this field. A pre-dominant short-tail research keyword consists of two or three keywords, which typically has a high bid cost, competitive rate, but results in a low probability of conversion. The standard model of Search Demand Curve and overall global practical trends confirmed that 70 % of online search traffic and higher conversion rates are generated from long-tail keywords, which can consist of 4 to 6 keywords (Kritzinger and Weideman, 2013).

In general, current digital insurance platforms can be interpreted as outcomes of the implementation of the B2C strategy in a digital environment and a data source for the development of e-commerce related activities and system functionalities. The COVID-19 situation undoubtedly has revealed the market demand for digital insurance platforms and self-service-oriented technical solutions, enforced in a great variety within a short period and compounding advanced analytics and best practices of online customization frameworks. Otherwise, digital platforms and technical solutions from the insurance service providers' perspective are still used as a supplementary channel to traditional insurance distribution channels and multichannel marketing strategies. Therefore, a practical variety, non-standardized technological and content requirements and market dynamics complicate both qualitative and quantitative evaluations of digital insurance platforms and require applying a multidimensional functional and product-orientated assessment matrix. The suggested assessment matrix combines the theoretical layer, reflecting on key features of 9 combined online customization frameworks of customization, personalization, and standardization. The second layer is oriented to the practical investigation of digital insurance platforms in the country and combines product / functionality levels from the perspective of an end-user usability. It is expected that, by avoiding a purely technical evaluation of the platform, this type of content analysis would reveal the practical status as-is of digital insurance platforms in the Baltics and foster further managerial implications and academic discussions. In order to ensure the comparability of results and to reflect the structure of the Baltic non-life insurance for a following comparative analysis 9 insurance service providers were selected in each country. Accordingly, this number is an evaluation benchmark in the results table below by showing in how many cases of the service providers' analyzed features were identified. Main sreening and sampling criteria were defined in section 2.2.1 and Table 11. The final results of the application of the multidimensional functional and product-oriented assessment matrix are presented in Table 28.

		Features								
			Custon	nization:	Personalization:					
Country Product		Standardization	Insurance options	Additional insurance risks and/or attributes	Self-service system	Chat	Multilanguage			
	MTPL	8/9	0/9	7/9						
Lithuania	Travel	0 / 9	3 / 9	6/9	6/9	2/9	3/9			
	Property	0 / 9	4 / 9	6/9						
	MTPL	8/9	1/9	5/9						
Latvia	Travel	0/9	8/9	9/9	8/9	3/9	8/9			
	Property	1/9	4/9	6/9						
Estonia	MTPL	9/9	0/9	3/9						
	Travel	0/9	0/9	8/9	8/9	7/9	8/9			
	Property	0/9	5/9	8/9						

Table 28. The multidimensional analysis of digital service platforms in the Baltic non-life insurance market

Source. Composed by the author by following and published in Baranauskas, 2021, p. 77. *Data collection and analysis made at February-March 2020.

The multidimensional analysis on digital insurance platforms in the Baltic nonlife insurance market revealed that concepts of MC and MP both as a stand-alone and in combination with the Standardization phenomenon are practically widespread and following conclusions can be disclosed:

- The combined online customization framework of (AT-B) + (AL-B) was predominant in the case of Estonia. For instance, 5 of 9 insurers offered a predefined home insurance option or an option to customize it by adding additional insurance risks or attributes. A different situation was observed in regards to Travel and MTPL products. The (AT-B) online customization logic was identified in the majority of cases, while, in the case of MTPL, similar to the case of Lithuania, no customization options were identified and only standardized MTPL insurance options were offered. Another distinguished feature of digital insurance platforms in Latvia and Lithuania was a highly personalized consumer support, where the availability of self-service system / account and a multilanguage functionality were identified in 8 of 9 cases, and a live chat functionality identified in 7 of 9 cases.
- Variations of combined online customization frameworks of (AT-B) + (AL-B) and (AL-B) + (AT-B) were identified in the case of Latvia. A customer was able to start the customization of the travel or home insurance from the very beginning of the digital purchase by selecting preferable insurance options or addi-

tional risks and attributes in later stages. Similarly to the Estonian case, personalization features were identified in the majority of cases of self-service system / account and the multilanguage functionality, 8 of 9 cases, but insurers were struggling to ensure a fully online and on-demand support in via live chat.

• Similar to Estonia, a combined online customization framework of (AT-B) + (AL-B) was identified as the predominant online customization framework in the case of Lithuania. The AT-B framework oriented to the customization logic was offered by 6 of 9 insurers by allowing the selection of additional insurance risks or attributes next to the main travel or home insurance option. In a parallel way, the (AL-B) framework oriented to the customization logic was identified within the same travel and home insurance purchase process in digital calculators by 3 of 9 and 4 of 9 cases respectively. This dual situation of customization options illustrates a period of transition from standardization and the (AT-B) framework-oriented digital insurance platforms towards the combined (AT-B) + (AL-B) framework-oriented digital insurance platforms. A low penetration of personalized services and functionalities in digital insurance platforms is the distinguishing feature of the Lithuanian case. Within the analysis period, only in 2 of 9 cases a feature of personalized assistance via live chat was identified, and, in only 3 of 9 cases, consumers were able to select other than the Lithuanian language. 6 of 9 insurance service providers were able to offer a self-service system and account.

The conducted practical analysis of digital insurance platforms revealed the content, trends, and state-of-the-art of the non-life insurance market and insurance platforms in the Baltics. Moreover, the results of the case study analysis confirm the existence of a practical variety of technical frameworks and solutions in all 3 Baltic countries. An intensive transition from the standardized and product-oriented approach to more customizable insurance products, personalized customer service, and the customer-oriented approach can be also identified. Such results refer to the COV-ID-19 period, during which digital platforms and technical solutions have become an irreplaceable part of integrated sales and marketing strategies of insurance service providers and in this way illustrate the progress of the application of e-commerce function-alities in the conservative insurance industry. In general, the application of combined online customization frameworks of (AT-B) + (AL-B) or (AL-B) + (AT-B) in digital insurance platforms has twofold outcomes. First, it allows a smooth and fast integration

of gamification and playfulness features into the current customer service and sales systems, leading to a stronger branding and a more positive attitude and involvement of the younger audience. On the other hand, for a specific consumer group, having a lower attraction to playfulness intentions and features in the platform, it may require considering a more traditional framework, such as the (AL-B) framework, or at least integrating of a higher level of personalization into versions of the (AT-B) framework. Finally, looking at the country level, the most advanced functionalities and user-oriented digital platforms were identified in the case of Estonia and Latvia, while the weakest progress within the insurance digitalization and a strong legacy of standardization were identified in the case of Lithuania. Therefore, identification of such scattered status of research context requires a continuous macro level analysis of the market and platforms situations, based on expert-based validation of state-of-the-art of non-life insurance market and digital insurance platforms in Lithuania, Latvia, and Estonia.

3.2. Results of digitalization and MCP widespread within digital non-life insurance platforms: Baltic expert-based investigation and evaluation

In general, practical trends of the past decade, such as an acceleration of new data-driven and combined business management models, data networks, and organizational ecosystems, also have become influential factors in the development of the research of the modern insurance concept. Insurance service providers seem to have raising concerns that they are targeting a lower digital maturity level and consequently are not able fully and easily integrate new technological innovations, platform economic oriented business models and avoid struggle in realizing BDA and the MC concept into daily processes, products, or systems. According to Chen et al. (2015), insurers are still working on the identification and definition of heterogeneous data sources, evaluation of technological, legal, and management base, and competencies. The following descriptive type of an embedded case study of expert-based evidence extends previous scientific investigations on insurance digitalization and customization trends in the European and Baltic markets. It results in quantitative findings on predominant as-is features of existing digital platforms in the Baltic non-life insurance market and a practical spread of 3 strategical capabilities of the MCP concept.

Results are presented according to the analysis and systemization of answers in

selected questions or statements of the questionnaire, whose answers were evaluated under the methods of experts' opinions ranging and an estimation of the Kendall's Coefficient of Concordance (W). The weighting method of ranging experts' opinions was applied in evaluation matrix to identify their significance according to the ranks obtained to ranked subjects and presented in Table 29.

	Ranked object*:		1		2	3	4	5	6	7	Total rank per
	Question:	3	4	5	6	7	8	9	10	11	expert
	IE 1	2	2	2	2	2	2	2	2	2	18
	IE 2	6	6	7	6	7	8	4	4	5	53
	IE 3	5	6	5	7	7	7	3	5	7	52
	IE 4	6	7	9	9	10	10	9	3	1	64
Expert	IE 5	2	2	2	2	2	2	2	2	2	18
&	IE 6	9	9	8	8	6	6	7	6	7	66
Rank	IE 7	6	6	8	6	5	6	3	5	4	49
	IE 9	2	2	2	2	2	2	2	2	2	18
	IE 10	6	4	8	7	7	6	4	4	4	50
	IE 14	7	7	9	7	7	7	3	5	4	56
	IE 16	7	8	9	8	6	8	5	6	4	61
Total ra	nk per question:	58	59	69	64	61	64	44	44	42	

Table 29. Ranking of Baltic experts evaluation

Source. Composed by the author by following Podvezko, 2005; Podvezko and Sivilevičius, 2013 and published in Baranauskas and Raišienė, 2021a, p. 193.

*Meanings of ranked objects: 1 - Digitalization; 2 - Standardization; 3 - Personalization; 4 - Customization

In order to calculate the Kendall's Coefficient of Concordance, following pre-calculations were made:

Calculation of a total rank-sum Ci using the formula in Formula 2. The indicator had a value of 451.

$$\sum_{i=1}^{m} c_i = \frac{1}{2} rm (m+1)$$

Formula 2. The formula of indicator Ci

Source. Composed by the author by following Podvezko, 2005; Podvezko and Sivilevičius, 2013 and published in Baranauskas and Raišienė, 2021a, p. 194.

The character r is the number of experts, the character m is the number of ranked objects.

Calculation of a general average of ranks using the formula in Formula 3. The indicator had a value of 64.

$$\bar{c} = \frac{1}{2}r(m+1)$$

Formula 3. The formula of indicator c^-

Source. Composed by the author by following Podvezko, 2005; Podvezko and Sivilevičius, 2013 and published in Baranauskas and Raišienė, 2021a, p. 194.

The character r is the number of experts, the character m is the number of ranked objects.

Calculation of the sum of squares of deviations from the sum of the rank for values of each criterion from the total mean value. The indicator S had a value of 763, the calculation was made using the formula in Formula 4.

$$S = \sum_{i=1}^{m} (c_i - \overline{c})^2$$

Formula 4. The formula of indicator S

Source. Composed by the author by following Podvezko, 2005; Podvezko and Sivilevičius, 2013 and published in Baranauskas and Raišienė, 2021a, p. 194.

Calculation of the maximum value of the sum of squares of deviations Smax. The indicator had a value of 149769, the calculation was made using the formula in Formula 5.

$$S_{max} = \sum_{i=1}^{m} (r \ x \ i - \frac{1}{2} r \ (m+1))^2 = \frac{r^2 m (m^2 - 1)}{8}$$

Formula 5. The formula of indicator Smax

Source. Composed by the author by following Podvezko, 2005; Podvezko and Sivilevičius, 2013 and published in Baranauskas and Raišienė, 2021a, p. 194.

Finally, the Kendall's Coefficient of Concordance (W) was calculated using the formula in Formula 6.

$$W = \frac{8S}{r^2 m(m^2 - 1)}$$

Formula 6. The formula of Kendall's Coefficient of Concordance (W)

Source. Composed by the authors by following Podvezko, 2005; Podvezko and Sivilevičius, 2013 and published in Baranauskas and Raišienė, 2021a, p. 194.

The following are indicators and their values used in formulas:

• S - the sum of squares of deviations of each ranked object;

- m the number of objects being ranked, in this case, equal to 7;
- r the number of raters, in this case, is equal to 8. After ranking the results of experts' opinions, the results of 3 experts (IE1, IE5, and IE9) were eliminated due to a limited objectivity and simulation in the survey, as provided in Table 29.

The calculation of the concordance coefficient W resulted in a value of 0,28 which defines a low agreement and concordance among experts towards ranked objects (Podvezko, 2005; Podvezko and Sivilevičius, 2013). In addition, the indicator of the Chi-square distribution (X²) was calculated and resulted in the value of 13,44. The indicator X² was considered in order to evaluate the significance of the concordance coefficient and the consistency of the group of raters. Afterwards, the value of the Chi-square distribution (X²) indicator was compared to the value of the critical Chi-square distribution (X_{kr}²) indicator by following the chi-square distribution table. The value of the critical Chi-square distribution (X_{kr}²), under a degree of freedom v = m – 1 = 6 and the significance level α = 0.05, was equal to 12,59 and confirms that opinions of experts are consistent and valid to use in the analysis (Podvezko, 2005; Podvezko and Sivilevičius, 2013).

The ranking of experts' evaluations towards 7 rank objects results in the following conclusions. Firstly, a positive but heterogeneous practical status as-is of the insurance digitalization domain can be identified. In detail, the digitalization subject compounds 3-level evaluations of:

• The general level of digitalization in the non-life insurance in the respondent country. The average judgment of experts was 6.5 points. This evaluation indicates that, in the whole Baltic non-life insurance market, digitalization is between levels Satisfied and Rather Good. At the country level, the highest average evaluation of digitalization was identified in Latvia (7 points), a close average evaluation was in Lithuania (6.7 points), while the lowest average evaluation was provided by experts from Estonia (5.5 points). In the case of Estonia, lower than Satisfied evaluation levels can be explained by an open discussion that Estonian insurance service providers, their service platforms, and the financial service sector generally are more advanced and of a higher digital maturity comparing to Latvia and Lithuania. Therefore, the assumption is that users from Estonia are more familiar with digital insurance solutions and naturally have higher expec-

tations.

- The level of insurance service providers' preparation for application of digital solutions in the respondent country. An average judgment of experts was 6.6 points, which stands for the evaluation between levels Satisfied and Rather Good. At the country level, the highest average evaluation was identified in Latvia (7.3 points), meaning that the situation is better than Rather Good. In Lithuania, the critical evaluation resulted in an average of 6.3 points, indicating this part as the weakest part of the insurance digitalization domain in the country. The lowest evaluation was identified in Estonia with an average judgment of 6 points, or Satisfied.
- The level of demand of insurance service consumers on digital non-life insurance solutions. The average judgment of experts was 7.9 points, which stands for the evaluation between levels Rather Good and Good, indicating that the insurance digitalization in the Baltic non-life insurance market is behind actual consumers' needs. At the country level, the lowest evaluation was identified in Estonia, where an average judgment was 6 points, or Satisfied. The highest average evaluation was identified in Lithuania with 8.6 points, which stands in the range of levels Good to Very Good. In Latvia, the experts' judgment was close to the Lithuanian and reached 8.4 points, which is over Good.

Secondly, experts' evaluations towards research subjects of customization, personalization, and standardization resulted in the following conclusions about predominant content and functional features of Baltic digital non-life insurance platforms:

• In the survey, the standardization subject was presented as a pre-built insurance product logic with standard product features and general insurance terms & conditions without end-user customization options, standardization of the insurance sales & aftersales processes level. The experts' judgment over a practical spread and level of standardization in existing digital non-life insurance platforms resulted in the conclusion of being the predominant as-is feature. In detail, the overall standardization level in Baltic digital non-life insurance platforms was 7.25 points, which stands for the evaluation level Rather Good. Comparing average judgments of experts on a country level, it is observed that standardization features are mostly visible in Latvia with an average evaluation of 7.7 points, while in Lithuania it was near to the Baltic average of 7.3 points, and in Estonia it was 6.5 points, which define it in between evaluation levels Satisfied and Rather Good. The additional comparative analysis under the simplified Fuzzy AHP logic also showed a significant dominance of standardization features over personalization and customization features in cases of Lithuania and Latvia. In general, these expert-based judgments on standardization objects have a twofold meaning. First, it can be explained by a predominance of MTPL products within digital insurance platforms in the Baltics, which is a legally regulated and standardized non-life insurance product with low customization and personalization options. Second, results of the evaluation on the standardization subject also confirm assumptions about a slow transition of Baltic non-life insurance organizations from the Mass Production approach, which is still vital due to benefits of ensuring a balance between creating unlimited product variability options and keeping overall operational efficiency in profitable numbers in the digital environment.

- The personalization subject was presented as a tailored UX, personalized information, and service solutions in insurance processes and systems. The experts' judgments over a practical spread and level of personalization in existing digital non-life insurance platforms resulted in the conclusion of being expressed the most weakest comparing to subjects of standardization and customization. The average judgment of personalization of Baltic experts was 6.85 points, which defines it between levels Satisfied and Rather Good. Comparing average judgments of experts on a country level, no sharp distinctions were observed. The evaluation of the personalization domain varied from 6.7 points in Lithuania to 7 points in both Latvia and Estonia.
- The customization subject was presented as fully or partly customized insurance products, a selection of additional insurance features, and / or participation options in insurance customization processes. The average judgment of Baltic experts on the customization subject was 7.25 points, which stands for the evaluation slightly over Rather Good. Comparing on a country level, the customization domain in Estonia is defined as being between levels Rather Good and Good (7.5 points). In Latvia it received an average judgment of 7,3 points, while in Lithuania it was 7.0 points, or Rather Good.

The comparative analysis under the simplified Fuzzy AHP logic was also applied in the case of personalization and customization subjects. Evaluations of this analysis are visualized in Figure 18.



Figure 18. The Baltic experts' evaluations on pre-dominant features in existing digital non-life online insurance platforms

Source. Composed by the author by using draw.io.

Main distinctions were identified by comparing answers on a country level, where Baltic experts appeared to have different preferences in evaluations of customization and personalization pairs. In the case of Estonia, the selection of customization fully dominated personalization, while, in cases of Latvia and Lithuania, an opposite evaluation was identified. In detail, 2 of 3 experts from Latvia agreed on the customization dominance over personalization, while 2 of 3 experts from Lithuania expressed their preference for personalization over customization features in digital non-life insurance platforms. These types of heterogeneous judgment results on a country level support open discussions about an ongoing digital transformation in the Baltic non-life insurance market, where one of key driving components is an increasing penetration of combined digitalization, customization, and personalization solutions in insurance platforms and customer service.

The third part of the survey was dedicated to the investigation of three strategic capabilities required for a successful MC concept implementation. Baltic expert judgments are summarized in Table 30.

MC conchility	The average evaluation:								
MC capability	in Baltics	in Lithuania	in Latvia	in Estonia					
Choice Navigation	4,75 points	4,8 points	6,3 points	3,5 points					
Robust Process Design	4,75 points	5 points	4,7 points	4,5 points					
Solution Space Development	4,5 points	4 points	4 points	6 points					

Table 30. The Baltic experts' evaluation on three MC capabilities reflections within digital non-life insurance platforms

Source. Composed by the author and published in Baranauskas and Raišienė, 2021a, p. 196.

The investigation resulted in low MC capabilities evaluations, which were in the range of 4.5 The investigation resulted in rather low evaluations of MC capabilities. The evaluations appear to be in the range of 4.5-6 points in the case of SSD capability, 4.75-

6.3 points in the case of CN, and 4.5-5 points in RPD capabilities. Overall, MC capabilities resulted in a weak practical reflection, which was between levels Rather Weak and Neutral. On the other hand, results also indicate the following functional differences of platforms in the Baltics. The capability of CN had remarkable differences within experts' judgments and received the highest evaluation in the case of Latvia. The average judgment in Latvia was 6.3 points, equal to Satisfied, in Lithuania it was 4.8 points, or between levels Rather Weak and Neutral, and in Estonia it was 3.5 points, or between levels Weak and Rather Weak. The capability of RPD had similar evaluations in all Baltic countries, from 4.5 points in Estonia to 5 points in Lithuania. A low difference in experts' judgment can be grounded by RPD's main orientation to the re-usage of existing organizational resources and re-organization of a value-chain to deliver digitalized customization solutions, which is not visible or visualized in the final solution for external users. The capability of SSD received the highest average evaluation in Estonia, where it was 6 points, or level Satisfied, while in Latvia and Lithuania it received an average judgment of 4 points, or Weak. Strongly opposing judgments of CN and SSD capabilities in cases of Latvia and Estonia illustrate different functional orientations and development directions for digital platforms as well as overall MC penetration levels within non-life-insurance markets in the Baltics. Average judgments in Latvia indicate that the priority is set for creating a simple, effective, and user-friendly digital system of insurance product configurations and recommendations, while in Estonia the strongest part of digital insurance platforms seems to be expressed within the capability of SSD, centering on understanding insurance consumer needs for products and services in a digital format. In the case of Lithuania, a more balanced situation is identified, yet MC capabilities show a low penetration within existing digital insurance platforms. According to surveyed experts, the most recognizable capability is RPD, which indicates that Lithuanian non-life insurance organizations focus more on internal resource and processes management, aiming to deliver digitalized solutions by keeping a high efficiency and reliability.

Finally, survey results confirm both results of case study analysis in section 3.1. and the assumption that neither the MC concept and its capabilities nor combinations of digital solutions and the MP concept are sufficiently extended within digital sales platforms of the non-life insurance market in the Baltic countries. The low evaluation of the personalization level and features in all 3 countries and the dominance of standardization features lead to conclusions that incumbents of the Baltic non-life market

deal with similar challenges as incumbents of the German insurance market digitalization, as per Zolnowski and Warg (2017). Main challenges are balancing between maintenance of legacy system infrastructure and modernization activities as digital service platforms, adoption of new SDL, and development of a unified omnichannel distribution strategy. On the other hand, in-depth mezzo and micro level analysis of insurers' and insurance consumers' perspectives both on the internal market situation, digital insurance platforms, and behavioral patterns analysis and validation of the application of combined online customization and digital insurance decision-making process frameworks are required.

3.3. Results of digital insurance end-users decision-making process empirical studies: Baltic insurance specialists and insurance consumers-based investigation and evaluation

It is recognized that the modern insurance end-user behavior and decision-making in digital platforms reflect theoretical positions of behavioral finance and economy, cognitive psychology, and marketing domains, especially from an angle of traditional CDM, HCDM (2002), and TAMs and theories. Therefore, the following analysis refers to findings of preceding and fundamental non-life insurance consumer decision-making studies of Hsee and Kunreuther (2000), Kunreuther and Pauly (2005; 2015), and the cross-border study report by the European Commission (2017). In parallel, content features of complex and simplified consumer behavioral models, expected utility, and behavioral reasoning theories, such as a continuous but not simultaneous sequence of the multi-step process logic, a combination of perceived risks, personal bias, monetary and contextual variables, and interactive and personalized feedback-repurchase loop, were outlined in recent researches and practices of digital insurance platforms and insurance consumers decision-making processes. All features contributed to the foundation of the modern insurance concept, and can be defined as a combination of perceptions of individual risk and heuristic reflections within digital framing effects, and intuitive and deliberative thinking along with the insurance literacy and general concepts of probability, risk, and technology acceptance. For this reason, findings of novel studies of comparison websites (Porrini, 2018), multi-sided platforms, and SDA (Zolnowski et al., 2017) application in the insurance industry and the insurance literacy (Zolnowski et al., 2017; Weedige and Ouyang, 2019; Allodi et al., 2020) were considered in the following analysis as well. It is important to outline that looking from the research scope perspective, the majority of them were oriented to financially developed countries and regions of Western and Central Europe, while scientific investigations on insurance markets of each Baltic country (Lithuania, Latvia, and Estonia) and the region resulted in low volumes, or were limited to a specific country-level analysis. A significant part of scientific studies on the digital insurance has been completed at a high-generality level with a scattered focus on individual parts of the insurance-specific value chain or technological solutions, without properly considering the impact of modern MC and MP concepts. A similar situation is identified in the analysis on Baltic insurance consumers' decision-making processes, which are geographically limited and practically outdated, and, as in the case of Lithuania, the majority of studies were completed from 2008 to 2014, without considering customization, personalization, or digitalization domains enough. Thus, the following analysis aims to investigate the influence of digital environments and technological factors towards the decision-making process and to identify predominant factors and content features of insurance decision-making processes in digital insurance platforms in the Baltics. It also undoubtedly compounds key findings and limitations of scientific studies on behavioral patterns in the Baltic insurance market, such as research by Kiyak and Pranckevičiūtė (2014), studies conducted by Ulbinaitė et al. (2011), Ulbinaitė and Moullec (2010), Ulbinaitė and Kučinskienė (2013), Ulbinaitė et al. (2013).

3.3.1. The evaluation of Baltic insurance specialists' investigation (2021)

The empirical analysis on the survey of Baltic insurance specialists began with the preparation and review on descriptive statistics as a valuable summary of dataset characteristics, research sample, and the influence of sociodemographic factors toward research subjects (Mathur and Kaushik, 2014). The descriptive statistics is focused on the analysis of sociodemographic variables in order to reveal their possible influences and relationships, therefore, contribute to the formulation of general conclusions and validation of the conceptual Baltic insurance consumer decision-making process framework. Main sociodemographic variables are listed out in Table 31.

Variables	Data values	Absolute Number	%
Gender	Female	123	78
	Male	34	32
Age group	18-25	36	23
	26-35	54	34
	36-45	47	30
	46-55	17	11
	56-65	3	2
	+65	0	0
Country	Estonia	32	20
	Latvia	31	20
	Lithuania	94	60

 Table 31. Socio-demographic characteristics of the Baltic insurance specialists' research sample

 Source. Composed by the author and published in Baranauskas and Raišienė, 2021b, p. 9.

To summarize, the research sample consisted of 157 insurance-related working professionals from Lithuania, Latvia, and Estonia. In detail, the majority of the respondents (78% of all research samples) were women, belonging to the age group from 26 to 45 years (64% of all respondents), with Lithuania as their residency country (60% of all respondents). The important reliability feature of the research sample is a great variety of age groups, showing that 5 different age groups are represented altogether, however, respondents mostly represent 3 age groups of 18-25, 26-35, and 36-45. In general, the adequacy of the sample size is grounded by following the theoretical position of Guadagnoli and Velicer (1988), who stated that the research sample of 150 respondents could be interpreted as adequate if factor loads of several items exceed 0.80 (Guadagnoli and Velicer, 1988; Koyuncu and Kılıç, 2019).

After the descriptive statistics, the pre-factor analysis was conducted by using the SPPS statistical software (version 26). It allowed identifying an internal consistency of questionnaire items, a level of the questionnaire and its scale reliability, a sampling adequacy, and an overall usefulness of the factor analysis. Results of the pre-factor analysis of four indicators are presented in Table 32.

Indices	Result
Cronbach a	0.875
Spearman-Brown	0.701
Kaiser-Meyer-Olkin (KMO)	0.839
Bartlett's test of sphericity χ2	0.000

Table 32. Results of indexes in the pre-factor analysis. The Baltic insurance specialists' survey (2021)Source: Composed by the author and published in Baranauskas and Raišienė, 2021b, p. 10.

Firstly, the Cronbach α indicator was calculated and resulted in the value of 0.875, which confirms the internal consistency of questionnaire items and the scale

to be good and reliable. Secondly, the test reliability and acceptance to perform data reduction procedures by using EFA and CFA techniques were confirmed. The Spearman-Brown and Kaiser-Meyer-Olkin coefficients were calculated and resulted in values of 0.701 and 0.839 respectively. These results confirmed that the selected sampling was adequate and supports the further application of the factor analysis (Chan and Idris, 2017). Finally, the Bartlett's test of the sphericity indicator χ^2 as a test of at least one significant correlation among two of the items studied was calculated and resulted in the value χ^2 (157) = 1140.42, p < 0.05. The received value of χ^2 is significant while the p-value is smaller than the significance level ($\alpha = 0.05$); therefore, these calculations confirm that there is a sufficient significant correlation in the data, and the dataset is suitable to continue the factor analysis within procedures of EFA and CFA.

EFA and CFA are widely recognized and accepted. They use a combination of traditional statistical measurement techniques and procedures, allowing reaching a high effectiveness in uncovering complex patterns of a dataset, and testing a construct content and criteria (Koyuncu and Kılıç, 2019). First, EFA was applied to explore the underlying theoretical structure and determine latent dimensions among observed variables, reflected in items of an instrument. The construct validity was determined by using the method of Principal Component Analysis (PCA) extraction and varimax rotation, and results of the calculation of EFA indicators are presented in Table 36. The CFA principal procedure was used for an interpretation of a factor and instrument structure, and to test the validity of the dimensionality of the structure obtained after EFA procedures. 3 categories of global model fit indices were used to investigate the goodness-of-fit of the model within the collected data: videlicet the absolute fit indices (a coefficient of a standardized root means a square residual, SRMR), parsimonious indices (a coefficient of a root means a square error of approximation, RMSEA), and comparative indices (coefficients of a comparative fit index, CFI; a non-normed fit index, also known as the Tucker-Lewis index, TLI-NNFI) (Koyuncu and Kılıç, 2019; Alavi, Visentin, Thapa, Hunt, Watson and Michelle, 2020 and published in Baranauskas and Raišienė, 2021b, p. 10-11.). Results of CFA indices are provided in Table 33.

Indices	Result
SRMR	0.063
RMSEA	0.065
CFI	0.921
TLI-NNFI	0.903

 Table 33. Results of 4 CFA indices. Factor analysis of the Baltic insurance specialists' survey (2021)

 Source. Composed by the author and published in Baranauskas and Raišienė, 2021b, p. 11.
Next to 4 CFA indices, presented in Table 37, the importance of the chi-square / df ratio should be outlined as essential in assessing the fit between the hypothesized model and data from a set of observed variables (Alavi et al., 2020). The value of the chi-square fit was 1.66, which is under the recommended value ≤ 2 and indicates a superior fit between the hypothesized model and the sample data (Alavi et al., 2020). Overall, results of all 4 fit indices are under the recommended cut-off points for a good model-data fit. In short, the value of the SRMR fit index (0.063) fit the acceptable range and was less than recommended 0.08, which refers to an assumption that the model approximately fits well (Asparouhov and Muthen, 2018). Indices of RMSEA are typically used to assess how far a hypothesized model is from a perfect model. In this case, the value of 0.65 could be considered acceptable, since it was in between of close fit (< .05) and reasonable model-data fit (< .08) (Shi, Lee and Maydeu-Olivares, 2019; Xia and Yang, 2019). Values of CFI and TLI-NNFI indices were also in a recommended range between .90 and .95, which indicates a satisfactory fit.

Finally, following 5 groups of interrelated factors were identified after completing EFA and CFA procedures:

- The factor group F1 is the largest in the number of factors and total rank-sum (6648 points) among other identified factors groups. It compounds following 6 internal type factors of a personal evaluation and consideration towards purchasing a non-life insurance in the digital platform: perception of a need for insurance, personal financial well-being, potential financial savings, a consideration of loss and gains probability, recommendations.
- 2. The factor group F2 compounds 4 external type factors, oriented to evaluating the influence of technological and content features of a platform and outcomes of the marketing domain in the digital insurance decision-making process: advertising and the brand of an insurance service provider, key technical platform features, graphical UI features, and insurance literacy. The total rank-sum of this factor group was 4482 points.
- 3. The factor group F3 compounds 2 general factors, oriented to evaluating the practical status as-is of the non-life insurance digitalization in a specific country and a preparation level of insurance service providers in a specific country to apply digital solutions. The total rank-sum of this factor group was 2051 points.
- 4. The factor group F4 compounds following 4 combined internal and external types of factors, oriented to evaluating the influence of operational-functional platform features and a general insurance knowledge: insurance literacy, prod-

uct terms and conditions acceptability, customization level of insurance products, personalization level of insurance processes, and services. The total ranksum of this factor group was 4352 points.

5. The factor group F5 compounds 2 general factors, oriented to evaluating the practical status as-is and a level of service personalization and product customization in existing digital non-life insurance platforms. The total rank-sum of this factor group was 1958 points.

It is important to outline that even though the statistical EFA and CFA analysis resulted in the identification of 5 groups of interrelated factors, only 3 factor groups have a direct relation and influence to the Baltic insurance consumer decision-making in a digital insurance platform: the factor group F1, the factor group F2 and the factor group F4.

Continuously, Pearson correlations were calculated to evaluate the strength and direction of linear relationships among all 5-factor groups. Calculations of the Pearson correlation are presented in Table 34.

		Factor Group 1	Factor Group 2	Factor Group 3	Factor Group 4	Factor Group 5
Fastan	Pearson Correlation	1	0.654**	0.327**	0.726**	0.528**
Group 1	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	157	157	157	157	157
г.,	Pearson Correlation	0.654**	1	0.173*	0.758**	0.279**
Group 2	Sig. (2-tailed)	0.000		0.030	0.000	0.000
	N	157	157	157	157	157
Feature	Pearson Correlation	0.327**	0.173*	1	0.444**	0.763**
Group 3	Sig. (2-tailed)	0.000	0.030		0.000	0.000
	N	157	157	157	157	157
Eastan	Pearson Correlation	0.726**	0.758**	0.444*	1	0.663**
Factor Group 4	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	157	157	157	157	157
Factor Group 5	Pearson Correlatio n	0.528**	0.279**	0.763**	0.663**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	157	157	157	157	157

Table 34. The calculation of Pearson's correlation. The Baltic insurance specialists' survey (2021)Source. Composed by the author by using IBM SPSS Statistics 26 (Armonk, NY: IBM Corp) and publishedin Baranauskas and Raišienė, 2021b, p. 12.

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Results in Table 34 confirm the existence of a strong positive Pearson correlation among 3 factor groups: the factor group F1, the factor group F2 and the factor group F4. This finding supports the theoretical assumption of the digital environment and technological factors to be influential in the modern insurance purchase decision making as well as confirms the extension of the theoretical insurance decision-making process framework with new external variables in pre-purchase and purchase stages. In general, results of the factor and correlations analysis also support findings of Milner and Rosenstreich (2013) and Rocha and Botelho (2018) on predominant factors within insurance purchase-decision-making processes. On the factor level, the highest rank value (7.3) was identified in the case of personal insurance experience factor, which supports the structural model of Attitude Towards Insurance (ATI), presented by Rocha and Botelho (2018), and their conclusions that factors of perception of risk in relation to the good / asset and personal concern with finances have the highest positive influence towards the consumers' willingness to pay for an insurance service. Additionally, the highly ranked (7.2) factor insurance service provider brand supports marketing domain-oriented findings of the Milner and Rosenstreich's (2013) research. The variable named marketing mixes was recognized as an outlying component of the final financial decision-making. Moreover, the similar factor trust in the industry was ranked among 3 most influential factors in the structural ATI model of Rocha and Botelho (2018). Findings on the factor insurance literacy also have a scientific contribution to the insurance research field. Firstly, a lower average evaluation (6.9) of this factor influence partly supports findings of studies of Weedige and Ouyang (2019), Weedige, Ouyang, Gao and Liu (2019), and Allodi et al. (2020) researches, where this factor was defined as a potential mitigation action and factor to reduce social problems of a high underinsurance and low-level insurance knowledge of insurance consumers. In general, the empirical recognition of the factor insurance literacy in a combined influential factor group next to factors product terms and conditions acceptability, customization and personalization levels reveal its novelty and potential for application in the conceptual modeling both on academic and practical levels. Looking from the perspective of Baltic insurance market studies, received results of marketing domain-oriented factors contradict findings of the research of Kiyak and Pranckevičiūtė (2014) on the consumers' attitude to non-life insurance prices and determinants of their perceived quality towards insurance products in Lithuania. In Kiyak and Pranckevičiūtė's research (2014), no significant statistical relationship has been identified between the insurance purchase intention and the price discount factor. Therefore, the contradiction of evaluation results on marketing-oriented factors in the empirical part of the thesis confirms the need to involve factors from the marketing domain in future scientific studies on the digital insurance decision-making process.

Finally, assumptions of the value on the normal distribution were not formulated, therefore, nonparametric dependence tests of Mann-Whitney U and Kruskal-Wallis H were applied. These types of tests were used to identify if there are any statistically significant differences between dependent variables of sociodemographic characteristics and to compare their dependence on the evaluation on independent variables of 3 most influential digital insurance decision-making factor groups. Results of the Kruskal-Wallis H and Mann-Whitney U tests are provided in Table 35 and Table 36.

		Results of Kruskal Wallis H tests			
Variable	Factor group	Kruskal-Wallis H	df	Asymptotic Significance	
	F1	3.453	4	0.485	
4	F2	15.209	4	0.004	
Age group	F4	2.736	4	0.603	
	F1	0.986	2	0.611	
Commenter	F2	2.317	2	0.314	
Country	F4	1.732	2	0.421	

Table 35. Results of Kruskal-Wallis H test. The Baltic insurance specialists' survey (2021) Source. Composed by the author by using IBM SPSS Statistics 26 (Armonk, NY: IBM Corp) and published in Baranauskas and Raišienė, 2021b, p. 12-13.

Results of the Kruskal-Wallis H test showed the existence of a statistically significant (p-value = 0.004 is less than the significance level 0.05) difference among mean values of the second-factor group and age groups. The highest mean rank of 103.53 was determined within the age group 46-55 while the lowest mean rank of 59.22 was determined in the age group 18-25. The tendency of the value of a mean rank appears to increase within each age group. Thus, following conclusions can be formulated about sociodemographic characteristics and the decision to purchase an insurance in a digital platform. External factors as technological and content features of a platform and outcomes of the marketing domain do not have any significant impact on the digital insurance decision-making process for the youngest consumers, in the age group 18-25. The assumption is that this age group is a tech-savvy-type of consumers, who do not have any strong brand recognition and preference for it, including insurance service providers. Otherwise, the same type of external factors has a significant influence on the digital insurance decision-making process for consumers in the age group of 46-55. It is confirmed that representatives of this age group tend to have a higher need for personalized assistance, have specific experience with different insurance service providers, and possess an overall stronger emotional connection to the brand comparing to younger consumers. Accordingly, insurance consumers of the age group 46-55 require a technologically friendly platform and more attention to marketing activities including a brand and loyalty promotions. On the country level, no statistically significant differences were observed by comparing results of factor groups F1, F2, and F4.

		Results of Mann-Whitney U Test Statistics table				
Variable	Factor group	Mann-Whitney U	Wilcoxon W	z	Asymptotic Significance (2-tailed)	
	F1	1980.000	2575.000	-0.473	0.636	
Canden	F2	2086.000	9712.000	-0.021	0.986	
Gender	F4	2011.00	2606.000	-0.341	0.733	

Table 36. Results of Mann-Whitney U test. The Baltic insurance specialists' survey (2021)Source. Composed by the author by using IBM SPSS Statistics 26 (Armonk, NY: IBM Corp) and publishedin Baranauskas and Raišienė, 2021b, p. 13.

Results of the Mann–Whitney U test reveal that no statistically significant differences were identified in the evaluation of factor groups F1, F2, and F4 in terms of a gender.

Received statistical results of the organizational perspective analysis highlight a need for re-conceptualization of the theoretical digital insurance decision-making process framework by several structural and content updates. Firstly, the statistical analysis resulted in finding that a behavioral intention to use digital platforms and purchase a non-life insurance is mostly driven by a combined set of Personal Condition factors, financial value evaluation, and recommendations from close social groups. Factors of a financial value and recommendations on the theoretical level typically are related to external factors groups of general Facilitating Conditions and Social Conditions categories. On the factor level, the highest average evaluation was identified in the case of key technology platform features (7.4), including platform availability, speed, safety, compatibility, design, and functional simplicity, and personal insurance experience (7.3). Slightly less influential were factors of a price value as potential financial savings (7.2), a brand of the insurance service provider (7.2), and graphical UI features (7.2), while the factors of perceived risks (6.5) and an acceptability of product terms and conditions (6.6) had the lowest influence level. These findings correspond to previous Baltic market studies carried out by Ulbinaitė and Moullec (2010), Ulbinaitė et al. (2011),

Ulbinaitė and Kučinskienė (2013), Ulbinaitė et al. (2013), where dependent variables of financial value evaluation and personal experience were recognized as having the highest influence to purchase an insurance. On the other hand, a high evaluation of the brand factor contradicts findings of the Kiyak and Pranckevičiūtė's (2014) research, where this factor has a minor importance for respondents in the selection process of an insurance service provider. A meaningful finding was the evaluation of the risk evaluation factor as it appeared to have the lowest value among all independent variables. This type of evaluation challenges knowledge and modeling methods based on the evaluation of traditional, risk, and monetary factors toward insurance consumers' behavior and preferences as not fully applicable and valid in the digital environment and digital insurance platforms. Secondly, the practically confirmed setup of the factor group Personal Conditions requires reconsidering the place and influence of technological, marketing, customization factors in the digital insurance decision-making process. The statistical and correlation analysis resulted in finding the content and influential level of factor groups F2 and F4, which refer to several hypothetical assumptions, crystallized during the theoretical analysis. The factor group F2 compounds 4 independent variables from Facilitating Conditions and Social Conditions categories and defines the influence level of external and system-level variables toward the insurance decision-making in a digital platform. An important finding within these factor groups was the highest evaluation value (7.4) of the factor key technical platform features, which confirms the assumption of technological factors being critical enablers for an insurance service quality, a well-designed, personalized, and customized purchase process in the digital environment. High evaluations of graphical UI features and an insurance service provider brand confirm a scientific position that digital operational capabilities promote a positive social interaction experience and an emotional brand connection after the purchase process completion. The structure of the factor group 4 combines an operational-functional platform and general insurance knowledge factors. This type of structure indicates that customization and personalization domains are not considered as supplementary parts of technical features of digital insurance platforms yet. This insurers' position toward customization and personalization factors is supported by results of the investigation on Baltic financial experts where the spread of MCP strategical capabilities within digital non-life insurance platforms was defined as being between Rather Weak and Neutral. Additionally, such evaluations of customization and personalization are closely related to the empirical finding of standardization as a predominant feature in the Baltic non-life insurance digital platforms. Low evaluations on both factors product terms and conditions acceptability and insurance literacy require continuous scientific discussions and empirical investigations.

Evaluations generally can be explained by an existing understanding of the digital insurance purchase process format, which is supposed to have a simplified content and be completed in a quick time manner, and does not require a strong knowledge on insurance services and products. Such positions of insurance specialists toward these two factors can be also influenced by the current technical setup of digital insurance product configurators, which are focused on lower complexity of personal line insurance products, such as MTPL and travel insurance. Finally, findings of surveys on the Baltic financial experts and insurance specialists are closely related and supports the confirmation of the second and third defended statements regarding the level of digitalization, customization, and personalization in the Baltic non-life insurance platforms being Rather Good. On the other hand, evaluations of experts, insurance specialists and consumers on the digitalization domain, including online customization frameworks for digital insurance platforms, tend to be inhomogeneous in terms of socio-demographic factors of resident country and age.

3.3.2. The evaluation of Baltic insurance consumers' investigation (2021)

Descriptive statistics of socio-demographic characteristics such as a gender, an age group, and a residence country in the Baltic insurance consumers survey contributes to identifying main characteristics and the quality of the targeted research sample as well as the influence of socio-demographic variables towards the fourth defended statement of the thesis and the suggested conceptual digital insurance decision-making process framework. In addition, an identification of socio-demographic profile characteristics supports explanations of findings on the factor and correlation analysis. Main sociodemographic variables are concisely listed out in Table 37.

Variables	Data values	Absolute Number	%
Cardan	Female	175	45
Gender	Male	215	55
	18-24	127	33
	25-34	77	20
1	35-44	107	27
Age group	45-54	48	12
	55-64	20	5
	+65	11	3
	Estonia	57	15
Country	Latvia	165	43
	Lithuania	168	42

Table 37. Socio-demographic characteristics of the research sample on Baltic insurance consumers **Source**. Composed by the author.

The sample of 390 respondents refers to the methodological requirement for a qualified representation of the target Baltic population and completes the Nunnally rule for factor analysis-based researches by ensuring 14 participants per one factor. Nevertheless, the main limitation in the reached sample is that it does not fulfill the requirement of a proportional allocation on a country level, especially in the case of Estonia, where 57 responses were collected instead of expected 90 responses. To summarize, the quality of the realized sample and a minimization of biased results are ensured by a great allocation of numbers in gender and age groups. In general, 215 males (55 % of all respondents) and 175 females (45 % of all respondents) from six age groups participated in the survey. The majority (92 %) of all respondents were from 18 to 54 years old and statistically belonged to four age groups.

Rank-based nonparametric tests of Mann-Whitney U and Kruskal-Wallis H were conducted to analyze statistically significant differences among sociodemographic variables, such as an age group, a gender, a residence country and dependent variables the presence of digital insurance platforms (Question 30, Q30) and perceived usefulness of insurance (Question 31, Q31). Another type of analysis was about dependent variables the presence of digital insurance platforms (Question 30, Q30) and perceived usefulness of insurance (Question 31, Q31) and their influence on the attitude toward a non-life insurance. The third analysis examined attitude toward insurance (Question, Q32) and its influence on an intention to buy a non-life insurance. In the case of analyzing the gender's influence (see Table 38 and Table 39) towards dependent variables Q30, Q31, and Q32, the Mann-Whitney U test was applied, where no statistically significant differences were identified.

		Mann-Wh		
Variable	Gender	Ν	Mean Rank	Sum of Ranks
	Female	175	193.17	33805.00
Q30	Male	215	197.40	42440.00
[Total	390		
	Female	175	197.66	34590.50
Q31	Male	215	193.74	41654.50
]	Total	390		
	Female	175	203.60	35629.50
Q32	Male	215	188.91	40615.50
	Tota1	390		

Table 38. Results of Mann-Whitney U test application for analysis of statistically significant differencesbetween gender and Q30, Q31, Q32 (Ranks). The Baltic insurance consumers' survey (2021)Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

Index	Mann-Whitney U Test Statistics				
Index	Q30	Q31	Q32		
Mann-Whitney U	18405.000	18434.500	17395.500		
Wilcoxon W	33805.000	41654.500	40615.500		
Z	376	347	-1.299		
Asymp. Sig (2-tailed)	.707	.729	.194		

Table 39. Results of Mann-Whitney U test application for analysis of statistically significant differencesbetween gender and Q30, Q31, Q32 (Test Statistics). The Baltic insurance consumers' survey (2021)Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

In the case of analyzing the influence of the respondent country (see Table 40) towards constructs Q30, Q31, and Q32, the Independent-Samples Kruskal-Wallis test was applied, where no statistically significant differences were identified.

Number	Null Hypothesis		Decision
1	The distribution of Q30 is the same across categories of Country	.686	Retain the null hypothesis.
2	The distribution of Q31 is the same across categories of Country	.308	Retain the null hypothesis.
3	The distribution of Q32 is the same across categories of Country	.192	Retain the null hypothesis.

Table 40. Results of Independent-Samples Kruskal-Wallis test application for analysis of statistically significant differences between country and Q30, Q31, Q32 (Test Summary). The Baltic insurance consumers' survey (2021)

The significance level is .050.

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

Number	Null Hypothesis	Sig.	Decision
1	The distribution of Q30 is the same across categories of Age.	.098	Retain the null hypothesis.
2	The distribution of Q31 is the same across categories of Age.	.845	Retain the null hypothesis.
3	The distribution of Q32 is the same across categories of Age.	.027	Reject the null hypothesis.

Table 41. Results of Independent-Samples Kruskal-Wallis test application for analysis of statistically significant differences between age group and Q30, Q31, Q32 (Test Summary). The Baltic insurance consumers' survey (2021)

*The significance level is .050.

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

Index	Value
Total N	390
Test Statistic	10.939a
Degree Of Freedom	4
Asymptotic Sig. (2-sided test)	.027

Table 42. Results of Independent-Samples Kruskal-Wallis test application for analysis of statistically significant differences between gender and Q30, Q31, Q32 (Test Summary 2). The Baltic insurance consumers' survey (2021)

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

An additional Pairwise Comparisons analysis (see Table 43) revealed that the construct attitude toward insurance (Q32), influencing an intention to buy a non-life insurance, obtained the lowest median in the age group 18-24, however, the highest median score ranks were identified in the age group 25-34.

Age group	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig*
18-24 - 45-54	-8.500	18.814	452	.651	1.000
18-24 ->54	-9.306	22.245	418	.676	1.000
18-24 - 35-44	-30.229	14.572	-2.074	.038	.380
18-24 - 25-34	-48.612	16.038	-3.031	.002	.024
45-54 ->54	806	25.586	032	.975	1.000
45-54 - 35-44	21.728	19.291	1.126	.260	1.000
45-54 - 25-34	40.112	20.421	1.964	.050	.495
>54 - 35-44	20.922	22.650	.924	.356	1.000
>54 - 25-34	39.306	23.620	1.664	.096	.961
35-44 - 25-34	18.384	16.595	1.108	.268	1.000

Table 43. Results of Pairwise Comparisons of Age groups. The Baltic insurance consumers' survey (2021)*The significance level is .05.

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

The comparison of age groups also showed statistically significant differences in following pairs: 18-24 - 25-34 (p = 0.002), 18-24 - 35-44 (.038) and 45-54 - 25-34

(.050). These results confirm previous findings of Generation Z, like age group 18-24 in this research, differences to compare Millennials, like age groups 25-34 and 35-44 in this research. In more detail, the results of Pairwise Comparisons of Kruskal-Wallis Test are visualized in Figure 19.





Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

The lowest mean rank of the Generation Z confirms general findings about this group that their attitude to a service or a product are not drawn by brand, loyalty intentions, or their personal experience. Preferences and choices of the Generation Z are influenced by a value proposition as a combination of a product / service quality, their availability and compatability in a digital format and customization options. The attitude of buyers from this age group strongly relies on the social dimension in a form of

searching and sharing information via collaborative networks and crowdsourcing. The attitude of buyers from the Millennial age group relies more on their personal attitude, beliefs, and experience, and is formulated by combing both previous hybrid and personalized shopping experiences, digital branding, and recommendations.

After the descriptive statistics and analysis on socio-demographic Baltic insurance consumer characteristics, the pre-factor analysis was conducted in order to identify an internal questionnaire consistency, its reliability and a measurement scale, a sampling adequacy, and an overall usefulness of the factor analysis. Results of the pre-factor analysis are provided in Table 44.

Indices	Result
Cronbach a	0.892
Spearman-Brown	0.805
Kaiser-Meyer-Olkin (KMO)	0.892
Bartlett's test of sphericity 2	0.000

Table. 44. Results of indexes in the pre-factor analysis. The Baltic insurance consumers' survey (2021)Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

The Cronbach α indicator resulted in the value of 0.892, which confirms the internal consistency of questionnaire items and the scale to be good. Reliability and acceptance of the test to perform data reduction procedures by using EFA and CFA techniques were confirmed by values of the Spearman-Brown coefficient and the Kaiser-Meyer-Olkin (KMO) coefficient. The Spearman-Brown coefficient resulted in the value of .0805, which is in the middle of the acceptable range from 0.70 to 0.90. The KMO coefficient resulted in the value of .0892, which is in the recommended range from 0.8 and 1 to maintain an adequate sampling. Finally, the Bartlett's test of the sphericity χ^2 indicator was conducted and resulted in the following calculated value: χ^2 (390) = 1140.42, p < 0.05. The received value of χ^2 is significant and the p-value is smaller (.000) than the significance level ($\alpha = 0.05$); therefore, it confirms that there is a sufficient significant correlation in the data, and the dataset is suitable to continue the factor analysis within procedures of EFA and CFA.

EFA was applied to analyze the dataset structure, determine latent dimensions and common factors among the observed variables in the survey. Methodologically, the construct validity was determined by using the method of Principal Component Analysis (PCA) extraction and varimax rotation. The CFA principal procedure was applied for an interpretation of a factor and instrument structure, and to test the validity of the dimensionality of the structure obtained after EFA procedures. Main results of CFA indices are presented in Table 45.

Indices	Result
SRMR	0.049
RMSEA	0.046
CFI	0.917
TLI-NNFI	0.901

Table 45. Results of CFA indices. Factor analysis of Baltic insurance consumers' survey (2021)Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

In this case, three categories of global model fit indices were used to examine the goodness-of-fit of the model with a given dataset:

1. Videlicet the absolute fit indices, which in this case is a coefficient of standardized root mean square residual (SRMR). SRMR resulted in the value of 0.049, which is under the recommended value of 0.08 and confirms the model to be approximately well fitting.

- 2. Parsimonious indices, which in this case is a coefficient of root mean square error of approximation (RMSEA). RMSEA resulted in the value of 0.046, which shows a convergence fit to the analyzed data of the model.
- 3. Comparative indices, which in this case stand for coefficients of a comparative fit index (CFI) and non-normed fit index (Tucker-Lewis index, TLI-NNFI). CFI resulted in the value of 0.917, and TLI-NNFI resulted in the value of 0.901, which both are in the recommended range from .90 to .95 to have a satisfactory fit.

Finally, EFA and CFA of 27 independent variables resulted in a finding of six factors groups. The factor group F1 is the largest by the total rank-sum (16553) and factor quantity, by compounding the following seven external types of platform-technology factors. The factor group F1 is purely oriented to a digital insurance platform evaluation: insurance digitalization and insurance literacy, self-service platform quality including the personalization domain, insurance information quality, insurance service quality, security and privacy in the platform, and the customization domain. The factor group F2 has the third-largest total rank-sum of 14765 and compounds the following four internal types of factors from the Personal Conditions category and two external factors from the Facilitating Conditions group: Perception of Need, Perception of Affordability, Perceived Risk, Price Value, Terms and Conditions, Experience. The factor group F3 has the second largest total rank-sum of 15194 and compound seven

combined types of factors from three model categories: Perceived Enjoyment, Curiosity and Loyalty factors from the Personal Conditions category, WOM also known as Recommendations and Social media and network factors from the Social Conditions category, and Brand and Sustainability factors from the Facilitating conditions category. The factor group F4 with the total rank-sum of 6559 compounds three combined types of operational platform-level factors of Task characteristics, User interface, and Effort Expectancy. The factor group F5 has the lowest total rank sum (4401) and consists of two internal types of factors of Perceived Behavioral Control and Perceived Interactivity, which belong to Personal Conditions and Platform Conditions categories. The factor group F6 with the total rank-sum of 4451 consists of two internal type factors of Habit and Personal innovativeness and technology readiness, which also belong to the combined Personal Conditions and Platform Conditions category. On a factor level, the highest rank value (an average evaluation 6.7) was identified in cases of the level of security and privacy in digital insurance platform and the price of insurance. Personal financial well-being (6.6), which in the conceptual model stands for the construct Perception of Affordability, and the need for insurance (6.4), which in the conceptual model stands for the construct Perception of Need, received close evaluations. Slightly lower ranks were identified within the following factors:

The quality of the information in a digital insurance platform, personal experience, recommendations and feedback, which in the conceptual model stands for construct Word of Mouth (WOM), received an evaluation rank 6.2.

The acceptability of insurance product terms & conditions and the quality of support service in a digital insurance platform, which in the model stands for construct Insurance service quality, including personalization domain, received an evaluation rank 6.1.

Loyalty to insurance companies, insurance literacy, the quality of digital insurance platform features, and the consideration of lost and gains probability, which in the model stands for construct Perceived Risks, received an evaluation rank 6.

All other 14 factors did not manage to reach the evaluation rank benchmark of 6 points. These findings correspond both to results of earlier researches in the field made by Ulbinaitė et al. (2011), Ulbinaitė and Moullec (2010), Ulbinaitė and Kučinskienė (2013), Ulbinaitė et al. (2013), Kunreuther and Pauly (2015) Rocha and Botelho (2018), a cross-border study report by the European Commission (2017), and the Baltic insurance specialists' survey, presented in section 3.3.1. The prioritization of factors related to financial and personal dimensions refers to above-listed researches and outlines the vitality of classical economics and rational behavior perspectives within the digital decision-making process, when a personal experience and evaluation situations, including one's financial well-being, a perception of insurance need, and an insurance literacy level, together with economic benefits calculation, affect the decision to purchase an insurance. Higher than the total average (5.9) evaluations of factors of the platform-technology dimension follow findings of the Baltic insurance specialists survey, where technological factors of platform operational and graphical user interface features were outlined as key drivers of digital insurance decision-making. Lower than the total average (5.9) evaluations of insurance product customization (5.7), Perceived Interactivity (5.7), user interface design and framework in the platform (5.6), Perceived Behavioral Control (5.5), and Perceived Enjoyment (5.5) factors influence has a multifold meaning. First, these lower evaluations on factors related to the platform usage indicate that Baltic insurance consumers do not seek for more advanced technological solutions or empowerment within the digital insurance purchase process and prefer a high level of personal data privacy, security, insurance service and information quality in digital platforms. Second, these results also support earlier findings that MC capabilities have a weak practical reflection and the standardization is a predominant feature in current digital non-life insurance platforms in the Baltics.

Continuously, Pearson correlations among all 6-factor groups were calculated and results are presented in Table 46.

		Factor Group 1	Factor Group 2	Factor Group 3	Factor Group 4	Factor Group 5	Factor Group 6
Ft	Pearson Correlation	1	0.873**	0.669**	0.909**	0.786**	0.891**
Group 1	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
	Ν	390	390	390	390	390	390
F4	Pearson Correlation	0.873**	1	0.652**	0.698**	0.611**	0.861**
Group 2	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
	N	390	390	390	390	390	390
Factor	Pearson Correlation	0.669**	0.652**	1	0.648**	0.627**	0.818**
Group 3	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
	N	390	390	390	390	390	390
F	Pearson Correlation	0.909**	0.698**	0.648**	1	0.702**	0.825**
Group 4	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	N	390	390	390	390	390	390
Factor Group 5	Pearson Correlation	0.786**	0.611**	0.627**	0.702**	1	0.651**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
	N	390	390	390	390	390	390
Factor Group 6	Pearson Correlation	0.891**	0.861**	0.818**	0.825**	0.651**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	390	390	390	390	390	390

Table 46. The calculation of Pearson's correlation. The Baltic insurance consumers' survey (2021)Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).**Correlation is significant at the 0.01 level (2-tailed).

Calculation of Pearson correlations revealed a very strong positive or a strong positive correlation among all factor groups. A very strong positive (0.909) and statistically significant correlation was identified between factors groups F1 and F4. This result can be explained by a similar type of a structure of these factor groups, which compound factors from the platform-technology level, combined with factors from customization and personalization domains. A strong positive and statistically significant correlation was identified in multiple pairs of factor groups: between F1 and F2 (.0873), F1 and F5 (0.786), F1 and F6 (0.891), F2 and F6 (.0861), F3 and F6 (0.818), F4 and F5 (0.702), F4 and F6 (0.825). Findings on a structure of factor groups, their relationship structure and intensity support the confirmation of the fourth defended statement and the validation of the conceptual integrated insurance decision-making process in dig-

ital insurance platforms. As per Pearson's correlation results in Table 50, the digital insurance decision-making process is influenced by 6 interrelated factor groups, which represent independent variables from platform and technology, personal evaluation, social and marketing dimensions. The structure of factor groups and their correlation reflect and extend findings of the Baltic insurance specialists survey, where three factor groups, including a personal evaluation and considerations, technological, operation-al-functional, and content features of the platform, marketing domain outcomes, were identified.

Tests of Mann-Whitney U and Kruskal-Wallis H were carried out to identify and analyze statistically significant differences among an age group, a gender, a residence country of respondents, and factor groups. Results of the Mann-Whitney U test application for gender variables are presented in Table 47.

Factor group	Gender	N	Mean Rank	Sum of Ranks
F1	Female	175	196.75	34432.00
	Male	215	194.48	41813.00
F2	Female	175	200.73	35127.00
	Male	215	191.25	41118.00
F3	Female	175	204.20	35735.00
	Male	215	188.42	40510.00
F4	Female	175	190.55	33346.00
	Male	215	199.53	42899.00
F5	Female	175	195.29	34176.00
	Male	215	195.67	42069.00
F6	Female	175	196.68	34419.00
	Male	215	194.54	41826.00

Table 47. Results of Ranks in Mann-Whitney U test. The Baltic insurance consumers' survey (2021)Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

Summarized statistical results of the Mann-Whitney U test, presented in Table 48, indicate that no statistically significant differences were identified between the sociodemographic factor of the respondent's gender and evaluations of factor groups.

Factor groups						
Indices	F1	F2	F3	F4	F5	F6
Mann-Whitney U	18593.000	17898.000	17290.000	17946.000	18776.000	18606.000
Wilcoxon W	41813.000	41118.000	40510.000	33346.000	34176.000	41826.000
Z	198	826	-1.375	783	033	187
Asymp. Sig. (2 tailed)	.843	.409	.169	.434	.974	.852

Table 48. Test Statistics of Mann-Whitney U test. The Baltic insurance consumers' survey (2021)Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

The non-parametric test of Kruskal-Wallis H was applied to understand if any statistically significant difference between a sociodemographic factor of the respond-

ent's country and factor groups exists. As per Table 49, no statistically significant differences were noticed.

Number	Null Hypothesis	Sig.	Decision
1	The distribution of F1 is the same across categories of Country	.675	Retain the null hypothesis.
2	The distribution of F2 is the same across categories of Country	.194	Retain the null hypothesis.
3	The distribution of F3 is the same across categories of Country	.374	Retain the null hypothesis.
4	The distribution of F4 is the same across categories of Country	.902	Retain the null hypothesis.
5	The distribution of F5 is the same across categories of Country	.954	Retain the null hypothesis.
6	The distribution of F6 is the same across categories of Country	.326	Retain the null hypothesis.

Table 49. Results of Independent-Samples Kruskal-Wallis test application for analysis of statistically significant differences between country and factor groups (Test Summary). The Baltic insurance consumers' survey (2021)

The significance level is .050.

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

The non-parametric test of Kruskal-Wallis H was applied to understand if any statistically significant difference between a sociodemographic factor of the respondent's age group and factor groups exists. As per Table 50, statistically significant differences in factor groups F1 and F4 can be identified. Both factor groups stand for a platform-technology type of factors including content features of an insurance platform framework, information and process quality, security and privacy.

Number	Null Hypothesis	Sig.	Decision
1	The distribution of F1 is the same across categories of Age	.037	Reject the null hypothesis.
2	The distribution of F2 is the same across categories of Age	.127	Retain the null hypothesis.
3	The distribution of F3 is the same across categories of Age	.917	Retain the null hypothesis.
4	The distribution of F4 is the same across categories of Age	.040	Reject the null hypothesis.
5	The distribution of F5 is the same across categories of Age	.482	Retain the null hypothesis.
6	The distribution of F6 is the same across categories of Age	.526	Retain the null hypothesis.

Table 50. Results of Independent-Samples Kruskal-Wallis test application for analysis of statistically significant differences between age groups and factor groups (Test Summary). The Baltic insurance consumers' survey (2021)

The significance level is .050.

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

Therefore, the method of the Pairwise Comparisons analysis was applied and resulted in the finding of statistically significant differences in following pairs of age groups: 18-24 – 25-34 (.049), 18-24 – 35-44 (.026), and 18-24 – 45-54 (.005). This finding supports earlier results of the Baltic insurance specialists survey, where the youngest consumer age group was less influenced by technological and content features of

the digital insurance platform due to their strong technology literacy and a lower need for a personalized assistance in the decision-making process. In detail, results of the Pairwise Comparisons of Kruskal-Wallis Test are summarized in Table 51.

Age group	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig*
18-24 ->54	-23.040	22.583	-1.020	.308	1.000
18-24 - 25-34	-32.076	16.282	-1.970	.049	.488
18-24 - 35-44	-33.026	14.793	-2.233	.026	.256
18-24 - 45-54	-53.925	19.100	-2.823	.005	.048
>54 - 25-34	9.037	23.978	.377	.706	1.000
>54-35-44	9.986	22.993	.434	.664	1.000
>54-45-54	30.885	25.974	1.189	.234	1.000
25-34 - 35-44	949	16.846	056	.955	1.000
25-34 - 45-54	-21.848	20.731	-1.054	2.92	1.000
35-44 - 45-54	-20.899	19.583	-1.067	.286	1.000

Table 51. Results of Pairwise Comparisons of Age groups and factor groups. The Baltic insurance consumers' survey (2021)

*The significance level is .05.

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

The last part of the examination on survey results is a statistical analysis on searching for a significant statistical difference among three independent variables: the influence of the presence of digital insurance platforms (Question 30, Q30) and perceived usefulness of insurance (Question 31, Q31) on the attitude toward a non-life insurance, the influence of attitude toward insurance (Question, Q32) on an intention to buy a non-life insurance, and respondents, who have or do not have any type of non-life insurance contract (Question 1, Q1) and have and have not bought any non-life insurance by using a digital insurance platform (Question 2, Q2). Due to the categorical (dichotomous) nature of Q1 and Q2 variables, the Binomial Logistic Regression method was applied and calculations were made by using Software IBM SPSS Statistics 26. Calculations are summarized in Table 52.

Dependent variable	Independent variable	Pr (> z)
	Q30	0.000836
Q1	Q31	2.26*10^{-5}
	Q32	0.000248
	Q30	0.00079
Q2	Q31	0.000208
	Q32	1.17e*10^{-5}

Table 52. Coefficients of Logistic Regression analysis among variables Q1, Q2 and Q30, Q31, Q32. The Baltic insurance consumers' survey (2021)

The significance level is .05.

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

The identification of statistically significant differences in all six pairs supports the suggested integration of theoretical constructs Perceived Ease of Use of Platform, Perceived Usefulness of Insurance, and Attitude Toward Behavior into the conceptual integrated digital insurance decision-making process framework. Such results also allow formulating a conclusion about the positive influence of the presence of digital insurance platforms and personal insurance experience toward the purchase of non-life insurance and using digital insurance platforms. In order to determine the existence of the association among binary variables Q1, Q2, and all factor groups, the Point-Biserial Correlation method was applied. Calculations of Point-Biserial Correlation coefficients are summarized in Table 53.

	Indices		Factor groups and variables						
		F1	F2	F3	F4	F5	F6	Q1	Q2
	Pearson Correlation	.351**	.316**	.219**	.292**	.213**	.333**	1	.580**
QI	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N*	387	387	387	387	387	387	387	387
	Pearson Correlation	.343**	.289**	.180**	.313**	.173**	.304**	.580**	1
Q2	Sig. (2-tailed)	.000	.000	.000	.000	.000	.001	.000	
	N*	387	387	387	387	387	387	387	387

Table 53. Results of Point-Biserial Correlation analysis among variables Q1, Q2, and factor groups. The Baltic insurance consumers' survey (2021)

* Total sample was 390 but in 3 cases of Q1 and Q2, answers fell out of the binary selection.

** Correlation is significant at the 0.01 level (2-tailed).

Source. Composed by the author by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

As per Table 53, a positive and statistically significant correlation in all cases is observed. In the case of Q1, received values of the Pearson correlation coefficient of all factor groups show a weak positive correlation, and, in the case of Q2, received values of the Pearson correlation coefficient of factor groups are in levels of a very weak positive and weak positive correlation. In other words, received results allow formulating a conclusion that outlined factor groups have a positive effect on the non-life insurance ownership and usage of digital insurance platforms. Looking at the factor level, the highest correlation coefficient both in Q1 and Q2 cases was identified in the factor group F1. Such results of the factor group F1 confirm earlier findings on technological features of a platform, quality features of the insurance service and information in a digital platform, and the personalization domain as among the most influential factors of digital insurance decision-making. This position of the influence level of the factor group F1 is supported by lowest evaluations of factor groups F5 and F3. A very weak positive correlation among factors F3, F5, and the usage of the platform for non-life insurance purchase (Q2) confirms a low interest of Baltic non-life consumers in advanced technological solutions and a received experience in digital insurance platforms as well as a low effect of digital branding activities and social media. In general, such findings at the factor groups' level, together with the strength level of a moderate positive correlation, identified between an ownership of an insurance contract (Q1) and a usage of a digital insurance platform (Q2), also confirm earlier findings of insurance digitalization insufficiently widespread in the Baltic non-life insurance market.

Finally, path analysis and SEM methods were applied to present actual causal relations among independent and latent variables specified by structural equations and correlations among the error term. From the methodological perspective, it should be noted that structural constructs of eX were included to define the error level as a potential extent of the dependent variable Insurance Purchase in Platform, which cannot be explained by independent variables. The value of eX was calculated by using a statistical measure of R-squared (R2) formula $e=\sqrt{(1-R^2)}$. Received values of eX confirm a potential existence of another input (independent) and latent variables, which were not involved in the empirical investigation but might also have a statistically significant influence to the dependent variable of Insurance Purchase. The analysis resulted in an associated recursive path diagram, which is provided in Annex 13. From the statistical analysis perspective, the practical digital insurance consumer decision-making path diagram unifies results of the CFA analysis, the linear regression analysis, and the path analysis, and explains the correlation among a set of variables and their variance within the model specified in Annex 14. The statistical analysis of SEM showed a positive causal relationship among all observed and latent variables in the diagram and confirmed their both indirect and direct causal effects towards the dependent variable of Insurance Purchase in Platform (IPP). A standardized estimate of the path coefficient std all. resulted in a finding of large effect both on a factor level, where 25 of 27 factors had a higher than the selected benchmark value of 0.50, and on a factor group level, where all factor groups had the absolute value not less than 0.60. Leading factors were Perceived Interactivity (Q13, 0.714), Insurance information quality (Q6, 0.665), Perceived Behavioral Control (Q12, 0.646), Task Characteristics (Q4, 0.642), and Effort Expectancy (0.637). Looking from factors groups level, the most influential were F1 (0.966), F6 (0.810), and F2 (0.800). Such results both confirm and extend findings of the statistical analysis above, where combined personal and platform-technology level factors, including personal experience and consideration, technological, operational-functional, and content features of a platform, were identified as most influential factors in the digital insurance decision-making process. In general, these results of standardized coefficients confirm the strength of the generated model as all independent variables are interrelated, easily comparable to each other, and have a high effect on the IPP variable. A different situation was identified in the case of standardized regression coefficients, received after completing the linear regression analysis for latent variables PEUP and PUI. The value of the PUI (0.359) variable shows a medium positive effect, while the value of PEUP (0.080) indicates a small positive effect on variables ATB. Such results can be interpreted as the outcome of a difficult semantical interpretation of the latent variable ATB, which is related to imponderable personal mental consideration steps before the actual insurance purchase decision. Therefore, the presence of digital insurance platforms has a low direct influence on the attitude toward the non-life insurance, and the variable of perceived usefulness of insurance is more understandable and reasonably has a higher influence level. The result of latent variable BI (0.306) can be explained similarly, which has a medium effect on the actual insurance purchase decision making. An important finding is the received value range of R-squared (R2), which not only confirmed the existence of non-observable variables in the digital insurance decision-making process, but also defined the explanatory power of separate factors, factor groups, and latent variables toward a dependent variable of digital insurance purchase. The following researchers Henseler, Ringle and Sinkovics (2009), Hair, Ringle and Sarstedt (2011), and Hair, Hult, Ringle and Sarstedt (2014) proposed an interpretation of a rule of thumb for acceptable R2 in scientific researches of marketing issues, including investigations on human behavior, applying in the analysis on factor level. The value range of 0.75, 0.50, and 0.25 was described as substantial, moderate, and weak, respectively. Accordingly, factor groups F2, F4, and F6, fit to the range 0.25 < r < 0.5, which is considered having a weak effect size, factor groups F3 and F5 fit the range 0.5 < r < 0.75, which is considered a moderate effect size, while the factor group 1 fits the range where r < 0.25, which is considered a very low effect size. In general, such factor results of R2 at a factor level indicate that the factor group F1 as a technical evaluation of digital insurance platforms covered main variables and has a very low error level in this category. The situation with factor groups F2, F4, and F6 is similar, where values of R2 indicate a low error level existence, while the combined factor

group F3 has a moderate result by explaining the influence on the digital insurance decision-making. A higher evaluation of the factor group F3 can be explained by the structure of factors, where three different evaluation categories of personal, social, and facilitating conditions are covered. Looking at the factor level, 23 of 27 independent variables fit the range 0.5 < r < 0.75 and can be defined as having a moderate error level. Values of four factors Q14, Q15, Q18, and Q20 fit the range where r => 0.75, which shows a higher than moderate error level. This result of factors Q14, Q15, Q18, and Q20 can be explained by the nature of these factors, where a personal evaluation of perceived enjoyment and risk, habits, curiosity are strongly biased variables. The received R2 value of the variable of BI (0.91) indicates a strong effect level, while the R2 value of ATB (0.00) indicates a none effect size. These results of BI and ATB confirm their latent and biased nature, which are difficult to explore comparing to crystalized dependent variables and a need for continuous scientific investigation of these types of variables' reflections and influence in the digital insurance decision-making process.

From the content perspective, the practical path diagram supports the conceptual integrated digital insurance decision-making process framework but also has several logical and content differences comparing to the initial conceptual integrated framework. Firstly, the correlation analysis resulted in findings that a digital insurance purchase is mostly driven by a combined set of 3-factor groups of F1, F2, and F3, which later was extended by SEM analysis results above identifying F4 and F6 as strongly related and influential factor groups. The leading factor group F1 is composed of six factors from the platform-technology level and one factor from the system level of the conceptual integrated framework. A high influence of these factors confirms the relevance of the traditional and updated DeLone and McLean Information Systems (IS) Success Models (1992, 2003) within the modern insurance researches and the practice of insurance digitalization. Moreover, a practical recognition of TTF model (1995) constructs of Task and Technology characteristics within the setup of the factor group F4 also confirms a possibility to combine these two models. In this way, insurance practitioners would be able to receive more far-reaching insights about digital insurance consumers' behavioral patterns, attitudes, and decision-making process by evaluating personal, contextual-moderator, and technical platform or task factors that fit a user. A heterogeneous structure of factor groups F2 and F3 confront theoretical assumptions of relationships and a structural setup in Personal Conditions, Facilitating Conditions, and Social Conditions factors categories. In the case of factor group F2, four

factors from the Personal Conditions category and two factors from the Facilitating Conditions group are combined and illustrate main practical drivers of an individual evaluation in the insurance decision-making process. The setup of F2 group reflects on earlier findings of Ulbinaitė et al. (2011), Ulbinaitė and Moullec (2010), Ulbinaitė and Kučinskienė (2013), Ulbinaitė and Moullec (2013), where two sequential stages of the evaluation on needs and affordability, and the evaluation of insurance itself together with monetary and personal factors were outlined as main influence factors of traditional insurance-decision making process in Lithuania. Strong positive and statistically significant correlations between factor groups F1 and F2 (.0873) and between F2 and F6 (.0861) are essential practical findings, which support findings of the theoretical analysis on the positive attitude towards insurance and digital insurance platforms as being highly affected by combined personal, contextual, and situational factors as well as a utilitarian approach to risk reduction. In the case of the factor groups, F3 and F6 were also identified with statistically significant correlation (0.818) and a heterogeneous foundation. Both factor groups combined factors from Personal Conditions, Social Conditions, and from Facilitating conditions categories and confirm the relevance of the UTAUT2 (2012) model application in the insurance research field. Additionally, an empirical validation of the Sustainability factor from the factor group F3 together with the Insurance Literacy factor from the factor group F1 introduces both a new value dimension and a profile of modern insurance consumers and a must-to-be feature of insurance digitalization and marketing outcomes. Another crucial finding is the confirmation of suggested extensions of TAM (1986, 1989) model constructs of Perceived Usefulness and Perceived Ease of Use and their incorporation into the TRA (1967, 1980) model. Moreover, the logistic regression analysis resulted in the finding of statistically significant differences between latent variables of Perceived Ease of Use of Platform, Perceived Usefulness of Insurance, Attitude Toward Behavior and buying a non-life insurance by using a digital insurance platform. In this way, the conceptual integrated process workflow with the cause-and-effect logic, multiple interrelated factors groups, and latent variables are validated as applicable for the Baltic non-life insurance organizational practice and a continuous scientific investigation.

From the theoretical perspective, the above-defined findings of factor groups also support the fourth defended statement of the digital insurance purchase decision-making process being influenced by combined factor groups with leading factors of personal insurance need and financial affordability, digital marketing, technological enablers, customization, and personalization. Otherwise, considerably low evaluations of customization and personalization factors set both by insurance specialists and consumers indicate the MCP concept still has a vague penetration within existing digital non-life insurance platforms in the Baltic region. Therefore, these findings encourage a further scientific discussion of the direction and reflections forms of insurance digitalization and customization in the Baltic non-life insurance market, such as an integration of combined online customization frameworks. The survey of Baltic insurance specialists disclosed the three most influential factor groups, which affect the attitude and behavioral intentions in digital non-life insurance platforms, while the results of a continuous consumer-based investigation expanded the number of influential factor groups to six. A strong positive correlation among all combined factor groups, identified in both analyses of surveys, supports the findings of the theoretical analysis part, where the combination of personal (cognitive-emotional), technological, monetary, and individual risk factors appeared as a foundation of the modern insurance concept and digital insurance decision-making process.

Finally, the empirically validated integrated framework of the digital insurance-decision making process might be a starting step for assessing the impact of internal distribution processes on the attitude and behavioral intentions of consumers. The suggested integrated framework and subjects provide a holistic and prevailing scientific standpoint on the digital purchase decision-making process and valuable insights on the traditional trust and risk-related factors, the effects on insurance consumer's perceived risk, value, and attitude towards a behavioral intention and actual behavior in the digital platform.

3.3.3. Results of combined online customization frameworks visualization in digital insurance platforms: Baltic consumers-based investigation and evaluation (2022)

Recent scientific studies and practical trends of insurance digitalization have revealed that the global non-life insurance industry is in an intensive multidimensional conceptual and operational transition. An acceleration of technological advancements, platformization, dynamic changes in the market structure, and a spread of new hybrid business models are practical outcomes of this transition period in recent years, affected by the global COVID-19 situation. In general, factors of the digital business environment, online customization frameworks, and a combination of technological and cognitive-emotional variables have become major drivers and fundamental features of the modern insurance concept application in digital platforms. Besides, it is important to list specific outcomes and influential factors on the consumer level in digital platforms, including increased practical demands on hyper-personalized support services in sales and aftersales processes, and an availability of product customization or already fully digitally customized insurance outcomes in a form of on-demand, UBI or sachet insurances (bite-sized insurances). Therefore, the following statistical analysis aims to identify the influence of sociodemographic factors, combined online customization and personalization features application in digital insurance platforms towards the decision of digital insurance end-users from Baltic countries to use in the future or recommend the prototypes of digital platforms.

The empirical data analysis on the Baltic insurance consumers survey began with descriptive statistics of dataset characteristics and research sample in general. Main sociodemographic variables are listed in Table 54.

Variables	Data values	Absolute Number	%
Candan	Female	147	46
Gender	Male	170	54
	18-24	73	23
	25-34	100	32
A	35-44	71	22
Age group	45-54	38	12
	55-64	35	11
	+65	0	0
	Estonia	39	12
Country	Latvia	189	60
_	Lithuania	89	28

Table 54. Socio-demographic characteristics of the Baltic insurance consumers' research (2022) sample Source. Composed by the author

The research sample consisted of 317 insurance consumers from Lithuania, Latvia, and Estonia altogether. In detail, the majority of respondents (54 % of all research samples) were men, belonging to age groups 18-24 (23 %), 25-34 (32 %), and 35-44 (22%), with Latvia as their residency country (60%). In general, the research sample had a proportional representation of genders and a great diversity in age groups, 5 different age groups are represented altogether.

In the statistical data analysis part, the Kruskal-Wallis H test was applied firstly in the case of sociodemographic factors of respondents' age, gender, and residence country and question 3 (How likely would you use such insurance platform prototype in the future?) as well. Estimation results are presented in Annex 15. Initial estimations, which included a non-stratified full sample and sample A, did not show any statistically significant differences among above listed sociodemographic characteristics and respondents' likelihood to use the presented prototype in the future. On the other hand, the replication by using the sample B resulted in findings of statistically significant differences in the case of prototype X towards a resident country. See results of the Dunn test in the post hoc analysis in Table 55.

Sample A – Sample B	Test statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.*
EE - LV	-20.381	11.524	-1.769	0.77	.231
EE - LT	-38.577	12.564	-3.070	.002	.006
LV - LT	18.196	7.915	2.299	.022	.065

Table 55. The calculation of Dunn test. The Pairwise Comparisons of country characteristic in the Balticconsumers' survey (2022)

Source. Composed by the author by using IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

*Each row test the null hypothesis that the Sample A and Sample B distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .05. Significance values have been adjusted by the Bonferroni correction for multiple tests.

It can be identified that the prototype X is less preferred ((p-value = 0.002) is less than the significance level 0.05) to use in the future by Estonians and can be explained by the results of the case study in section 3.1.1, where the combined framework ((AT-B)+(AL-B)) was identified to be the dominant version of digital insurance platforms in Estonia while prototype X is build around more standardization closed ((AL-B)+(AT-B)) framework. In overall it is recognized that Estonians have stronger skills and longer experience in using digital insurance platforms, therefore looking for higher level of customization and personalization solutions, including platform framework. The second level investigation of sociodemographic factors' influence on respondents' likelihood to recommend was made by applying the Kruskal-Wallis H test in the case of question 4 (How likely would you recommend such insurance platform prototype to a friend or colleague?). Estimation results are presented in Annex 15. Similarly to the case of the question 4, no statistically significant differences were identified in a non-stratified sample and sample A, and only in the case of sample B a statistically significant difference was identified in genders. Here, the prototype Z was favored more by female respondents.

Additionally, an estimation of the dependency of previous respondents' experience with non-life insurance and their likelihood to use it personally and recommend each of the presented frameworks in the future was concluded. No statistically significant differences were identified in the Kruskal Wallis H tests within this case, indicating that previous experience in holding insurance has no effect on digital insurance platform usage and does not require any differentiation on platform design and online customization features by following the logic of new vs. old consumer. Finally, the investigation was completed by an evaluation of the dependency of previous respondents' experience with using digital insurance platform and their likelihood to use it personally and recommending each of the presented frameworks in the future. In this case, statistically significant differences were identified both within a non-stratified sample and sample B in the question of recommending the prototype to a friend or colleague. Estimation results of all types of samples in question 4 are presented in Table 56.

Kruskal-Wallis H	Sig.	Decision
Non-stratified (full) sample		
The distribution of Q3 Prototype Y is the same across categories of Q2	.477	Retain the null hypothesis.
The distribution of Q3 Prototype Z is the same across categories of Q2	.015	Reject the null hypothesis.
The distribution of Q3 Prototype X is the same across categories of Q2	.055	Retain the null hypothesis.
The distribution of Q4 Prototype Y is the same across categories of Q2	.152	Retain the null hypothesis.
The distribution of Q4 Prototype Z is the same across categories of Q2	.015	Reject the null hypothesis.
The distribution of Q4 Prototype X is the same across categories of Q2	.016	Reject the null hypothesis.
Sample A		
The distribution of Q4 Prototype Y is the same across categories of Q2	.709	Retain the null hypothesis.
The distribution of Q4 Prototype Z is the same across categories of Q2	.216	Retain the null hypothesis.
The distribution of Q4 Prototype X is the same across categories of Q2	.519	Retain the null hypothesis.
Sample B		
The distribution of Q4 Prototype Y is the same across categories of Q2	.051	Retain the null hypothesis.
The distribution of Q4 Prototype Z is the same across categories of Q2	.045	Reject the null hypothesis.
The distribution of Q4 Prototype X is the same across categories of Q2	.010	Reject the null hypothesis.

Table 56. Results of Kruskal-Wallis H testing with different size of samples. The Baltic insurance consumers' survey (2022)

Source. Composed by the author by using IBM SPSS Statistics 26 (Armonk, NY: IBM Corp)

Accordingly, it can be noticed that the previous experience in using digital insurance platforms influences a favorable attitude towards the prototype X recommendation and the prototype Z both for a personal usage in future and as a recommendation to a friend or colleague. This result can be explained in a twofold direction, where it is strongly affected by the existing dominance of the ((AL-B) + (AT+B)) framework (p-value = 0.010 is less than the significance level of 0.05) in Latvia and Lithuania and an increasing awareness of hyper-personalized, step by step online support availability in digital product customization, which increased significantly during the COVID-19. Additionally, a statistically significant recommendation of the prototype Z can be explained by an assumption of seeing question-based type of customization prototype as more consumer centric and user friendly both to existing and new platform user. Finally, such results also indicate the possible transition to a higher level of insurance customization in the Baltic non-life insurance market, which naturally triggers a more spread application of (Q-B) online customization framework in the modeling of digital insurance platform.

CONCLUSIONS

1. Clear historical boundaries of six transformation periods were identified. From the scientific research perspective, three main historical periods and transformations were disclosed by the bibliometric and thematic synthesis. Semantically, initial findings of MC features, as Mass Confusion or limitations of the Mass Production system, can be traced back to the works of Alvin Toffler (1970, 1980). Later, in 1987, Davis conceptualized the theoretical foundation and term MC, and, in 1993, Pine II et al. popularized and developed the idea of MC for the practical application within manufacturing operational management. Within 2000-2010, the traditional MC concept faced a semantical and conceptual transition into two stand-alone, electronic, and customer-driven MC and MP concept versions. From 2010, the practical popularity of digital transformations and sustainability has determined innovative scientific interpretations of combined MCP versions, oriented to interrelated scientific domains of digital marketing and entrepreneurship, platform economics, agile and smart manufacturing. Although the content and research directions of MC and MP domains have outlined boundaries and outcomes, the semantical meaning still faces numerous typologies and interpretations.

2. The theoretical content development and semantic changes of the traditional MC and MP concepts can be observed from functional, customer, and organizational perspectives. A synthesis of Mass Production, supply chain and operational management theories, and the technological-instrumental approach application were recognized as key drivers. From the theoretical perspective, the traditional MC evolved from the Mass Production concept, but a later development was strongly influenced by theoretical constructs of Servitization Business Model and Product Cannibalization. The organizational, as product-oriented, perspective was identified as a significant theoretical development discourse within traditional MC research domains, however, it was dominated by the customer perspective in later development periods. A practical popularity of the human-centric approach and an application of the SDL to model product customization and platform design became determinant drivers of MC and MP concepts as well. Digitalization and customization have already penetrated to the insurance industry, leading to positive outcomes in pricing and product underwriting, customer service and sales distribution platforms, and dynamics of the market structure. In the insurance field, the application of Self-Service Technologies reflect within a variety of multisided and multifunctional digital service platforms, covering the 360° consumer support, product configurators, claim registration and administration via a live chat, chatbots, web forms, and overall online customization framework solutions. Moreover The COVID-19 has not only accelerated digital insurance transformation within the legacy IT infrastructure and risk management, but also introduced a new consumer service model, built around dynamic needs for on-demand and customizable insurance products, interpersonal digital interaction within the decision-making process, and a hybrid consumer service format. The modern insurance decision-making process should not be interpreted as a linear progression through process stages anymore, since it has become iterative and simultaneous.

3. Digital e-retail organizations and traditional B2C service organizations tend to confront obstacles in integrating traditional online customization frameworks into already existing multisided platforms and omnichannel service-based business models. The transition to online customization has been recognized as more complex within traditional brick-and-mortar types of manufacturing organizations, since they face additional challenges due to limited in-house technical capabilities for implementing data and customer-driven digital processes and qualifications of e-MCP concept. A lower success rate in the adoption closely relates to the homogeneity level of the target audience and a practical popularity level of the Mass Production's operational approach in the market. In general, the development of circular and sharing types of economy models and the COVID-19 situation in recent years have undoubtedly influenced consumers' behavioral patterns and raised a digital knowledge level among users. Therefore, following six combined online customization frameworks have been modelled: ((AL-B) + (AT-B)), ((AL-B) + (Q-B)), ((AT-B) + (AL-B)), ((AT-B) + (Q-B)), ((Q-B) +(AL-B))), ((Q-B) + (AT-B)).

4. A conceptual extension of the traditional three-stage model of service consumption was suggested towards the digital insurance consumers' behavior and purchase decision-making process in digital platforms. The presented conceptual framework and its constructs refer to the holistic marketing concept and the approach of consumer centricity to a system design and process evaluation and management. In general, the suggested integrated decision-making process framework compounds four evaluation dimensions, such as system, process, platform-technology, and individual. The framework includes modified theoretical constructs and the process logic from HCDM (2002), UTAUT2 (2012), TAM3 (2008), TTF (1995), the updated IS success model of DeLone and McLean (2003), e-service quality and success dimensions, and the interpretation of key findings of related field researches as well. The proposed extension contributes to the scientific field by introducing a modern three-stage insurance decision-making process logic, centering on a unique combination of dependent and interdependent variables with a cause-and-effect relationship at the content and process level, and a focus on insurance purchase in digital platforms.

5. Empirical investigation compounds procedures of data collection and analysis based on the methodological triangulation of qualitative and quantitative research methods and 5 stages of empirical investigation process of the Baltic market and consumers completed in 3 years period (2020-2022). The selection of research methods and samples of Baltic financial service experts, specialists, and consumers support both the selected 3-level research strategy and objectives of the thesis. Empirical data collection began by applying a multidimensional qualitative type of a comparative Baltic insurance platforms analysis and completing an analysis of global statistical data sources and statistical mapping of search keywords. Afterward, the investigation continues by applying 3 structured online surveys by following a simplified Fuzzy and Likert scale questionnaire logic and is supported by visualizations under the art-based research logic. A modified methodological logic of the Human-Computer Interaction (HCI) research with the process design of a randomized controlled A/B testing and NPS loyalty measurement were introduced in the last empirical investigation as well.

6. The practical case study and data analysis revealed a high variety of digitalized insurance products for individual consumers and the customization availability in digital product configurators was identified. However, current insurance digitalization outcomes in digital platforms seem to be unbalanced in terms of value co-creation and personalization, as platforms provide limited options for personalized information or assistance in product customization and other self-service processes. Country-level differences were also noticed on the digital platform level, where the combined online customization framework of ((AT-B) + (AL-B)) was predominant in the Estonian nonlife insurance market, while variations of combined online customization frameworks of ((AT-B) + (AL-B)) and ((AL-B) + (AT-B)) were predominant in Latvia and Lithuania.

Findings of the Baltic financial exerts survey support the partial confirmation of the first defended statement and confirm the second and third defended statements. Heterogeneous results on the country-level were identified in the evaluation of insurance digitalization, where the lowest evaluations were identified in Estonia, while the highest evaluations of the general digitalization and insurers' preparation for digital solutions application were identified in Latvia. The highest consumers' need for digital insurance solutions was identified in the case of Lithuania. In general, the multi-sided investigation on the insurance digitalization domain indicated that the preparation level of Baltic insurance service providers to apply digital solutions is in between of Satisfied and Rather Good, which is close to the average judgment of the general digitalization level, but is significantly behind the actual need and demand of Baltic insurance consumers for digital non-life insurance solutions. These findings allow confirming the second defended statement as country-level differences were also observed in the evaluation on digital platform features. Average standardization and customization levels in the Baltics were Satisfied, while the personalization level evaluation is between levels Satisfied and Rather Good. These findings support the confirmation of the third defended statement. High evaluations on standardization features in the Baltic nonlife insurance platforms reflect product specifics, strict legal regulations of MTPL and overall importance of motor insurance segment in the non-life product portfolio of Baltic insurers. On the other hand, the identical average evaluation on customization features indicates the ongoing strategical and technological transition from the Mass Production approach.

After conducting an online survey of 157 specialists from the insurance-related working field in the Baltics, three factor groups, F1, F2, and F4, were recognized as directly related to the insurance decision-making process and having a strong positive Pearson correlation. The presence of factor group F1 as the largest by factor number and influence level of combined personal conditions contribute to confirmation of the fourth defendant statement. On the factor level, factors of previous and ongoing personal insurance experience and key technical platform features showed the highest influence, factors of potential finance value-savings, insurance service provider brand and graphical UI features in the platform were slightly less influential. Any statistically

significant differences were not identified among factor groups F1, F2, F4 and a residence country, but a statistically significant difference between mean values of the F2 factor group and respondent age groups of 18-25 and 46-55 was recognized. The age group 18-25 can be defined as a tech-savvy type of individuals, who have a high knowledge of modern technologies, usage experience of technology-based products and platforms, and possess a lower brand recognition and loyalty intentions. In opposition, the age group 46-55 can be defined as a more dependent on personalized and direct relationships with service providers and has a stronger brand recognition and loyalty.

After conducting an online survey of 390 insurance consumers from the Baltic market, six factors groups of 27 factors, having a very strong positive or strong positive correlation to the digital insurance purchase decision-making, have been identified. The setup of most influential factors and their content orientation to monetary-risk and personal condition evaluation indicate that traditional economic benefits and rational behavior perspectives are relevant and applicable within digital insurance decision-making process evaluation and modeling. The higher than total average (5.9) evaluations of platform-technology-related factors of information, support service, and general platform quality indicate the importance to include the updated DeLone and McLean Information Systems (IS) Success Model (2003) in the modeling of digital insurance consumers' behavior and frameworks of digital non-life insurance platforms. On the other hand, the lower than total average (5.9) evaluations of platform usage and framework related factors allow making a twofold interpretation. Firstly, this situation supports previous findings of the research where all 3 operational MCP capabilities were identified as being applied in the evaluation range between Rather Weak and Neutral as well as finding of the standardization domain being a predominant feature in the existing digital non-life insurance platforms in the Baltics. Secondly, such evaluations on the platform usage and framework-related factors indicate that the Baltic non-life insurance consumers are influenced by current platform setup and general insurance digitalization level, therefore, they lack interest in a higher perceived control or enjoyment of the insurance purchase process or interactivity within digital insurance platforms. A statistically significant differences among the sociodemographic variable of a respondent's age group 18-24 and factors evaluations as well as between presence of digital insurance platform and purchase of non-life insurance were identified. Such results can be explained through the glance of this age group as core characteristics of Generation Z has a high, even native, digital literacy level as well as a limited experience with the insurance service and platforms. On the other hand, such differences on age groups also confirm the need for more user-centered, digitalized, customized, and personalized insurance services and platforms in the Baltics. Therefore, additional empirical research of 317 Baltic insurance consumers' likelihood-to-use and recommend combined online customization frameworks in digital insurance platforms was completed and the results of the statistical analysis partially confirmed the second defended statement. Here, statistically, significant differences were identified in-country and gender level evaluations of the frameworks as well as there was outlined a positive attitude towards the (Q-B) framework application, which indicates a possible practical transition in the Baltic non-life insurance market from the traditional, alternatives or attributes based customization to the combined customization with a higher level of personal assistance in the process.

7. A combined model for a practical application of the empirically validated integrated digital insurance decision-making process framework was prepared and included guidelines from 2 levels and usage perspectives, which can be applied both as integral and stand-alone toolkits. The first part of the model includes recommendations that are grounded on results of mezzo and macro level empirical investigations as current state-focused practical guidelines for insurance platform evaluation from the content, customer-centricity, and functional perspectives. This first part compounds the suggested 9 additional KPIs, KPIs Measurement Table, and KPIs Assessment Matrix following the structural and process logic of Risk Register and Risk Heat Map methods and S.M.A.R.T goal and objectives framework. From the practical application perspective, the presented guidelines are prepared by following the criteria of low financial investment, simple technological integration, and minimal usage knowledge. Additionally, due to the structural modularity of KPIs types and flexibility on a timeline, the evaluation of suggested additional KPIs may be smoothly integrated into daily and periodical research and modeling activities of digital insurance specialists, service, and platforms managers, and designers.

The second part of the model includes recommendations that are grounded on the results of macro and micro levels of empirical investigations. This part of the recommendations can be interpreted both as current state and solution-focused practical guidelines for modeling the digital insurance consumer journey and framework of the platform. The suggested analysis framework combines empirical findings on the digital non-life insurance decision-making process in the Baltic market and, from the methodological perspective, following a simplified logic and content categories of the traditional Service Blueprint map diagram. Similarly to the first part of the model, this part of recommendations features a high application scale, modular simplified content, and visualized outcomes which require low investment and user training. In general, it is expected that the suggested framework would be beneficial for the upper-level insurance distribution service, platform, and customer service managers in the situational analysis as well as be an additional tool for digital marketing, process, and product analysts for modeling both platform design and end-user behavior.

RECOMMENDATIONS

Introduction and validation of recommendation model foundation

It is essential to emphasize that the following 2-level recommendation model and usage guidelines include logic and features of empirically validated insurance decision-making process framework and factor groups. The outcomes of the presented recommendations can be modified and adjusted either fully or to a selected extent in regards to the insurer's digital maturity level, existing platform technical resources, operational capabilities, target audience or strategical targets for digital sales, marketing, and platform development. Since strictly defined step-by-step instructions, a static process approach to technological framework management is confirmed impractical in the digital environment, recommendations and usage guidelines on the application are suggested in a more modular and adaptable approach. Finally, the recommendation model and its usage guidelines follow the content, scope, and general application limitations of the thesis, as presented in the introductory and discussion sections of the thesis, and should be considered carefully before an actual implication.

The first level of the recommendation model and usage guidelines is dedicated to both supporting internal and market analysis of digital insurance markets and reflecting on existing limitations of market and platform performance analysis. In other words, the traditional analysis on full market environment and performance compounds a structure of 3-level strategy insights, and multiple analysis tools, and allows linking historic, prevailing, and forecasted conditions of the selected market. The industry, sector and competitor analysis, as the mezzo-level analysis, is the practical outcome of this structure of multi-level strategy insights and is conducted by applying well-known methods of Porter's Five Forces, Value Chain Analysis (VCA), Structure-Conduct-Performance analysis (SCP), and other Blue Ocean Strategies, for instance 3C, 4P. The internal, as micro-level, analysis typically is conducted from perspectives of an organization or a user by applying traditional methods, such as SWOT analysis, income analysis, and strongly depends on internal organizational requirements and standards. Moreover, there are multiple formats of market and performance analysis within the insurance industry, including market structure and financial performance report, official market briefs on market dynamics within pricing and claim administration, interpretations of legal regulations, and a purchasing power level. Meanwhile, the analysis on the current internal or market situation with digital insurance platforms requires an innovative and combined analysis approach with an extensive collection of both primary and secondary data, additional methods, and factor evaluations. The application of the VCA method and market integration analysis tools are insufficient anymore as they both are oriented to the traditional process logic and narrowed down to a price integration analysis.

The second level of the recommendation model and usage guidelines is dedicated to both supporting internal analysis and modeling the consumer decision-making process in digital insurance platforms and reflecting on global insurance market trends influenced by the COVID-19 period. The global insurance industry analysis, conducted by Capgemini Efma (2019), and EIOPA (2021), within the COVID-19 period has showed that insurance service providers try balancing among a profitable business continuity, financial support for policyholders, and embracing new technologies and partnerships. Despite the growing use of BDA and Artificial Intelligence techniques on the operation level, the overall insurance digitalization still seems to keep a slow pace and stay behind the actual consumer needs for digital insurance solutions on the customer service level. Additionally, the conducted analyses in the thesis outlined the gap of both comprehensive scientific investigations and practical guidelines on how to support the ongoing transition from the traditional, provider, and product-centric management business model to digitalized and human-centric process approach and platform business model. For this reason, the combined Service Blueprint model, including theoretical and empirical findings on the digital non-life insurance decision-making, the practical purchase process logic, content, and touchpoints, is suggested. Service Blueprinting is selected as a scientifically and practically accepted method for a holistic and objective analysis of the dynamic and multilayered phenomenon, visualizing relationships among people, processes, and physical and / or digital touchpoints, and building the foundation for re-designing the process to more consumer-centric. From the application perspective, the Service Blueprint method is recognized as more simpler to
apply comparing to UML (Unified Modeling Language) and BPMN (Business Process Model and Notation) methods as well as offers more aggregated findings comparing to UX mapping methods as empathy, experience, customer journey mapping or PCN (Process Chain Network). The Service Blueprint map diagram typically is focused on the current state rather than on solution, as it points out weaknesses of a specific customer journey from organizational and customer perspectives.

Finally, the suggested 2-level recommendation model can be visualized by following the format of the Input-Process-Output (IPO) model as a 2-process workflow eligible to apply in a parallel and modular way. The selection of the IPO format for the visualization allows presenting conceptual frameworks in a structured and easyto-read way, which encourages further discussions and interpretations. Figure 20 illustrates the suggested 2-level recommendation model.



Figure 20. Recommendations model for analysis and modeling of end-user behaviour in digital insurance platforms **Source**. Composed by the author by using draw.io.

As per Figure 20, main outputs of the first level in the suggested recommendation model are new data collection and methods for digital insurance platforms analysis and modeling:

- The 3-level KPIs Measurement Table presented in Annex 16 and Annex 17 should be used on a monthly and quarterly basis for multidimensional digital insurance platforms evaluation from content, consumer centricity, and functional perspectives. 9 additional KPIs and sub-KPIs presented in Table 57 and used in the Measurement Table are of a derivatives type of indicators by following findings of the most influential decision-making factors in the Baltic digital non-life insurance platforms, presented in sections 3.3.1 and 3.3.2. From the process and content perspectives, the presented data collection and analysis methods are created by following the logic of Risk Register and Risk Heat Map methods, S.M.A.R.T goal and objectives framework.
- The 3-level KPIs Assessment Matrix presented in Annex 18 should be used for the final KPIs assessment after the data collection by using the 3-level KPIs Measurement Table. The KPIs Assessment Matrix allows visualizing the internal and market situation within the digital platform content, consumer-centricity, and selected functional features according to the Risk Heat Map logic of using the 3-level evaluation by colors.

Main outputs of the second level in the suggested recommendation model are new data collection and methods for digital insurance platforms analysis and modeling:

• High and low-fidelity prototyping from a hypothetical customer journey and platform solution-focused perspectives presented in Annex 19 by following 5 mapping categories of the traditional Service Blueprint framework. The focal point of the user guidelines within the Service Blueprint model is the Baltic non-life insurance consumers' journey of the insurance purchase in a digital insurance platform and practical outcomes of the re-conceptualized and empirically validated 3-stage theoretical model of the insurance purchase decision-making presented in section 1.6.

In detail, each part of the recommendations model and the suggested methods of data collection and analysis are defined in sections as follows.

Recommendations for internal and market analysis of digital insurance platforms

Thus, additional digital environment and platform business model-oriented KPIs are recommended for application both as a stand-alone quantifiable benchmark and supplemental material to the existing market research toolkit and steps of formal investigations, data analysis, and reporting. An inclusion of the suggested additional evaluation on digital platform KPIs is expected to extend an existing practice of the internal and market analysis and evaluation metrics of a technological or marketing type by new perspectives. The suggested 9 KPIs allow capturing the multidimensional status of digital insurance platforms from the content and functional perspectives. The foundation of these digital platforms KPIs follows findings of the most influential decision-making factors in the Baltic digital non-life insurance platforms, presented in section 3.3.1 and 3.3.2. In order to perceive details to a deeper level, the recommended additional KPIs are presented in Table 57 as per below.

Type	KPIs and sub-KPIs	Meaning of KPI	Measurement
Content	Pricing: I. Final price I.2. Discount presentation Recommendations: 2.1. Automated 2.2. Friend-based ranking Advertising: 3.1. Branding 3.2. Insurance usefulness	 Pricing - presentation of the final price and discounts option in a platform. Recommendations - presentation of automated or friend-based ranking recommendations in a platform. Advertising - digital marketing outcomes in a platform. 	 Scale: 0 - Not identified 1 - Partly identified 3 - Identified Frequency: Monthly
Consumer -centricity	 Personalization: Self-service solutions Personalized assistance Customization: Online customization 	 Personalization - availability of automated and / or semi-automated personalized user assistance solutions. Customization - availability of full or partial customization of insurance products, and / or participation in the customization process. 	 Scale: 1 - Low 2 - Medium 3 - High Frequency: Quarterly
Functional	 6. Integrations 7. Security and privacy 8. Information quality 9. Navigation: 9.1. Automated 9.2. Manual 	 Platform integrations – availability of automated data sources and functionalities, ensuring faster and smoother data insertion and process flow. Security and privacy – presentation of information, processes, and functionalities in a platform under recommendations of a human-centered security approach and legal requirements of personal data protection in a digital environment. Information Quality – information presentation framework, where graphical user interface features follow recommendations of W3C, simplicity, and consistency in design to be user-friendly. 	 Scale: 1 - Low 2 - Medium 3 - High Frequency: Quarterly

Table 57. Recommended additional KPIs for digital insurance platform analysis

Source. Composed by the author by following theoretical and empirical researches results.

The KPIs Measurement Table and KPIs Assessment Matrix are compiled by following the structural logic of Risk Register and Risk Heat Map methods applied widely in modern project and process management disciplines. The practical usability is also increased by following recommendations of the S.M.A.R.T goal and objectives framework, reflecting as specific, measurable, achievable, relevant, and time-bound KPIs and their evaluation process. The specific feature part in these recommendations is covered by selecting evaluation KPIs as customer-centered and reflecting on practical expectations of Baltic insurance consumers towards digital insurance platforms and the digital insurance purchase process, identified during empirical investigation of the thesis. Accordingly, limitations in traditional marketing data analytics are reduced and the practical application in functional maintenance and design development of digital platforms is increased. Suggested additional KPIs and their evaluation stand for the unique combination of content data, process management, and framework evaluation, which can be used as the foundation for managerial insights report on operational platform improvements, as well as support more advanced predictive and prescriptive analytics. The recommended measurement of digital insurance platforms centers on the perspective of a digital end-user experience by avoiding deep technical and quantitative evaluations on platform features. The inclusion of a basic 3-point rating scale with qualitative equivalents ensures a lower level of ambiguity and time consumption in procedures of data collection, analysis, and later managerial implications. In order to understand the logic of the suggested scale, definitions on points are listed Table 58 as follows.

Scale		Application in the KPIs analysis		
	Quantitative	Qualitative		
3-point scale	0	Not identified - the measured KPI is not identified in a platform during analysis.	Content analysis	
	1	Partly identified – the measured KPI is partly identified in a platform during analysis. Partly identification reflects on proportional representation of sub-KPI (if exists) when half of them are identified in a platform during the analysis procedure.		
	3	Fully identified – the measured KPI, including all sub-KPI (if exists) is fully identified in a platform during the analysis procedure.		
	1	Low – the measured KPI, including all sub-KPI (if exists), was identified in a platform during the analysis procedure but has a weak expression both in scope and formats.	Common contribity	
	2	Medium – the measured KPI, including all sub-KPI (if exists), was identified in a platform during the analysis procedure and has more advanced expression in scope and / or formats.	analysis	
	3	High – the measured KPI, including all sub-KPI (if exists), was identified in a platform during the analysis procedure and has advanced expression both in scope or formats.	runchonar analysis	

Table 58. The presentation of the 3-point rating scale for analysis of additional digital insurance platforms KPIs

Source. Composed by the author.

Results of both internal and market analyses on the provided additional KPIs might be achieved by applying the logic of the manually controlled observation method, presented in Figure 29, and using the recommended data collection table template, provided in Annex 16. In the case of human resource limitations or a need of a more frequent measurement, data collection can be partially done by using an automated Web Scraping method and software tools. From the holistic implementation perspective, the full process of data collection, analysis, and synthesis is illustrated in the process flowchart diagram, as per Figure 21.



Figure 21. The process flowchart of evaluation on additional digital platforms KPIs **Source.** Composed by the author by draw.io.

The relevance of evaluation results of additional digital platforms KPIs and a reasonable time-bound setup is closely related to well recognized dynamics of digital information flows, technological advancements and an intensive competition in the Baltic non-life insurance market. Therefore, it is recommended to measure suggested KPIs of the digital platform content type on a monthly basis. The empirically validated low level of customization and personalization in the Baltic digital non-life insurance platforms together with strict legal regulations of personal data security and privacy in digital financial platforms enable to conduct functional and customer-centered KPIs measurement on a quarterly basis. From the application process perspective, the following steps are recommended as a preparation stage before conducting the suggested internal and market analysis on digital insurance platforms and increasing the relevance of received findings within a broader application:

1. The general situation analysis and informal investigation on digital insurance platforms in the market. The traditional market research requires starting with a high-level industry outlook and specifying focal points of analysis, research design, and data sources. This is a starting point, whose implication is simplified due to well prepared financial and technological briefs of the insurance industry from official market regulators or independent consulting firms. Therefore, in this step procedures of sampling in a form of digital platform identification and filtering are required.

2. Framing the research approach as a set of certain research objectives and the data collection procedure in regards to the suggested frequency and KPIs area.

After collecting data, findings can be summarized with a help of the KPIs Measurement Table, provided in Annex 17.

The final KPIs Measurement Table is used as the second data analysis procedure in order to provide an accumulated score both of separate KPIs types and the total measurement score. From the theoretical perspective, the Table is built according to the Risk Register Table logic of using 3-level evaluation indicators and their score calculation. Instead of constructs of the Probability level, Impact level and Risk Score, all three Target Score (TS), Actual Score (AS), and Final Score (FS) are presented as equivalent constructs. The construct of TS is used as a quantitative benchmark of a maximum available value in the 3-point rating scale, while the construct AS is a quantitative measurement value in the 3-point rating scale of the practical status as-is of KPIs. The construct of FS presents the proportion of TS and AS. It is recommended to include the construct Change, defining quantitative differences of KPIs in percentage comparing to the last measurement result. Thus, the completed measurement is not static and can be used in a long-term analysis.

After completing the data collection and analysis procedure, it is advised to transfer values of FS constructs of each KPIs type into the KPIs Assessment Matrix, which visualizes the internal and market situation within the digital platform content, consumer-centricity, and selected functional features. In detail, the fulfilled KPIs Assessment Matrix and a template are provided in Annexes 18 and 21. The Assessment Matrix is formed according to the Risk Heat Map logic of using the 3-level evaluation by colors. The Apple Green color stands for a range of FS of High and Fully identified features, the Barley White color stands for a range of FS of Low and Not identified features. From the application perspective, the FSs of the measured object in each measurement type are transformed to the selected character and placed in the Matrix in regards to the value of FS. Thus, the Matrix is fulfilled, as provided in the example

in Annex 18, and both weak and strong points of the platform can be identified as well as the general status as-is of the market within a digital insurance platform is outlined. The periodical implication is useful to identify development directions of a platform of each competitor and the market in general.

The content and procedural simplicity of the suggested additional KPIs evaluation process on digital insurance platforms requires a considerably low financial investment, technological integration, and usage knowledge. From the implementation perspective, due to the structural modularity of KPIs types and flexibility on a timeline, the evaluation of suggested additional KPIs may be smoothly integrated into daily and periodical activities of digital insurance specialists, service, and platforms designers. Additionally, the fulfillment of a complete evaluation, by including additional KPIs constructs, intends to create a basis for a habitual evaluation procedure, leading to a continuous readjustment and improvement of digital platforms.

Recommendations for modeling non-life insurance consumer decision-making process in digital insurance platforms

Therefore, empirical thesis findings of the investigation on Baltic insurance specialists and consumers in sections 3.3.1 and 3.3.2 and were considered in order to prepare a widely applicable and customer-oriented blueprint framework of the digital insurance purchase service. The example of the fulfilled modified Service Blueprint is provided in Annex 19 and the template of the modified Service Blueprint is provided in Annex 20. The suggested modified Service Blueprint framework can be used as practical guidelines for insurance service managers, service and platform designers, and process analysts on analyzing current processes and systems connected to digital insurance sales as well as modeling a favorable non-life insurance consumer decision-making process and design of a digital insurance platform. The digital non-life insurance decision-making process is analyzed from a hypothetical customer journey and platform solution-focused perspectives, by following 5 mapping categories of the traditional Service Blueprint framework and during theoretical analysis introduced a re-conceptualizated the 3 stages model of purchase decision-making. The outcome of the mapping is provided in Table 59.

Category	Meaning	Outcomes in the model
		Possible touchpoints:
Evidence	Interaction points of a digital customer with the	Social media
	insurance service provider in the purchase process.	Website
	The format and scope of the touchpoint reflect on the	Mobile application
	type of a customer (new or existing) and a process	Email
	(new contract purchase of renewal of a contract).	Fnone Live shat
		Live chat
	A chronological flow of specific actions of digital	Customer actions. Platform usage experience
	customers is conducted to complete the insurance	Insurance usage experience
	nurchase process	Need arousal
Customer	Digital customers actions and their logical sequence	Information search
actions	reflect on general digital non-life insurance purchase-	Visiting platform
	process stages, provided in the category Process stage,	Consultation / negotiation
	and conceptual personal experience stages, provided in	Insurance customization
	the category Experience stage.	Purchase
		Insurance cover usage
		 Employee role:
		Customer support specialist
		Insurance partner specialist
		 Technology:
Frontstage	Visible physical and / or digital responses of insurance	Live chat
actions	service providers and their partners in order to support	Chat Bot
actions	requests from customers.	Automated recommendations
		Friend-based ranking
		Web request form
		Product configurator
		Payment Gateway, self-service platform
		Employee role:
		Digital marketing specialist
Backstage	Non-visible interactions within the organization to	II support specialist
actions	support frontstage operations and customer requests.	Platform aposialist
		Claim specialist
		Partner integration specialist
		Processes:
		Technical platform support
		Digital marketing
Support processes and tools		Risk and pricing evaluation
	Non-visible interactions within the organizational	Insurance partners integration support
	processes and systems to support backstage operations.	 Tools (digital marketing):
		Google Analytics
		Adobe Web Analytics
		Yandex Metrica
		Hotjar

 Table 59. Outcomes of Service Blueprinting categories in the digital non-life insurance purchase-process

 Source. Composed by the author by following theoretical and empirical researches results.

From the content perspective, the focal point of the user guidelines within the Service Blueprint model is the Baltic non-life insurance consumers' journey of the insurance purchase in a digital insurance platform. In the chronological flow, there are 9 digital non-life insurance customer's actions outlined that are practical outcomes of the re-conceptualized 3-stage theoretical model of the purchase decision-making. It should be noted that the listed customer, frontstage, and backstage actions are not fixed constructs both in quantity and content and might be combined and expanded according to the selected customer journey, platform, or online customization framework. The above-defined customer and organizational actions also depend on the type of a customer and insurance purchase process. For instance, the actions need arousal and information search are more applicable and considerable in the case of new insurance contract purchase when a first-time visitor of a platform conducts the process. This type of visitor typically reaches out to insurers after engaged by digital marketing outcomes or recommendations in social networks. The setup of web analytics tools on the insurers' website or product configuration platforms, such as Google Analytics, Adobe Web Analytics, Yandex Metrica, or Hotjar, is recommended. Web and platform analytics tools not only allow ensuring a better customer support service and reducing the bounce rate of the purchase process, but also supporting more accurate management of digital marketing costs, planning future marketing campaigns, and platform framework improvements. Accordingly, the design of an insurance platform and the online customization framework should reflect on both visitor types, first-time and returning, and both process types, a new insurance contract purchase and a renewal of a contract. In both cases, it is recommended to follow the logic of HCD and ensure a user-friendly welcoming (landing) page, where main information about insurance products, customer support, and service is laid out in a simplified, humanized language and a properly visualized format. The age is an important sociodemographic factor to consider in modeling the digital insurance platform framework as well. The conducted empirical investigation resulted in finding that the age group 18-24 has statistically significant differences comparing to other age groups regarding the influence of technological and content features of the digital insurance platform. Therefore, combined frameworks of (AT-B), such as (AT-B)+(AL-B) and (AT-B)+(Q-B), or the (Q-B) combined outcome (Q-B)+(AT-B) should be the leading frameworks for this age group, while for other age groups features of the combined (AL-B) framework of (AL-B)+(Q-B) are recommended to apply. Management of digital interaction touchpoints is closely related to the same segmentation of a customer and process type as well. In the case of a new customer and insurance contract purchase, primary interaction touchpoints are built around engaging insurers' profiles and activities in social media, digital advertising, and the WOM phenomenon. Despite the empirically confirmed low influence of insurers brands and popularity of the generic and short-tail type research keywords

in the Baltic non-life insurance market, several adjustments on daily practices might be recommended for digital insurance marketing practitioners. One suggestion is increasing numbers of the long-tail type research keywords in advertising, with target topics of a digital distribution channel, product, and brand promotion. Consequently, a higher operational efficiency due to lower bid costs and higher conversion rates may be expected. Additionally, long-tail keywords allow introducing a new type of branding, including features of sustainability as a fastly growing interest domain in the insurance field and an important factor in the insurance decision-making process. Results of empirical investigations revealed that the age factor should be also considered within the digital marketing field as a feedback from a close social group and social network is among the most influential factors in the insurance decision-making process within all age groups. The integration of automated personalized or general rank-based recommendation features in the existing digital platform framework is one of the practical suggestions on fulfilling or improving this practical customer need. In the scenario of returning customers and a renewal of a contract, a full range of digital interaction points are available and widely used in practice. Key requirement is to ensure an omnichannel approach implementation both in communication with the customer and ongoing customer actions in the platform.

From the process perspective, it is important to introduce recommendations on the preparation and usage of the Service Blueprint model. Before conducting an actual service analysis and modeling by using the blueprinting method, several steps are essential as follows:

- To build a cross-functional team and ensure a stakeholders' support for a selected service re-design and improvement by using the Service Blueprinting method.
- To identify the scope of the improvable service and focus point of Service Blueprinting analysis, which can be as-is blueprint or to-be blueprint.
- Gather relevant information about the improvable service, including customer actions and interactions from the existing customer-journey map and primary internal data sources. This internal research is recommended to conduct by combing methods such as a direct observation and interviews.
- To model a low-fidelity version of an initial service blueprint by conducting physical or digital team workshop, which might result in either multiple individual frameworks or one general service blueprint framework.

Afterwards, a high fidelity prototype might be compiled by completing the following refinement steps:

1. A detailed mapping and understanding of the customer's point of view on the selected process, their experience, and contact forms within the selected process. A segmentation of the customers base to first-time and repeating is important in order to outline differences in process workflows and evidence points. In order to identify, it is recommended to break down key components of the customer process into measurable action steps by following suggested additional evaluation layers of Process stage and Experience stage. A visualized process in the framework is presented and later read from the left to right side of the framework. In the case of an external usage of the Service Blueprint framework, a visualization of the selected customer process can be made by following symbols of a traditional process flow diagram.

2. A validation and list of core roles of employees, technologies, and support processes, which are connected to the specific customer action and experience management stage. The visualization of these framework components follows the workflow of customer's actions but is distinguished by the line of visibility and the line of internal interaction. These framework components can be analyzed both vertically and horizontally in a later stage of the analysis. The vertical analysis allows understanding the concentration of organizational resources in separate selected process steps, while the horizontal analysis, from the left to the right side of the framework, outlines an interconnection of organizational resources.

3. A link of front-stage actions, back-stage actions, support processes and tools, and introduction of additional evaluation constructs. Modeling a high-fidelity Service Blueprint prototype is completed by linking organizational resources. It should be elaborated that, on the practical application level, the integration of secondary evaluation categories, such as selected operational metrics, timeline, and customer emotional experience levels, is used to complete the blueprint process. These type of extensions allows analyzing the selected customer journey from additional time and financial angles as well as revealing new points of frontage backstage or supporting process improvements. In the case of the suggested modified Service Blueprint framework, additional categories of the Process stage and Experience stage were included to link specific customer actions to stages of the empirically validated integrated insurance decision-making process framework. Finally, an internal distribution of the final Service Blueprint framework for feedback and approval as well as an iterative approach to the refinement process of a high-fidelity Service Blueprint is also recommended.

To conclude, the proposed additional KPIs on the internal and market platform analysis together with the modified Service Blueprint framework for the digital insurance decision-making process are prepared as practical recommendations and guidelines from the managerial perspective. They also reflect recent preferences of Baltic digital insurance end-users within the insurance purchase process and insurance digitalization, customization, and personalization outcomes in the Baltic non-life insurance market. It is expected to widen existing technical, marketing, and product domain-oriented understanding and analysis practices of digital insurance platforms as well as to support modern insurance service managers with an additional comprehensive situational market, functional and content platform information and provide an angle of a customer. Modular simplified content and visualized outcomes of recommendations make them flexible, easy and quickly applicable to daily practices of the digital insurance platform analysis and modeling.

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ANNEXES

ANNEX 1. The logical structure of the dissertation



Source. Author's elaboration by using the draw.io.

ANNEX 2. Dissemination of the research findings

Stand-alone publications and publications in the co-authorship model, published in research journals and / or conference proceedings from Web of Science and / or Scopus databases:

1.1. Baranauskas, G. (2020). Digitalization Impact on Transformations of Mass Customization Concept: Conceptual Modeling of Online Customization Frameworks. Marketing and Management of Innovations, 3, 120-132. http://doi.org/10.21272/ mmi.2020.3-09

1.2. Baranauskas G, Raišienė A.G and Korsakienė R. (2020). Mapping the Scientific Research on Mass Customization Domain: A Critical Review and Bibliometric Analysis. Journal of Risk and Financial Management.13(9), 2-20. https://doi.org/10.3390/jrfm13090220

1.3. Baranauskas, G. and Raišienė, A.G. (2021). Expert-based evaluation of digitalization and Mass Customization in the Baltic non-life insurance online platforms. Journal of Eastern European and Central Asian Research, 8(2), 184-201. https://doi. org/10.15549/jeecar.v8i2.644

1.4. Baranauskas, G. (2021). Application of customization and personalization in digital solutions of non-life insurance market: a case study of Lithuanian, Latvian and Estonian e-sales platforms. Engineering Management in Production and Services, 13(2), 68-82. doi: 10.2478/emj-2021-0013

1.5. Baranauskas, G. and Raišienė, A. G. (2021). Reflections on the Customer Decision-Making Process in the Digital Insurance Platforms: An Empirical Study of the Baltic Market. Applied Sciences, 11(18), 8524. https://doi.org/10.3390/app11188524

Stand-alone publications and publications in the co-authorship model, published in research journals and / or conference proceedings in other scientific databases:

2.1. Baranauskas, G. (2018). Review of a Process Prioritization In Mass Customization. Contemporary Research on Organization Management and Administration, 2, 46-57. doi: https://doi.org/10.33605/croma-022018-012

2.2. Baranauskas, G. (2019a). Mass Personalization vs. Mass Customization: finding variance in semantical meaning and practical implementation between sectors. Social Transformations in Contemporary Society, (7), 6-15.

2.3. Baranauskas, G. (2019b). Application of Big Data Analytics in Cusomization of E-mass Service: Main Possibilities and Obstacles. Management of Organizations: Systematic Research, 82(1) 1-11. https://doi.org/10.1515/mosr-2019-0009

Personal and online participation and / or presentations in scientific conferences at national and international levels:

3.1. Baranauskas, G. Case of ManoSodra – standardization, personalization or customization of public service? 6th international scientific conference Viešojo valdymo pokyčių konferencija "Tarp efektyvumo ir socialinio poveikio", 13 March, 2019, Vilnius, Lithuania.

3.2. Baranauskas, G. Mass Personalization vs. Mass Customization: finding variance in semantical meaning and practical implementation between sectors. 7th international scientific conference "Social Transformation in Contemporary Society (STICS) 2019", 6-7 June, 2019, Vilnius, Lithuania.

3.3. Baranauskas, G. Digitalization Impact On Transformations Of Mass Customization Concept: Conceptual Modeling Of Online Customization Frameworks. 7th international scientific conference "New Trends in Management and Production Engineering - Regional, Cross-border, and Global Perspectives", 5 June, 2020, Dąbrowa Górnicza, Poland.

3.4. Baranauskas, G. Application of Customization and Personalization in Digital Solutions of Non-Life Insurance Market: A Case Study of Lithuanian, Latvian and Estonian E-Sales Platforms. 31st EBES Conference - Warsaw, 15-17 April, 2020, Warsaw, Poland.

3.5. Baranauskas, G. Experts-based Evaluation of Digitalization and Mass Customization in Online Insurance Platforms: Empirical Analysis on the Baltics Non-Life Insurance Market. 33rd EBES Conference - Madrid, 7-9 October, 2020, Madrid, Spain.

3.6. Baranauskas, G. Reflections on Digital Insurance Platforms and Consumer Decision-Making Process in the Baltics NonLife Insurance Market. 36th EBES Conference – Istanbul, 1-3 July, 2021, Instanbul, Turkey.

Online participation in summer study programs at the international level:

4.1. Digital Business Master Class. International Aalto University Summer School, Aalto University School of Business, 1 June-7 August, 2020, Espoo, Finland.

4.2. Industrial organization – Applied platform economics. International Paris School of Economics (PSE) Summer School, 14-18 June, 2021, Paris, France.

Other disseminations:

5.1. Approved: a chapter about digital transformation in the insurance service industry in the Springer book Intelligent Systems in Digital Transformation: Theory and Applications (2022) (Kahraman, C. amd Haktanır, E., Eds.). Chapter title: Digital and customizable insurance: empirical findings and validation of behavioral patterns, influential factors, and decision-making framework of Baltic insurance consumers in digital platforms.

Research topics: Balic con-life msurance market Digtal environment and platforms e-MCP concept	RESEARCH CONTEXT	Research period: February-March 2020 Research sample: 27 digital insurance platforms Data collection method: State of the art Multionensional assessment matrix Data analysis method: Multilevel qualitative comparative analysis	
Research topics: Digatation of non-life insurance market Dissimization of digata inon-life insurance platform Personatization of digata inon-life insurance platform MC capabilities in digital non-life insurance platform	MACRO RESEARCH LEVEL (Market perspective)	Research period: July August 2020 Research sample 11 Ballic financial service expert Data collection method. Structured online survey Experts ophiciar analysis Experts ophicar analysis Chardias (W) von creation Chi-square distrution (XZ)	
Reservin topics: Displantization of insurance market Displantization of displant insurance plantforms Personatization of displant insurance plantforms Factors of digital insurance decision-making	MEZZO RESEARCH LEVEL (Organizational perspective)	Research period. February-May 2021 Research smaller: 157 Bailt insurance specialists Data collection methods. Shuctured online survey Descriptive statistics Descriptive statistics Correlation analysis (ETA and CFA) Correlation analysis (ETA and CFA) Statistical inference Case study	
Research topics: Digital insurance decision-making process and behavioral patterns Combined online customization frameworks for digital insurance platforms	MICRO RESEARCH LEVEL (Individual perspective)	Research period. September-October 2021 Research smore: 330 Ballic insurance consumers Data collection methods: Structured online survey. Data analysis methods: Factor analysis (EFA and CFA) Statistical inference Statistical inference Creation analysis Statistical inference Creation analysis	Research period. April 2022 Research station arbito nsurance consumers Data collection method: Structured online survey Data analysis methods: Description analysis Correlation analysis Carrelation analysis Caste study

Source. Composed by the author by using draw.io

ANNEX 4. The questionnaire for the Baltic financial experts survey (2020) Dear Expert,

It is a great pleasure to have you onboard in the following insurance market expert interview to find out the status as-is on the situation in digitization as well as customization and personalization features in the P&C insurance segment of three Baltic countries: Lithuania, Latvia and Estonia.

Collected and summarized answers on the following online questionnaire will deposit to the practical data analysis as an essential part of my doctoral thesis.

Main information about the questionnaire:

Interview is anonymous and should be filled by free will.

Results will be used only for scientific research purposes.

Interview scope and format - 15 closed-ended questions and statements.

Estimated filling time – 10-15 min.

You agree that the author will use your information provided in the following questionnaire by filling up and submitting it.

Link to Terms & Conditions of questionnaire platform provided here: https://admin.typeform.com/to/dwk6gt/

Instructions for filling the questionnaire:

1. Please provide your scores in the scale by considering the context of your work and residence country.

2. Your score in questions 4-12 should fit in 10 point range, where point 1 has a value of "Very poor"; 5 – "Neutral"; 10 – "Excellent".

3. Your selection in statements 13-15 should express a preference for one part of a statement pair.

If you have any questions, please do not hesitate to contact me by email gedas. baranauskas@yahoo.com

Working field:

- Sales
- Marketing
- Sales & Marketing
- Product and process development
- IT (including IT project management)
- Other (please insert)

Country:

- Lithuania
- Latvia
- Estonia
- Other (please insert)

1. How do you evaluate the level of digitalization in the insurance sector at your country?

1 2 3 4 5 6 7 8 9 10

2. How do you evaluate insurance service providers at their preparation for

digital solutions at your country?

*insurance service providers cover the meaning of insurance companies, insurance intermediaries, and counterparts.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10$

3. How do you evaluate the demand level for digital insurance solutions ap-

plication from the service end user's point of view at your country?

*service end user covers the meaning of all external insurance consumers.

1 2 3 4 5 6 7 8 9 10

4. How do you evaluate the level of standardization in existing online insur-

ance platforms at your country?

*standardization covers the meaning of standard insurance product features, terms&conditions standardization of the insurance sales process and availability of insurance information.

1 2 3 4 5 6 7 8 9 10,

5. How do you evaluate the level of service personalization in existing online

insurance platforms at your country?

*service personalization covers the meaning of a tailored user experience and solutions in insurance processes and systems, for example self-service systems, personalized communication via live chat etc.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10$

6. How do you evaluate the level of product customization in existing online insurance platforms at your country?

*product customization covers the meaning of fully or partly customized insurance products, additional insurance options and/or participation options in insurance customization processes.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10$

7. How do you evaluate the level of Choice Navigation (CN)* capabilities in online insurance?

*Choice Navigation (CN) – capabilities, which are supporting customer in identifying their needs, specifying the wanted solution using simple, effective and user-friendly product configuration and recommendation system (Moon et al., 2018; Borzemski et. al. 2019).

1 2 3 4 5 6 7 8 9 10

8. How do you evaluate the level of Robust Process Design (RPD)* capabilities in online insurance?

*Robust Process Design (RPD) – capabilities of reusing existing organizational and value-chain resources to deliver digitalized solutions with high efficiency and reliability, so increased variability in customers' requirements will not significantly influence the overall operational efficiency Moon et al., 2018; Borzemski et. al. 2019).

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10$

9. How do you evaluate the level of Solution Space Development (SSD)* capabilities in online insurance?

*Solution Space Development (SSD) – capability for organization to understand their customers and their needs of products and services, by identifying valuable product attributers and, hereafter developing products, services or toolkits that effectively can adapt to these individual requirements through overall process standardization, service personalization, products platforms etc. (Moon et al., 2018; Borzemski et. al. 2019). 1 2 3 4 5 6 7 8 9 10

10. Please compare and express your preference for statements:

personalization is a predominant feature in existing online insurance platforms customization is a predominant feature in existing online insurance platforms

11. Please compare and express your preference for statements: personalization is a predominant as-is feature in online insurance standardization is a predominant as-is feature in online insurance

12. Please compare and express your preference for statements:

customization is a predominant feature in online insurance

standardization is a predominant as-is feature in online insurance

ANNEX 5. The questionnaire for the Baltic insurance specialists investigation (2021)

Dear respondent,

It is a great pleasure to have you onboard in the following online survey to find out the situation in insurance digitalization and customization, online sales platforms features and end-user preferences in three Baltic countries: Lithuania, Latvia, and Estonia. Your answers will only be used for the scientific research purpose of my doctoral thesis.

Main information about the questionnaire:

Survey is anonymous and should be filled by free will.

Survey consists of 24 questions and statements.

Survey is available until 15 April 2021.

Estimated filling time – 10-15 min.

Terms & Conditions of Typeform platform: https://admin.typeform.com/to/ dwk6gt/

If you have any questions, please do not hesitate to contact me by email gedasbaranauskas@mruni.eu

Instructions for filling the questionnaire:

a)Please provide your scores on the scale by considering the context of your residence country.

b)Your score in questions 1-6 should fit in 9 point range, where point 1 has a value of "Neutral"; 2 – "Very poor"; 9 – "Excellent".

c)Your score in statements 7-9 should express a preference for one of the statement parts and fit in 9 point range, where point 1 has a value of "Neutral"; 2 – "Very poor"; 9 – "Excellent".

Gender:

- Man
- Woman
- Prefer not to disclose

Age group:

- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- +65

Country:

- Lithuania
- Latvia
- Estonia

1. How do you evaluate the level of digitalization* in the insurance sector in

your country?

Digitalization - cover the meaning of digital technologies application to change traditional insurance service, products and/or platforms by providing new value-producing opportunities and features to end-users.

$1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

2. How do you evaluate preparation of insurance service providers to apply

digital solutions in your country?

Insurance service providers - cover the meaning of insurance companies, insurance brokers, and other insurance service providers.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

3. How do you evaluate the level of service personalization* in existing on-

line insurance platforms in your country?

Service personalization - cover the meaning of a tailored user experience and solutions in insurance processes and systems, for example, self-service systems, personalized communication via live chat, etc.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

4. How do you evaluate the level of product customization* in existing online

insurance platforms in your country?

Product customization - cover the meaning of fully or partly customized insurance products, additional insurance options, and/or participation options in insurance customization processes.

123456789

5. Please compare and express your preference to use one of following proto-

type visualizations of online insurance product configurators:

Online insurance product configurator - cover the meaning of a web-based insurance product configurator, which enables the end-user to customize and purchase a preferable insurance product.

Visualizations of a better quality are accessible via URL links below:

Configurator No 1

Configurator No 2

Configurator No 3

6. Please compare and express your preference for one statement about prod-

$uct \ customization \ capabilities \ in \ presented \ online \ insurance \ product \ configurators:$

Visualizations of a better quality are accessible via URL links below:

Configurator No 1 Configurator No 2

Configurator No 3

I prefer product customization capabilities in Configurator no 1

I prefer product customization capabilities in Configurator no 2

I prefer product customization capabilities in Configurator no 3

7. Please compare and express your preference for one statement about user

interface solutions in presented online insurance product configurators:

Visualizations of a better quality are accessible via URL links below:

Configurator No 1 Configurator No 2 Configurator No 3

I prefer user interface solutions in Configurator no 1

I prefer user interface solutions in Configurator no 2

I prefer user interface solutions in Configurator no 3

8. How do you evaluate the influence level of perception of need* to purchase

insurance via the online insurance platform?

Perception of need - cover the meaning of multiple social and cultural parameters of an individual like ownership of property, security need, social (family) status, insurance culture in family and society, etc.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

9. How do you evaluate the influence level of your financial well-being to purchase insurance via the online insurance platform?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

10. How do you evaluate the influence level of potential financial savings if purchasing insurance via the online insurance platform?

11. How do you evaluate the influence level of consideration of lost and gains

probability to purchase insurance via the online insurance platform?

Lost and gains probability - cover the meaning of the possible mental consideration in insurance gain-loss situations: if insurance will not be purchased but a claim event occurs, or an opposite situation if insurance will be purchased and a claim does not occur.

12. How do you evaluate the influence level of positive personal insurance

experience* to purchase insurance via the online insurance platform?

Personal insurance experience - cover the meaning of past and ongoing experience and interrelationships regarding insurance provider's service level, communication, insurance contract issue and/or claims administration processes.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

13. How do you evaluate the influence level of recommendations* on pur-

chasing insurance via the online insurance platform?

Recommendations - cover the meaning of recommendations from close social groups like relatives, friends or colleagues regarding an insurance service provider, product or service platform.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

14. How do you evaluate the influence level of insurance literacy to purchase

insurance via the online insurance platform?

Insurance literacy - cover the meaning of personal knowledge, skills, and understanding level regarding insurance products; processes and system.

$1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

15. How do you evaluate the influence level of advertising* on purchasing

insurance via the online insurance platform?

Advertising - cover the meaning of active digital and non-digital marketing outcomes like special pricing campaigns, personalized offers, promotes via multiple touchpoints, etc.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

16. How do you evaluate the influence level of insurance service provider

brand* to purchase insurance via the the online insurance platform?

Insurance service provider brand - cover the meaning of include awareness and associations like public visibility, corporate responsibility and sustainability actions, the image of professional skills and knowledge, legal status (insurance company or insurance service intermediary as for example broker).

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

17. How do you evaluate the influence level of key technical platform fea-

tures to purchase insurance via the online insurance platform?

Key technical platform features - cover the meaning of online platform availability, speed, safety, compatibility, design and functional simplicity, etc

18. How do you evaluate the influence level of graphical user interface fea-

tures to purchase insurance via the online insurance platform?

Graphical user interface features - cover the meaning of a part of the online framework combined of multiple graphical elements (graphical icons and audio indicators) through which end-users interacts with the service/product provider.

19. How do you evaluate the influence level of product terms & conditions

acceptability to purchase insurance via the online insurance platform?

123456789

20. How do you evaluate the influence level of customization* to purchase

insurance via online insurance platform?

Customization - cover the meaning of fully or partly customized insurance products, additional insurance options, and/or participation options in insurance customization processes.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

21. How do you evaluate the influence level of personalization to purchase insurance via the online insurance platform?*

Personalization - cover the meaning of a tailored user experience and solutions in insurance processes and systems, for example, self-service systems, personalized communication via live chat, etc.

ANNEX 6. The questionnaire for the Baltic consumers' investigation (2021)

1. Do you have any non-life insurance contract?

Non-life insurance covers the meaning of general insurance types, which are not related to person health or long-term life insurance products. Examples of non-life insurance can be: car insurance, home and property insurance, travel insurance, bicycle insurance, pet insurance, etc.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

2. Have you ever bought a non-life insurance by using a digital insurance

platform?

Digital insurance platform covers the meaning of insurance self-service service oriented digital solutions, which allows users access a preferable information about insurance services, products as well as manage and complete actions as buying or extending insurance policy, register a claim, etc.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

3. How does the overall level of insurance digitalization in your country in-

fluence your decision to buy a non-life insurance on a digital insurance platform?

Digitalization covers the meaning of digital technologies applied to change traditional insurance services, products, and/or platforms by providing new opportunities and features to insurance customers.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

4. How does the complexity of processes in a digital insurance platform in-

fluence your decision to buy a non-life insurance?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

5. How does the quality of digital insurance platform features influence your

decision to buy a non-life insurance?

Quality of a digital insurance platform covers the meaning of quality of general platform features of operational efficiency, functional simplicity, functionality fulfillment, and key technical platform features as digital platform availability, speed, compatibility, etc.

123456789

6. How does the quality of information in a digital insurance platform influ-

ence your decision to buy a non-life insurance?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

7. How does the quality of a support service in a digital insurance platform

influence your decision to buy a non-life insurance?

Quality of the support service covers the meaning of quality of platform support features to ensure a personalized information access and process experience.

123456789

8. How do the required efforts to complete actions in a digital insurance

platform influence your decision to buy a non-life insurance?

Effort covers the meaning of user experience and expectations about the ease of use of technology.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

9. How does the design of user interface solutions in a digital insurance plat-

form influence your decision to buy a non-life insurance?

Design of user interface solutions covers the meaning of graphical user interface features as combined multiple graphical elements (graphical icons and audio indicators) through which a user interacts with the service or product provider).

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

10. How does the level of security and privacy in a digital insurance platform

influence your decision to buy a non-life insurance?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

11. How does the level of product customization in a digital insurance plat-

form influence your decision to buy a non-life insurance?

Product customization covers the meaning of fully or partly customized insurance products, additional insurance options, and/or participation options in insurance customization processes.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

12. How does the level of Perceived Behavioral Control in a digital insurance

platform influence your decision to buy a non-life insurance?

Perceived Behavioral Control covers the meaning of how much of behavior and resources are under the individual's control during the process.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

13. How does the level of Perceived Interactivity in a digital insurance plat-

form influence your decision to buy a non-life insurance?

Perceived Interactivity covers the meaning of the extent to which an individual could control the process, information and decision-making within usage of digital platform.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

14. How does the level of Perceived Enjoyment in a digital insurance plat-

form influence your decision to buy a non-life insurance?

Perceived Enjoyment covers the meaning of the degree to which the use of the system is entertaining and pleasant independently of any other consequence derived from the usage.

123456789

15. How do habits influence your decision to buy a non-life insurance on a

digital insurance platform?

Habits cover the meaning of the degree to which individuals are ready to act automatically due to learning, repeating actions and experience.

16. How does Technology Readiness in a digital insurance platform influ-

ence your decision to buy a non-life insurance?

Technology Readiness covers the meaning of the readiness of an individual to use technology through a combination of positive and negative personal beliefs about technology-related intentions and behavior.

123456789

17. How does insurance literacy influence your decision to buy a non-life

insurance on a digital insurance platform?

Insurance literacy covers the meaning of personal knowledge, skills, and understanding level regarding insurance products, processes, and systems.

123456789

18. How does curiosity influence your decision to buy a non-life insurance

on a digital insurance platform?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

19. How does the need for insurance influence your decision to buy a non-

life insurance on a digital insurance platform?

Perception of need for insurance covers the meaning of multiple social and cultural parameters of an individual like ownership of property, security need, social (family) status, insurance culture in family and society, which influence a decision to buy an insurance.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

20. How does the consideration of lost and gains probability influence your

decision to buy a non-life insurance on a digital insurance platform?

Lost and gains probability covers the meaning of a possible mental consideration in situations: if insurance will not be purchased but a claim event occurs, or an opposite situation if insurance will be purchased and a claim does not occur.

$1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

21. How does personal financial well-being influence your decision to a buy non-life insurance on a digital insurance platform?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

22. How does the price of insurance influence your decision to buy a non-life insurance on a digital insurance platform?

123456789

23. How does the acceptability of insurance product terms & conditions influence your decision to buy a non-life insurance on a digital insurance platform?

24. How do personal insurance experiences influence your decision to buy a non-life insurance on a digital insurance platform?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

25. How do recommendations and feedback influence your decision to buy a non-life insurance on a digital insurance platform?

Recommendations cover the meaning of positive or negative recommendations and feedback from a close social network like relatives, friends, or colleagues regarding an insurance service provider, product, or service platform

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

26. How does loyalty to insurance companies influence your decision to buy a non-life insurance on a digital insurance platform?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

27. How does advertising in the social media influence your decision to buy a non-life insurance on a digital insurance platform?

Advertising covers the meaning of active digital and non-digital marketing outcomes like special pricing campaigns, personalized offers, promotes via different touch points of social media.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

28. How does the brand of insurance service provider influence your decision to buy a non-life insurance on a digital insurance platform?

Insurance service provider brand covers the meaning of awareness and associations like public visibility, an image of professional skills and knowledge, legal status (insurance company or insurance service intermediary, e.g. insurance broker.

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

29. How does the sustainability of an insurance service provider influence your decision to buy a non-life insurance on a digital insurance platform?

Sustainability covers the meaning of the insurance service provider's strategic approach to responsible resources allocation and activities of the insurance value chain management and their specific corporate responsibility and sustainability actions

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

30. How does the presence of digital insurance platforms influence your attitude toward a non-life insurance?

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9$

31. How does the overall perceived usefulness of insurance influence your attitude toward a non-life insurance?

123456789

32. How does your attitude toward insurance influence your intention to buy a non-life insurance?

ANNEX 7. The questionnaire for the Baltic insurance consumers' investigation (2022)

Please be informed that the survey contains questions where you will be asked to evaluate 3 different insurance product calculator prototypes. Please evaluate each of them individually, as you are not obliged to compare them to each other. Results of the survey will be used for scientific purposes. Thank you for your time.

1. Do you have any non-life insurance contract?

(Non-life insurance covers the meaning of general insurance types, which are not related to person health or long-term life insurance products. Examples of non-life insurance can be: car insurance, home and property insurance, travel insurance, bicycle insurance, pet insurance, etc.)

Yes / No

2. Have you ever bought a non-life insurance by using a digital insurance platform?

((Digital insurance platform covers the meaning of insurance self-service oriented digital solutions, which allow users accessing preferable information about insurance services, products, managing and completing actions as buying or extending an insurance policy, register a claim, etc.)

Yes / No

3. How likely would you use such insurance platform prototype in the future?

$1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10$

4. How likely would you recommend such insurance platform prototype to a friend or colleague?



ANNERX 8. Prototype X. The Baltic consumers' survey (2022)

Source. Composed by the author by using Axure RP Pro (version 8) and by following picture source



Source. Composed by the author by using Axure RP Pro (version 8) and by following picture source



ANNEX 10. Prototype Z. The Baltic consumers' survey (2022)

Source. Composed by the author by using Axure RP Pro (version 8) and by following picture source



ANNEX 11. Conceptual integrated digital insurance decision making process fra

Source. Composed by the author by following theoretical research results and by using draw.io.

amework


ANNEX 12. Modeling of conceptual digital insurance decision making pro-

cess







ANNEX 13. Integrated digital insurance decision making process frame-

Source. Composed by the author by following empirical research results and by using software IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

ANEXX 14.Results of statistical analyses in SEM of the digital insurance decision-making process model. The Baltic insurance consumers' survey (2021)

Latent variables						
F1 =-	Estimat	eStd Err	z-value	Pr (> 7)	Std ly	Std all
03	1.000		- varue		0.961	
05	1 143	0 126	9 063	0 000	1 099	0.606
06	1 301	0.135	9.618	0.000	1 251	0.665
07	1 153	0.129	8 965	0.000	1 109	0.596
010	1 126	0.131	8 569	0.000	1.083	0.558
011	0.941	0 114	8 270	0.000	0 904	0.531
017	1.078	0.125	8 623	0.000	1.037	0.563
F2 =-	1.070	0.125	0.025	0.000	1.057	0.505
019	1 276	0.159	8 013	0.000	1 185	0.616
020	1 000	0.155	0.015	0.000	0.929	0.502
021	1 220	0 157	7 791	0.000	1 133	0.585
022	1 121	0.154	7 257	0.000	1.041	0.518
023	0.002	0.134	7 380	0.000	0 922	0.533
024	1 275	0.156	8 148	0.000	1 184	0.636
F3 =_	1.275	0.150	0.140	0.000	1.104	0.050
014	0.721	0.097	7 470	0.000	0.858	0.486
018	0.721	0.113	7 174	0.000	0.050	0462
025	1.000	0.115	7.174	0.000	1 1 1 2 0	0.601
025	0.803	0.114	7 855	0.000	1.165	0.001
027	0.099	0.123	8.058	0.000	1.002	0.520
027	0.900	0.123	0.000	0.000	1.175	0.550
020	0.704	0.107	7 075	0.000	0.022	0.590
Q29	0./64	0.100	1.0/5	0.000	0.932	0.521
04	1 000			1	1 1 60	0.640
0	0.050	0.100	0.010	0.000	1.109	0.627
<u>0</u>	0.939	0.100	7 620	0.000	0.012	0.057
<u>Q</u> 9	0./01	0.102	7.036	0.000	0.912	0.500
012	1 000		1		1.049	0.646
012	1.000	0.140	2 774	0.000	1.048	0.040
Q15	1.150	0.149	1.//4	0.000	1.212	0./14
P0 =-	1 000				0.000	0.504
016	0.070	0.152	6 417	0.000	0.999	0.504
QIO	0.979	0.155	0.41/	0.000	0.979	0.555
BI=-	1.000				1.012	0.022
AIB	1.000				1.018	0.920
Purchase=						
F1	1.000				0.966	0.966
F2	0.800	0.114	7.029	0.000	0.800	0.800
F3	0.810	0.116	6,991	0.000	0.632	0.632
F4	0.995	0.127	7.833	0.000	0.791	0.791
F5	0.743	0.110	6.789	0.000	0.659	0.659
F6	0.872	0.133	6,563	0.000	0.810	0.810
BI	0.534	0.103	5.192	0.000	0.306	0.306
Regression						
S: ATB-			1		<u> </u>	
PEUP	0.081	0.048	1 697	0.090	0.081	1 697
PUI	0 349	0.046	7 604	0.000	0.349	7 604
	0.000	. 0.010	1T	. 0.000		

Source. Composed by the author by following empirical research results and by using IBM SPSS Statistics 26 (Armonk, NY: IBM Corp).

ANNEX 15. Results of Kruskal-Wallis H testing on prototypes. The Baltic

consumers' survey (2022)

ſ	Null Hypothesis	Sig	Decision
	Pasults of Independent Samples Kruskal V	Vallis Test	on full sample
1	The distribution of Q3 Prototype X is the same across	.724	Retain the null hypothesis.
2	The distribution of Q3 Prototype Y is the same across	.547	Retain the null hypothesis.
3	The distribution of Q3 Prototype Z is the same across	.563	Retain the null hypothesis.
4	The distribution of Q3 Prototype X is the same across categories of Age.	.370	Retain the null hypothesis.
5	The distribution of Q3 Prototype Y is the same across categories of Age.	.111	Retain the null hypothesis.
6	The distribution of Q3 Prototype Z is the same across categories of Age.	.355	Retain the null hypothesis.
7	The distribution of Q3 Prototype X is the same across categories of Country.	.860	Retain the null hypothesis.
8	The distribution of Q3 Prototype Y is the same across categories of Country.	.952	Retain the null hypothesis.
9	The distribution of Q3 Prototype Z is the same across categories of Country.	.886	Retain the null hypothesis.
	Results of Independent-Samples Kruskal-	Wallis Tes	st on sample A
1	The distribution of Q5Prototype X is the same across categories of Gender.	.616	Retain the null hypothesis.
2	The distribution of Q5Prototype Y is the same across categories of Gender.	.572	Retain the null hypothesis.
3	The distribution of Q5Prototype Z is the same across categories of Gender.	.455	Retain the null hypothesis.
4	The distribution of Q5Prototype X is the same across categories of Age.	.574	Retain the null hypothesis.
5	The distribution of Q5Prototype Y is the same across categories of Age.	.304	Retain the null hypothesis.
6	The distribution of Q5Prototype Z is the same across categories of Age.	.368	Retain the null hypothesis.
7	The distribution of Q5Prototype X is the same across categories of Country.	.838	Reject the null hypothesis.
8	The distribution of Q5Prototype Y is the same across categories of Country.	.777	Retain the null hypothesis.
9	The distribution of Q5Prototype Z is the same across categories of Country.	.815	Retain the null hypothesis.
	Results of Independent-Samples Kruskal-	Wallis Tes	st on sample B
1	The distribution of Q5Prototype X is the same across categories of Gender.	.108	Retain the null hypothesis.
2	The distribution of Q5Prototype Y is the same across categories of Gender.	.323	Retain the null hypothesis.
3	The distribution of Q5Prototype Z is the same across categories of Gender.	.066	Retain the null hypothesis.
4	The distribution of Q5Prototype X is the same across categories of Age.	.987	Retain the null hypothesis.
5	The distribution of Q5Prototype Y is the same across categories of Age.	.866	Retain the null hypothesis.
6	The distribution of Q5Prototype Z is the same across categories of Age.	.998	Retain the null hypothesis.
7	The distribution of Q5Prototype X is the same across categories of Country.	.005	Reject the null hypothesis.
8	The distribution of Q5Prototype Y is the same across categories of Country.	.255	Retain the null hypothesis.
9	The distribution of Q5Prototype Z is the same across categories of Country.	.433	Retain the null hypothesis.

Source. Composed by the author by following theoretical and empirical research results and by using draw.io.

ANNEX 16 Data collection table of digital insurance platform sub-KPIs (template)

Type	Sub-KPIs	Actual Score	Comment
rype	540-141 13	(AS)	comment
Content	Final price	X	
	Discount presentation	X	
	Automated recommendations	X	
	Friend-based ranking	X	
	Branding	X	
	Insurance usefulness	X	
Customer-centricity	Self-service solutions	X	
	Personalized assistance solutions	X	
	Online customization solutions	X	
Functional	Integrations	X	
	Security and privacy	X	
	Information quality	X	
	Automated navigation	X	
	Manual navigation	X	

Source. Composed by the author by following theoretical and empirical researches results.

ANNEX 17. General Measurement Table of digital insurance platform sub-KPIs (template)

Tune	Sub KPIc	Target	Actual	Final score	Change,
туре	Sub-Kr1s	score (TS)	Score (AS)	(FS)	%
Content	Final price	3	X	$TS \ge AS$	X
	Discount presentation	3	X	TS X AS	Х
	Automated recommendations	3	X	$TS \ge AS$	Х
	Friend-based ranking	3	X	$TS \ge AS$	X
	Branding	3	X	$TS \ge AS$	X
	Insurance usefulness	3	X	$TS \ge AS$	Х
Content total scores		18	x	х	x
Customer-centricity	Self-service solutions	3	X	TS X AS	Х
	Personalized assistance solutions	3	X	TS X AS	Х
	Online customization solutions	3	X	TS X AS	Х
Customer-					
centricity		9	x	x	X
total scores					
Functional	Integrations	3	X	$TS \ge AS$	X
	Security and privacy	3	X	$TS \ge AS$	Х
	Information quality	3	X	$TS \ge AS$	Х
	Automated navigation	3	X	TS X AS	
	Manual navigation	3	X	TS X AS	
Functional total scores:		15	x	х	x
ALL TYPE TOTAL SCORES		42	x	х	x

Source. Composed by the author by following theoretical and empirical research results.

ANNEX 18. Assessment Matrix of digital insurance platform KPIs (exam-



Source. Composed by the author by following theoretical and empirical research results and by using draw.io.



ANNEX 19. Modified Service Blueprint framework (template)

Source. Composed by the author by following theoretical research results and by using draw.io.



Source. Composed by the author by following theoretical research results and by using draw.io.

ANNEX 20. Modified Service Blueprint framework (example)

ANNEX 21. Assessment Matrix of digital insurance platform KPIs (tem-

plate)



Source. Composed by the author by following theoretical research results and by using draw.io.

ANNEX 22.A practical feedback on the dissertation



To Whom It May Concern,

I have first met Gedas Baranauskas in May 2021 when ERGO Baltic has started a cooperation with Trinidad Wiseman. During the project period, we have worked together on different topics and tasks, including analyses on the Baltic insurance market, competitors, ERGO digital platforms, surveys and questionnaires on customers, etc. While collaborating together, working both directly and within a team, I have noticed that Gedas holds a strong knowledge on current digital insurance platforms and their solutions both in ERGO and in the market, and has contributed into the development of business solutions to a deep extent. We, as the Trinidad Wiseman team, have been properly supported in creating a questionnaire on Baltic insurance customers, since Gedas demonstrated his professional analytical and methodological skills in sharing applicable practical insights on the digital insurance purchasing process. I find insights, which Gedas shared in December as findings of his thesis on behavior patterns and decision-making factors of Baltic insurance consumers, practically important and effective in modeling the design and content of new ERGO Baltic digital insurance platforms.

> Jaana Ziius Service Designer, Project Manager Jaana.ziius@twn.ee, +372 580 90 331 Trinidad Wiseman Ltd, www.twn.ee 5.01.2022

ANNEX 23.A practical feedback on the dissertation (2)

Institution elektronistate paralete
OSKARS MATISONS
2022-01-00 19:24 59:0011-2
Mesa Paralete



ERGO insurance GE Latvijas filāle - Skanstes iela 50 - LV-1013 Rīga

ERGO Insurance SE Latv[as fillids Skanstes leia 50, LV-1013, Rīga Tahr.: (+371) 5705 18 87 Fakss. (+371) 6706 18 87 e-pasts: Info@ergo.lv www.ergo.lv Vienotais reģistrācijas numurs 4010359913

Riga 05.01.2022

Feedback about Gedas Baranauskas

I have worked with Gedas in ERGO since 2018 on various local and Baltic projects. Gedas has a strong interest and knowledge about digital insurance platforms, customization and insurance digitalization in general. The most recent task we have worked together on was the ERGO Baltic digital strategy project, dedicated to launching new digital self-service platforms and processes for ERGO customers in Baltic countries. In this project, next to main working responsibilities, Gedas has contributed by constantly sharing his practical knowledge on the Lithuanian insurance market and digital insurance platforms. This recent project has seemed to be a proper area for Gedas to share findings of his studies on insurance digitalization trends, as we have touched lots of topics in discussions where his knowledge directly helped in heading to a solution. I can honestly share my recommendations about the practical relevance of findings that Gedas described in his thesis in terms of e-customization and personalization solutions, frameworks or models of digital end-user platforms, and I see the potential in their application to developing new ERGO Baltic digital insurance platforms.

Oskars Matisons

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> Luminor Bank AS Latvijas filāle Kods: RIKOLV2X EUR LV63RIKO0002010090007 EUR LV94RIKO0000081983007 USD LV32RIKO0002030060343

MYKOLAS ROMERIS UNIVERSITY

Gedas Baranauskas

COMBINED MASS CUSTOMIZATION AND PERSONALIZATION METHODS TO MODEL END-USER BEHAVIOR IN DIGITAL INSURANCE PLATFORMS

Summary of Doctoral Dissertation

Social Sciences, Management (S 003)

Vilnius, 2023

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DISSERTATION SUMMARY

Relevance of the topic. In the last three decades, terms and concepts of Mass Customization (MC) and Mass Personalization (MP) have received considerable attention at scientific research and have exerted a wide-spreading effect on different types of organizations and sectors at the practical application level. These stand-alone research domains have been advancedly overlooked and currently have become a combined, multidisciplinary operations management concept with a focus on applying combined Consumer Decision-Making (CDM) and Technology Acceptance Model (TAM) methods, and business models of digital platforms (Abdallah and Matsui, 2009).

The significant progress towards unlocking productivity of the digital entrepreneurship model, digitalized value co-creation, and collaborative networks are noticed on recent global data of digital platforms development. The Global Digital report, published in October 2021, revealed the pandemic affection towards the development of digitalization in the global society, including dynamic numbers of mobile, internet, and social media users. An almost double annual growth, from 7,2 % in 2019 to 13,2 % in 2020, in the number of global social media platform users was recognized, and the total number of active social media users reached 4.2 billion (DataReportal, 2021). The potential of digital business platforms in the Baltic region can be associated with the number of active users compared to the total population of the region, which resulted in the range from 65 % in the Eastern Europe and 79 % in the Northern Europe region (DataReportal, 2021). Finally, the discourse of insurance service digitalization development towards simplified and mobile-first design and multi-sided platforms is dictated by the natural demand, as 66,6 % of the world's total population are mobile users (DataReportal, 2021). The discussed statistical trends above confirm not only the intensity of the ongoing 4th industrial revolution but also the practical potential of the digital and networked economy, and application of digital business ecosystem models in the insurance industry.

Recent scientific research also outline the emergence of digital entrepreneurship and digital platforms approach and intensive service customization and personalization as highly influential factors to the model end-user attitude, preferences, and behavioral patterns in the digital environment. Accordingly, traditional principal-agent relationships and business models built on monolithic information system architecture are replaced by hybrid and collaborative network-based organizations and combined online customization framework-based platform business models (Reuver, Sørensen and Basole, 2018; Senyo, Liu and Effah, 2019; Pousttchi and Gleiss, 2019; George, Merrill and Schillebeeckx, 2020). From the theoretical perspective, these practical trends influence the content and discourse of the MC and MP concepts development significantly, therefore, in the recent decade, the shift to the combined electronic version of Mass Customization and Personalization (e-MCP) has been recognized (Jitpaiboon, Dobrzykowskib, Ragu-Nathanb and Vonderembse, 2013; OECD, 2018). The e-MCP concept is driven by technology and data, where processes and systems are targeted to customization and personalization. Therefore, the concept has been widely applied in the practice of non-tangible products, including financial, design, and digital service platforms management (Jitpaiboon et al., 2013; Deloitte LLP, 2015, 2016; Chatzopoulos, 2017; OECD, 2018). It is important to outline that the version of e-MCP has shifted from a narrow understanding of being only a technological-instrumental tool and having a limited impact on specific manufacturing process steps and tangible products. Accordingly, a combination of concepts have evolved to the business models of Mass Customization and Personalization (MCP) and online customization frameworks, which later have emerged to the area of electronic Business to Customer (B2C) and Business to Business (B2B) services (Kamis, Koufaris and Stern, 2004; Kamis, Stern and Ladik, 2008; Risdiyono, Imam and Affan, 2016). The e-MCP not only reflects in practical needs of modern organizations within product / service, platform design and modeling of consumer behavior but also represents a holistic operations management approach, which compounds implications at strategical, tactical and operational management levels and is applicable within different types of organizations and sectors.

For a considerably long period of time, financial service organizations, including insurers, have relied on operational strategies determined by a product-oriented, broadly segmented, and multichannel approach. However, the COVID-19 situation, global economic trends, and rapid social changes in society have also had a remarkable influence on currently existing business models, including management of customer service and product distribution in the financial service industries. Studies of the past years outline the need for financial organizations to continue heavy investment into digital platform solutions, improvement of existing online customization frameworks and a personalized customer experience level (Dimitris, Ekaterini and Zogopoulos, 2018; Khanboubi, Boulmakoula and Tabaa, 2019; Lezgovko and Lastauskas, 2019). In the case of the non-life insurance market, the ongoing digital insurance transformation towards more personalized, Usage-Based Insurance (UBI) services and an increased availability of fully digital and customizable personal line insurance products are already noticed (Wiesböck, Matt, Hess and Li, 2017; Warg, Zolnowski, Frosch and Weiß, 2019; Schilirò, 2020). The Baltic non-life insurance market and incumbents follow global insurance industry trends in a form of both dynamic financial revenue numbers and increased practical attention to digital technologies and solutions. Nevertheless, the existing social-demographic and digital maturity level differences among Baltic nonlife insurance service providers and insurance consumers require a comprehensive and state-of-the-art market analysis. Continuous scientific investigations on outcomes of digitalization, customization, and personalization domains and new combined methods modeling in the light of the Baltic insurance market, products, digital distribution channels, and consumers' behavioral patterns are also required.

Research problematic. The real-time experience of the COVID-19 pandemic had a surprising and enterprise-wide influence on the global economy, society, and science. Significant consequences to behavior and preferences of end-users, strategies and methods of organizational sales, supply chain, and customer service management as well as the expansion of digital platform business models can be recognized (McKinsey, 2020; Schilirò, 2020; Chang, Liu, Huang and Hsieh, 2019). According to McKinsey Global Survey (2020), global organizations have accelerated the digitization at customer and supply-chain operation levels by three to four years, while at the digitally enabled products level the acceleration is by seven years. This intensive period of technology-related changes required additional financial investments and re-focus onto technology-driven strategic and operational models in a timely manner. It also revealed gaps of data security management and disinformation, migration to new cloud and artificial solutions, and limited alignment among traditional and digital business platforms (McKinsey, 2020; European Commision, 2020). Due to a high competition among traditional and virtual peers and intensive development of modern information and communication solutions, an additional pressure naturally intensifies (Łyskawa, Kędra, Klapkiv and Klapkiv, 2019; Zarina Cīrule, Voronova and Pettere, 2019; Baret, Celner, O'Reilly and Shilling, 2020).

All these trends are visible in managerial practices of modern organizations from financial sector and it reveals that a full fusion of electronic product customization and service personalization solutions, advanced digitalization, and integration of multiple analytical and automation solutions has become a dominant operation management strategy. The main practical challenges arise, where a high penetration of omnichannel-based distribution and digital platform solutions has become a global service standard and spread among all 3 operations management levels in the banking industry. To compare to the case of the insurance industry, it has a strong focus on the digitalization strategy but is still insufficiently aligned and vaguely spread within process and platform management at the operational level. This position is supported by studies on digital maturity that indicate that the status as-is is considered as a technological breakthrough and a pre-stage towards a full digitalization of the insurance industry (Mustafina, Kaigorodova, Alyakina, Velichko and Zainullina, 2020). On the theoretical level, the discussion arises where the background of MCP vaguely provides a sufficiently structured and consistent implementation logic and balanced frameworks for digitally customized products and systems. The legacy of traditional MC and MP concepts, which was built around the organization and product-orientated processes, technology-driven attitude, and quantitative data indicators, is still vital and applicable in the practice of tangible and non-tangible products, including financial service. Therefore, multiple practical obstacles for organizational application and consumers' usage as well as confusion within scientific discussions are noticeable. From the scientific perspective, it results in numerous semantical interpretations of the concept content and application forms, which leads to the absence of a commonly agreed definition and application framework in the digital environment. Practically, users of insurance services also face the risk to experience a negative effect due to situations of information asymmetry, when a large quantity and variety of financial data and offers are presented by using not aligned customization and personalization-related solutions. Therefore, it is important not to overwhelm platform users with customization options and personalized assistance requests. In a bad case scenario, the phenomenon of mass confusion may be triggered, resulting in an anxiety, regret, and finally, a not completed insurance-decision making.

These multidimensional issues of transition to the modern and combined MCP version based on technological management, and application limitations of traditional online customization frameworks require a continuous empirical investigation and modeling of new conceptual frameworks. Additionally, finding right and suitable elements from the conception to apply within a dynamic digital insurance-specific value chain might be a complicated, challenging, and time-consuming task. Therefore, this particular thesis comprises a problem, unraveled throughout the whole paper as follows: how to use combined methods of the Mass Customization and Personalization concept, Consumers-Decision-Making and Technology Acceptance models in order to analyze and model digital insurance consumers' behavior and framework of digital insurance platforms?

The **research subject** of the thesis is application of combined digitalization, customization and personalization solutions in the Baltic non-life insurance market and their impact on consumers' behavior in the digital insurance decision-making process and an attitude to digital insurance platforms.

The **aim** of the thesis is, after disclosing scientific development trends and combination perspectives of the customization and personalization domain and practical state-of-the-art of the Baltic non-life insurance market, to model a conceptual framework of end-users' decision-making process in digital insurance platforms and develop guidelines on practical application.

In order to achieve the aim of the thesis, **objectives** have been determined and listed as per below:

- 1. To examine and define a historical, semantical and bibliometric overview on the theoretical background of the Mass Customization and Personalization research domain.
- 2. To identify and synthesize theoretical links among the Mass Customization and Personalization concept, Consumer Decision-Making Models, Technology Acceptance Models and modern insurance domain.
- 3. To model and validate combined online customization frameworks and their usage options within digital business platforms.
- 4. To build and validate an integrated digital insurance decision-making process framework, applicable for analyzing and modeling consumers' behavior in digital insurance platforms.
- 5. To define and validate research methodology, methods and samples for empirical investigations.
- 6. To carry out an empirical investigation on the content, trends, and state-of-theart of the non-life insurance market, consumers' behavioral patterns, and digital insurance platforms in Lithuania, Latvia, and Estonia.

7. To prepare a combined model and usage guidelines for a practical application of the empirically validated integrated digital insurance decision-making process framework.

The thesis has several theoretical and empirical **limitations**, which should be taken under consideration as a research gap and a standpoint for future scientific researches:

1. Period of scientific investigation. The scientific investigation of the Baltic insurance consumer decision-making process, the non-life market status as-is, and the spread of the customization and personalization domains has been carried out during the period of the COVID-19 pandemic. Dynamics and specifics of the COVID-19 pandemic significantly have impacted insurance consumers' behavioral patterns and accelerated intensive transition of insurance organizations to the digital business model.

2. Research subject. The research subject of the thesis is focused on a specific insurance market segment, i. e. non-life (P&C) insurance, individual consumer type, an emerging insurance region of three Baltic countries, and a distribution channel of digital sales platforms. Therefore, the outcome of the thesis might not fully cover practical needs of consumers and service providers from the Life insurance segment as well as may be limited in the application in other insurance markets, traditional (offline) retail distribution channels, and the legal consumers type.

Accordingly, above defined limitations of the period of investigation and research subject might have influenced empirical results and conclusions of the thesis as well as highlighted potential research directions in the scientific analysis. Such practical phenomena and trends like digital insurance platforms, an embedded insurance solutions, hybrid and personalized customer service models, and an emerging application of combined self-service technologies and customization solutions in daily insurance marketing and sales activities are still fragmentally analyzed on a scientific level and missing a more critical and holistic investigation. Moreover, the continuous and comprehensive analysis on digital insurance-decision-making process and users levels, combined platform frameworks and design development are required to support both practical efforts and a scientific interest of modeling attitudes and behavioral intentions of digital insurance end-users in insurance platforms. Finally, a comparative type of state-of-the-art case studies on different insurance markets and regions would be beneficial for insurers, which are facing with digital transformation and online customization implication.

Research methodology and methods. The methodology of the thesis follows best practices and well-grounded scientific approaches, designs, and methods of data collection and analysis of modern social science research. The author also aims for a novelty and methodological contribution within scientific studies of the operational management. General scientific methods are combined with methods of the art-based research, practical data sources, and analytical tools to identify digital behavioral patterns. The selection of the research methodology and methods focus on the structure of the thesis and can split into two groups. The first group arranges the analysis of the theoretical background and composes a theoretical foundation, while the second group is dedicated to the analysis of practical data and trends and conducts an empirical investigation.

The thesis follows pragmatism as key research philosophy, in combination with an objectivist epistemological paradigm, which reflect in the process of data analysis and sources of knowledge. This type of synthesis of the research philosophy and paradigm allows expecting an acceptable level of holistic scientific knowledge and empirical evidence. The research approach follows the logic of induction and supports the structure and objectives of the thesis. It allows to reveal points of the combination of mass service customization and personalization in digital service platforms as well as to create a universally applicable, multi-dimensional analysis framework for insurance service providers. Moreover, in this thesis, pragmatism is observed as a deconstructive paradigm, having strong linkages to a methodological pluralism in a form of Mixed-Methods Research (MMR) methods and research design during the whole research scope. Validation of the MMR suitability for the thesis is confirmed by 3 categories such as mixed sources of information and data, mixed data collection and analysis methods, and research strategy and methods applied in parallel procedures. The selection of epistemology is legitimated as this thesis focuses on the integration of three knowledge sources (authoritarian, logical, and empirical) uses an observable and subjective meaning of the phenomenon. The authoritarian source of knowledge is obtained by collecting and analyzing scientific research papers and then used in two initial theoretical parts of the thesis for the following types of analysis:

- 1. Semantical analysis, narrative, and thematic synthesis of the MCP concept meaning, content, and their combination options.
- 2. Retrospective and bibliometric analysis of the MCP concept.
- Identification of the theoretical foundation and causal-effect relations among online customization frameworks, Consumer Decision-Making Models and Information Systems theories, models, Self-Service Technologies and modern insurance domain.

The logical, featuring conceptual modeling of combined online customization frameworks, and the empirical knowledge, featuring an objective investigation of statistical data and practical trends in the digital non-life insurance field, find a place in parts 3 and 4 of the thesis. The triangulation of methods is defined as follows:

- Analysis of statistical data and practical trends of the non-life insurance market, insurance digitalization phenomenon, and digital platforms in Lithuania, Latvia, and Estonia. This part of the empirical analysis was grounded by using a combination of descriptive and comparative case studies, which follows the embedded single-case design, and used additional practical data sources and tools of Google Analytics and Google Trends.
- 2. Conceptual modeling of new combined online customization frameworks and integrated insurance consumers decision-making framework. This research part was completed by using a simplified Robinson (2008a, 2008b, 2015) conceptual modeling framework and the logic of Cartesian product creation by using the c-tuple method. Logical data flow diagrams (DFDs) and Framework-based synthesis were selected as supplementary methods for qualitative data analysis and visualization. In addition, analyses of the Explanatory and Confirmatory factors together with the Pearson correlation analysis, Logistic regression and SEM path analysis were conducted via the statistical analysis software IBM SPSS Statistics version 26 and statistical analysis software R package lavaan version 0.6-9. These multiple statistical analyses determined the best factor's structure and reliability of the integrated insurance consumer decision-making framework.
- 3. Main primary data to investigate the practical status as-is level of insurance digitalization, customization, and personalization in the Baltic market were collected within a 4-stage investigation with the experts in the field, internal end-users (employees), and external end-users (consumers). A convergent parallel research design was applied within a combination of data collection and analysis

methods and procedures:

- 1. Structured online surveys with a simplified Fuzzy and Likert scale-based questionnaire and visual expressions.
- 2. Visual expressions-prototypes of online customization frameworks by following an art-based research, A/B testing and Net Promoter Score (NPS) methods and using the design software Axure RP Pro (version 8).
- 3. A combination of embedded, explanatory, and interpretive types of case studies. Application of these mixed research methods and procedures not only produces a rigorous and credible source of empirical data, but also harmonizes in-depth, contextual, and qualitative evaluations on the research subject with broader quantitative generalizations of larger sample evaluations.

Defended statements:

- 1. Strategical Mass Customization capabilities of Solution Space Development, Robust Process Design, and Choice Navigation have a low spread within digital Baltic non-life insurance platforms, but are of a different scope at the country level and tend to affect the current setup of digital insurance platforms and lower an end-user's intention for insurance customization and personalization.
- 2. The level of the digitalization of the Baltic non-life insurance market and evaluations of digital insurance platforms are not homogenous and influenced by the socio-demographic factors.
- 3. Features of customization and personalization are widespread in the Baltic nonlife digital platforms, but standardization is a predominant feature affecting the attitude of insurance consumers towards the insurance purchase process in digital platforms.
- 4. The digital insurance purchase decision-making process in the Baltics is mostly influenced by an evaluation on combined traditional individual financial and risk evaluation factors related to insurance, while an evaluation on platform-technological, social domain, and hedonic motivation factors is influenced by socio-demographic factors.

The methodological and theoretical contribution of the research will appear and be available in research fields of modern insurance and MCP domains. From the methodological point of view, it is expected to be an exploration example

on how to combine and apply the logic of the art-based research, the visual drawing software and practical research methods A/B testing and NPS measurement for both current-state-focused and solution-focused analyses within modern insurance and customization research domains. From the theoretical point of view, significant contributions to the insurance research field were made by introducing conceptual interpretations of Porter Value Chain (1985), traditional Kamis (2004) online customization and Service Blueprint frameworks. Finally, the suggested modified Service Blueprint framework for analysis and modeling of the digital insurance decision-making process fosters a continuous scientific discussion on application of combined traditional UX mapping, UI modeling methods and modern practical tools for analysis and modeling of financial services, products and systems frameworks. In addition, provided recommendations of KPIs Measurement Table and KPIs Assessment Matrix outline a possible adoption of traditional project and process management tools, Risk Register and Risk Heat Map, within analysis and measurement of digital insurance platforms. Another important contribution is a theoretical extension of the previous state-of-the-art analysis on the MCP research domain by concluding a comprehensive automatic analysis, which relies on an investigation of bibliometric data of the 30 years research period, from 1990 until 2020, and an interpretation of the traditional Gilmore and Pine II's (1997) model classification. An important theoretical novelty of the work relates to a renewal and an extension of past decade regional studies on the Baltic non-life insurance market and consumers behavioral patterns by introducing a new research subject of digital insurance platform and variables, such as Insurance literacy, Sustainability, Customization and Personalization, first time in empirical researches of insurance decision-making process. Finally, it is expected that results of the research would become a standpoint for future researches of modern MCP concepts within non-tangible product value chains and digital platforms as well as encourage a scientific discussion towards combined online customization frameworks and combined models of Hybrid Consumer Decision-Making, Technology Acceptance Models and self-service technologies application for an analysis and management of non-life insurance-related products, purchase process, and digital platforms.

The practical contribution of the research. The empirically validated integrated digital insurance decision-making process framework is expected to have multiple practical application outcomes and a notorious contribution to casual practices of Baltic non-life insurance service providers. The following practical outcomes can be outlined as main recommendations for different levels and positions of insurance employees:

- 1. Additional Key Performance Indicators (KPIs), KPIs Measurement Table, and KPIs Assessment Matrix of digital insurance platforms would be beneficial for insurance distribution service and platform managers, process and product analysts, digital platform designers, and support specialists. These recommended tools and their usage guidelines can serve as a foundation or a supporting data source in a comprehensive platform and market-level data collection, analysis, and reporting of the current status. In this way, the suggested evaluation process and tools of additional digital platform KPIs support findings of a traditional technological, financial or marketing type of analysis and their evaluation metrics, by introducing innovative combined content, customer-centricity, and functional perspectives.
- 2. The modified Service Blueprint framework would be beneficial for the insurance distribution service and platform managers, digital marketing and customers support specialists, process and product analysts. The suggested modified framework integrates a conceptual digital insurance process logic and constructs into the practical insurance purchase process and results in a holistic map of key process stages, interaction touchpoints, and support types both from consumer and organizational perspectives. The application of the modified Service Blueprint framework can support a positive customer experience and platform design development tools, as a high scale and low investment solution-focused analysis tool.
- 3. Empirical findings on trends and content of digital Baltic non-life insurance platforms and behavioral patterns of Baltic digital insurance end-users would be beneficial for the insurance distribution service and platform managers, digital marketing and platform support specialists. Empirically validated most influential digital insurance decision-making factors can be practically applied on the multidimensional internal and market analysis and evaluation of digital insurance platforms. These empirical findings might support planning activities at both tactical and strategical levels as well as at operational level by improving digital branding, user experiences, communication activities and an discourse of operational actions. Findings on conceptual combined online customization

frameworks validation confirms need of having diversified platform design based on country-factor as well as the introduction of a higher level of insurance customization oriented Question-based (Q-B) framework features in existing digital insurance platforms.

Keywords: Mass Customization and Personalization, online customization, insurance digitalization, digital platforms, decision-making, non-life insurance, Baltic

Logical structure and volume. The logical structure of the thesis reflects the aim and objectives. Part 1 is a theoretical foundation of the thesis and consists of 8 sub-sections, which are structured according to the 3 initial objectives. This part of the thesis is dedicated to critical examination and synthesis of scientific literature on semantical, historical, and content dynamics as well as identification of theoretic links among MC and MP concepts, consumer decision-making and technology acceptance models, and digitalization phenomenon. Part 2 has 3 sub-sections, and the main focus there switches on the presentation and validation of the empirical research methodology, research methods, design and sample. Part 3 is oriented to 4, 5, and 6 objectives of the thesis and empirical validation of the integrated digital insurance decision-making framework. Therefore, this third part of the dissertation has 5 sub-sections, where multi-phase empirical investigations of the research subject, results in analysis, and discussions are outlined. The dissertation research is concluded within the section of conclusions and recommendations. A logical structure of the dissertation is provided below in Figure 22.

INTRODUCTION



Figure 22. The logical structure of the dissertation

Source. Author's elaboration by using the draw.io.

OVERVIEW OF THEORETICAL FOUNDATION AND RELATIONS OF MASS CUSTOMIZATION AND PERSONALIZATION, INSURANCE DIGITALIZATION AND USERS BEHAVIOR RESEARCH DOMAINS

The multidimensional theoretical investigation has resulted in a scientific contribution to MC and MP and the modern insurance research fields. A qualitative synthesis of scientific studies within MC and MP research domain was conducted and resulted in a unique interpretations of the Porter Value Chain (1985) and Gilmore and Pine II's (1997) models. Accordingly, as illustrated in Figure 12, three strategical MC capabilities can be combined with the digitalization domain and analyzed under primary and support types of activities in insurance value chain. Main features of the historical development and main semantical variations of MC and MP concepts were also examined. Thus, a suggested timeline diagram, presenting a new evaluation angle to the historical development of the MC concept by comparing six historical periods through the traditional Gilmore and Pine II's (1997) model of 4 MC types, is definitely a significant scientific contribution.



Figure 23. Historical development and background of the MC and MP concepts

Source. Composed by the author by following Anišić et al., 2013; Kanama, 2018; Zhang, Chen, Tao and Liu, 2019 and published in Baranauskas, Raišienė and Korsakienė, 2020, p. 3.

In addition, the suggested classification of traditional and modern MC domains scientific development into three main periods and three sub-stages in the thesis was supported by findings of bibliometric analysis, where initial scientific works were identified in 1992. Findings in the semantical analysis of MC and MP concepts and terms disclosed the existence of numerous interpretations on the definition level and the bipolar logic of the classification of MC and MP terminologies, which later reflect as a misleading practical usage and aroused scientific discussions. This finding of multiple interpretations issue is supported by a bibliometric analysis of the keyword co-occurrence network, where more than 7 clusters were identified.



Figure 24. Co-occurrence of author's keywords in the Mass Customization domain (1990-2020) Source. Composed by the authors using VosViewer software and published in Baranauskas et al., 2020. Additional information: A benchmark of 5 keyword occurrences is used.

Overall, the theoretical content-relational or bibliometric state-of-the-art analysis of interpretations on the modern MC concept is required to disclose the influence of the digitalization domain on the practical development of MC and MP concepts. This continuous theoretical investigation of semantical interpretation issues can be identified as a gap in the academic research. Identification and synthesis of theoretical links among the MCP concept, traditional and modern operations management theories, and the practical business and technology development outcomes, resulted in crystallization of functional, customer and organizational perspectives. These perspectives within the development of MC and MP concepts serve as the theoretical foundation for the thesis and further scientific studies in this field. The customer and organizational perspectives of modern MC and MP concept theoretically link to marketing, psychology, sociology, and behavioral finance theories and models, but they tend to miss a proper scientific investigation from the functional perspective and its practical outcomes. In addition, the human-centric approach and SDL application, platform economics, collaborative networks, and technological factors of BDA and AR are identified as the most influential factors on the modern MC and MP practical development, still holding a limited number of and scattered content analysis on the scientific level. The theoretical analysis on reflections of customization and digitalization domains, CDM, and IS theories and models within the modern insurance domain, resulted in several important findings. The theoretical content analysis on the main technology acceptance and consumer decision-making theories and models revealed a lack of a unified research standpoint towards the analysis of behavior of insurance consumers in digital platforms. Additionally, it was identified that modern insurance-related decisions and behavioral patterns cannot be sufficiently explained by applying traditional neoclassical economic and financial theories and ignoring cognitive, emotional, and situational factors.

The analysis of online customization frameworks and their usage options revealed ongoing scientific discussions about the MC concept and traditional online customization framework suitability for digital business platform management and design development. Moreover, the theoretical analysis shows that three traditional online customization frameworks, suggested by Kamis et al. (2004), do not reflect on dynamics of technological, operational, and situational factors, an attitude of a modern customer, preferences towards product customization and service personalization, and hybrid business models of modern retail and manufacturing organizations. Therefore, the six new combined online customization frameworks were created and they contribute to the modern MC research field by reducing the knowledge gap. Practically they support the current dominant human-centered approach to platform designs by including features of participatory and service simplicity-centered design.

Types	Alternative-based (AL-B)	Attribute-based (AT-B)	Question-based (Q-B)
Alternative based (AL-B)	(AL-B)	((AL-B) + (AT-B))	((AL-B) + (Q-B))
Attribute based (AT-B)	((AT-B) + (AL-B))	(AT-B)	((AT-B) + (Q-B))
Question based (Q-B)	((Q-B) + (AL-B))	((Q-B) + (AT-B))	(Q-B)

Table 60. 9 theoretical combinations of online customization frameworksSource. Composed by the author by following Kamis et al., 2004 and published in Baranauskas, 2020, p. 127.

The analysis on effects and outcomes of digitalization and customization domains in the insurance industry resulted in twofold findings. First, within the previous decade, in the financial sector, the phenomenon of digitization and digitalization became an operational standard, widely spread and enough balanced, while, in the insurance service field, it had strong implications only at the strategical planning level and in primary activities of the insurance specific-value chain. The traditional insurer service providers seem to stay under the target digital maturity level, therefore, face difficulties to fully and easily integrate technological innovations as well as to develop a unified digital distribution and service platform. Second, the ongoing global pandemic also has highlighted several additional obstacles and potential research directions in the digital transformation implication in insurance organizations. Legal compliance issues in data protection and information asymmetry in digital service platforms, technical issues of resources and knowledge limitations in a digital transition, product underwriting and service management issues, resulting in a low level of service flexibility, platform personalization and customization, data harmonization with the casual needs of customers, are key obstacles that organizations face.

A significant research gap has been identified on the modern insurance domain in regards with the COVID-19 period, including sub-topics of a fostered development of digital service platforms, an increased popularity of embedded insurance solutions and hybrid customer service models, and an application of combined self-service technologies and customization solutions in daily insurance marketing and sales activities. The practical phenomena of social media and network, digital branding, mobile-first design and simplified content-based financial services in the insurance research field have been also investigated, however, only fragmentally. Thus, the integrated digital insurance-decision-making process framework partially covers these fragmentally investigated insurance research areas and can be applied as an innovative approach to analyze and model attitudes, preferences, and behavioral intentions of digital insurance consumers in digital platforms.

OVERVIEW OF METHODOLOGY AND METHODS OF EMPIRICAL BALTIC LEVEL RESEARCH

The empirical investigation of complex research subject and contexts requires a comprehensive research strategy and research design, following primary and secondary data sources and combined research methods of operational management, information theories, and research on customers behavior. Therefore, the following empirical Baltic-level research process was divided into 5 empirical investigation stages. The investigation started with the case study of the Baltic non-life insurance market and afterward consequently 4 stage investigations of Baltic financial experts, insurance specialists, and consumers, and in a parallel way case studies were completed. The selected research process logic supports the main aim and objectives of holistic empirical research subject investigation on 3 research levels (macro, mezzo, and micro) and accordingly on 3 analysis perspectives (market, organizational and individual) presented in Annex 20. The following empirical research strategy compounds domains of insurance digitalization, customization, personalization, and existing solutions of digital insurance platforms in the Baltic countries and their multidimensional practical investigation at functional, product, and system levels by following a convergent parallel research design. The selected research design also contributes to the scientific research field on modern insurance by providing a versatile empirical validation of a conceptual framework of the Baltic digital insurance consumer decision-making process. The application of the concurrent triangulation design (single-phase) approach allows collection of qualitative and quantitative data simultaneously and produces a rigorous and credible source of primary data. It also contributes by converging and subsequent interpreting of secondary data and more contextual and in-depth generalizing of theoretical assumptions within larger sample researches and datasets. Finally, the multilevel qualitative and quantitative analysis, including descriptive statistics, factor, and correlation analyses, and path analysis ensure a proper examination of the validity of theoretical constructs and the consistency of research instruments, sampling adequacy, underlining structures, and relationships among latent variables (factors) (Dhillon et al., 2014; Koyuncu and Kılıç, 2019). In detail, procedures of data collection and analysis were conducted by using the methodological triangulation of qualitative and quantitative research methods within a continuous, multi-stage empirical investigation within 2020-2022. The logic of the selected research strategy, its sequence and reflections on

different research levels and methods are illustrated in Annex 20. As per Annex 20, in order to understand the background and related objectives of the 5-stage strategy of empirical investigations, it is essential to elaborate on a detailed explanation as follows:

- The first stage of the empirical investigation follows the empirical research objective to present an as-is status in the Baltic non-life insurance market and clarify insurance platforms' compatibility at practical product and functional levels. The investigation compounds a multidimensional qualitative comparative analysis by analyzing global statistical data sources, completing a statistical mapping of selected search keywords, and conducting a modified Baltics' market and platform analysis from functional and product perspectives.
- 2. The second stage of the empirical investigation follows the empirical research objective to empirically investigate the status, content, and tendencies of the digitalization phenomenon and the application of the MCP concept within digital platforms of the Baltic non-life insurance market. The investigation compounds a structured online survey of 15 close-ended questions and statements, conducted by following a simplified Fuzzy and Likert scale questionnaire logic, with the Baltic financial service experts as a target audience. The survey has aimed to examine the state-of-the-art level of insurance digitalization, customization, personalization, and standardization domains, and the inclusion of MC capabilities within digital non-life insurance platforms in the Baltic countries. Looking from the perspective of research strategy levels, this stage of the empirical research has been oriented to the Macro level of research implementation.
- 3. The third stage of the empirical investigation follows the empirical research objective to identify and analyze the most influential factors for the behavioral intention of Baltics insurance customers towards decisions in digital insurance platforms from an organizational perspective. This stage of research supports key findings and subjects of the first stage investigation and introduces a new subject of the digital insurance decision-making process. This stage encloses a structured online survey of 24 close-ended questions and statements, conducted by following a simplified Fuzzy and Likert scale questionnaire logic and visualizations under the art-based research logic, with the Baltic insurance specialists as a target audience. The survey has aimed to identify the practical level of insurance digitalization, customization, and personalization domains in digital non-life insurance platforms, and pre-dominant features of the digital

insurance purchase decision-making process in the Baltic countries from the internal users' side. Looking from the perspective of research strategy levels, this stage of the empirical research has been oriented to the Mezzo level of research implementation.

- 4. The fourth stage of the empirical investigation supports the same empirical research objective as in the third stage, just from an individual evaluation perspective. The objective is to identify and analyze the most influential factors for a behavioral intention and attitude of insurance customers towards decisions in digital insurance platforms in the Baltic region. Therefore, the research follows the structure and key findings of the digital insurance decision-making process features as well as extends them by introducing new theoretical constructs. This stage encloses a structured online survey of 32 close-ended questions, conducted by following the Likert scale questionnaire logic, with the Baltic insurance consumers as a target audience. The survey has aimed to identify the most influential factors and validate the conceptual framework of the digital insurance purchase decision-making process in the Baltic countries from the external users' side. Looking from the perspective of research strategy levels, this stage of the empirical research has been oriented to the Micro level of research implementation.
- 5. The fifth stage of the empirical investigation supports the empirical research objective to conceptualize and practical investigate the acceptance of combined online customization frameworks in digital insurance platforms. The research follows results of the conceptual modeling of combined online customization frameworks in the section 1.4 as well as key findings in the case study analysis on reflections on customization, personalization, and digitalization in the Baltic non-life insurance market in the section 3.2.1. This stage encloses a structured online survey of 4 close-ended questions, conducted by following the modified methodological logic of the Human-Computer Interaction (HCI) research, combining the process design of a randomized controlled experiment (A/B testing) and loyalty measurement (NPS indicator). The survey has aimed to identify the preferable design logic of online MTPL product configurator in the Baltic countries and validate the visualization of the 3 selected combined online customization frameworks in digital insurance platforms. Looking from the perspective of research strategy levels, this stage of the empirical research has been

oriented to the Micro level of research implementation.

6. It should be emphasized that a combination of embedded, explanatory, and interpretive types of case studies was conducted in a parallel way to above defined empirical researches. Case studies were supplemented with secondary data sources of the Global Insurance Markets Trends made by the Organisation for Economic Co-operation and Development (OECD) for 2017-2020, as well as primary data sources and tools Google Trends and Google Keyword Planner for the period from 1 January 2017 to 1 January 2020, and datasets of online surveys. This part of the empirical investigation has aimed to identify and analyze features and trends of the non-life insurance market and insurance consumers' behavioral patterns at the Macro level.

In general, the empirical research methodology is defined and validated in accordance with a general thesis methodology. A pragmatism and objectivist epistemological paradigm can be identified in the form of a research philosophy, methodological pluralism in the form of MMR methods for data collection, and the inductive reasoning logic for data analysis and summary of results. In addition, the research strategy and design are shaped around the defended statements and practical objectives to empirically investigate and identify the state-of-the-art content and trends of the non-life insurance market, insurance consumers' behavioral patterns, and features of digital insurance platforms in Lithuania, Latvia, and Estonia.

OVERVIEW OF EMPIRICAL RESEARCH MODEL

The conceptual research framework, presented in Figure 17 and Annex 11, was constructed as a result of the multidimensional theoretical synthesis of selected CDM, TAM, service quality models, and scientific researches on insurance consumers' decision-making and technology acceptance, presented in Figure 15, Figure 16 and summarized in Annex 12, which was completed in the theoretical part of the thesis.

First, the proposed integrated framework follows the conceptual process logic and determinants of HCDM (2002), which take a standard discrete choice, latent and observed variables into consideration and allows evaluation of psychometric-perception, behavioral, and environmental (situational and contextual) factors within the same decision-making. In detail, a theoretical extension of the traditional model of three stages, of pre-purchase, purchase, and post-purchase, and static evaluation
constructs to the field of modern insurance end-users' behavior and purchase decision-making in digital platforms is suggested in the thesis. The conceptual process logic and determinants, defining the digital insurance-decision-making process as a continuous, but not a simultaneous sequence of three stage processes and multiple interrelated factor groups, which combine variables of consumer experience, decision-making, and technology acceptance, is introduced. Theoretically, the presented extension on traditional evaluation constructs refers to the holistic marketing concept and a process evaluation approach based on customer-centricity, and contributes by outlining that value-creation, experience, and behavior of insurance end-users are context-dependent, systematic, and interactive within all stages of the purchase process. The process level modeling is presented in Figure 15. Furthermore, the suggested process workflow of the cause-and-effect relationship logic, three stages, and numerous interconnected dependent and interdependent variables is expected to extend the current scientific and practical approach to the insurance-specific value chain. Second, the proposed integrated framework consists of 13 constructs in the cause-and-effect relationship logic, from which 6 are dependent variables and 7 are independent variables

In general, both types dependent and independent variables are developed in accordance to:

- E-service quality and success dimensions, presented in the E-S-QUAL model (2005) and the traditional and updated IS success model of DeLone and McLean (1992, 2003).
- The purchase process logic and determinants of HCDM of Walker and Ben-Akiva (2002), and IS theories and TAMs, including variables from UTAUT2 (2012) and TTF (1995) models.
- Key findings from researches of Taylor et al. (2002), Ulbinaitė and Moullec (2010), Ulbinaitė et al. (2011), Santouridis, Trivellas and Tsimonis (2012), Ulbinaitė and Kučinskienė (2013), Ulbinaitė, Kučinskienė, Moullec (2013), Kiyak and Pranckevičiūtė (2014), Aziz et al. (2017), Zolnowski and Warg (2017), Rocha and Botelho (2018), Gbongli et al. (2019), Lin, Wu, Lim, Han and Chen (2019), Łyskawa et al. (2019), Naffa (2019), Weingarth et al. (2019), Allodi et al. (2020), Liu, Chow and Zhao (2020).

This type of theoretical synthesis also reflects on findings in researches of the previous decade on behavioral patterns of insurance consumers. Finally, the empirical validation of conceptual framework was completed by conducting a structured ques-

tionnaire of 32 questions, with the Likert scale of 9 points for a proper item measurement, by operating the online survey platform Pollfish. The questionnaire replicates variables of the integrated framework and refers to results of the previous elicitation study in this particular insurance field of the thesis' author, completed in February-May 2021 with a sample of 157 professionals from the insurance-related working fields in the Baltics.

OVERVIEW OF EMPIRICAL INVESTIGATIONS OF BALTIC INSURANCE MARKET, PLATFORM, CONSUMERS AND RESULTS EVALUATION

The 5-stage empirical investigation resulted in both theoretical and practical contributions as well as limitations, which require a critical scientific discussion. The identification and crystallization of the most influential factor groups in the digital insurance purchase process and favorable online customization frameworks are also beneficial both within the primary and support type of activities of the insurance-specific value chain. In more details, the results of the survey on Baltic insurance specialists disclosed the three most influential factor groups and 14 factors, which have a direct relation and influence on the Baltic insurance consumer decision-making in a digital insurance platform: the factor group F1 compounds 6 internal type factors of a personal evaluation and consideration towards purchasing non-life insurance in the digital platform; the factor group F2 compounds 4 external type factors, oriented to evaluating the influence of technological and content features of a platform and outcomes of the marketing domain in the digital insurance decision-making process and the factor group F4 compounds following 4 combined internal and external types of factors, oriented to evaluating the influence of operational-functional platform features and general insurance knowledge. Meanwhile, the results of a continuous consumer-based investigation expanded the number of influential factor groups to six: factor group F1 compound 7 factors oriented to a digital insurance platform evaluation and customization; factor group F2 compounds the 6 internal types of factors from the Personal Conditions category and two external factors from the Facilitating Conditions group; factor group F3 compound 7 combined types of factors from Personal Conditions, categories: Perceived Enjoyment, Curiosity and Loyalty factors from evaluation categories

of the Personal Conditions, Social Conditions and Facilitating conditions; the factor group F4 compounds 3 combined types of operational platform-level factors; the factor group F5 consists of two internal types of factors of from the Personal Conditions and Platform Conditions categories; the factor group F6 consists of two internal type factors from Personal Conditions and Platform Conditions categories. A strong positive correlation among all combined factor groups, identified in the analysis of surveys, supports the findings of the theoretical analysis part, where the combination of personal (cognitive-emotional), technological, monetary, and individual risk factors appeared as a foundation of the modern insurance concept and digital insurance decision-making process. In this way, the aim and objectives of the thesis to empirically validate a conceptual framework of the insurance customers' decision-making process in digital self-service platforms were fulfilled.

From the theoretical perspective, the above-defined findings of factor groups also support the fourth defended statement of the digital insurance purchase decision-making process being influenced by combined factor groups with leading factors of personal insurance need and financial affordability, digital marketing, technological enablers, customization, and personalization. The suggested unique combination of variables in the framework is a significant contribution to existing field findings of Ulbinaitė and Moullec (2011), Ulbinaitė et al. (2013) and Kiyak and Pranckevičiūtė, L. (2014), which were solely focused on the traditional non-digital insurance purchase process and limited by one Baltic region country. Additionally, the statistical analysis of results of the insurance consumers survey (2021) shows that among the leading factors in the digital insurance purchase process are Perceived Interactivity Perceived Behavioral Control, and Effort Expectancy, and in this way refers to the research of Naffa (2019). On the other hand, an important extension of Naffa's (2019) suggested model was the identification of the statistical importance of Security and Privacy and Price Value factors. The empirically validated framework of the digital insurance-decision making process might be a starting step for assessing the impact of internal distribution processes on the attitude and behavioral intentions of consumers. The framework extends the current insurance research models of Weedige and Ouyang (2019), Weedige, et al. (2019), and Allodi et al. (2020) by including new variables of Insurance literacy, Sustainability, and Insurance digitalization in the context of empirical investigation. An additional novelty is the suggested conceptual merge of traditional models of CDM, HCDM (2002), defined in the theoretical part, technology acceptance, and DeLone and

McLean Information Systems (IS) Success Models (1992, 2003) within two research subjects, digital insurance platform usage, and insurance purchase decision-making, into a common research framework. In the case of combined online customization frameworks empirical evaluation, the identification of Baltic consumers' favorable attitude and intention to recommended of (Q-B)+(AT-B) based MTPL product configurator indicate practical possibilities of higher level of online customization and user centric design solutions application in digital insurance platforms in the Baltic non-life insurance market. The empirically validated combined online customization frameworks and integrated decision-making framework can be also applied for testing the applicability of these theoretical models within the practical analysis of existing digital insurance platforms or in modeling a new technology acceptance.

From the practical perspective, these 5-stage investigations allowed to clarify the practical level of insurance digitalization, customization, and personalization in the Baltic non-life insurance market. The multidimensional case study on customization and personalization domains and outcomes of digital solutions in the Baltic non-life insurance market together with online surveys of Baltic financial experts and insurance specialists supported the fulfillment of research objects. Findings of surveys on the Baltic experts and insurance specialists also supported the confirmation of the second and third defended statements regarding the level of digitalization, customization, and personalization in the Baltic non-life insurance platforms being Rather Good. On the other hand, evaluations of experts and insurance specialists on the digitalization domain tend to be inhomogeneous in terms of socio-demographic factors. In detail, the results of the survey on Baltic experts showed the level stay between Satisfied and Rather Good, and revealed significant differences per country. In the case of the survey on Baltic insurance specialists, the digitalization level stayed between Satisfied and Rather Good as well, but no visible influence of socio-demographic factors was detected. Statistically significant differences among factor groups and age groups of 18-25 years and 46-55 years were identified in surveys of Baltic insurance specialists and consumers (2021). Therefore, the evaluation of the influence of socio-demographic variables of an age group and a residence country requires a continuous empirical investigation with a larger scope of the research sample and statistical analysis. Considerably low evaluations of customization and personalization factors set by insurance specialists and consumers indicate the MCP concept still has a vague penetration within existing digital non-life insurance platforms. This position is supported by both findings of the Baltic expert-based investigation and Baltic consumer-based investigation (2022), where standardization is defined as a predominant feature of digital non-life insurance platforms and a favorable attitude and recommendation was identified towards the prototype X build around more standardization closed ((AL-B)+(AT-B)) framework. Therefore, these findings encourage a further scientific discussion of the direction and type of insurance digitalization in the Baltic non-life insurance market.

In general, obtained results appear innovative and valuable for insurance service providers as they provide a holistic expert-level position and understanding regarding the insurance digitalization situation in the Baltic region, including the preparation level of service providers for digitalization, the demand level of consumers for digital insurance solutions and the overall digitalization level. The empirically validated integrated framework of the digital insurance-decision making process presented in Annex 9 might be a starting step for assessing the impact of internal distribution processes on the attitude and behavioral intentions of consumers. From the content perspective, the presented framework compounds a unique combination of logic and variables of process and content level including traditional CDM and HCDM models (2002), IS theories, UTAUT2, TTF, service quality models and the updated IS success model of DeLone and McLean (2003) and follows findings of scientific researches on insurance consumers' decision-making and technology acceptance, presented in Figure 19, Figure 20 and summarized in Annex 7. The identification and crystallization of the 6 most influential factor groups and 27 factors, and influence of 3 independent variables in the digital insurance purchase process are also beneficial within the support type of activities of the insurance-specific value chain, such as Marketing and Public Relation. In these types of activities, the most influential factor groups can serve as quality assurance indicators in the evaluation and monitoring of the information content and indicate the required development discourse of digital insurance marketing and service personalization. Moreover, the method of the Pairwise Comparisons analysis resulted in the finding of statistically significant differences in following pairs of age groups: 18-24 - 25-34 (.049), 18-24 - 35-44 (.026), and 18-24 - 45-54 (.005). This finding supports earlier results of the Baltic insurance specialists survey, where the youngest consumer age group was less influenced by technological and content features of the digital insurance platform due to their strong technology literacy and a lower need for a personalized assistance in the decision-making process. In general, the socio-demographical profile of digital insurance end-users should be taken into consideration for continuous

analysis and modeling. Generation Y and Generation Z slowly become the target audience in the digital banking service field but lack a proper investigation in the context of digital insurance platforms and the insurance field in general. By following findings in the digital banking field it is recognized that these demographic cohorts have a strong preference for speedy and simplified information search, share, and completion of actions in digital environments and accordingly expect service providers to ensure both personalized user-friendly platform and process design.

The conducted multi-stage empirical examinations have methodological and empirical limitations, which should be discussed both in future studies and in practical application cases. Methodologically, in the case of the survey on Baltic insurance specialists, the validity and reliability of results of the factor analysis in the CFA part might be questioned due to the received sample size. According to absolute indices of Hoelter's critical N (CN) statistic, the recommended acceptable size of the research sample (N) should be above 200 respondents to accept a model at the 0.05 level of significance (Bollen and Liang, 1988; Shadfar and Malekmohammadi, 2013). Nevertheless, in this thesis, the methodological position of Guadagnoli and Velicer (1988) is followed. They defined the sample size as a function of the number of variables, and placed a recommendation for the research sample size to stay between 100 and 200 observations as valid for the factor analysis. The adequacy of the sample was confirmed by the value of the KMO (0.839) as well. As per Nunnally's (1978) Rule of Thumbs, the required sample size for the 14-factor model validation should not be lower than 140 respondents, therefore, the thesis follows this approach as well. Another methodological limitation and discussion point comes from the survey on Baltic insurance consumers (2021), where a disproportional allocation of the received sample on the country level was identified. In this case, the risk of biased or less valid results was rejected after completing the Kruskal-Wallis H test, resulting in no statistically significant differences among a residence country, evaluations on factor groups, and dependent variables of the presence of digital insurance platforms, perceived usefulness of insurance and attitude toward insurance. In the case of the Baltic insurance consumers' survey (2022) a similar disproportional allocation of the received sample on the country level was identified. Here the Kruskal-Wallis H test also showed no statistically significant differences among sociodemographic factors of respondents' age, gender, and residence country (in sample A) and question 3 (How likely would you use such insurance platform prototype in the future?) with question 4 (How likely would you recommend such

insurance platform prototype to a friend or colleague?). On the other hand further scientific studies on the influence of socio-demographic factors and combined online customization frameworks are required due to tests of the Kruskal-Wallis H applied on replication sample B. Here statistical significant differences between prototype X towards a resident country in question 3 and between prototype Z and a resident gender.

Key empirical limitations to consider are related to the selected research context and subject. Conducted empirical investigations were solely focused on the non-life insurance market, private customer's segment, digital distribution channel and MTPL insurance product. Therefore, results of the investigations lack enough confidence and qualitative imperative to apply in the legal customer's segment and other private customers' insurance products, including the analysis of the attitude and behavioral intention towards insurance purchase and modeling digital product configurators and service platforms. A critical evaluation on the relevance of the suggested integrated framework and combined online customization frameworks should be carried out before applying in traditional direct distribution channels, such as an agent network and call center, due to their lower dependency on technological factors and different profiles of consumers. The application of the integrated framework is also limited and challenged in the case of application in non-direct-intermediary insurance distribution channels, such as brokerage, white-label, and bancassurance. Overall, next to the above-listed limitations and discussion points, further scientific studies on the digital insurance customers' decision-making process and platforms should include the life insurance market segment and new digital intermediaries-insurtechs. These research sub-fields and subjects have compelling practical and scientific potential within the development of digitalization and customization domains. In addition, meaningful points of an interactive repurchase cycle and post-purchase stage, identified in the theoretical analysis, are still insufficiently investigated within the modern insurance research field. Complementary aspects, such as the influence of webographics, differentiation between first-time and repetitive customers, and dependance on the purchasing power of different age groups, should be studied under digital insurance platforms and online customization framework domains.

Finally, the ongoing insurance digitalization and platformization in the Baltics is worth challenging whether it has already shifted from an internal type of transfor-

mation, which is technical-driven, resource and operations optimization-oriented, to an external type of transformation, where innovative, customer-centered personalization and customization solutions are prioritized. Moreover, the positive results of question-based type of customization prototype Z usage in future and as a recommendation to a friend or colleague indicate the possible transition to a higher level of insurance customization in the Baltic non-life insurance platforms and require continuous scientific investigation.

CONCLUSIONS

1. Clear historical boundaries of six transformation periods were identified. From the scientific research perspective, three main historical periods and transformations were disclosed by the bibliometric and thematic synthesis. Semantically, initial findings of MC features, as Mass Confusion or limitations of the Mass Production system, can be traced back to the works of Alvin Toffler (1970, 1980). Later, in 1987, Davis conceptualized the theoretical foundation and term MC, and, in 1993, Pine II et al. popularized and developed the idea of MC for the practical application within manufacturing operational management. Within 2000-2010, the traditional MC concept faced a semantical and conceptual transition into two stand-alone, electronic, and customer-driven MC and MP concept versions. From 2010, the practical popularity of digital transformations and sustainability has determined innovative scientific interpretations of combined MCP versions, oriented to interrelated scientific domains of digital marketing and entrepreneurship, platform economics, agile and smart manufacturing. Although the content and research directions of MC and MP domains have outlined boundaries and outcomes, the semantical meaning still faces numerous typologies and interpretations.

2. The theoretical content development and semantic changes of the traditional MC and MP concepts can be observed from functional, customer, and organizational perspectives. A synthesis of Mass Production, supply chain and operational management theories, and the technological-instrumental approach application were recognized as key drivers. From the theoretical perspective, the traditional MC evolved from the Mass Production concept, but a later development was strongly influenced by theoretical constructs of Servitization Business Model and Product Cannibalization. The organizational, as product-oriented, perspective was identified as a significant theoret-

ical development discourse within traditional MC research domains, however, it was dominated by the customer perspective in later development periods. A practical popularity of the human-centric approach and an application of the SDL to model product customization and platform design became determinant drivers of MC and MP concepts as well. Digitalization and customization have already penetrated to the insurance industry, leading to positive outcomes in pricing and product underwriting, consumer service and sales distribution platforms, and dynamics of the market structure. Moreover The COVID-19 has not only accelerated digital insurance transformation within the legacy IT infrastructure and risk management, but also introduced a new consumer service model, built around dynamic needs for on-demand and customizable insurance products, interpersonal digital interaction within the decision-making process, and a hybrid consumer service format. The modern insurance decision-making process should not be interpreted as a linear progression through process stages anymore, since it has become iterative and simultaneous.

3. Digital e-retail organizations and traditional B2C service organizations tend to confront obstacles in integrating traditional online customization frameworks into already existing multisided platforms and omnichannel service-based business models. The transition to online customization has been recognized as more complex within traditional brick-and-mortar types of manufacturing organizations, since they face additional challenges due to limited in-house technical capabilities for implementing data and customer-driven digital processes and qualifications of e-MCP concept. A lower success rate in the adoption closely relates to the homogeneity level of the target audience and a practical popularity level of the Mass Production's operational approach in the market. In general, the development of circular and sharing types of economy models and the COVID-19 situation in recent years have undoubtedly influenced consumers' behavioral patterns and raised a digital knowledge level among users. Therefore, following six combined online customization frameworks have been modelled: ((AL-B) + (AT-B)), ((AL-B) + (Q-B)), ((AT-B) + (AL-B)), ((Q-B) + (AL-B))), ((Q-B) + (AT-B)).

4. A conceptual extension of the traditional three-stage model of service consumption was suggested towards the digital insurance consumers' behavior and purchase decision-making process in digital platforms. The presented conceptual framework and its constructs refer to the holistic marketing concept and the approach of consumer centricity to a system design and process evaluation and management. In general, the suggested integrated decision-making process framework compounds four evaluation dimensions, such as system, process, platform-technology, and individual. The framework includes modified theoretical constructs and the process logic from HCDM (2002), UTAUT2 (2012), TAM3 (2008), TTF (1995), the updated IS success model of DeLone and McLean (2003), e-service quality and success dimensions, and the interpretation of key findings of related field researches listed in Annex 7 as well. The proposed extension contributes to the scientific field by introducing a modern three-stage insurance decision-making process logic, centering on a unique combination of dependent and interdependent variables with a cause-and-effect relationship at the content and process level, and a focus on insurance purchase in digital platforms.

5. Empirical investigation compounds procedures of data collection and analysis based on the methodological triangulation of qualitative and quantitative research methods and 5 stages of empirical investigation process of the Baltic market and consumers completed in 3 years period (2020-2022). The selection of research methods and samples of Baltic financial service experts, specialists, and consumers support both the selected 3-level research strategy and objectives of the thesis. Empirical data collection began by applying a multidimensional qualitative type of a comparative Baltic insurance platforms analysis and completing an analysis of global statistical data sources and statistical mapping of search keywords. Afterward, the investigation continues by applying 3 structured online surveys by following a simplified Fuzzy and Likert scale questionnaire logic and is supported by visualizations under the art-based research logic. A modified methodological logic of the Human-Computer Interaction (HCI) research with the process design of a randomized controlled A/B testing and NPS loyalty measurement were introduced in the last empirical investigation as well.

6. The practical case study and data analysis revealed a high variety of digitalized insurance products for individual consumers and the customization availability in digital product configurators was identified. However, current insurance digitalization outcomes in digital platforms seem to be unbalanced in terms of value co-creation and personalization, as platforms provide limited options for personalized information or assistance in product customization and other self-service processes. Country-level differences were also noticed on the digital platform level, where the combined online customization framework of ((AT-B) + (AL-B)) was predominant in the Estonian nonlife insurance market, while variations of combined online customization frameworks of ((AT-B) + (AL-B)) and ((AL-B) + (AT-B)) were predominant in Latvia and Lithuania.

Findings of the Baltic financial exerts survey support the partial confirmation of the first defended statement and confirm the second and third defended statements. The multi-sided investigation on the insurance digitalization domain indicated that the preparation level of Baltic insurance service providers to apply digital solutions is in between of Satisfied and Rather Good, which is close to the average judgment of the general digitalization level, but is significantly behind the actual need and demand of Baltic insurance consumers for digital non-life insurance solutions. These findings allow confirming the second defended statement as country-level differences were also observed in the evaluation on digital platform features. Average standardization and customization levels in the Baltics were Satisfied, while the personalization level evaluation is between levels Satisfied and Rather Good. These findings support the confirmation of the third defended statement. High evaluations on standardization features in the Baltic non-life insurance platforms reflect product specifics, strict legal regulations of MTPL and overall importance of motor insurance segment in the non-life product portfolio of Baltic insurers.

After conducting an online survey of 157 specialists from the insurance-related working field in the Baltics, three-factor groups, F1, F2, and F4, were recognized as directly related to the insurance decision-making process and having a strong positive Pearson correlation. The presence of factor group F1 as the largest by factor number and influence level of combined personal conditions contribute to confirmation of the fourth defendant statement. On the factor level, factors of previous and ongoing personal insurance experience and key technical platform features showed the highest influence, factors of potential finance value-savings, insurance service provider brand and graphical UI features in the platform were slightly less influential. Any statistically significant differences were not identified among factor groups F1, F2, F4 and a residence country, but a statistically significant difference between mean values of the F2 factor group and respondent age groups of 18-25 and 46-55 was recognized.

After conducting an online survey of 390 insurance consumers (2021) from the Baltic market, six factors groups of 27 factors, having a very strong positive or strong positive correlation to the digital insurance purchase decision-making, have been identified. The setup of most influential factors and their content orientation to monetary-risk and personal condition evaluation indicate that traditional economic benefits and rational behavior perspectives are relevant and applicable within digital insurance

decision-making process evaluation and modeling. The higher than total average (5.9) evaluations of platform-technology-related factors of information, support service, and general platform quality indicate the importance to include the updated DeLone and McLean Information Systems (IS) Success Model (2003) in the modeling of digital insurance customers' behavior and frameworks of digital non-life insurance platforms. On the other hand, the lower than total average (5.9) evaluations of platform usage and framework related factors allow making a twofold interpretation. Firstly, this situation supports previous findings of the research where all 3 operational MCP capabilities were identified as being applied in the evaluation range between Rather Weak and Neutral as well as finding of the standardization domain being a predominant feature in the existing digital non-life insurance platforms in the Baltics. Secondly, such evaluations on the platform usage and framework-related factors indicate that the Baltic non-life insurance consumers are influenced by current platform setup and general insurance digitalization level, therefore, they lack interest in a higher perceived control or enjoyment of the insurance purchase process or interactivity within digital insurance platforms. A statistically significant differences among the sociodemographic variable of a respondent's age group 18-24 and factors evaluations as well as between presence of digital insurance platform and purchase of non-life insurance were identified. Such differences on age groups also confirm the need for more user-centered, digitalized, customized, and personalized insurance services and platforms in the Baltics. Therefore, additional empirical research of 317 Baltic insurance consumers' (2022) likelihood-to-use and recommend combined online customization frameworks in digital insurance platforms was completed and the results of the statistical analysis partially confirmed the second defended statement. Here, statistically, significant differences were identified in the replication type of sample B in-country and gender-level evaluations of the frameworks. A positive attitude towards the (Q-B) framework application indicates a possible practical transition in the Baltic non-life insurance market from the traditional, alternatives or attributes-based customization to the combined customization with a higher level of personal assistance in the process.

7. A combined model for a practical application of the empirically validated integrated digital insurance decision-making process framework was prepared and included guidelines from 2 levels of usage. The first part of the model includes recommendations and current state-focused practical guidelines grounded on results of mezzo and macro-level empirical investigations for insurance platform evaluation from the

content, customer-centricity, and functional perspectives. This first part compounds the 9 additional KPIs, KPIs Measurement Table, and KPIs Assessment Matrix following the structural and process logic of Risk Register and Risk Heat Map methods and S.M.A.R.T goal and objectives framework. From the practical application perspective, the presented guidelines are prepared by following the criteria of low financial investment, simple technological integration, and minimal usage knowledge. Additionally, due to the structural modularity of KPIs types and flexibility on a timeline, the evaluation of suggested additional KPIs may be smoothly integrated into daily and periodical research and modeling activities of digital insurance specialists, service, and platforms managers, and designers. The second part of the model includes recommendations that are grounded on the results of macro and micro levels of empirical investigations. This part of the recommendations can be interpreted both as current state and solution-focused practical guidelines for modeling the digital insurance customer journey and framework of the platform. The suggested analysis framework combines empirical findings on the digital non-life insurance decision-making process in the Baltic market and, from the methodological perspective, follows a simplified logic and content categories of the traditional Service Blueprint map diagram. Similarly to the first part of the model, this part of recommendations features a high application scale, modular simplified content, and visualized outcomes which require low investment and user training. In general, it is expected that the suggested framework would be beneficial for the upper-level insurance distribution service, platform, and customers service managers in the situational analysis as well as be an additional tool for digital marketing, process, and product analysts for modeling both platform design and end-user behavior.

RECOMMENDATIONS

It is essential to emphasize that the following 2-level recommendation model and usage guidelines include logic and features of empirically validated insurance decision-making process framework and factor groups. The outcomes of the presented recommendations can be modified and adjusted either fully or to a selected extent in regards to the insurer's digital maturity level, existing platform technical resources, operational capabilities, target audience or strategical targets for digital sales, marketing, and platform development. Since strictly defined step-by-step instructions, a static process approach to technological framework management is confirmed impractical in the digital environment, recommendations and usage guidelines on the application are suggested in a more modular and adaptable approach. Finally, the recommendation model and its usage guidelines follow the content, scope, and general application limitations of the thesis, as presented in the thesis, and should be considered carefully before an actual implication.

The first level of the recommendation model and usage guidelines is dedicated both to support internal and market analysis of digital insurance markets and reflect on existing limitations of market and platform performance analysis. In other words, the traditional analysis on full market environment and performance compounds a structure of 3-level strategy insights, and multiple analysis tools, and allows linking historic, prevailing, and forecasted conditions of the selected market. The industry, sector and competitor analysis, as the mezzo-level analysis, is the practical outcome of this structure of multi-level strategy insights and is conducted by applying well-known methods of Porter's Five Forces, Value Chain Analysis (VCA), Structure-Conduct-Performance analysis (SCP), and other Blue Ocean Strategies, for instance 3C, 4P. The internal, as micro-level, analysis typically is conducted from perspectives of an organization or a user by applying traditional methods, such as SWOT analysis, income analysis, and strongly depends on internal organizational requirements and standards. Moreover, there are multiple formats of market and performance analysis within the insurance industry, including market structure and financial performance report, official market briefs on market dynamics within pricing and claim administration, interpretations of legal regulations, and a purchasing power level. Meanwhile, the analysis on the current internal or market situation with digital insurance platforms requires an innovative and combined analysis approach with an extensive collection of both primary and secondary data, additional methods, and factor evaluations.

The second level of the recommendation model and usage guidelines is dedicated both to support internal analysis and modeling the consumer decision-making process in digital insurance platforms and reflect on global insurance market trends influenced by the COVID-19 period. Despite the growing use of BDA and Artificial Intelligence techniques on the operation level, the overall insurance digitalization still seems to keep a slow pace and stay behind the actual consumer needs for digital insurance solutions on the customer service level. Additionally, the conducted analyses in the thesis outlined the gap of both comprehensive scientific investigations and practical guidelines on how to support the ongoing transition from the traditional, provider, and product-centric management business model to digitalized and human-centric process approach and platform business model. For this reason, the modified Service Blueprint model, including theoretical and empirical findings on the digital non-life insurance decision-making, the practical purchase process logic, content, and touch-points, is suggested. Service Blueprinting is selected as a scientifically and practically accepted method for a holistic and objective analysis of the dynamic and multilayered phenomenon, visualizing relationships among people, processes, and physical and / or digital touchpoints, and building the foundation for re-designing the process to more consumer-centric. From the application perspective, the Service Blueprint method is recognized as more simpler to apply comparing to UML (Unified Modeling Language) and BPMN (Business Process Model and Notation) methods as well as offers more aggregated findings comparing to UX mapping methods as empathy, experience, customer journey mapping or PCN (Process Chain Network).

Finally, the suggested 2-level recommendation model can be visualized by following in the format of the Input-Process-Output (IPO) model as a 2-process workflow eligible to be applied in a parallel and modular way. The selection of the IPO format for the visualization allows for presenting conceptual frameworks in a structured and easy-to-read way, which encourages further discussions and interpretations. Figure 25 illustrates the suggested 2-level recommendation model.



Figure 25. Recommendations model for analysis and modeling of end-user behaviour in digital insurance platforms

Source. Composed by the author by using draw.io.

As per Figure 25 can be identified the main outputs of the first level in the suggested recommendation model are new data collection and methods for digital insurance platforms analysis and modeling:

• The 3-level KPIs Measurement Table presented in Annex 3 and Annex 4 should be used on a monthly and quarterly basis for multidimensional digital insurance platforms evaluation from content, consumer centricity, and functional perspectives. 9 additional KPIs and sub-KPIs presented in Table 57 and used in the Measurement Table are derivatives type of indicators by following findings of the most influential decision-making factors in the Baltic digital non-life insurance platforms which were presented in section 3.4.1. From the process and content perspectives the presented data collection and analysis methods are created by following logic of Risk Register and Risk Heat Map methods, and S.M.A.R.T goal and objectives framework.

• The 3-level KPIs Assessment Matrix presented in Annex 5 should be used for the final KPIs assessment afterward of data collection by using the 3-level KPIs Measurement Table. The KPIs Assessment Matrix allows to visualize the internal and market situation within the digital platform content, consumer-centricity, and selected functional features according to the Risk Heat Map logic of using the 3-level evaluation by colors.

The main outputs of the second level in the suggested recommendation model are new data collection and methods for digital insurance platforms analysis and modeling:

• High and low-fidelity prototyping from a hypothetical customer journey and platform solution-focused perspectives presented in Annex 1 by following 5 mapping categories of the traditional Service Blueprint framework. The focal point of the user guidelines within the Service Blueprint model is the Baltic non-life insurance consumers' journey of the insurance purchase in a digital insurance platform and practical outcomes of the re-conceptualized and empirically validated 3-stage theoretical model of the insurance purchase decision-making presented in section 1.6.

To conclude, the proposed additional KPIs on the internal and market platform analysis together with the modified Service Blueprint framework for the digital insurance decision-making process are prepared as practical recommendations and guidelines from the managerial perspective. It is expected to widen existing technical, marketing, and product domain-oriented understanding and analysis practices of digital insurance platforms as well as to support modern insurance service managers with an additional comprehensive situational market, functional and content platform information and provide an angle of a customer. Modular simplified content and visualized outcomes of recommendations make them flexible, easy and quickly applicable to daily practices of the digital insurance platform analysis and modeling.

DISSEMINATION OF THE RESEARCH FINDINGS

Stand-alone publications and publications in the co-authorship model, published in research journals and / or conference proceedings from Web of Science and / or Scopus databases:

1.1. Baranauskas, G. (2020). Digitalization Impact on Transformations of Mass Customization Concept: Conceptual Modeling of Online Customization Frameworks. Marketing and Management of Innovations, 3, 120-132. http://doi.org/10.21272/ mmi.2020.3-09

1.2. Baranauskas G, Raišienė A.G and Korsakienė R. (2020). Mapping the Scientific Research on Mass Customization Domain: A Critical Review and Bibliometric Analysis. Journal of Risk and Financial Management.13(9), 2-20. https://doi. org/10.3390/jrfm13090220

1.3. Baranauskas, G. and Raišienė, A.G. (2021). Expert-based evaluation of digitalization and Mass Customization in the Baltic non-life insurance online platforms. Journal of Eastern European and Central Asian Research, 8(2), 184-201. https://doi. org/10.15549/jeecar.v8i2.644

1.4. Baranauskas, G. (2021). Application of customization and personalization in digital solutions of non-life insurance market: a case study of Lithuanian, Latvian and Estonian e-sales platforms. Engineering Management in Production and Services, 13(2), 68-82. doi: 10.2478/emj-2021-0013

1.5. Baranauskas, G. and Raišienė, A. G. (2021). Reflections on the Customer Decision-Making Process in the Digital Insurance Platforms: An Empirical Study of the Baltic Market. Applied Sciences, 11(18), 8524. https://doi.org/10.3390/app11188524

Stand-alone publications and publications in the co-authorship model, published in research journals and / or conference proceedings in other scientific databases:

2.1. Baranauskas, G. (2018). Review of a Process Prioritization In Mass Customization. Contemporary Research on Organization Management and Administration, 2, 46-57. doi: https://doi.org/10.33605/croma-022018-012

2.2. Baranauskas, G. (2019a). Mass Personalization vs. Mass Customization: finding variance in semantical meaning and practical implementation between sectors. Social Transformations in Contemporary Society, (7), 6-15.

2.3. Baranauskas, G. (2019b). Application of Big Data Analytics in Customization of E-mass Service: Main Possibilities and Obstacles. Management of Organizations: Systematic Research, 82(1) 1-11. https://doi.org/10.1515/mosr-2019-0009

Personal and online participation and / or presentations in scientific conferences at national and international levels:

3.1. Baranauskas, G. Case of ManoSodra – standardization, personalization or customization of public service? 6th international scientific conference Viešojo valdymo pokyčių konferencija "Tarp efektyvumo ir socialinio poveikio", 13 March, 2019, Vilnius, Lithuania.

3.2. Baranauskas, G. Mass Personalization vs. Mass Customization: finding variance in semantical meaning and practical implementation between sectors. 7th international scientific conference "Social Transformation in Contemporary Society (STICS) 2019", 6-7 June, 2019, Vilnius, Lithuania.

3.3. Baranauskas, G. Digitalization Impact On Transformations Of Mass Customization Concept: Conceptual Modeling Of Online Customization Frameworks. 7th international scientific conference "New Trends in Management and Production Engineering - Regional, Cross-border, and Global Perspectives", 5 June, 2020, Dąbrowa Górnicza, Poland.

3.4. Baranauskas, G. Application of Customization and Personalization in Digital Solutions of Non-Life Insurance Market: A Case Study of Lithuanian, Latvian and Estonian E-Sales Platforms. 31st EBES Conference, 15-17 April, 2020, Warsaw, Poland.

3.5. Baranauskas, G. Experts-based Evaluation of Digitalization and Mass Customization in Online Insurance Platforms: Empirical Analysis on the Baltics Non-Life Insurance Market. 33rd EBES Conference, 7-9 October, 2020, Madrid, Spain.

3.6. Baranauskas, G. Reflections on Digital Insurance Platforms and Consumer Decision-Making Process in the Baltics NonLife Insurance Market. 36th EBES Conference, 1-3 July, 2021, Instanbul, Turkey.

Online participation in summer study programs at the international level:

4.1. Digital Business Master Class. International Aalto University Summer School, Aalto University School of Business, 1 June-7 August, 2020, Espoo, Finland.

4.2. Industrial organization – Applied platform economics. International Paris School of Economics (PSE) Summer School, 14-18 June, 2021, Paris, France.

Other disseminations:

Baranauskas, G. (2022). Digital and Customizable Insurance: Empirical Findings and Validation of Behavioral Patterns, Influential Factors, and Decision-Making Framework of Baltic Insurance Consumers in Digital Platforms. In: Kahraman, C., Haktanır, E. (eds) Intelligent Systems in Digital Transformation. Lecture Notes in Networks and Systems, vol 549. Springer, Cham. https://doi.org/10.1007/978-3-031-16598-6_17.

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MYKOLO ROMERIO UNIVERSITETAS

Gedas Baranauskas

MASINIO INDIVIDUALIZAVIMO IR PERSONALIZAVIMO KOMBINUOTIEJI SPRENDIMAI MODELIUOJANT VARTOTOJŲ ELGSENĄ SKAITMENINĖSE DRAUDIMO PLATFORMOSE

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DISERTACIJOS SANTRAUKA ĮVADAS

Temos aktualumas. Per pastaruosius tris dešimtmečius masinio individualizavimo ir personalizavimo koncepcijos, jų terminologija ir metodai buvo plačiai analizuojami moksliniu požiūriu tiek kaip atskiri tyrimo objektai, tiek kombinacijose su vartotojų sprendimų ir technologijų priėmimo teorijomis ir modeliais (Abdallah ir Matsui, 2009). Iš praktinio taikymo perspektyvos taip pat pastebima, jog šiuolaikinės ekonomikos sąlygomis veikiančios organizacijos, siekdamos išlaikyti arba įgyti konkurencinį pranašumą, vis daugiau dėmesio ir resursų skiria ne tik technologinės bazės atnaujinimui ir žmogiškiesiems resursams, bet ir vidinių sistemų, procesų analizei ir tobulinimui, remiantis bendrakūra, individualizavimu ir personalizavimu. Stebimi tokie praktinės organizacijų vadybos pokyčiai ir tendencijos kaip naujų kombinuotų technologinių ir vadybinių sprendimų taikymas, skaitmeninių sistemų ir duomenų šaltinių išplitimas, personalizuoto požiūrio į klientą bei poreikio tam įsitvirtinimas, kompleksinių organizacijų tinklų ir ekosistemų atsiradimas. Iš mokslinio vertinimo perspektyvos tokią kombinuotų organizacijos vadybos, technologinių ir į klientą orientuotų procesinių bei sisteminių sprendimų taikymo praktiką bei tendencijas pagrindžia masinio individualizavimo ir masinio personalizavimo koncepcijų tyrimai.

Temos aktualumą patvirtina pastarųjų metų praktiniai tyrimai, kurie indikuoja ženklų organizacijų progresą skaitmenizacijos ir platformų verslo modelio vystymosi srityse. Kaip rodo Global Digital ataskaita (2021) pandemijos laikotarpiu buvo stebima dinamiška mobiliųjų aplikacijų, interneto technologijų ir skaitmeninių medijų vartotojų skaičiaus raida, išskiriant 2019 – 2020 metų laikotarpį. Šiuo laikotarpiu skaitmeninių medijų ir platformų vartotojų skaičius beveik padvigubėjo, t.y. nuo 7,2 % (2019 metais) iki 13,2 % (2020 metais), o bendras tokių vartotojų skaičius pasiekė 4.2 milijardo (DataReportal, 2021). Išskirtinas rodiklis yra skaitmeninių verslo platformų vystymosi potencialas, kuris suprantamas kaip aktyvių platformų vartotojų proporcija bendram gyventojų skaičiui pasirinktame regione. Baltijos šalių regiono atveju šis rodiklis sietinas su Rytų Europos ir Šiaurės Europos rodikliais bei atitinkamai svyruoja nuo 65 % iki 79 %. (DataReportal, 2021). Svarbus esamos situacijos indikatorius yra mobiliųjų įrenginių vartotojų skaičius, siekiantis 66,6 % bei taip apibūdina skaitmeninių draudimo platformų vystymosi kryptį ir potencialą, turinio formatą bei skaitmeninių draudimo vartotojų poreikius. Visi šie aukščiau pateikti statistiniai rodikliai indikuoja apie intensyvią 4-osios pramonės revoliucijos praktinę raišką bet patvirtina platformų verslo modelio ir tinklų efekto plėtojimu paremtos ekonomikos potencialą ir mokslinės analizės poreikį kuriant naujus skaitmeninių platformų sprendimus.

Detalizuojant, iš mokslinių tyrimų perspektyvos taip pat stebimas padidėjęs tyrimų dėmesys skaitmeninės antreprenerystės, platformų verslo modelio ir skaitmeninio individualizavimo ir personalizavimo tyrimų laukams. Pagrindinis tyrimų objektas yra galutinis vartotojas bei su juo susijusių platformų sąlygų ir veikiančiųjų faktorių nustatymas, skaitmeninių vartotojų požiūrio ir elgsenos analizė, procesų ir poveikio vartotojams modeliavimo sprendimai. Lygiagrečiai analizuojama ir organizacinė perspektyva bei su tuo susijuse tradicinis tarpininko-agento (angl. traditional principal-agent) verslo modelis, organizacijos ir kliento santykiai, monolitinės informacinių sistemų architektūros realizacijos ribotumai skaitmeninio verslo atveju. Kartu nemažas dėmesys skiriamas hibridinių, tinklo efektu ir bendrakūra paremtų verslo modelių vystymui, skaitmeninio individualizavimo ir personalizavimo sprendimų produktų ir paslaugų realizacijai platformose (Reuver, Sørensen ir Basole, 2018; Senyo, Liu ir Effah, 2019; Pousttchi ir Gleiss, 2019; George, Merrill ir Schillebeeckx, 2020). Šioje vietoje išskirtina masinio individualizavimo (toliau tekste naudojamas trumpinys MI) (angl. Mass Customization, MC) ir masinio personalizavimo (toliau tekste naudojamas trumpinys MP) (angl. Mass Personalization, MP) koncepcijų reikšmė bei susijusi raida. Pastebimas abipusis ryšys tarp minėtojo organizacijų perėjimo prie skaitmeninių sprendimų ir platformų verslo modelio taikymo, mokslinių tyrimų tendencijų bei šių koncepcijų raidos ir turinio pasikeitimų, nulėmusių kombinuotos elektroninės masinio individualizavimo ir personalizavimo (toliau tekste naudojamas trumpinys e-MIP) (angl. Mass Customization and Personalization (e-MCP)) koncepcijos atsiradimą (Jitpaiboon, Dobrzykowskib, Ragu-Nathanb ir Vonderembse, 2013; OECD, 2018). E-MIP koncepcija yra paremta technologinių inovacijų, platformų ir duomenų įtraukimu bei panaudojimu kuriant individulizuotas sistemas ir personalizuotą vartotojų aptarnavimą. Taip pat stebimas semantinių interpretacijų pokytis, kai tiek kombinuotoji e-MIP koncepcija, tiek atskiros MI ir MP koncepcijos nėra traktuojami tik kaip technologiniai sprendimų rinkiniai skirti gamybinių organizijų procesų ir produkcijos tobulinimui. Šios koncepcijos ir su jomis siejamos skaitmeninio individualizavimo modeliai tapo integralūs šiuolaikinių elektronių verslas – verslui (angl. electronic Business to Business, B2B) ir verslas - klientams (angl. electronic Business to Customer, B2C) modelių dalys ((Kamis, Koufaris ir Stern, 2004; Kamis, Stern ir Ladik, 2008; Risdiyono, Imam ir Affan, 2016). Visa tai nulėmė šių koncepcijų išplitimą ir negamybinio pobūdžio organizijų praktinėje veikloje, įskaitant finansų sektoriaus organizacijas, ir susijusiuose moksliniuose tyrimuose apie platformų dizainą, turinio ir procesų valdymą bei modeliavimą (Jitpaiboon ir kt., 2013; Deloitte LLP, 2015, 2016; Chatzopoulos, 2017; OECD, 2018). Reziumuojant pažymėtina, jog e-MIP traktuotina kaip tarpdisciplininė procesų ir sistemų valdymo koncepcija, apimanti kombinuotus vadybinius ir technologinius sprendimus strateginiam, taktiniam ir operaciniam valdymo lygiams bei skirtingo tipo ir sektoriaus organizacijoms.

Vertinant temos aktualumą iš finansinių paslaugų organizacijų pusės pirmiausiai pastebima, jog tradicinės organizacijos naudoja operacinės veiklos strategijas, kurios yra orientuotos į produkta, vartotojų segmentacija ir daugiakanaliu (angl. multichanel) aptarnavimo modeliu. Kita vertus, pastarųjų kelių metų socialinės ir ekonominės aplinkos pokyčiai, COVID-19 pandemijos įtaka lėmė pokyčius esamuose finansinių organizacijų veiklos strategijuose ir verslo modeliuose, ypač klientų aptarnavimo, paslaugų ir produktų kūrimo bei platinimo srityse. Analizuojant pastarųjų metų mokslinius tyrimus apie finansinių organizacijų veiklos strategijas ir metodus pastebimas padidėjęs dėmesys skaitmenizacijos ir platformizacijos temoms bei su tuo susijusių skaitmeninių individualizavimo sprendimų ir personalizuotos vartotojų patirties analizei (Dimitris, Ekaterini ir Zogopoulos, 2018; Khanboubi, Boulmakoula ir Tabaa, 2019; Lezgovko ir Lastauskas, 2019). Detalizuojant, negyvybės draudimo rinkos ir organizacijų atveju, yra identifikuojama ir analizuojami tokie skaitmeninės tranformacijos raiškos aspektai kaip kombinuotų arba pilnai personalizuotų, į vartojimo poreikį (angl. Usage-Based Insurance, UBI) paremtu aptarnavimo procesu ir sistemu taikymas bei skaitmeninių ir pagal poreikį individidualizuojamų asmens draudimo produktų kūrimas bei platinimas (Wiesböck, Matt, Hess ir Li, 2017; Warg, Zolnowski, Frosch ir Weiß, 2019; Schilirò, 2020). Vis dėlto esamas ribotas empirinių studijų skaičius, orientuotų į kombinuotų vartotojų sprendimo, technologijų priėmimo modelių ir savitarnos technologijų pritaikymą draudimo srityje skatina tolimesnę mokslinę diskusiją. Vertinant Baltijos šalių regiono atvejį, išskirtina, jog negyvybės draudimo rinka ir joje veikiantys draudikai atliepia globalias vystymosi tendencijas tiek pagal finansinių veiklos rodiklių dinamiką, tiek padidėjusiu dėmesiu ir praktiniu skaitmeninių technologijų taikymu. Svarbu pažymėti ir tai, jog iš mokslinės pusės pasigendama išsamių esamos Baltijos šalių rinkos situacijos (angl. state-of-the-art) ir šių reiškinių raiškos analizės. Lygiagrečiai reikalingi testiniai ir lyginamojo pobūdžio tyrimai šio regiono lygiu, nustatant technologijų, skaitmeninės bendrakūros sprendimų ir platformų verslo modelio skvarbos tendencijas ir eamus skirtumus.

Temos problematika. COVID-19 pandemija nulėmė plataus pobūdžio pokyčius ne tik sveikatos apsaugos sistemose, socialinius ir ekonominius pokyčius, bet ir paskatino naujų technologinių sprendimų pritaikymą esamuose verslo modeliuose ir procesuose. Tai nulėme ir stebimi vartotojų elgsenos, preferencijų ir sprendimų priėmimo pokyčiai, kurių išeiga laikytini intensyvus aptarnavimo, pardavimo ir tiekimo grandinių procesų skaitmenizavimas ir kombinuotų sprendimų taikymas, savitarnos sistemu diegimas bei ju tobulinimas (McKinsey, 2020; Schilirò, 2020; Chang, Liu, Huang ir Hsieh, 2019). Remiantis McKinsey organizacijos tyrimų duomenimis (2020), pandemijos laikotarpiu verslo procesų skaitmenizacijos ir platformizacijos reiškinių tempas buvo paspartintas nuo 3 iki 4 metų, o produktų gamybos ir paslaugų teikimo srityse iki 7 metų. Tai pagrindžia ir elektroninės komercijos rezultatų dinamika 2019 - 2020 metų balandžio mėnesio laikotapiu, kai Europos Sąjungoje buvo stebimas 30 % užsakymų pokytis, o JAV rinkoje, lyginant 2020 pirmo ir antro ketvirčio rezultatus, atitinkamai stebimas augimas nuo 11,8 % iki 16,1 % (OECD, 2020a). Žinoma, visa tai turėjo ne tik teigiamų pasekmių organizacijų veikloje, bet ir sukėlė naujų iššūkių, išskiriant papildomų finansinių resursų, žmogiškųjų resursų perkvalifikavimo poreikį bei organizacinės kultūros pokyčių. Kartu identifikuotos duomenų saugumo užtikrinimo ir tradicinio ir platformų verslo modelio suderinamumo problematika (McKinsey, 2020; European Commision, 2020). Finansinių paslaugų sektoriuje taip pat išskirtina ir stebimas spartus naujų startuolių ir virtualių organizacijų išplitimas, kuris lemia ne modernių informacijos valdymo ir komunikacijos sprendimų diegimą, didėjančią rinkos konkurenciją ir naujus vartotojų poreikius (Łyskawa, Kędra, Klapkiv ir Klapkiv, 2019; Zariņa Cīrule, Voronova ir Pettere, 2019; Baret, Celner, O'Reilly ir Shilling, 2020).

Vertinant probleminį temos lauką iš mokslinės perspektyvos, pirmiausiai paminėtina, jog masinio individualizavimo ir personalizavimo temų moksliniai tyrimai nuo XX a. 9-ojo dešimtmečio vidurio transformavosi tiek turinio apimtimi, tiek savo vystymosi kryptimis. Tai sudarė pagrindą tarpdisciplininės procesų ir sistemų valdymo koncepcijos susiformavimui, inkorporuojant skaitmenizacijos ir vartotojų elgsenos tyrimų tematikas bei jų kombinacijas. Išskirtina tai, jog mokslinių tyrimų kryptys ir jų turinys iki XXI a. pradžios buvo koncentruojamas į atskirų koncepcijų potemių analizes, t.y. masinio individualizavimo pritaikomumą automobilių, baldų, kompiuterių, drabužių gamybos pramonės srityse ir verslo organizacijose, o masinio personalizavimo atveju – raišką viešajame sektoriuje, sveikatos priežiūros, socialinių ir kitų viešųjų paslaugų teikimo procesuose. Kita svarbi tyrimų sritis - kiekybinę taikymo naudą pagrindžiantys statistiniai ir ekonometriniais modeliai ir jų vertinimas. Tuo tarpu ryšys su šiuolaikinėmis vadybos ir ekonomikos teorijomis, vadybos ir informacinių technologijų (IT) sprendimų kombinacijos ir jų poveikis skaitmeninėse sistemose nebuvo detaliai analizuojamas. Taip pat, kaip rodo šioje temoje vyraujanti mokslinių tyrimų tematika ir organizacijų veiklos tyrimai, vis dar nėra aiškios takoskyros tarp masinio individualizavimo ir masinio personalizavimo koncepcijų, jų turinio ir loginio taikymo proceso eiliškumo, todėl nustatoma eilė klaidingų semantinių interpretacijų ir praktinio taikymo atvejų. Stebimos klaidingos semantinės interpretacijos formuojamas dėl iki galo neapibrėžto ir įvairialypio (plačiąją ir siaurąją prasme) temos terminų ir turinio vertinimų, o praktinio taikymo problematika sietina su vis dar vyraujančiu siauru, instrumentinio-technologinio pobūdžio minėtų teorinių koncepcijų adaptavimu bei jų nesusiejimo su vartotojų elgsenos tyrimų lauku. Kita temos ribotumų ir mokslinių diskusijų dalis susijusi su kombinuotosios e-MIP ir atskirų MI ir MP koncepcijų pritaikomumu platformų verslo modelyje. Konkretizuojant, paminėta, jog pasigendama skaitmeninių, klientų poreikiams adaptuotų individualizavimo sprendimų procesų ir sistemų lygiuose, kurie turėtų nuoseklią igyvendinimo logiką ir struktūrą.

Nepaisant šių e-MIP ir atskirų MI ir MP koncepcijų diskusinių vietų ir ribotumų stebima jų sparti ir įvairiapusė sklaida finansų sektoriuje ir organizacijose. Kartu su duomenų analitikos ir procesų automatizavimo sprendimais šios koncepcijos ir jų metodai tapo vyraujanti operacijų valdymo strategija. Vis dėlto, lyginant bankinių ir draudimo paslaugų organizacijų situaciją, galima išskirti esminius skirtumus, kurie nulemia papildomus praktinius iššūkius draudikams. Išskirtina, jog intensyvi skaitmenizacija ir perėjimas prie "suderintos daugianalės" (angl. omnichannel) veiklos strategijos ir platformų verslo modelio bankinių paslaugų organizacijose jau stebima visuose valdymo lygiuose, tačiau draudimo paslaugų organizacijose situacija kitokia. Didelis dėmesys skaitmenizacijai skiriamas strateginiame planavimo lygmenyje, tačiau nėra suderinta ir įgyvendinama fragmentiškai operaciniame platformų valdymo ir skaitmeninio individualizavimo procesų lygiuose. Šią situaciją pagrindžia ir pastarųjų metų moksliniai tyrimai, kuriuose esama situacija apibūdinama kaip pereinamasis laikotarpis į visapusišką draudimo skaitmenizaciją (Mustafina, Kaigorodova, Alyakina, Velichko ir Zainullina, 2020). Svarbu išskirti ir temos problematiką iš kliento vertinimo perspektyvos, kuri glaudžiai susijusi su aptarta dalinės skaitmenizacijos ir platformizacijos situacija draudimo organizacijose. Kaip pastebima, draudimo vartotojų patirties valdymo potemėje nėra skiriama pakankamai dėmesio asmens duomenų valdymo rizikų analizei, informacijos asimetrijos reiškiniui, kurie identifikuojami, kai praktikoje taikomi nesuderinti individualizavimo ir personalizavimo sprendimai bei pateikiama su tuo susijęs didelis kiekis įvairialypės finansinės informacijos. Šiuo atveju pasigendima dedikuotų teorinių proceso modelių ir visapusiškos skaitmeninio draudimo pirkimo internetu proceso analizės, įvertinant ne tik galimą finansinių ir rizikos veiksnių poveikį, bet taip pat įtraukiant asmeninio vertinimo, emocinius-kognityvinius ir situacinius aplinkos veiksnius bei jų galimą poveikį. Tai būtina, siekiant išvengti vadinamo "masinio sutrikimo" (angl. mass confusion) situacijos, kai vartotojas sprendimo priėmimo metu dėl minėtųjų nesuderintų technologinių platformos sprendimų ir nepritaikyto pirkimo proceso gali pasijusti sutrikęs, supykęs ir nebeatlikti pirkimo veiksmo platformoje. Neigiamos ilgojo laikotarpio pasekmės taip pat galimos, kai pasikartojanti neigiama patirtis, susijusi su platformos technologinėmis charakteriskomis ir/arba produktų individualizaimo galimybės bei aptarnavimo personalizavimu, gali sukelti neigiamas asociacijas su paslaugos/produkto teikėju ir ateityje būti esminis veiksnys priimant sprendimus.

Aptartas teorinis ir praktinis temos aktualumas bei probleminis laukas byloja, jog reikalingi tęstiniai e-MIP koncepcijos moksliniai tyrimai, orientuojantis į išvestinius skaitmeninio individualizavimo modelius ir procesų personalizavimo sprendimus draudimo srityje, kurie būtų pritaikomi atliekant esamą rinkos situacijos, procesų ir platformų analizę. Lygiagrečiai reikalinga mokslinė diskusija ir tyrimai susiję su masinio individualizavimo ir personalizavimo kombinuotų sprendimų pritaikymu modeliuojant vartotojų elgseną skaitmeninės draudimo platformose. Apibendrinat, šiame darbe bus orientuojamasi į tyrimo probleminę situaciją kaip suderinti ir pritaikyti masinio individualizavimo ir personalizavimo, sprendimo ir technologijų priėmimo modelius analizuojant ir modeliuojant draudimo vartotojų elgseną skaitmeninėse draudimo platformose? Remiantis įvardyta tyrimo problema keliami toliau pateikiami problemos tyrimo klausimai: Kokie kombinuotieji MIP sprendimai atlieptų intensyvios technologijų ir platformų modelio skverbties ir vartotojų elgsenos dinamikos nulemtus organizacijų veiklos, procesų ir sistemų pokyčius? Kaip suderinti vartotojų sprendimo priėmimo ir technologijų priėmimo modelius analizuojant ir modeliuojant vartotojų elgseną skaitmeninėse draudimo platformose? Kokie yra Baltijos šalių draudimo vartotojų elgsenos požymiai ir esminiai faktoriai, lemiantys pirkimo sprendimo priėmimą

skaitmeninėje draudimo platformoje?

Darbo objektas: Masinio individualizavimo ir personalizavimo kombinuotieji sprendimai ir jų taikymas Baltijos šalių negyvybės draudumo rinkoje bei poveikis vartotojų elgsesnai ir požiūriui skaitmeninėse draudimo platformose.

Darbo tikslas: Išanalizavus MIP kombinavimo ir integravimo teorines perspektyvas skaitmeninio draudimo srityje bei atlikus empirinius Baltijos šalių ne gyvybės draudimo rinkos tyrimus, suformuoti koncepcinį draudimo klientų sprendimo priėmimo modelį skaitmeninėse platformose ir parengti įgyvendinimo siūlymus.

Siekiant iškelto tikslo, disertacijoje sprendžiami tokie uždaviniai:

- 1. Išanalizuoti ir įvertinti MIP koncepcijas ir modelius iš istorinės, semantinės ir bibliometrinės perspektyvų.
- Išanalizuoti ir susisteminti teorines MIP, vartotojų sprendimo ir technologijų priėmimo teorinių modelių ir savitarnos technologijų sąsajas ir jų raišką draudimo tyrimų srityje.
- 3. Sumodeliuoti ir apibendrinti kombinuotųjų skaitmeninių MIP modelių pritaikymą skaitmeninėse verslo platformose.
- 4. Sumodeliuoti ir apibendrinti koncepcinį integruotą klientų sprendimo priėmimo modelį skaitmeninėse draudimo platformose.
- Apibrėžti ir pagrįsti empirinės analizės dalies prielaidas, tyrimo metodologiją, metodus ir imtį.
- 6. Atlikti Baltijos šalių ne gyvybės draudimo rinkos, platformų ir vartotojų elgsenos tyrimus, panaudojant parengtus koncepcinius modelius, ir pateikti apibendrintus rezultatus.
- 7. Remiantis apibendrintais empirinio tyrimo rezultatais parengti siūlymus skaitmeninių platformų ir vartotojų elgsenos analizei ir modeliavimui bei parengti įgyvendinimo siūlymus.

Ginamieji darbo teiginiai:

 Sprendimo aplinka, proceso formatas ir galutinio pasirinkimo navigacija kaip strateginės MIP dalys yra silpnai išreikštos Baltijos šalių draudimo skaitmeninėse platformose, bet jų raiška per šalis skiriasi ir lemia esamą platformų formatą, turinį ir mažesnį vartotojų poreikį individualizuotiems ir personalizuotiems draudimo sprendimams.

- 2. Baltijos šalių ne gyvybės draudimo rinkos ir platformų skaitmenizacijos lygis nėra homogeniškas ir veikiamas socio-demografinių charakteristikų skirtumų.
- Baltijos šalių ne gyvybės draudimo platformos pasižymi individualizuotais ir personalizuotais sprendimais, bet standartizavimas išlieka esminiu skiriamuoju platformų bruožu ir lemia vartotojų požiūrį į draudimo paslaugų pirkimą internetu.
- 4. Klientų sprendimas įsigyti draudimą skaitmeninėje platformoje yra reikšmingai veikiamas individualių finansinių ir su draudimu susijusių rizikos faktorių, tuo tarpu technologiniai, socialiniai ir motyvaciniai faktoriai yra antraeiliai ir priklausomi nuo sociodemografinių charakteristikų.

Darbo apribojimai. Mokslinis darbas turi teorinių ir praktinių apribojimų, kuriuos svarbu aptarti bei vertinti kaip galimas ateities tyrimų kryptis šioje temoje:

- Tyrimų laikotarpis. Empiriniai vartotojų elgesenos tyrimai buvo atlikti COV-ID-19 pandemijos laikotarpiu 2020-2022 metais, kai buvo stebimi esminiai draudimo vartotojų elgsenos ir poreikių pasikeitimai bei intensyvi draudimo skaitmenizacija ir platformizacija. Tikėtina, jog tęstinių šios srities tyrimų rezultatai būtų panašūs, todėl būtini ilgojo laikotarpio atvejo studijos ir lyginamosios rezultatų analizės.
- 2. Darbo objektas. Darbo objektas yra apibrėžtas ir apribotas pasirinktu fizinių vartotojų segmentu, negyvybės draudimo produktų ir platformų sritimi bei geografiniu Baltijos šalių regionu. Tai lemia, jog gauti tyrimų rezultai, darbo išvados ir siūlymų modelis nėra pilnai adaptuotini juridinių vartotojų segmentui ir gyvybės draudimo produktų bei vartotojų sprendimo priėmimo analizei ir modeliavimui. Darbo siūlymų modelio taikymo atveju taip pat būtina atsižvelgti į tai, jog šis modelis buvo parengtas remiantis besivystančio Baltijos šalių draudimo regiono specifika ir tyrimų rezultatais, todėl kitų šalių ir draudimo regionų atvejų būtini papildomi vertinimai, analizės ir korekcijos.

Reziumuojant pažymėtina, jog darbe analizuoti kompleksiniai skaitmeninių draudimo platformų, skaitmeninų draudimo vartotojų bei integruotų ir kombinuotų draudimo invidualizavimo ir personalizavimo sprendimai turi praktinio taikymo potencialo ir poreikio, bet yra ribotai bei fragmentiškai analizuoti iš mokslinės pusės. Tai reikalauja tęstinių mokslinių tyrimų, kurie pateiktų kritinio ir holistinio pobūdžio vertinimus apie esamą rinkos situaciją ir praktikoje taikomus sprendimus. Kita svarbi ateities tyrimų sritis yra susijusi su skaitmenių draudimo platformų turinio ir vartotojų elgsenos modeliavimu, integruojant psichologijos, rinkodaros, elgsenos ekonomikos ir informacinių technologijų mokslo sričių tyrimų metodus ir naujausius rezultatus. Tai būtina siekiant atliepti esamus draudikų poreikius analizuojant draudimo platformas ir skaitmeninius individualizavimo modelius bei modeliuojant pageidautiną vartotojų elgeseną ir naujas skaitmenines platformas ir produktus. Išskirtinas ir poreikis atlikti pakartotines lyginamojo pobūdžio analizes apie draudimo skaitmenizacijos, platformizacijos bei individualizavimo vystymosi tendencijas, praktinius iššūkus ir gerąsias praktikas taikomas skirtinguose šalyse ir draudimo regionuose tiek Europoje, tiek pasaulyje.

Darbo metodologija ir tyrimo metodai. Darbo metodologija sudaryta remiantis gerosiomis praktikomis ir patvirtintais socialinių tyrimų duomenų rinkimo ir analizės metodais bei siekiant mokslinio naujumo operacijų vadybos srityje. Darbe kombinuojami tradiciniai kiekybiniai, kokybiniai tyrimo ir menu grįsto tyrimo (angl. art based research) metodai duomenų rinkimui ir analizei ir jie derinami su praktiniais statistinių duomenų šaltiniais. Tyrimo metodologijos sudarymas ir metodų pasirinkimas yra taip pat orientuotas į darbo struktūrą ir gali būti suskirstytas į dvi grupes. Pirmoji grupė skirta teorinei darbo analizei ir rezultatų analizei.

Pasirinkta tyrimo filosofija yra pragmatizmas ir objektyvistinė epistemologija, kuriomis paremti duomenų analizės procesai ir duomenų šaltiniai (angl. sources of knowledge). Šios kombinacijos pasirinkimas susijęs su siekiu pateikti holistinio pobūdžio tyrimo objekto vertinimus ir rezultatus. Darbo struktūra ir uždaviniai yra paremti indukcija kaip tyrimo požiūriu, kuris leidžia sudaryti universaliai pritaikomą ir daugialypį tyrimo modelį. Pažymėtina, jog pragmatizmo paradigma ir pliuralizmas sudaro tyrimo metodologijos ir strategijos pagrindą bei apima 3 kombinuotų duomenų rinkimo ir analizės metodų ir šaltinių kategorijas, kurios taikomos lygiagrečiai. Objektyvistinės epistemonologijos pasirinkimas yra pagrindžiamas 3 duomenų šaltinių (autoritarinių (angl. authoritarian), loginių (angl. logical) ir empirinių (angl. emphirical)) panaudojimu ir tai užtikrina visapusišką ir objektyvų tyrimo objekto interpretaciją tikrovės sąlygomis. Autoritarinio duomenų šaltinio panaudojimas susijęs su toliau išvardintų duomenų rinkimu ir analizės metodų pritaikymu:

- 1. Semantinė, aprašomoji ir tematinė MIP koncepcijos turinio ir kombinavimo prielaidų sintezė.
- 2. Retrospektyvinė ir bibliometrinė MIP koncepcijos analizė.
- Priežastinių pasekminių ryšių ir kombinavimo prielaidų tarp skaitmeninio individualizavimo, vartotojų sprendimo ir technologijų priėmimo, IT sprendimų ir draudimo tyrimų analizė bei teorinio integruoto modelio sudarymas.
- Loginio duomenų šaltinio panaudojimas susijęs su koncepciniu kombinuotu skaitmeninio individualizavimo ir integruoto draudimo sprendimo priėmimo modelių sudarymu 3 darbo dalyje, o empirinio duomenų šaltinio panaudojimas susijęs su 5 etapų empirinių tyrimų atlikimu ir jų rezultatų analize 4 darbo dalyje. Metodų trianguliacija identifikuotina:
- Kombinuojant analitinio, aprašomosios ir aiškinamojo pobūdžio Baltijos šalių negyvybės draudimo rinkos, draudimo skaitmenizacijos ir platformizacijos atvejo analizes su statistiniais duomenų šaltiniais ir praktiniais skaitmeninės rinkodaros Google Analytics ir Google Trends įrankiais.
- 2. Taikant modifikuotus Robinson (2008a, 2008b, 2015) mokslinio modeliavimo principus ir dekarto sandaugos metodus kombinuotų skaitmeninių individualizavimo ir integruoto draudimo sprendimo priėmimo modelių sudarymui. Lygiagrečiai kokybinėje duomenų analizei ir rezultatų vizualizacijai buvo naudojamos loginės duomenų srauto diagramos (angl. logical data flow diagrams, DFDs). Duomenų surinkimimo etape buvo pasitelkiami struktūrizuotos vartotojų ir ekspertinės apklausos ir A/B testavimo metodai, o kiekybinių duomenų analizėje daugiakriterinės analizės metodai ir daugiamačiai statistiniai metodai. Detalizuojant, kiekybinė analizė buvo atlikta kombinuojant aiškinamosios ir patvirtinančiosios faktorinės (angl. Explanatory Factor Analysis, EFA); Confirmatory Factor Analysis, CFA)), koreliacinė ir kintamųjų priklausomybės (SEM) analizė bei logistnės regresijos metodus. Statistinių rodiklių analizė ir gautų rezultatų visualizacija, išskiriant esminius draudimo sprendimo įsigyjimo priėmimo faktorius, jų tarpusavio ryšius bei poveikį draudimo sprendimo įsigyjimo priėmimo skaitmeninėse platformose, atlikta naudojant atitinkamai programinę IBM SPSS Statistics įrangą (26 versiją) ir R (lavann paketo versiją 0.6-9).

Pirminiai duomenų šaltiniai ir jų surinkimas susiję su praktiniu draudimo skaitmenizacijos, individualizavimo ir personalizavimo įvertinimų Baltijos šalių regione, atliekant 4 etapų empirinius tyrimus su finansų srities ekspertais, draudimo įmonių ir brokerių darbuotojais bei draudimo vartotojais. Remiantis lygiagretaus taikymo principais buvo naudojami toliau išvardinti tyrimo metodai:

- 1. Stuktūrizuota apklausa internetu pritaikant modifikuotą Fuzzy klausimyno sudarymo metodiką ir Likerto vertinimo skalę.
- Prototipų sudarymo logiką, vizualizavimą ir testavimą pritaikant modifikuotus A/B testavimo ir klientų rekomendavimo indekso (angl. Net Promoter Score, NPS) vertinimo metodus, menu grįsto tyrimo logiką ir programinę įrangą Axure RP Pro (8 versiją).

Pasirinkta metodų trianguliacija užtikrina ne tik sistemišką ir patikimą duomenų surinkimą, bet taip pat visapusišką ir kokybišką tyrimo objekto įvertinimą bei išvadų pritaikomumą platesniame kontekste.

Darbo metodologinis ir teorinis reikšmingumas. Atliktas darbas pasižymi metodologiniu ir teorinis naujumu draudimo ir MIP koncepcijų tyrimų srityse. Iš metodologinės vertinimo perspektyvos išskirtina darbe pritaikyta unikali duomenų rinkimo ir analizės metodų kombinacija, apjungiant menu grįsto tyrimo logiką, vizualizuojant tyrimo objektą bei lygiagrečiai jo įvertinimą, taikant modifikuotus A/B testavimo ir klientu rekomendavimo indekso (angl. Net Promoter Score (NPS)) metodus. Toku būdu suformuojama pavyzdinė metodologinė analizės praktika draudimo ir MIP tyrimuose, adaptuotina tiek vidinėje platformų turinio, personalizavimo ir individualizavimo analizėje, tiek išorinėje rinkos situacijos analizėje. Iš teorinės vertinimo perspektyvos išskirtina darbe atliktos Porter vertės grandinės (angl. Porter Value Chain, 1985), tradicinių skaitmeninio individualizavimo (Kamis ir kt., 2004) modelių ir paslaugų techninio aprašymo ir brėžinio (angl. Service Blueprint) metodo koncepcinės interpretacijos ir išvestinių variantų pristatymas. Šių išvardintų metodų interpetacijos ir išvestinių variantų panaudojimas analizuojant bei modeliuojant skaitmeninių draudimo platformų turinį ir skaitmeninio draudimo vartotojų sprendimo priėmimo procesą skatina tolimesnes mokslines diskusijas draudimo skaitmenizacijos tyrimų sriyje bei patvirtina galima praktinį suderinamumą su įprastais vartojų patirties ir sistemų modeliavimo įrankiais. Siūlymų dalyje pristatytos išvestinių vertinimo kriterijų analizės lentelė (angl. KPIs Measurement Table) ir vertinimo matrica (angl. KPIs Assestment Matrix) patvirtina galimus tokių tradicinių projektų vadybos įrankių kaip rizikų registro (angl. Risk Register) ir rizikų žemėlapio (angl. Risk Heat Map) taikymo būdus

skaitmeninių draudimo platformų atveju. Reikšmingu moksliniu indėliu MIP tyrimų srityje laikytina disertacijoje atlikta išsami bibliometrinė mokslinių publkacijų analizė, apimanti laikotarpį nuo 1990 iki 2020 metų bei lygygrečiai pristatyta mokslinė Gilmore and Pine II's masinio indvidualizavimo klasifikacijos modelio (1997) interpetacija. Paminėtina, jog darbe atlikti empiriniai tyrimai ne tik pateikė vertingų mosklinų ir praktinių įžvalgų apie Baltijos šalių negyvybės draudimo rinką, jos skaitmenizaciją ir vartotojų elgseną, bet taip pat pristatė tokius naujus tyrimo objektus kaip skaitmeninės draudimo platformos ir draudimo įsigyjimas internetu bei vertinimo kriterijus kaip draudimo raštingumas (angl. Insurance Literacy), tvarumas (angl. Sustainability), paslaugos individualizavimas (angl. Customization) ir procesų personalizavimas (angl. Personalization). Reziumuojant, tikimasi, jog aptartas darbo metodologinis ir teorinis naujumas bei reikšmingumas paskatins tolimesnius mokslinius MIP koncepcijos tyrimus draudimo paslaugų ir platformų srityse, orientuojantis į skaitmeninės vertės kūrimo grandinės analizę ir kombinuotų skaitmeninio individulizavimo ir personalizimo modelių pritaikymą, integruojant vartotojų sprendimo ir technologijų priėmimo modelius bei savitarnos sistemų technologijas.

Darbo praktinis reikšmingumas. Empirinių tyrimų metu patvirtintas ir atnaujintas integruotas draudimo pirkimo sprendimo priėmimo modelis skaitmeninėse platformose pasižymi praktiniu naujumu ir reikšmingumu. Išskirtina darbo reikšmė bei pritaikymas skirtingose daudimo organizacijų valdymo lygiuose ir srityse:

- Suformuoti 9 išvestiniai veiklos vertinimo kriterijai (Key Performance Indicators (KPIs)), jų analizės lentelė (angl. KPIs Measurement Table) ir vertinimo matrica (KPIs Assessment Matrix) praktiškai pritaikoma skaitmeninių draudimo paslaugų pardavimų, klientų aptarnavimo ir plaformų valdymo vadovų, specialistų ir duomenų analitikų veikloje. Minėtieji praktiniai siūlymai adaptuotini kaip pagrindinė ir/arba papildoma priemonė atlikti esamą rinkos ir vidinę platoformų stebėjimą, analizę, suderinant vadybinius ir technologinius kriterijus ir rengiant apibendrinančias veiklos ataskaitas. Tokiu būdu pateikti praktiniai siūlymai reikšmingai papildo esamas technologinio, finansinio ir rinkodarinio pobūdžio platformų vertinimo ataskaitas bei juose naudojamas vertinimo metrikas, integruojant kombinuotus platformų informacijos turinio, funkcinio ir klientų įtraukties kriterijus.
- 2. Pristatyta modifikuotas paslaugų techninio aprašymo ir brėžinio (angl. Service

Blueprint) metodo koncepcinė interpretacija ir kombinuotas išvestinis variantas praktiškai pritaikomas skaitmeninių platformų projektuotojų, draudimo procesų, produktų ir sistemų analitikų bei skaitmeninės rinkodaros specialistų veikloje. Suformuotas kombinuotas išvestinis variantas integruoja empiriškai patvirtintą skaitmeninio draudimo pirkimo proceso logiką ir esminius veikiančiuosius veiksnius į standartinį 5 dalių paslaugų techninio aprašymą ir brėžinį (angl. Service Blueprint) taip suformuojant naujovišką skaitmeninių draudimo platformų ir pirkimo procesų vertinimo ir modeliavimo įrankį. Pateiktas praktinis siūlymas išsiskiria taikymo universalumu, paprastumu ir turinio platumu. Paminėtina ir tai, jog suformuotas kombinuotas išvestinis analizė metodo variantas taikytinas be papildomų finansinių ir technologinių resursų poreikių, tiek esamos situacijos analizei, tiek ateities procesų modeliavimui.

3. Empirinių tyrimų metu nustatyti Baltijos šalių negyvybės draudimo vartotojų požiūris į draudimo pirkimą internetų, elgseną veikiantys faktoriai, platformų turinys ir bendras draudimo skaimenizacijos lygis ir šalių skirtumai yra praktiškai naudingos įžvalgos Baltijos šalių regione veiklą vykdantiems draudikams. Tyrimų metu nustatyti esminiai draudimo vartotojų elgseną ir sprendimą pirkti draudimą internetu lemiantys faktoriai bei jų pritaikymo galimybės naudingi ne tik draudimo platformų analizės ir modeliavimo veiklose, bet ir taktinio bei strateginio lygio planavimo veiklose, susijusiose su pardavimo procesų organizavimu ir draudimo skaitmenizacija. Praktiškai reikšmingi ir tyrimų metu nustatyti kombinuotų skaitmeninio individualizavimo modelių vertinimai, kurie indikuoja poreikį diversifikuoti platformų dizainą, turinį ir funkcionalumus pagal taikymo šalį bei orientuotis į aukštesnio personalizavimo lygio (angl. Question-based (Q-B) framework) skaitmeninius individualizavimo modelius draudimo platformose.

Darbo struktūra ir apimtis. Darbo struktūra sudaryta remiantis darbo tikslu ir uždaviniais. Pirmąją darbo dalį sudaro 8 poskyriai skirti teorinei temos analizei bei orientuojantis į pirmus 3 darbo uždavinius. Šioje darbo dalyje buvo atliekama semantinio, bibliometrinio ir aprašomojo pobūdžio mokslinių šaltinių turinio analizė ir sintezė bei taikomi mokslinio modeliavimo metodai. Lygiagrečiai buvo atliekama MIP koncecpcijų ir vartotojų sprendimo ir technologijų priėmimo modelių teorinių sąsajų ir raiškos draudimo srityje analizė. Antrąją darbo dalį sudaro 3 poskyriai skirti įgyvendinti 4 ir 5 darbo uždavinius bei pristatyti ir pagrįsti pasirinktą empirinių tyrimų metodologiją,
metodus, strategiją ir imtį. Trečiąją darbo dalį sudaro 5 poskyriai skirti praktinei temos analizei bei orientuojantis į 6 ir 7 darbo uždavinius. Šiuose poskyriuose pristatoma 5 tyrimo etapų eiga, duomenų rinkimo eiga bei atliekama gautų rezultatų analizė ir mokslinė interpretacija. Baigiamąją darbo dalį sudaro apibendrinančių darbo išvadų ir siūlymų poskyriai. Loginė darbo struktūra vizualizuojama schemoje nr. 22.

Raktažodžiai: Masinis individualizavimas ir personalizavimas, skaitmeninis individualizavimas, draudimo skaitmenizacija, skaitmeninės platformos, pirkimo sprendimo priėmimas, negyvybės draudimas, Baltijos šalys

TEORINĖS DALIES APŽVALGA

Darbe atliktos temos teorinės analizės iš istorinės, semantinės ir bibliografinės vertinimo perspektyvų ir jų rezultatai turi reikšmingą mokslinį indėlį MIP ir draudimo tyrimų srityse. Pirmiausiai išskirtina darbe atliktos mokslinė Porter'io vertės kūrimo grandinės (angl. the Porter Value Chain) (1985) ir Gilmore ir Pine II (1997) skaitmenizacijos modelių interpretacijos, pritaikytos kokybinėje MI ir MP koncepcijų analizėje. Kaip matyti iliustracijoje nr. 12, pateikiama 3 strateginių MI koncepcijos dalių kombinacija su skaitmenizacijos objektu ir raiškos vertinimas pagrindinėse ir palaikančiose draudimo vertės grandinės veiklose, adaptuojant Porter'io vertės kūrimo grandinės (angl. the Porter Value Chain) (1985) modelio logiką. Semantinė ir istorinė MI ir MP koncepcijų analizė buvo atlikta adaptuojant Gilmore and Pine II's (1997) modelio siūlomą 4 MI tipų klasifikaciją. Šios mokslinės interpretacijos rezultatas pristatomas iliustracijoje 24, kur pristatomas naujas MC ir MP istorinės raidos ir tarpusavio sąsajų vertinimas ir išskiriami 6 istoriniai laikotarpiai.

Pristatytas istorinės raidos vertinimas buvo patvirtintas atlikus MI tyrimų srities bibliografinę analizę, kurioje identifikuoti 3 pagrindiniai mokslinės raidos laikotarpiai, atliepiantys istorinę koncepcijos raidą nuo 1987-1989 metų. Semantinė koncepcijų analizė atskleidė, jog ezgistuoja MI ir MP sąvokų interpretacijų įvairovė ir bipolinė klasifikavimo logika, formuojanti klaidingą taikymo praktiką ir mokslinį diskursą. Išskiriama MI ir MP terminų ir susijusių sąlyginė sąvokų klasifikacija pagal orientaciją į atskiras strategines MI koncepcijos dalis, o MP koncepcijos atveju vyrauja interpretacijos paremtos integralumu su MI koncepcija ir individualizavimo procesu arba laikantis priešingos – MP kaip savarankiškos mokslinių tyrimų koncepcijos – pozicijos. Tokią semantinių interpracijų įvairovę patvirtina ir biblografinės analizės metu atlikta raktažodžių pasikartojimo tinklo analizė (angl. keyword co-occurrence network). Kaip matyti iš iliustracijos nr. 25, per 3 tyrimų dešimtmečius galima išskirti 7 mokslo tyrimų sritis, kuriose identifikuojama MI sąvokų ir susijusių reiškinių raiška.

Reziumuojant, teorinė MI ir MP bibliometirnė ir turinio analizės atskleidė pagrindines šių koncepcijų mokslines vystymosi tendencijas ir galimas praktinio pritaikymo formas. Pirmiausiai išskirtina skaitmenizacijos procesų ir metodų poveikis bei įvairios kombinacijos formos, nulėmusios koncepcijų semantinę ir turinio transformacijas pastaraisiais dešimtmečiais. Visu antra, išskirtina egzistuojanti semantinė koncepcijų savokų ir taikymo modelių problematika bei testinis tyrimų poreikis, susijes tiek su identifikuojamu praktinės raiškos išplitimu į negamybinio pobūdžio sritis, tiek su pastaruoju dešimtmečiu stebimu intensyviu šių koncepcijų integravimu į skaitmenizacjos ir platformizacijos reiškinius. Kartu nustatyta ne tik kombinuotų ir skaitmeninių MIP koncepcijos versijų atsiradimas ir raiškos tendencijos, bet taip pat galimos 3 vertinimo perspektyvos - funkcinė, organizacijos ir kliento, sudarančios pagrindą ir kryptį tolimesniems koncepcijų tyrimams. Organizacijos ir kliento vertinimo dichotomija užtikrina visapusišką MI ir MP taikymo naudos įvertinimą ir kartu integruoja skirtingus rinkodaros, psichologijos, sociologijos ir elgsenos ekonomikos teorijas ir modelius. Tai didina šių koncepcijų ir jų metodų taikymo kompleksiškumą bei reikalauja papildomų tyrimų iš funkcinio suderinamumo, nuoseklaus įgyvendinimo modelio ir praktinio įgyvendinimo efektyvumo vertinimo pusės. Svarbiu veiksniu funkcinėje vertinimo perspektyvoje yra tokių technologinių inovacijų kaip didžiųjų duomenų analitikos ir papildytosios realybės (angl. augmented reality) ir su skaitmenizacija ir platformizacija susijusių, į vartotoją orientuotų, procesų ir produktų orientavimo, paslaugų dominavimo logikos (angl. service dominant logic, SDL), platformų ekonomikos reiškinių raiška. Šioje vietoje pasigendama holistinio pobūdžio analizių, vertinant minėtų reiškinių poveikį koncepcijų turiniui, taikančiajai organizacijai ir galutiniam vartotojui. Skaitmeninio indivualizavimo modelių analizė atskleidė, jog 3 tradiciniai Kamis ir kolegų (2004) suformuoti individualizavimo modeliai nėra tinkami šiuolaikinių skaitmeninių vartotojų poreikiams produktų invididualizame ir paslaugų personalizavime, hibridinių verslo modelių bei esamų dinamiškų techonologinių, operacinių ir situacinių faktorių. Tai atitinkamai skatina mokslinę diskusija dėl tradicinių individualizavimo modelių dizaino tinkamumo ir praktinio adaptavimo galimybių skaitmeninių platformų atvejų. Remiantis šiuo pagrindu ir taikant mokslinio modeliavimo principus

buvo suformuoti 6 išvestiniai kombinuoti skaitmeninio individualizavimo modeliai, pristatomi lentelėje nr. 60:

Tipas	Paremtas alternatyvomis (angl. Alternative based, AL-B)	Paremtas atributais (angl. Attribute based, AT-B)	Paremtas klausimais (angl. Question based, Q-B)
Paremtas alternatyvomis (angl. Alternative based, AL-B)	(AL-B)	((AL-B) + (AT-B))	((AL-B) + (Q-B))
Paremtas atributais (angl. Attribute based, AT-B)	((AT-B) + (AL-B))	(AT-B)	((AT-B) + (Q-B))
Paremtas klausimais (angl. Question based, Q-B)	((Q-B) + (AL-B))	((Q-B) + (AT-B))	(Q-B)

Lentelė 60. 9 kombinuotieji skaitmeninio indivualizavimo modeliai

Šaltinis. Sudaryta autoriaus, remiantis Kamis ir kt., 2004 ir publikuota Baranauskas, 2020, p. 127.

Išskirtini teorinės analizės rezultatai draudimo tyrimų srityje, kurie parodė esamą skaitmeninio individualizavimo ir skaitmenizacijos reiškinių raišką bei tradicinių vartotojų sprendimo ir technologijų priėmimo teorijų ir modelių integravimo galimybes. Nustatyta, jog skaitmeninių draudimo platformų ir naudotojų analizės bei modeliavimo veiklose gali būti sėkmingai pritaikomi technologijų priėmimo UTAUT2 (2012), TAM3 (2008), TTF (1995), vartotojų elgsenos HCDM (2002), tradicinio ir atnaujinto DeLone ir McLean informacinių sistemų (IS) sėkmės modeliai (1992, 2003), nors šių modelių kombinavimo galimybių tyrimų draudimo srityje pasigendama. Taip pat identifikuota, jog skaitmeninio draudimo įsigyjimo sprendimo priėmimo procesas ir skaitmeninių platformų naudotojų elgesna gali būti analizuojama ir modeliojama kombinuojant tradicinius neoklasikinės sintezės ir elgsenos ekonomikos modelius bei vertinant kognityvinių, emocinių ir situacinių faktorių reikšmę.

Reziumuojant, teorinė skaitmenizacijos ir invidualizavimo raiškos ir integravimo draudimo srityje analizė leidžia formuoti dvejopas išvadas. Egzistuoja mokslinio ištirtumo takoskyra tarp bankinių paslaugų ir draudimo paslaugų skaitmeninimo ir skaitmenizacijos, kur bankinių paslaugų atveju šie reiškiniai yra plačiai analizuojami ir taikomi visuose organizacijų valdymo lygiuose, lygiagrečiai daug dėmesio skiriant produktų ir sistemų individualizavimo bei bendrakūros sprendimams. Draudimo tyrimų ir praktikos atveju minėtieji reiškiniai yra vertinami izoliuotai, orientuojantis į starteginio planavimo ir modeliavimo veiklas, pagrindines veiklas draudimo vertės grandinėje bei organizacinę vertinimo perspektyvą. Skiriama ribotai dėmesio kliento perspektyvai bei integruotų ir kombinuotų individualizavimo ir personalizavimo sprendimų realizavimui operaciame lygmenyje bei palaikančiose veiklose draudimo vertės grandinėje. Svarbus veiksnys, lemiantys esamą skaitmenizacijos ir individualizavimo situaciją draudimo paslaugų organizacijose bei skirtumus lyginant su bankinių paslaugų organizacijomis, yra stebimas draudikų skaitmeninės brandos lygis, kuris pasireiškia lėtesniu technologijų adaptavimo procesu bei platformos verslo modelių integracija. Taip pat identifikuoti mokslinio ištirtumo trūkumai ir galimos ateities tyrimų kryptys, susijusios su COVID-19 pandemijos poveikiu ir vykstančiais dinamiškais skaitmeninės transformacijos procesais draudimo organizacijose bei ilgalaikių pasekmių įvertinimu draudikams ir draudėjams. Su COVID-19 pandemija sietina ne tik suintensyvėjusi skaitmenizacija, bet ir įterpinių sprendimų (angl. embedded solutions) ir hibridinių klientų aptarnavimo modelių diegimas, pokyčiai socialinių medijų ir tinklų, skaitmeninės rinkodaros sprendimų integravime, kurie moksliniame lygmenyje buvo analizuoti tik fragmentiškai. Skaitmenizacjos kontekste išskirtinas testinių tyrimų poreikis, susijęs su platformizacijos, skaitmeninio individualizavimo ir personalizavimo silpna raiška ir taikymo problematika draudimo sektoriuje. Detalizuojant, su tuo sietinas poreikis detaliau analizuoti teisinio reguliavimo ir atitikties situacijas, sprendžiant asmens duomenų apsaugos ir privatumo, informacijos asimetrijos reiškinių klausimus skaitmeninėse draudimo platformose. Kartu pridurtina ir kombinuotų technologinių skaitmeninio individualizavimo ir personalizavimo bei vadybinių žinių ir įgūdžių, susijusių su perėjimu prie skaitmeninių produktų kūrimo ir paslaugų valdymo, vertinimo trūkumas. Atsižvelgiant į aukščiau aptartą mokslinę tyrimo objekto problematika ir esama mokslinio ištirtumo poreiki buvo sumodeliuotas koncepcinis integruotas klientų sprendimo priėmimo skaitmeninės draudimo platformose modelis, pristatomas priede nr. 11.

METODOLOGINĖS DALIES APŽVALGA

Kompleksinis tyrimo objekto pobūdis ir aplinka reikalauja naudoti holistinę tyrimo strategiją ir dizainą, suderinant pirminius ir antrinius duomenų šaltinius, tęstinių tyrimų logiką bei kombinuojant tyrimo metodus naudojamus procesų vadybos, informacinių sistemų ir vartotojų elgsenos tyrimuose. Atsižveliant į tai toliau pristatoma 5 etapų tyrimo modelis ir metodologija, kurie buvo taikomi atliekant empirinius temos tyrimus Baltijos šalyse 2020 - 2022 metų laikotarpiu. Pirmajame etape buvo atlikta žvalgomojo ir aprašomojo pobūdžio Baltijos šalių negyvybės draudimo rinkos ir platformų atvejo studija, o po to - keturių etapų Baltijos šalių finansų srities ekspertų, draudimo specialistų ir vartotojų apklausos ir bei gautų rezultatų analizė. Tyrimo imtis ir etapai pasirinkti atsižvelgiant į 3 tyrimo lygius (makro, mezzo ir mikro) ir analizės perspektyvas (rinkos, organizacijos ir vartotojo), kurių tarpusavio ryšiai detalizuojami priede nr. 3. Pažymėtina, jog lygiagrečiai taikoma empirinio tyrimo strategija atliepa ir tyrimo objekto kompleksiškumą, kai atskiruose tyrimo etapuose iš sisteminės, funkcinės ir turinio perspektyvų yra įvertinamosios tokios dedamosios kaip draudimo skaimenizacija, procesų personalizavimas ir esami produktų individualizavimo sprendimai draudimo platformose. Tai sudaro tinkamas sąlygas surinkti detalius ir patikimus kokybinius ir kiekybinius pirminius duomenis bei vėliau atlikti jų konvergavimą ir interpretavimą į patikimas mokslines prielaidas ir praktines išvadas, kurios būtų taikomos tolimesniams temos tyrimams su didesne tyrimo imtimi ir duomenų rinkiniais. Reziumuojant, pasirinkta tyrimo metodų trianguliacija, kombinuojant aprašomąją statistiką, faktorių ir koreliacinę analizę bei rezultatų vizualizavimą kelių analizės (angl. path analysis) pagrindu yra pripažįstama kaip užtikrinanti visapusišką tyrimo objekto egzaminavimą. Tokiu būdu taip pat pagrindžiama pasirinktas tyrimo dizainas, imtis bei atskleidžiomos esamos loginės struktūros ir ryšiai tarp latentinių kintamųjų (Dhillon ir kt., 2014; Koyuncu ir Kılıç, 2019).

Detalizuojant, toliau pristatomas 5 etapų tyrimo modelio ir metodologijos ryšis su tyrimo uždaviniais ir jų refleksija atskiriuose tyrimo etapuose:

 Pirmasis tyrimo etapas yra susijęs su tyrimo uždaviniu atskleisti ir išanalizuoti tyrimo kontekstą įvertinat esamą praktinę situaciją Baltijos šalių negyvybės draudimo rinkoje ir draudimo platformose iš produktinės ir platformų funkcionalumų vertinimo perspektyvų. Tyrimo etapo metodologinį pagrindą sudaro kokybinio pobūžio daugiakiterinė lyginamoji analizė, analizuojant statistinius rinkų raidos ir interneto paieškos sistemoje Google naudojamų raktažodžių raiškos rodiklius bei lygiagrečiai atliekant aprašomąją draudimo platformų atvejo studiją.

- 2. Antrasis tyrimo etapas yra orientuotas į makro tyrimo lygį ir darbo uždavinį įvertinti esamą draudimo skaitmenizavimo ir srateginių MIP koncepcijos dedamųjų raišką ir turinį Baltijos šalių negyvybės draudimo platformose bei identifikuoti galimas vystymosi tendencijas. Šis tyrimo etapas yra paremtas struktūrizuota finansų srities ekspertų apklausa internetu, kurią sudaro 15 uždaro tipo klausimų ir vertinimo teiginių, suformuotų taikant modifikuotą Fuzzy klausimyno sudarymo metodiką ir Likerto vertinimo skalę.
- 3. Trečiasis tyrimo etapas yra orientuotas į mezo tyrimo lygį ir siekį nustatyti ir išanalizuoti iš organizacinės vertinimo perspektyvos reikšmingiausius faktorius, kurie lemia Baltijos šalių draudimo vartotojų elgseną ir draudimo įsigyjimo sprendimą skaitmeninėse platformose. Pažymėtina, jog šiame tyrimo etape pratęsiama draudimo skaitmenizacijos, individualizavimo ir personalizavimo kaip tyrimo objekto analizė, tačiau kartu pristatomas ir vertinamas draudimo įsigyjimo procesas skaitmeninėse platformose. Tyrimo etapo metodologinį pagrindą sudaro struktūrizuota Baltijos šalių draudimo specialistų apklausa internetu iš 24 uždaro tipo klausimų ir vertinimo teiginių, suformuotų kombinuojant modifikuotą Fuzzy klausimyno sudarymo metodiką, Likerto vertinimo skalę ir menu grįsto tyrimo logiką prototipų vizualizavimui.
- 4. Ketvirtasis tyrimo etapas yra orientuotas į mikro tyrimo lygį, kai siekiama iš vartotojo vertinimo perspektyvos identifikuoti ir išanalizuoti esminius faktorius, lemiančius draudimo platformos naudotojų požiūrį, elgseną ir galutinį sprendimą dėl draudimo įsigijimo. Tokiu būdu yra panaudojama trečiojo tyrimo etapo metodologija ir tyrimo modelis, tačiau iš turinio pusės kartu pristatomi papildomi vertinimo kriterijai ir suformuojama 32 uždaro tipų klausimų ir teiginių struktūrizuota apklausa internetu. Gautų rezultatų analizės pagrindu parengtas ir pristatytas atnaujintas integruotas draudimo vartotojų sprendimo priėmimo skaitmeninėse platformose modelis.
- 5. Penktasis tyrimo etapatas orientuotas į mikro tyrimo lygį ir darbo uždavinį patikrinti skaitmeninio individualizavimo modelius taikymui draudimo plat-formose bei įvertinti tokių modelių pritaikomumą iš vartotojo perspektyvos. Detalizuojant, sumodeliuojami ir respondentams įvertinti pateikiami 3 galimi

privalomojo automobilio draudimo skaitmeninio individualizavimo modeliai. Tyrimo mokslinį pagrindą sudaro koncepcinių kombinuotų individualizavimo modelių, pristatytų poskyryje 1.4., adaptavimas bei praktinės Baltijos šalių negyvybės rinkos platformizacijos, skaitmeninio individualizavimo ir personalizavimo situacijos analizės rezultatų, pristatytos poskyryje 3.2.1, interpretacija. Šio etapo duomenų rinkimui buvo naudojama struktūrizuota 4 uždaro tipo klausimų apklausa internetu, kombinuojant modifikuotus A/B testavimo ir klientų rekomendavimo indekso (angl. Net Promoter Score (NPS)) metodus bei draudimo platformų prototipų vizualizavima pagal menu grįsto tyrimo logiką.

Pridurtina, jog kiekvieno iš tyrimo etapų metu gautų rezultatų pagrindu buvo atliekamos analitinio, aprašomojo ir aiškinamojo pobūdžio atvejo studijos. Kaip papildomi duomenų šaltiniai buvo naudojama Ekonominio bendradarbiavimo ir plėtros organizacijos (Organisation for Economic Co-operation and Development, OECD) parengti 2017 – 2020 metų laikotarpio statistinių rodiklių ataskaitos ir praktiniai paieškos raktažodžių duomenys analogišku laikotarpiu. Kaip papildomi analizės įrankiai buvo panaudoti skaitmeninės rinkodaros Google Analytics, Google Trends ir Google Keyword Planner įrankiai. Duomenų analizė buvo atliekama naudojant programinę įrangą IBM SPSS Statistics (26 versiją) ir R (lavann paketo versiją 0.6-9), o duomenų vizualizavimas – programinę įrangą Axure RP Pro (8 versiją).

Reziumuojant, empirinio tyrimo metodologija yra parengta remiantis pragmatizmu ir objektyvistine epistemologija kaip bendra darbo metodologija ir filososija. Metodologinis pliuralizmas taip pat identifikuotinas empirinio tyrimo metodologijoje ir pasireiškia aptartųjų kokybinių ir kiekybinių duomenų rinkimo ir analizės metodų kombinavimu ir taikymu, o indukcinis požiūris pritaikomas apibendrinančių analizės rezultatų rengime. Pažymėtina, jog aukščiau aptarta empirinio tyrimo strategija, dizainas ir metodai suformuoti orientuojantis į praktinių darbo uždavinių (6 ir 7) įgyvendinimą ir ginamųjų darbo teiginių patvirtinimą.

TYRIMO MODELIO APŽVALGA

Koncepcinis tyrimo modelis, pristatytas iliustracijoje nr. 17 ir priede nr. 11, buvo parengtas atlikus daugiamatę teorinę analizę ir sintezę. Modelio teorinį pagrindą sudaro tradicinių vartotojų sprendimo ir technologijų priėmimo, paslaugų kokybės modelių bei mokslinių draudimo vartotojų tyrimų rezultatų, pristatomų iliustracijose nr. 15, 16 ir priede nr. 12, mokslinė interpretacija, pritaikant modifikuotus Robinson (2008a, 2008b, 2015) mokslinio modeliavimo principus.

Integruoto koncepcinio modelio procesinė logika paremta paremta HCDM (2002) modeliu, kombinuojant diskretinio pasirinkimo, latentinius ir stebimuosius faktorius ir tokiu būdu įgalinant atlikti visapusišką vartotojų suvokimo, elgesenos ir aplinkos poveikio analizę sprendimo priėmimo metu. Lygiagrečiai modelyje pristatoma tradicinio 3 pirkimo modelio stadijų modifikacija, atsižvelgiant į skaitmeninio draudimo pirkimo proceso specifiką, orientaciją į klientą ir holistinę rinkodaros strategiją. Teorinės analizės nustatyta, jog draudimo įsigyjimas skaitmeninėje platformoje turi būti vertinamas kaip dinamiškas ir kompleksinis procesas, apimantis naudotojų elgsenos ir patirties, racionalaus pasirinkimo ir technologijų naudojimo reiškinius.

Reziumuojant, procesinio modeliavimo rezultatas pristatomas iliustracijoje nr. 15. Integruoto koncepcinio modelio turinys ir struktūra yra paremti 13 faktorių kombinacija, susietų priežasties – pasekmės ryšiais: 6 priklausomi faktorių ir 7 nepriklausomų faktorių. Šių konceptinio tyrimo modelio faktorių teorinis pagrindas yra toliau išvardintų teorinių modelių turinio dedamųjų ir pastarųjų dviejų dešimmečių draudimo srities tyrimų rezultatų mokslinė interpretacija:

- Elektroninių paslaugų kokybės ir IS sėkmės dimensijų faktoriai, pristatomi E-S-QUAL modelyje (2005) ir tradiciniame bei atnaujintame DeLone ir McLean IS sėkmės modeliuose (1992, 2003).
- Pirkimo proceso logiką ir dedamąsias naudojamas Walker ir Ben-Akiva sukurtame HCDM (2002) modelyje bei technologijų priėmimo modeliuose TTF (1995) ir UTAUT2 (2012).
- Taylor ir kt. (2002), Ulbinaitė ir Moullec (2010), Ulbinaitė ir kt. (2011), Santouridis, Trivellas ir Tsimonis (2012), Ulbinaitė ir Kučinskienė (2013), Ulbinaitė, Kučinskienė ir Moullec (2013), Kiyak ir Pranckevičiūtė (2014), Aziz ir kt. (2017), Zolnowski ir Warg (2017), Rocha ir Botelho (2018), Gbongli ir kt. (2019), Lin, Wu, Lim, Han ir Chen (2019), Łyskawa ir kt. (2019), Naffa (2019), Weingarth ir kt. (2019), Allodi ir kt. (2020), Liu, Chow ir Zhao (2020) tyrimų rezultatų analizė, sintezė ir kombinavimas.

Suformuotas koncepcinis integruotas tyrimo modelis buvo empiriškai patvirtintas atliekant struktūrizuotą skaitmeninio draudimo vartotojų apklausą. Apklausos metodologinis pagrindas – struktūrizuota, 32 klausimų Baltijos šalių draudėjų apklausa internetu, pritaikaint modifikuotą 9 balų Likert vertinimo skalę. Klausimynas parengtas atsižvelgiant į koncepcinio tyrimo modelio turinį ir procesinę logiką bei remiantis trečiame empirinio tyrimo modelio etape atlikta Blatijos šalių draudimo specialistų apklausa ir jos rezultatu analize.

EMPIRINĖS DALIES APŽVALGA

5 etapų tyrimo modelio pritaikymas ir gautų rezultatų analizė turi tiek mokslinės ir praktinės reikšmės, tiek apribojimų, kurie reikalauja tolimesnės mokslinės diskusijos ir analizės. Pabrėžtina, jog tyrimų metu identifikuoti ir patvirtinti didžiausią poveikį draudimo įsigyjimui internetu turintys veiksniai ir jų grupės bei skaitmeninio individualizavimo modeliai gali būti pritaikomi ne tik lokalizuotai, analizuojant skaitmeninio draudimo pardavimo procesus ir platformas, bet ir platesniame kontekste, optimizuojant skirtingas pirmines ir antrines veiklas draudimo vertės grandinėje.

Detalizuojant, trečiojo tyrimo etapo metu, po draudimo specialistu apklausos rezultatų analizės buvo identifikuotos 3 didžiausią poveikį draudimo įsigyjimo sprendimui skaitmeninėse platformose turinčios faktorių grupės, sudarytos iš 14 faktorių: faktorių grupės F1, sudarytos iš 6 kombinuotų ir vidinių faktorių, orientuotų į asmeninio svarstymo ir vertinimo situacijas; faktorių grupės F2, sudarytos iš 4 išorinių faktorių susijusių su technologijų ir rinkodaros veiksmų raiška, platformų turinios savybių įvertinimu ir faktorių grupės F4, sudarytos iš 4 kombinuotų vidinių ir išorinių faktorių, susijusių su procesinių ir funkcinių platformų savybių įvertinimu ir bendromis žiniomis apie draudimo produktus. Tęstinio ketvirtojo tyrimo etapo metu, po draudimo vartotojų apklausos rezultatų analizės buvo identifikuotos 6 didžiausią poveikį turinčių veiksnių grupės, sudarytos iš 27 faktorių: faktorių grupės F1, sudarytos iš 7 faktorių, susijusių su platformos procesų, informacijos kokybės įvertinimu, skaitmenizacijos ir draudimo raštingumo lygiu, platformos saugumu ir informacijos privatumu; faktorių grupės F2, sudarytos iš 6 faktorių, susijusių su asmeninės draudimo patirties, rizikų ir finansinių aspektų įvertinimu; faktorių grupės F3, sudarytos iš 7 kombinuotų faktorių, susijusių su platformos naudojimo patirtimi, procesų valdymo kontrole bei bendriniais socialiniais, rinkodaros ir tvarumo reiškinių įvertinimu; faktorių grupės F4, sudarytos iš 3 platformos dizaino ir procesų savybių įvertinimu ir faktorių grupių F5 ir F6, sudarytų kombinuojant po 2 asmeninės patirties ir platfomos savybių įvertinimo faktorius. Stipri Pirsono (angl. Pearson) tiesinė koreliacija, nustatyta tarp visų veiksnių grupių, patvirtina teorinės dalies prielaidas, jog asmeninių (kognityvinių ir emocinių), technologinių, finansinių ir asmeninių rizikų įvertinimo faktorių kombinacija lemia sprendimą įsigyti draudimą internetu ir bendrai sudaro šiuolaikinio draudimo koncepcijos pagrindą.

Vertinant iš mokslinės perspektyvos pažymėtina, jog aukščiau apibūdintos faktorių grupės ir jų struktūra patvirtina ketvirtajį darbo ginamąji darbo teigini, kur draudimo isigyjimo internetu sprendimas yra apibūdinamas kaip reikšmingai veikiamas individualių finansinių ir su draudimu susijusių rizikos faktorių, tuo tarpu technologiniai, socialiniai ir motyvaciniai faktoriai yra antraeiliai ir priklausomi nuo sociodemografinių charakteristikų. Papildomai išskirtina, jog suformuotas tyrimo modelis ir analizės metu identifikuotos unikalios faktorių kombinacijos prisideda prie esamų šios mokslinės srities Ulbinaitės ir Moullec (2011), Ulbinaitės ir kolegu (2013), Kiyak ir Pranckevičiūtės (2014) tyrimų, kurie buvo orientuoti tik į tradicinio draudimo įsigyjimo proceso analizę ir kaip tyrimo kontekstą pasirinkę Lietuvos draudimo rinką. Svarbiu moksliniu indėliu laikytinas empirinių darbo tyrimų rezultatų analizės metu patvirtintas bei praplėstas Naffa (2019) tyrimo modelis: pirmiausiai faktorinė draudimo vartotojų apklausos (2021) rezultatų analizė patvirtino Naffa (2019) teiginius dėl draudimo platformos interaktyvumo (angl. Perceived Interactivity), vartotojų suteikiamos proceso kontrolės (angl. Perceived Behavioral Control) ir iš vartotojo reikalaujamu pastangu (angl. Effort Expectancy) veiksniu svarbos. Visu antra, Naffa (2019) pasiūlytas modelis analizuoti skaitmenines draudimo platformas ir pirkimo procesus papildytas naujais saugumo ir privatumo (angl. Security and Privacy) bei kainos vertės (angl. Price Value) faktoriais. Pridurtina, jog empiriškai patvirtintas ir atnaujintas tyrimo modelis taip pat patvirtina Weedige ir Ouyang (2019), Weedige ir kolegu (2019) bei Allodi ir kolegu (2020) teoriniuose modeliuose pristatytų draudimo raštingumo (angl. Insurance literacy), tvarumo (angl. Sustainability) ir draudimo skaitmenizacijos (angl. Insurance digitalization) pritaikomumą ir praktinį reikšmingumą. Papildomu moksliniu indėliu galima įvardyti tradicinių vartotojų elgsenos, HCDM, tradicinio ir atnaujinto DeLone ir McLean informacinių sistemų (IS) sėkmės modelių suderinimą ir adaptavimą analizuojant skaitmeninių draudimo platformų ir skaitmeninio draudimo įsigyjimo sprendimo atvejus. Vertinant kombinuotų skaitmeninio individualizavimo modelių pritaikymo skaitmeninėse platformose tyrimų rezultatus, išskirtina, jog nustatytas teigiamas skaitmeninio individualizavimo modelio ((Q-B)+(AT-B)) vertinimas indikuoja apie galimą praktinį poreikį ir perėjimą prie aukštesnio individualizavimo ir į vartotoją orientuotų plaftomos dizaino sprendimų. Reziumuojant, empirinių tyrimų

metu patvirtinti kombinuoti skaitmeninio individualizavimo modeliai ir integruotas klientų sprendimo priėmimo skaitmeninėse draudimo platformose modelis sudaro sąlygas tolimesniam teorinių sprendimo priėmimo, technologijų priėmimo modelių kombinavimui ir taikymui analizuojant bei modeliuojant naujus skaitmeninio draudimo sprendimus.

Vertinant iš praktinio pritaikymo pusės, pirmiausiai išskirtina, jog 5 etapų empirinio tyrimų metu buvo nustatytas esamas Baltijos šalių negyvybės draudimo rinkos skaitmenizacijos, individualizavimo ir personalizavimo lygis. Tai sudaro pagrindą kryptingiems esamų skaitmeninio draudimo pardavimo procesų organizavimo ir draudimo platformų funkcionalumo bei dizaino tobulinimams. Pridurtina, jog Baltijos šalių finansų srities ekspertų ir draudimo specialistų empirinių tyrimų rezultatai patvirtino antrajį ir trečiąjį ginamuosius teiginius. Papildoma praktiniu indėliu laikytina šių tyrimų metu patvirtinta sociodemografinių faktorių reikšmė, išskiriant 18 – 25 metų ir 46 – 55 metų amžiaus grupių draudimo skaitmenizacijos ir skaitmeninio individualizavimo vertinimo skirtumus. Pridurtina ir empirinio sprendimų priėmimo modelio tyrimo metu nustatytas statistiškai reikšmingas ryšys tarp 18-24 - 25-34 amžiaus grupių, 18-24 - 35-44 amžiaus grupių ir 18-24 - 45-54 amžiaus grupių. Visa tai sietina su Z ir Y kartos platformų vartotojų grupe, kurie bankinių paslaugų kontekste yra laikomi svarbi tikslinė auditorija, tačiau draudimo paslaugų kontekste nėra skiriama pakankamai dėmesio. Kaip rodo moksliniai tyrimai bankinių paslaugų kontekste šios kartos vartotojai turi aiškiai išreikštus poreikius greitai ir supaprastintai informacijos paieškai ir dalijimuisi skaitmeninėse platformose, kas atitinkamai skatina analogiškų tyrimus draudimo srityje ir modeliuoti praktinių sprendimų adapatavimą draudimo platformų atveju. Tokie sociodemografinių faktorių rezultatai patvirtina tolimesnį darbo temos mokslinų tyrimų bei praktinių sprendimų adaptavimo poreikį, orientuojantis į amžiaus grupės ir gyvenamosios vietos faktorius. Svarbus empirinių draudimo specialistų, vartotojų ir finansų srities ekspertų tyrimų analizės rezultatas yra nustatyti žemi draudimo individualizavimo ir personalizavimo vertinimai, indikuojantys, jog MIP koncepcijos praktinė raiška yra silpna, o standardizavimas yra vyraujanti skaitmeninų draudimo platformų savybė. Tokią praktinę situaciją patvirtina ir kombinuotų skaitmenizavimo modelių adaptavimo draudimo platformose empirinis tyrimas, kurio metu kaip labiausiai respondentų rekomenduotinas modelis nustatytas standartizavimu paremtas modelis X (atitinkantis skaitmeninio individualizavimo modelį (AL-B)+(AT-B)). Šie rezultatai indikuoja apie Baltijos šalių negyvybės draudimo platformų individualizavimo ir personalizavimo potencialą bei praktinių sprendimų poreikį. Kitas svarbiu praktiniu indėliu laikytinas empirinių tyrimų metu patvirtintas ir atnaujintas integruotas draudimo sprendimo priėmimo modelis, kuris dėl savo modulinės taikymo galimybių ir turinio įvairiapusiškumo yra adaptuotinas tiek draudimo platformų analizės ir modeliavimo veiklose, tiek pirminėse ir antrinės draudimo vertės grandinės veiklose, išskiriant rinkodaros, komunikacijos ir pardavimo organizavimo sritis.

Atlikti empiriniai tyrimai taip pat pasižymi metodoliginiais ir praktiniais apribojimais, kuriuos būtina įvertinti planuojant praktinį pritaikymą arba vykdant tolimesnius darbo temos mokslinius tyrimus. Vertinant iš metodologinės pusės pažymėtina, jog Baltijos šalių draudimo specialistų tyrimo rezultatų analizė, atlikta patvirtinančiosios faktorinės analizės pagrindu, yra kvestionuotina dėl tyrimo imties dydžio. Remiantis Hoelter kritinio statistikos rodiklio reikalavimais priimtinas respondentų imties dydis turi būti ne mažesnis nei 200 respondentų, kai taikoma 0.05 tyrimo rezultatu nuokripio lygis (Bollen ir Liang, 1988; Shadfar ir Malekmohammadi, 2013). Šis apribojimas paneigiamas tyrime pasirinkus naudoti Guadagnoli ir Velicer (1988) mokslinę poziciją, kai imties dydis yra susiejamas ir proporcingas vertinamų faktorių skaičiui, o rekomenduotinas respondentus skaičius, siekiant rezultatų validumo, yra tarp 100 ir 200 respondentų. Papildomai, imties dydis buvo patvirtintas apskaičiavus KMO rodikli (0.839) bei remiantis Nunally (1978) kumščio taisyklę, kai 14 faktorių patvirtinimui reikalinga ne mažesnė nei 140 respondentų imtis. Kita galima metodologinių diskusijų vieta susijusi su Baltijos šalių draudimo vartotojų (2021) apklausos metu nustatytu neproporcingu šalių atstovavimu. Šio apribojimo reikšmė minimalizuota atliktus Kruskal-Wallis H testa, kurio metu buvo patvirtinta, jog nėra statistiškai reikšmingo ryšio tarp nepriklausomų ir priklausomų kintamųjų vertinimo ir respondentų gyvenamosios šalies. Analogiška situacija nustatyta ir paskutinėje Baltijos šalių draudimo vartotojų (2022) apklausoje, bet ir šiuo atveju Kruskal-Wallis H testą patvirtino, jog nėra statistiškai reikšmingo ryšio tarp respondentų amžiaus, lyties ir gyvenamo vietos (imties A atveju) bei tyrimo klausimų nr. 3 ir nr. 4. Kita vertus, tęstinių sociodemografinių faktorių poveikio tyrimų poreikį patvirtina Kruskal-Wallis H testos rezultatai Baltijos šalių draudimo vartotojų (2022) apklausos imties B atveju. Šiuo atveju nustatytas statistiškai reikšmingas ryšys tarp kombinuoto skaitmeninio individualizavimo modelio X vertinimo ir respondento gyvenamosios šalies bei vertinimų dėl platformos naudojimo ateityje ir respondentų lyties. Vertinant iš praktinės taikymo pusės, išskirtini darbo apribojimai susiję su tyrimo kontekstu ir objektu. Darbo tyrimų metu pagrindinis dėmesys buvo skiriamas Baltijos šalių negyvybės draudimo rinkos, privačių klientų segmentui, transporto priemonių valdytojų civilinės atsakomybės draudimo produktui ir skaitmeniniams draudimo kanalams. Tai lemia, jog empirinių tyrimų analizės rezultatai reikalauja papildomo įvertinimo prieš taikant juridinių asmenų segmente ir kitų draudimo produktų bei platinimo kanalų atveju. Kritinio įvertinimo reikalauja ir empiriškai patvirtinimo integruoto draudimo sprendimo priėmimo skaitmeninės platformose modelio adaptavimas tradicinių draudimo platinimo kanalų atveju. Papildomų empirinių tyrimų tai pat reikalauja darbo rezultatų adaptavimas gyvybės draudimo rinkos ir produktų atveju bei lyginamojo pobūdžio analizės su kitais draudimo regionais. Reziumuojant, tęstinėmis darbo temos mokslinių tyrimų kryptimis galima įvardyti atskirų pirkimo proceso stadijų ir vartotojų tipų analizę draudimo pirkimo ir skaitmeninių platformų kontekste, išskiriant stadijas, prieš ir po pirkimo proceso bei atskiriant naujus ir esamus draudimo pirkėjus ir platformų naudotojus. Kombinuotų skaitmeninio individualizavimo modelių adaptavimas kitų draudimo produktų ir draudimo platformų dizaine taip pat reikalauja tęstinių mokslinių studijų.

IŠVADOS

1. Bibliometrinė ir retrospektyvinės MIP temos analizė analizė atskleidė 6 istorinės raidos laikotarpius, datuojamus nuo XIX a. vid. ir 3 mokslinius tyrimo laikotarpius, prasidėjusius nuo 1987 m. Iš semantinės perspektyvos išskirtini Alvin Toffler (1970, 1980), Stanley M. Davis (1987) ir Gilmore and Pine II's (1997) darbai, kuriuose buvo pristatyti fundamentiniai masinio sutrikimo (angl. Mass Confusion) reiškiniai, 4 masinio individualizavimo modeliai ir konceptualizuota masinio individualizavimo sąvoka. Išskiriant laikotarpį nuo 2000 iki 2010 metų buvo stebima konceptinių modelių ir semantinės reikšmės pasikeitimai susiję su MIP išsiskyrimu į dvi atskiras teorines koncepcijas bei orientacija į elektronines ir klientų poreikiais paremtas, išvestines koncepcijų versijas. Laikotarpyje nuo 2010 metų identifikuotinas perėjimas prie kombinuotų MIP modelių, kuriuose suderinama skaitmeninės rinkodaros, platformų verslo modelio, agile metodikos ir išmanosios gamybos principai. Vis dėlto, greta aptartų MIP mokslinės raidos laikotarpių ir išeigų stebimas ribotas empirinių studijų skaičius, orientuotų į kombinuotų MIP ir vartotojų sprendimo, technologijų priėmimo modelių bei savitarnos technologijų pritaikymą skaitmeninių paslaugų ir platformų vystyme, ypač draudimo tyrimų srityje. Taip pat paminėtina išliekanti aktuali sematinė intrepretacijų problematika dėl MI ir MP koncepcijų praktinio ir mokslinio taikymo atvejais, unifikuotos terminologijos ir taikymo modelių apibrėžimo.

2. Toerinė MI ir MP koncepcijų analizė ir sintezė atskleidė 3 vertinimo perspektyvas: funkcinė, vartotojų ir organizacinė. Iš funkcinės vertinimo pusės išskirtina masinės gamybos ir tiekimo grandinės operacijų valdymo teorijų ir modelių itaka, kuri suformavo tradicinį technologini-instrumentini požiūrį i MI koncepciją. Reikšmingai poveikį tradicinės MP koncepcijos raidai turėjo ir servitizavimo verslo modelio (angl. Servitization Business Model) bei produktų kanibalizacijos reiškiniai. Organizacinė vertinimo perspektyva sietina su į produkta/paslauga orientuoto požiūrio dominavimu tradicinėje MI koncepcijos versijoje, kuri vėliau buvo pakeista į vartotoja/žmogų (angl. user/human-centric) orientuoto mokslinio diskurso ir paslaugų dominavimo logikos modelio (angl. Service-Dominant Logic) adapavimo. Sparti praktinė skaitmenizacijos ir platformizacijos raidą ir jų praktinių išeigų raišką nulėmė vartotojo perspektyvos įsitvirtinimą moksliniuose šių koncepcijų tyrimuose bei tiek atskirų, tiek kombinuotų MI ir MP metodų taikymą paslaugų organizacijose, išskaitant finansų paslaugų sektorių. Draudimo paslaugų srityje taip pat stebimas intensyvus perėjimas prie skaitmeninių ir individualizuotų sprendimų draudimo produktų kūrime, kainodaroje ir platformuose bei aukštesnio lygio personalizuotų klientų aptarnavimo ir pardavimo procesų. Išskirtinas COVID-19 pandemijos poveikis finansinių paslaugų sektoriuje, kuris susijęs ne vien su spartesne procesų transformacija ir naujų rizikos valdymo metodų diegimu, bet ir naujo klientų aptarnavimo modelio susiformavimu. Šis modelis pasireiškia unifikuotu aptarnavimo procesu, suderinat tradicinius ir skaitmeninius vartotojų aptarnavimo kanalus ir metodus, pagal poreikį individualizuojamais draudimo produktais, personalizuota informacijos prieiga ir konsultacija sprendimo priėmimo metu. Tokiu būdu formuojamas naujas mokslinis ir praktinis požiūris į draudimo pirkimo procesą, pereinant nuo standardizuoto, nuoseklaus proceso ir orientacijos į produkto kainodarą prie dinamiškos, interaktyvaus ir personalizuoto proceso, kuriame pagrindinis dėmesis skiriamas į vartotoją orientuoto draudimo produkto sukūrimo procesui.

3. Su skaitmeninio individualizavimo ir personalizavimo modelių įgyvendinimo sunkumais susiduria tiek skaitmeninės organizacijos, tiek tradicinės verslas-klientui (angl. B2C) paslaugų ir gamybos organizacijos. Pagrindiniai įgyvendinimo iššūkiai susiję su organizacijų gebėjimu suderinti ir integruoti skaitmeninio individualizavimo ir personalizavimo sprendimus į esamus platformų ir "suderintos daugiakanalės" veiklos modelius bei technologiniais apribojimais, susijusiais su e-MIP modelių reikalavimais dėl duomenų srautų valdymo ir į vartotoja orientuotų procesų modifikavimu ir skaitmenizavimu. Reikšmingą poveikį e-MIP modelių įgyvendinimui draudimo srityje turi procesų ir sistemų valdyme ir modeliavime vyraujantis standardizavimo požiūris, suformavęs homogeniškų poreikių ir mažos įtraukties vartotojų auditoriją, standardizuotų draudimo produktų kūrimo ir tradicinio pobūdžio platinimo praktiką. Kita vertus, stebimi finansinių paslaugų, tame tarpe ir draudimo paslaugų, vartotojų pokyčiai nulemti COVID-19 pandemijos, įvairiapusės skaitmeninės transformacijos, dinamiškos ekonominės ir technologinės raidos ir atitinakmai reikalaujantis iš organizacijų naujų kombinuotų produktų ir sistemų individualizavimo ir personalizavimo sprendimų. Skaitmenizacijos, individualizavimo ir personalizavimo tyrimų potemės turi būti vertinamos kaip integralios draudimo srities tyrimų dalys, empiriškai paplitusios pagrindinėse ir palaikomosiose veiklose draudimo vertės kūrimo grandinėje bei lemiančios draudimo rinkų struktūros, procesų, produktų pokyčius ir platformų verslo modelio skverbti. Šiuo tikslu, pasitelkiant mokslinio modeliavimo principus, buvo suformuoti 6 išvestiniai skaitmeninio individualizavimo ir personalizavimo modeliai: ((AL-B) + (AT-B)), ((AL-B) + (Q-B)), ((AT-B) + (AL-B)), ((AT-B) + (Q-B)), ((Q-B) + (AL-B)), ((Q-B) + (AT-B)).

4. Darbe suformuotas koncepcinis klientų draudimo sprendimo priėmimo skaitmeninėse platformose modelis yra paremtas tradicinio 3 etapų pirkimo modelio, holistinės rinkodaros koncepcijos ir į vartotoją orientuotų sprendimo ir technologijų priėmimo modelių interpretacija. Darbe pristatytas tyrimo modelis suformuotas orientuojantis į 4 vertinimo perspektyvas (sistemos, procesų, platformos-technologijų ir vartotojo) ir adaptuojant proceso logiką ir turinio dedamąsias iš HCDM (2002), UTAUT2 (2012), TAM3 (2008), TTF (1995), tradicinio ir atnaujinto DeLone ir McLean informacinių sistemų (IS) sėkmės, elektroninių paslaugų kokybės modelių ir įžvalgų iš susijusių šios srities mokslinių tyrimų, pateikiamų priede nr. 7. Reziumuojant, pristatytas koncepcinis tyrimo modelis apibūdina draudimo pirkimo procesą skaitmeninėje platformoje kaip modifikuotą 3 etapų pirkimo procesą, kuriame priežasties-pasekmės ryšiais kombinuojami kintamasis Įsigyti draudimą platformoje ir 30 nepriklausomų ir latentinių kintamųjų.

5. 5 etapų empiriniai tyrimai buvo atliekami remiantis kokybinių ir kiekybinių duomenų trianguliacija per 3 metų laikotarpį, nuo 2020 iki 2022 metų. Tyrimo etapai, imtis ir metodai buvo sudaryti remiantis pasirinkta 3 lygių tyrimo strategija ir darbo uždaviniais. Iš procecinės pusės pirmiausiai buvo atlikta žvalgomojo ir aprašomojo pobūdžio Baltijos šalių negyvybės draudimo platformų daugiakriterinė kokybinė analizė, integruojant statistinių rodiklių ir paieškos raktažodžių analizę. Kituose etapuose buvo atliekamos 3 struktūrizuotos finansų srities ekspertų, draudimo specialistų ir vartotojų apklausos internetu, naudojant modifikuotą Fuzzy klausimyno sudarymo metodiką, menu grįsto tyrimo logiką prototipų vizualizavimui bei 9 ir 10 balų Likerto vertinimo skales. Papildomai pažymėtina, jog baigiamajame draudimo vartotojų tyrime buvo adaptuota kontroliuojama A/B testavimo proceso logika ir klientų rekomendavimo indekso (angl. angl. Net Promoter Score (NPS)) vertinimo metodas.

6. Atlikti Baltijos šalių empiriniai tyrimai patvirtino, jog negyvybės draudimo rinkos ir platformų skaitmenizacijos lygis nėra homogeniškas ir veikiamas sociodemografinų faktorių, o draudimo platformos pasižymi skirtingu individualizuotų draudimo produktų lygiu bei klientų įtraukties į individualizavimo procesą galimybėmis. Kaip rodo finansų ekspertų apklausos rezultatai draudikų pasiruošimas skaitmenizacijai vertintinas tarp Patenkinamai ir Labiau gerai ir atitinka bendra rinkos skaitmenizacijos lygį, tačiau ženkliai atsilieka nuo realių draudėjų skaitmeninių poreikių. Tai iš dalies patvirtina pirmąjį ginamąjį teiginį ir pilnai patvirtina antrąjį ir trečiąjį ginamuosius teiginius. Papildomai identifikuota, jog esamas skaitmenizacijos lygis Baltijos šalių negyvybės draudimo platformose išsiskiria nesuderintais bendrakūros ir personalizavimo sprendimais, kas nulemia funkcinius apribojimus naudotojams, susijusius su personalizuotos informacijos prieiga ir pagalba pirkimo proceso metu. Vertinant šalių lygyje, nustatyti skirtumai taikant skaitmeninius individualizavimo ir personalizavimo modelius, kur Estijos atveju nustatytas vyraujantis kombinuotas ((AT-B) + (AL-B) modelis, o Lietuvos ir Latvijos atveju - kombinuotas ((AT-B) + (AL-B)) and ((AL-B) + (AT-B)) modelis. Ekspertų tyrimo metu nustatyti platformų turinio skirtumai, kai esamas standartizavimo ir individualizavimo lygis Baltijos šalyse įvardijamas Patenkinamai, bet personalizavimo lygis apibūdinamas tarp Patenkinamai ir Labiau gerai. Tokie rezultatai patvirtina antrąjį ir trečiąjį ginamuosius teiginius. Esami aukšti standartizavimo įvertinimai Baltijos šalių negyvybės draudimo platformuose sietini su platformose vyraujančia transporto priemonių draudimo produktų specifika, kuri pasižymi teisinio reguliavimo reikalavimais dėl draudimo apsaugos apimties ir riboja šio produkto turinio individualizavimo ir personalizavimo galimybes.

157 Baltijos šalių draudimo specialistų apklausa ir jos rezultatų analizė atskleidė 3 faktorių grupes (F1, F2 ir F3), kurios pasižymi stipria Pirsono (angl. Pearson) tiesine koreliacija ir lemia sprendimą įsigyti draudimą skaitmeninėje platformoje. Išskirtinas faktorių grupė F1, kuri pasižymėjo didžiausių veiksnių skaičiumi ir kartu turėjo didžiausią poveikį sprendimo priėmimo procese. Turinio prasme šią faktorių grupę sudarė asmeninio vertinimo ir rizikos faktorių kombinacija ir tokiu būdu patvirtina ketvirtąjį ginamąjį teiginį. Vertinant faktorių lygyje, kaip reikšmingiausi faktoriai išskirtini esama ir buvusi draudimo pirkimo ir naudojiomo patirtis bei technologinės platformos savybės, o šiek tiek mažiau reikšmingi – finansinės naudos įvertinimo, draudiko žinomumo ir grafinės naudotojo sąsajos savybės platformoje. Iš sociodemografinių faktorių vertinimo pusės išskirtina, jog residentų šalis neturėjo reikšmės faktorių vertinimui, tačiau nustatytas statistiškai reikšmingas ryšys taip amžiaus grupių 18-25 metų ir 46 – 55 metų ir faktorių grupės F2 vertinimo.

390 Baltijos šalių draudimo vartotojų apklausa ir jos rezultatų analizė atskleidė 6 faktorių grupes sudarytas iš 27 faktorių, formuojančių sprendimą įsigyti draudimą skaitmeninėje platformoje ir pasižyminčių labai stipria arba stipria teigiama Pirson'o koreliacija. Pažyminėtina, jog reikšmingiausių finansinio pobūdžio (kainos) ir asmeninių rizikų vertinimo faktorių pobūdis patvirtina tradicinių elgsenos ekonomikos ir racionalaus pasirinkimo teorijų pritaikomumą analizuojant ir modeliuojant naudotojų elgesną skaitmeninės draudimo platformose. Aukštesni nei bendras faktorių vertinimo vidurkis (5.9) platformos-technologinio pobūdžio informacijos, procesų ir platformos kokybės faktoriai patvirtina atnaujinto DeLone and McLean IS sėkmės modelio pritaikomumą modeliuojant naudotojų elgseną ir platformų turinį. Kita vertus, nustatyti žemesni nei vidurkis (5.9) su platformos naudojimu ir indidividualizavimo modeliu susijusių faktorių įvertinimai patvirtina ankstesnių darbo autoriaus empirinių tyrimu metu nustatytą MIP koncepcijos dedamųjų silpną raišką ir standardizavimo praktikų paplitimą Baltijos šalių negyvybės draudimo platformose. Papildomai tai leidžia formuoti išvadą, jog naudotojų nuomonė ir sprendimą lemiantys faktoriai yra suformuojami turimos patirties pagrindu, esamų draudimo platformų turinio ir funkcionalumų specifikos ir bendro draudimo skaitmenizacijos lygio Baltijos šalyse. Platformos saugumo ir asmens duomenų privatumo faktorių aukšti įvertinimai indikuoja apie reikalingą papildomą tyrėjų ir praktikų dėmesį pasaulinio žiniatinklio konsorciumo (angl. W3C) saugumo standarto palaikymui ir praktinio perėjimo prie į vartotoją orientuoto saugumo formato įgyvendinimo draudimo platformose. Tokie faktorių įvertinimai paaiškina ir stebimą situaciją su žemesniais respondentų įvertinimais dėl pirkimo proceso kontrolės, malonumo ir interaktyvumo. Iš sociodemografinių faktorių vertinimo pusės pažymėtina, jog nustatytas statistiškai reikšmingas ryšys tarp amžiaus grupės 18 – 25 metai ir pirkimo sprendimą lemiančių faktorių įvertinimo ir bendro draudimo platformo įvertinimo. Tai patvirtina teorines prielaidas dėl poreikio vystyti labiau į vartotoją orientuotus draudimo skaitmenizavimo, individualizavimo ir personalizavimo sprendimus, taikomus platformų dizaino ir procesų modeliavime. Tai liudija ir tęstinė 317 Baltijos šalių draudimo apklausa ir jos rezultatų analizė, kuri iš dalies patvirtino ir antrąjį ginamąjį teiginį. Šiuo atveju, atliekant gautų rezultatų patikimumo įvertinimą su tyrimo imtimi B, buvo nustatyti statistiškai reikšmingas ir teigiamas skaitmeninio individualizavimo modelio (Q-B) vertinimas ir šalies bei lyties faktorių įtaka vertinimo rezultatams. Tokiu būdu patvirtinamas ne tik esamų Baltijos šalių skaitmeninio draudimo vartotojų praktinių individualizavimo ir personalizavimo poreikių pasikeitimas, bet ir mokslinės prielaidos dėl dinamiškos ir įvairiapusės platformos modelio vystymo Baltijos šalių negyvybės draudimo rinkoje, atsižvelgiant į sociodemografinius amžiaus, šalies ir naudojimo patirties faktorius bei taikant kombinuotus MIP metodus.

7. Kombinuotas, 2 dalių siūlymų modelis, kuris taikytinas dalimis arba lygiagrečiai, buvo parengtas remiantis empirinių tyrimų metu atnaujintu integruotu klientų sprendimo priėmimo modeliu. Pirmoji modelio dalis apima praktinio pobūdžio siūlymus, orientuotus į esamos situacijos analizę organizacijos viduje ir rinkoje, atsižvelgiant į mezo ir makro lygių empirinių tyrimų rezultatus. Pateikiami draudimo platformų įvertinimo proceso ir 9 išvestinių kriterijų (angl. Key Performance Indicators, KPIs) siūlymai iš 3 vertinimo perspektyvų: turinio, orientacijos į naudotoją ir funkcinių savybių. Greta 9 išvestinių vertinimo kriterijų suformuota KPI vertinimo forma ir KPI įvertinimo matrica, kurie paremti rizikų registro ir žemėlapio metodų struktūra ir S.M.A.R.T tikslų ir uždavinių formavimo logika. Pateikti siūlymai gali būti integruoti su kitais skaitmeninės rinkodaros ir technologiniais analizės įrankiais, taikomais skaitmeninės rinkodaros specialistų, plaformų dizaino ir procesų valdymo specialistų ir vadovų veikloje, atliekant tiek einamąją, tiek periodinę rinkos analizę ir vidines plaformų modeliavimo veiklas. Antroji modelio dalis apima praktinio pobūdžio siūlymus, orientuotus tiek į esamą situacijos analizę, tiek į ateities sprendimų modeliavimo veiklas, atsižvelgiant į macro ir mikro lygių empirinių tyrimų rezultatus. Pateikiami praktiniai siūlymai skirti analizuoti ir modeliuoti su draudimo platformos naudojimu susijusius procesus, resursų, sąlyčio taškus ir individualizavimo sprendimus. Siūlymai parengti remiantis atnaujintu integruotu draudimo klientų sprendimo priėmimo modeliu, šio modelio empirinių tyrimų rezultatais ir adaptuojant 5 dalių paslaugų techninio aprašymo ir brėžinio (angl. Service Blueprint) logiką ir turinį. Pateikti siūlymai gali būti integruoti su kitais procesų analizės ir modeliavimo įrankiais, taikomais plaformų dizaino ir procesų valdymo specialistų, platformų vadovų veikloje. Pažymėtina, jog suformuotas siūlymų modelis pasižymi nedideliu finansinių ir technologinių resursų poreikiu, paprastu naudojimu, moduliniu turiniu ir integralumu su kitais platformų naudotojų, procesų ir turinio analizės bei modeliavimo įrankiais.

SIŪLYMAI

Toliau pateikiamas 2 lygių siūlymų modelis ir jo taikymo gairės, suformuotos remiantis proceso struktūra, logika ir veiksniais iš disertacijos empirinių tyrimų metu atnaujinto integruoto klientų draudimo sprendimo priėmimo modelio. Išskirtina, jog pateikti siūlymai yra praktinio pobūdžio, kuriuos galima galima pilnai arba dalinai koreguoti ir taikyti, atsižvelgiant į draudiko skaitmeninę brandą, turimus platformos techninius išteklius, operacinius pajėgumus, tikslinę auditoriją bei strateginius tikslus skaitmeniniams pardavimams, rinkodarai ar platformų vystymui. Atsižvelgiant į tai, jog statinio procesinio pobūdžio ir griežtais turinio taikymo apribojimais paremti siūlymai platformų tobulinimui nėra praktiškai pasitvirtinę toliau pristatomas siūlymų modelis parengtas laikantis modulinio ir adaptyvaus taikymo principais. Taip pat, prieš taikant šį modelį, būtina įvertinti, jog pateikti siūlymai glaudžiai susiję su šio mokslinio darbo turiniu, tyrimo apimtimi bei nustatytais taikymo apribojimais, kas gali lemti jų aktualumo sumažėjimą kitame praktiniame kontekste.

Pirma siūlymų modelio dalis ir susijusios taikymo gairės yra orientuotos į vidinę ir išorinę skaitmeninių draudimo platformų analizę bei atliepia esamus kombinuoto vadybinio-technologinio pobūdžio platformos analizės proceso ir metodų trūkumus esamose tradicinėse aplinkos ir veiklos analizėse. Detalizuojant, tradicinė aplinkos ir veiklos analizė apima analitines veiklas ir metodus taikomus iš 3 analizės lygių perspektyvų, istorinius, einamojo laikotarpio duomenis bei prognozuotinas rinkos vystymosi tendencijas ateityje. Vadinamoji rinkos-sektoriaus ir konkurentų mezzo lygmens analizė yra praktiniai minėtųjų tradicinės analizės tipų pavyzdžiai, kuriuose taikomi toliau išvardinti metodai: Porterio 5 jėgų modelis (angl. Porter's Five Forces), vertės grandinės analizės (angl. Value Chain Analysis (VCA)), rinkos struktūros, rinkos dalyvių veiklos ir ekonominės situacijos analizė (angl. Structure-Conduct-Performance analysis (SCP)) ir tokios žydrųjų vandenynų strategijos kaip 3C ir 4P. Vadinamoji vidinė arba mikro lygmens analizė įprastai atliekama iš organizacijos arba vartotojo perspektyvos taikant tokius analizės metodus kaip SSGG (angl. SWOT), įplaukų analizes ir yra neatsiejama nuo vidinių organizacijos procesų reikalavimų ir veiklos standartų. Draudimo sektoriuje tiek rinkos, tiek organizacijų veiklos analizės turi savitų raiškos būdų, tarp kurių paminėtina atsakingų rinkos reguliavimo institucijų ruošiamos ir viešai prieinamos rinkos struktūros ir finansinių veiklos rodiklių ataskaitos, statistiniai rinkos pranešimai apie draudimo produktų kainodaros (įmokų) ir žalų (išmokų) administravimo dinamiką, teisinio reguliavimo pasikeitimus. Vis dėl to, skaitmeninių draudimo platformų aplinkos, produktų ir vartotojų specifika reikalauja inovatyvaus ir kompleksinio analizės proceso, pasitelkiant skirtingus pirminius ir antrinius duomenis, papildomus metodus ir išvestinius veiksnius, atliekant tiek esamą vidinės ir/ar rinkos situacijos analizę.

Antra siūlymų modelio dalis ir susijusios taikymo gairės yra orientuotos į draudimo platformų vartotojo elgsenos ir platformų turinio analizę bei ateities sprendimų modeliavimą. Pateikiami kombinuoti makro – micro vertinimo lygių bei į esamą situaciją ir į ateities sprendimus orientuoti praktinio pobūdžio siūlymai, skirti analizuoti ir modeliuoti su draudimo platformos naudojimu susijusius procesus, resursų, sąlyčio taškus ir platformose taikomus individualizavimo sprendimus. Pateiktų siūlymų dėl draudimo platformų analizės ir modeliavimo poreikį pagrindžia stebimos verslo organizacijų platformizacijos tendencijos, technologinių inovacijų ir didžiųjų duomenų taikymo praktikos operacijų lygmenyje bei COVID-19 pandemijos paskatinta intensyvi tradicinių paslaugų teikimo formų ir klientų aptarnavimo procesų skaitmenizacija. Kaip identifikuota Baltijos šalių atveju esamas platformizacijos sprendimų, produktų skaitmeninio individualizavimo ir bendras skatmenizacijos lygis atsilieka nuo realių vartotojų poreikių bei tokiu būdu didina pateiktų praktinių siūlymų poreikį. Pridurtina, jog iš mokslinės vertinimo pusės parengti siūlymai atliepa esamą mokslinių tyrimų ir siūlymų trūkumą apie technologinių metodų ir vadybinių sprendimų suderinamumą ir kombinavimą organizacijų transformacijų laikotarpiu, pereinant nuo tradicinio, į produktą orientuoto verslo modelio prie skaitmenizuoto ir į vartotoją orientuoto procesų organizavimo ir platformų verslo modelio. Antroji siūlymų modelis dalis parengta remiantis šiais argumentais bei empirinių tyrimu metu atnaujintu integruotu draudimo sprendimo priėmimo modeliu, ir modifikuotu 5 dalių paslaugų techninio aprašymo ir brėžinio (angl. Service Blueprint) metodu modifikavimu. Paslaugų techninio aprašymo ir brėžinio (angl. Service Blueprint) metodo pasirinktas kaip antros siūlymų

modelio dalies teorinis ir metodolignis pagrindas dėl mokslinio ir praktinio pripažinimo kaip tinkamo metodo atlikti holistines ir įvairiapuses sistemos ir procesų analizes. Panaudojant ši metodą galima atvaizduoti esamus ryšius tarp individų, procesų ir fizinių ir/arba skaitmeninių sąlyčio taškų, bei tuo pačiu identifikuoti galimas sistemos, funkcionalumų ir procesų tobulinimo vietas, siekiant didensės orientacijos į vartotoją ir jo įtraukties. Svarbu paminėti ir tai, jog paslaugų techninio aprašymo ir brėžinio (angl. Service Blueprint) metodo praktinis naudojimas yra paprastesnis nei UML ir BPMN metodų, taip pat šis metodas siejamas su platesnio pobūdžio, kompleksinius išeigos sprendimais, lyginant su tradiciniais vartotojų patirties (angl. User Experience, UX) planavimo metodais kaip kliento patirčių žemėlapis ar PCN.

Suformuotą 2 lygių siūlymų modelį galima visualizuoti kaip įeigos-proceso-išeigos modelį (angl. Input-Process-Output, IPO) sudarytą iš 2 paraleliai ir/ar moduliniai principais taikomų procesų. Vizualizavimas IPO modelio pagrindu sudaro galimybes perteikti koncepcinį modelį struktūrizuotu ir lengvai interpretuojamu formatu, kas gali paskatinti tolimesnę mokslinę diskusiją ir interpretacijas. 2 lygių siūlymų modelio vizualizacija pristatoma 20 pav. Kaip matoma 20 pav., pagrindinė pirmosios siūlymų modelio dalies išeiga yra suformuoti nauji duomenų rinkimo ir analizės metodai, skirti skaitmeninių draudimo platformų analizei:

- 3 lygių KPI vertinimo lentelė, detaliau pristatoma priede nr. 3 ir 4, yra siūloma naudoti kaip daugiakriterinė skaitmeninių draudimo platformų vertinimo forma, kuri naudojama kartą per mėnesį ir ketvirtį, vertinant platformų turinį, funkcines savybes ir orientacijos į vartotoją lygį. 9 išvestiniai vertinimo kriterijai, detaliau pristatomi lentelėje nr. 57, yra suformuoti remiantis Baltijos šalių draudimo platformų ir procesų tyrimo rezultatais, pateikiamais poskyriuje 3.4.1. Suformuoti metodai remiamasi rizikų registro metodo struktūra bei S.M.A.R.T tikslų ir uždavinių formavimo logika.
- 3 lygių KPI vertinimo matrica, detaliau pristatoma priede nr. 5, taikytina galutiniam surinktų platformų vertinimo duomenų vertinimui. Pristatomas vertinimo metodas suformuotas remiantis rizikų žemėlapio metodų ir adaptuojant spalvinį vertinimą.

Pagrindinė antrosios siūlymų modelio dalies išeiga yra suformuotas duomenų rinkimo ir analizės prototipas, skirtas skaitmeninių draudimo platformų analizei ir modeliavimui:

• Kombinuotas analizės ir modeliavimo prototipas, skirtas analizuoti hipotetinį

pirkimo procesą skaitmeninėje draudimo platformoje, su tuo susijusius sąlyčio taškus ir resursus organizacijoje. Siūlomas prototipas, detaliau pristatomas priede nr. 20, atitinka tradicinio paslaugų techninio aprašymo ir brėžinio (angl. Service Blueprint) metodo dedamąsias ir taikymo logiką. Kartu pateiktas analizės ir vertinimo metodas referuoja į disertacijos empirinių Baltijos šalių draudimo vartotojų draudimo pirkimo proceso platformose tyrimų metu patvirtintą 3 proceso stadijų modelį bei jo tyrimų reultatus, pristatytus poskyriuje 1.6.

Pažymėtina, jog pristatomi pirmosios ir antrosios siūlymo modelio įeigos veiksniai, procesiniai etapai ir išeigos rezultatai yra orientuoti į vadybino pobūdžio skaitmeninių draudimo platformų ir draudimo pirkimo proceso vertinimą. Pateikti praktiniai siūlymai yra kombinuotini su esamais technologinio ir rinkodarinio pobūdžio skaitmeninių platformų turinio ir procesų vertinimo metodais bei tokiu būdu gali papildyti ir praplėsti esamas šios srities analizės ir modeliavimo praktikas vadybinio pobūdžio vertinimo perspektyva ir metodais. Suformuoti praktiniai siūlymai taip pat skatina tolimesnę mokslinę diskusiją dėl vadybinio ir technologinio pobūdžio metodų tarpusavio suderinamuo ir kombinavimo galimybių bei palaiko esamas vizualaus vertinimo ir modulinio metodų taikymo praktikas ir draudimo platformų vystymosi poreikį orientojantis į vartotoją, procesų personalizavimą ir produktų individualizavimą.

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4.1. Tarptautinė Aalto universiteto vasaros studijų programa "Digital Business Master Class", Birželio 1 d. – Rugpjūčio 7 d., 2020, Aalto universiteto verslo mokykla, Espoo, Suomija.

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Baranauskas, Gedas COMBINED MASS CUSTOMIZATION AND PERSONALIZATION METH-ODS TO MODEL END-USER BEHAVIOR IN DIGITAL INSURANCE PLATFORMS: doctoral disertation. – Vilnius: Mykolas Romeris Universitety, 2023. P. 388

Bibliogr. 228-264 p.

The disertation aims to provide a critical assessment and to model a conceptual framework of combined mass customization and personalization, technology acceptance and decision-making methods within modelling the insurance consumers' decision-making process in digital insurance platforms. Accordingly, combined online customization frameworks and an integrated digital insurance decision-making process framework were modelled and empirically validated within 3 years of investigation (2020 – 2022). The research focused on the content, trends, state-of-the-art of the non-life insurance market, consumers' behavioral patterns, and digital insurance platforms in Lithuania, Latvia, and Estonia. Afterward, a combined 2-level recommendation model and usage guidelines for a practical application of both internal and market analyses on digital insurance markets and modeling the consumer decision-making process in digital insurance platforms were prepared.

Disertacijoje siekiama suprasti ir kritiškai įvertinti masinio individualizavimo ir personalizavimo, sprendimo ir technologijų priėmimo modelių ir metodų kombinavimo galimybes modeliuojant draudimo platformų turinį ir vartotojų elgseną skaitmeninėse draudimo platformose. Tuo pagrindu buvo sumodeliuoti ir apibendrinti išvestiniai kombinuotieji skaitmeniniai MIP modeliai ir integruotas klientų sprendimo priėmimo skaitmeninėse draudimo platformose modelis. Panaudojant parengtus koncepcinius modelius 2020 - 2022 metų laikotarpiu buvo atlikti Baltijos šalių ne gyvybės draudimo rinkos, platformų ir vartotojų elgsenos tyrimai. Tyrimų metu buvo nustatyta, jog Baltijos šalių ne gyvybės draudimo rinkos ir platformų skaitmenizacijos lygis nėra homogeniškas ir veikiamas sociodemografinių faktorių, draudikų pasiruošimas skaitmenizacijai atsilieka nuo realių draudimo vartotojų skaitmeninių poreikių, nors ir atitinka bendrą rinkos skaitmenizacijos lygį. Taip pat buvo nustatyta, jog organizacijų ir vartotojų požiūris ir poreikiai perėjo nuo standardizuotų, į produktą ir kainodarą orientuotų draudimo platformų, į dinamiško dizaino ir daugialypio turinio platformų, orientuojantis į kombinuotus skaitmeninio individualizavimo, personalizavimo, sociodemografinius ir platformos naudojimo patirties faktorius. Gautų rezultatų pagrindu paruoštas 2 lygių siūlymų modelis ir taikymo gairės, orientuotos į draudimo platformų vidinę ir rinkos analizę, vartotojo elgsenos ir platformų turinio analizę bei ateities sprendimų modeliavimą.

Gedas Baranauskas

COMBINED MASS CUSTOMIZATION AND PERSONALIZATION METHODS TO MODEL END-USER BEHAVIOR IN DIGITAL INSURANCE PLATFORMS

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