



VILNIUS GEDIMINAS TECHNICAL UNIVERSITY
FACULTY OF MECHANICS
DEPARTMENT OF MECHANICAL AND MATERIALS ENGINEERING

Albertas Valiokas

**SHELF FOR SERVING LINES DEVELOPMENT AND LAUNCHING
TO THE MARKET**

EKSPOZICINĖS LENTYNOS KŪRIMAS IR ĮVEDIMAS Į RINKĄ

Master's Degree Thesis

Industrial engineering and innovation management programme, state code 6211EX056

Production and Manufacturing Engineering study field

Vilnius, 2022

VILNIUS GEDIMINAS TECHNICAL UNIVERSITY
FACULTY OF MECHANICS
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APPROVED BY
Head of Department

(Signature)
assoc. prof. dr. Ina Tetsman
(Name, Surname)
2022.05.31
(Date)

Albertas Valiokas

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Supervisor assoc. prof. dr. Rūta Banelienė
(Title, Name, Surname)

(Signature) (Date)

Consultant

(Title, Name, Surname)

Signature) (Date)

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OBJECTIVES FOR MASTER THESIS

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Master Thesis title:

Shelf for serving lines development and launching to the market

Ekspozicinės lentynos kūrimas ir įvedimas į rinką

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The Final work has to be completed by 26th of May, 2022

THE OBJECTIVES:

Aim of the work. Develop and provide a model on a shelf for serving lines launching to the market based on the analysis of scientific literature, explored the commercial kitchens industry and results of empirical research.

Work tasks:

1. Perform a theoretical study of existing product development basics, models and their launching to market methods.
2. Explore the commercial kitchen industry and evaluate already existing shelves for serving lines in market.
3. Conduct an empirical study to identify the most important consumer demands, company organizational processes, and the factors that influence product development and launching to the market success.
4. Develop and define a model that is adapted to the shelf of serving lines for successful development and launching to the commercial kitchens market.

Academic Supervisor
(Signature)

assoc prof. dr. Rūta Banelienė
(Title, Name, Surname)

Objectives accepted as a guidance for my Master Thesis

.....
(Student's signature)
Albertas Valiokas
(Student's Name, Surname)
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(Date)

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<p style="text-align: right;">Thesis language: English</p>		
<p>Annotation</p> <p>In today's market, there is very intense competition: constantly changing market trends and unpredictable customer wishes shorten the product life cycle. The purpose of this master's thesis is to investigate the market for professional kitchen equipment manufacturers and customers' needs in order to identify the important factors that might influence the successful launch of a newly developed shelf for serving lines on the market. The study examines innovative product design concepts, product development procedures, types of models used to develop and launch to the market a product. A comparison of shelves for serving lines already on the market was conducted, as well as an evaluation of the current situation of the industry. The report presents the findings of an empirical research based on consumer and manufacturers of professional kitchen equipment questionnaires. Based on the study's findings and the information gathered, a model was developed and described, based on which the successful development and launch of the shelf for serving lines could be expected, and lastly, conclusions and recommendations for firms in this industry were offered.</p> <p>The work consists of 7 parts: introduction, the theory of product design development and it launching to the market, industry analysis of customized equipment for professional kitchens, results of research, proposed model for development and marketing shelf for serving lines for customized professional kitchens, conclusions and proposals, literature.</p> <p>Thesis consists of 76 p. text without appendixes, 21 images, 6 tables and 51 references. Work appendixes are attached separately.</p>		
<p>Keywords: Product, development, launching, professional kitchen equipment, commercial kitchen, shelf for serving lines, factors, market.</p>		

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Pavadinimas	Ekspozicinės lentynos kūrimas ir įvedimas į rinką
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Anotacija <p>Šiuolaikinėje rinkoje vyrauja labai intensyvi konkurencija: nuolat besikeičiančios rinkos tendencijos ir nenuspėjami klientų norai trumpina produkto gyvavimo ciklą. Šio baigiamojo magistro darbo tikslas yra išnagrinėti profesionalių virtuvių įrangos gamintojų rinką bei nustatyti pagrindinius aspektus, kurie galėtų būti raktas į sėkmingą ekspozicinės lentynos įvedimo į rinką. Darbe yra apžvelgiama naujo produkto dizaino sampratos, produkto kūrimo procesai, įvairūs naudojami modeliai kurti ir įvesti į rinką produktą. Atlikta lyginamoji jau rinkoje egzistuojančių ekspozicinių lentynų analizė, apžvelgta esama situacija šioje pramonės srityje. Darbe pateikiami atlikto empirinio tyrimo rezultatai, kurio pagrindą sudarė apklaustos klientams ir įmonėms, gaminančioms profesionalią virtuvinę įrangą. Remiantis tyrimo rezultatais ir surinkta informacija, buvo sukurtas ir aprašytas modelis, kuriuo remiantis galima tikėtis sėkmingo ekspozicinės lentynos kūrimo ir įvedimo į rinką bei pateiktos išvados ir pasiūlymai šioje pramonės srityje besispecializuojančioms įmonėms.</p> <p>Darbą sudaro 7 dalys: įvadas, produkto kūrimo ir įvedimo į rinką teorija, profesionalioms virtuvėms pritaikytos įrangos pramonės analizė, tyrimo rezultatai, pasiūlytas kūrimo ir rinkodaros modelis, skirtas ekspozicinės lentynos paleidimui į rinką, išvados ir pasiūlymai, literatūros sąrašas.</p> <p>Darbo apimtis – 76 p. teksto be priedų, 21 iliustr., 6 lent., 51 bibliografiniai šaltiniai.</p>
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Prasminiai žodžiai: Produktas, kūrimas, įvedimas, profesionali virtuvinė įranga, komercinė virtuvė, ekspozicinė lentyna, faktoriai, rinką.

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INTRODUCTION

The relevance of the research and the problem under consideration. Nowadays there is a very high level of competition in the market, as well as the unpredictability of client wants, market trends are changing at a quick pace, resulting in a shorter product life cycle. Companies should be constantly aware of potential market dangers, various risks must be detected in advance, and companies must pay attention to market changes as well as consumer behaviour and feedback in order to retain their product on the market, if at all possible. New product development is a time-consuming and expensive procedure, yet without it, no firm can succeed. The first stage is to gain a thorough knowledge of the users' wants and expectations, as well as to generate new ideas and ensure that the functional groups collaborate closely to meet the users' needs. As it was mentioned, companies strive to avoid product failure early in the development process to produce a new product or enhance an old one. Developing a profitable and innovative product includes the usage of widely utilized and commonly used new product development strategies. As product innovations are such an important component of every business, more attention should be devoted to it. This is significant for businesses since it assists in increasing competitiveness and maintaining or expanding current positions in domestic and international marketplaces. Through constantly inspecting and recording already completed tasks, a model based on traditional product development processes may not only help assure higher product quality, but also lower the chance of mistakes or fails in the complicated and lengthy process of producing goods.

Research object. Processes and aspects of developing and launching to the market newly designed shelf for serving lines which is made from stainless steel to various commercial kitchens.

Aim of the work. Develop and provide a model on a shelf for serving lines launching to the market based on the analysis of scientific literature, explored the commercial kitchens industry and results of empirical research.

Work tasks:

1. Perform a theoretical study of existing product development basics, models and their launching to market methods.
2. Explore the commercial kitchen industry and evaluate already existing shelves for serving lines in market.
3. Conduct an empirical study to identify the most important consumer demands, company organizational processes, and the factors that influence product development and launching to the market success.

4. Develop and define a model that is adapted to the shelf of serving lines for successful development and launching to the commercial kitchens market.

Applied research methods:

1. In the theoretical part, the analysis of scientific literature sources and new product development models is performed in order to get a better understanding of the topic and determine the level of research that is needed.
2. Empirical research that consists of two questionnaires: one for customers and the other for professional kitchen equipment manufacturers and correlation analysis its results.
3. It is being proposed the model for the development and introduction to the market of shelf for serving lines in the commercial kitchen industry which is based on the analyzed scientific literature, the information gathered during the empirical research and the results obtained during the comparative and correlation analyses.

Practical significance of the final work. From a scientific point of view, the study is significant in that it presents a guidance type hybrid-type model based on a review of scientific literature, an analysis of industry trends, and empirical research findings. The goal of the model is to facilitate the development and introduction of a specific product in the commercial kitchens market straightforward. The novelty of such a model is that it is adjustable and can be modified and adapted to any sort of business in many cases.

Approbation of work. It was presented a report “Shelf for serving lines development and launching to the market” at the 25th Lithuanian Junior Researchers Conference "Science-Future of Lithuania" on April 29, 2022.

1. THE THEORY OF PRODUCT DESIGN DEVELOPMENT AND IT LAUNCHING TO THE MARKET

Theoretical study can provide a rational foundation for subsequent empirical research by analyzing scientific literature sources. The analysis of scientific literature sources is performed in this, the first stage of the research, by looking at scientific works and articles on the following topics: the concept of design product, new product development processes, new product development models and strategies, determinants and emerging barriers to product development and commercialization success.

Furthermore, the majority of theoretical concerns surrounding the introduction of a new design product to the market are linked to theoretical features of the introduction of a new product to the market, as identified during the master's thesis preparation. The purpose is to link the theoretical content to a specific goal in a methodical way.

1.1. Definition of new design products

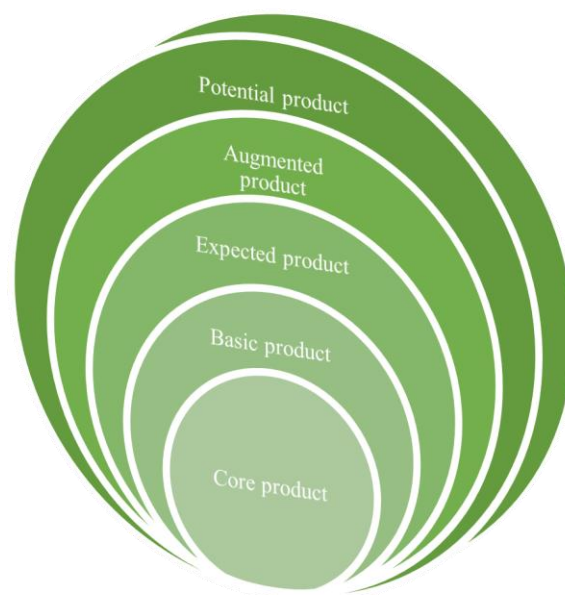
To start with, various innovations, new designs for items, products are being implemented all the time and one of the main tasks of this sphere specialists to be the ones who find a new concept for it. The first task is to understand for what that word “product” stands for and what it could mean looking from the marketing point of view. Mostly people tend to think that product is something just tangible, but it could be anything that can be offered to a market in purpose to get some attention, for acquisition, use, or consumption that may satisfy a desire or need. Looking for the bigger picture, products also include events, services, properties, places, persons, organizations, information, and ideas or also it could be a mixture of these (Kotler & Armstrong, 2017).

Products is not just a tangible but it either has an abstract value. It seeks to meet the needs of a consumer and satisfaction. For this reason, foreign authors states and emphasizes five levels of product that can be identified and developed. The satisfaction of customer of product could be accomplished when the value of it is equal or even higher to the expected one. Just because of those five product levels are seen from the perception of the consumer. Five levels of product have customer-value hierarchy because at each level it is attached more consumer value (Kotler & Lane, 2012):

- **Core benefit (product)** – is a product, service with all substantial benefits that the customer gets by purchasing the product. At this level, the consumption of the product is

essential, and the consumer buys it because it is a solution of the problem or because of lack but not because of a satisfaction.

- Secondly, the core benefit turns into a **basic product**. At this level product contains only those qualities, attributes which are required for its functioning. In the other words, it is a product that can provide the essential benefits required by the consumer. It is daily needs, or the benefits expected from the purchased product from the consumer point of view.
- **Expected product** - the version of product consists of all aspects that buyers expect when purchasing the product. After the first and second levels in this one it is given a belief to consumer to expect additional benefits or product features.
- **Augmented product** – this level gives product its distinctiveness from other objects, and it exceeds customer expectations. Additional features, benefits, attributes give product uniqueness which helps to gain a competitive advantage in market against competitors which offer similar product. Add to that, at this level brand positioning are included in the product development.
- At the fifth level is presented **potential product** concept. It includes growth, improvements and all possible transformations that could be offered to the product development in the future. That is the main issue for business to ensure future customer loyalty. That is why companies always try to satisfy customer and distinguish from their opponents.



1-1 fig. Five product levels

Source: prepared by author, based on Kotler & Lane (2012)

This form of product segmentation offers companies a validated method of structuring their product portfolio to reach different consumers. This makes a deeper study of the viability of products and needs of consumers in an organized way. In this way, the sales processes of an organization may be matched with their customer expectations and help concentrate other operating processes around their clients, such as design, planning of production, marketing, etc.

Furthermore, it is important to consider design as a word that defines both a process and a result. That the process of converting ideas and thoughts into real objects. The term design can be found in wide variety of operations, such as the new design of organization or its culture, the design of the home building project or the design of business plan (Dumas, 2002). Design is a clearly vital process in the construction industry, it turns out ideas, needs and expectations into a physical model of process, technical documentations, drawings. Eventually this phase determines up to 70 % of the cost of the finished product (Bibby & Bouchlaghem, 2003).

Eventually, it is very important to understand product and design words separately before speaking about the whole product design because it is frequently mistaken as a term. Usually even the managers of companies have an attitude that well product design stands just for aesthetically appealing appearance and trendiness, but it means a lot more than that. Product design is a multidisciplinary phase that typically includes technical and market analysis, designing ideas concept, model creation, analyzing and improving prototype, testing and development of final product, as well as refining after launch (Murray, 2005).

Pointing out the development of product design, to increase quality, efficiency or attractiveness, product design may be the adoption of entirely new products or may involve the enhancement of existing designs. However, the use of emerging technology to produce innovative products does not generally appear to be implemented in product design. Design specifically is about to introduce the improvements of functions and concepts.

However, product design not necessarily tends to adopt use of new technologies to create novel products. Design mainly deals with introduction of changes to functions and concepts (Patil, Sirsikar & Gholap, 2017).

1.2. Design process and development theory

Nowadays the market a full of various products and services and that is why companies are under pressure to adapt and develop their products with various innovations and launch it to the market as fast as possible for the lower price. But this process requires go through some steps of product conceptualization to satisfy the market imperatives. The foundation of manufacturing

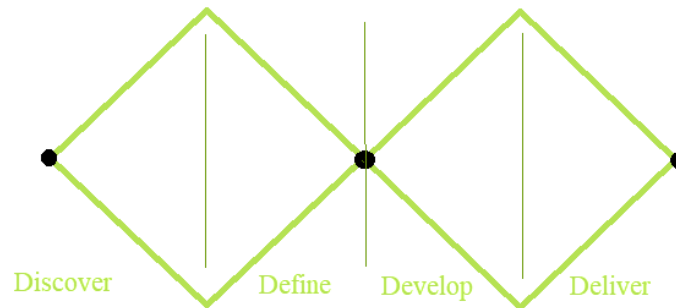
starts from identifying the need of the product by consumers and market demand. From idea's generation to the final product there is two main cycles: design process and the product development process. Those two processes mainly go side by side (Patil, Sirsikar & Gholap, 2017).

With iterative input and recurring feedback from development team members, management, sales and marketing managers and manufacturing staff, the product design and development process are a continuum of constant change over time. Depending on such aspects like type of the company, product types, location of company, etc. there is different strategies which are used by companies to attract new customers and overtake competitors (Patil, Sirsikar & Gholap, 2017).

The Design Council which is an advisor of UK Government on design in 2005 developed a simple graphical way of describing the design process which is called the "double diamond". That is a simple way of showing the steps through which some companies go by developing their products. It maps divergent and convergent stages of design process, and it is divided into four different phases (Eleven lessons..., 2007):

- The double diamond model starts **discovery** phase. That means the start of the project what requires to make research by gathering information from as most resources as possible, looking for inspiration, identifying the needs of the customers and whole market and generating new thoughts and ideas. The main methods that are used in this stage include: market research, managing information, design research groups.
- **Define** phase stands for trying to recognize and understand more clearly all the information gathered on the discovery phase. The designers try to identify all the possibilities of new ideas and what could be successful. The key activities involved in this stage are project development, project management, project sign-off.
- The third quarter is about **developing**. At this level all the people responsible people for product try find solutions for various failures. Also, the prototype is made and being tested all the time through this stage. Designers improving their ideas and products depending on this process of trial and error. Activities in this stage: brainstorming, prototyping, visual management, multi-disciplinary working, development methods, testing.

- **Deliver** is the last part of double diamond, and it is about launching finalizing and final product to the market. The key activities in this stage: final testing, approval and launch, targets, evaluation and feedback loops.



1-2 fig. The 'double diamond' design process mode

Source: prepared by author, based on Eleven lessons..., (2007)

The design process helps to keep product in the right way through whole development process and that production continues on schedule and achieves all the necessary milestones. It also contributes finding a problem and its roots and find a suitable solution for it, increasing efficiency of whole design and development process by implementing rules of process, knowing what important is to keep staff more focused, helps track the progression of the processes.

Mostly, all the designing and developing process consist of all the procedures mentioned in double diamond method. Just the naming and the numbers of steps could be different, but the main idea and final goal is the same. In order to achieve a suitable solution, the steps within the design process can be revisited several times. For instance, it could take 5 steps which are called research, definition, idea generation, design development, evaluation (Ledbury, 2018).

Professor Paul Rodgers and Professor Alex Milton published book called *Research methods for product design* in which are presented over 50 design research methods with very informative visualizations and simply explained theory. The submitted design process in the book takes 6 steps such as opportunity identification, brief and specification, concept design, design development, detail design and production. Product design undertakes an iterative series of cycles of steps as a product concept moves through the design process. Each cycle is composed of five levels: understand, observe, visualize, review, and implement. Every design process step goes through these levels to achieve and deeply analyze of the product design. The design team could go forward from one to the next design process step if the feedback is positive of all levels. Otherwise, the design team should revisit design steps again. (Rodgers & Milton, 2013).

There are exact methods which are commonly used in the product design cycle, and it could be divided into five levels (Ghimisi & Nicula, 2014).

1.1 table. Design methods used in the innovation cycle

Stages	Methods
Identifying the problem	Pareto Law Diagrams cause – effect (Ishikawa) Quality function deployment (QFD)
Sating the problem	Octopus (Pieuvre) Functional block diagrams (BDF) Structural analysis (SADT)
Development of concepts	Brainstorming Tree Diagrams
Evaluation	Functional Analysis Matrix diagram Multi – criteria evaluation
Implementation	GANTT PERT Chart

Source: prepared by author, based on Ghimisi & Nicula (2014)

The most efficient methods mentioned in 1.1 table are for the first two ant the last one. The research methods which theories and principles are focused on psychology are less systematic and non-reproducible. Although the methods for the third and fourth stages are not that efficient as for the other design process levels, but it is still very powerful tools which help companies looking for perpetual innovation, but the whole sense of succeed at these levels is about the concept of an idea, and none of these methods provide a solution to this problem (Ghimisi & Nicula, 2014).

1.3. The process of developing new products

The process of bringing an original product concept to market is known as new product development (Sutton, 2021). It is a time-consuming and costly process but without it any of businesses cannot be successful. The first step is to have a solid understanding of the users' needs and expectations, as well as to produce new ideas and guarantee that the functional groups work closely together to satisfy the users' demands. Although the process of developing products varies by sector, it may be divided into 5 or even 13 steps. Ideation, research, planning, prototype, sourcing, pricing, and commercialization are the core segments of any model of product development. The eight most usual phases are detailed further below (Kotler & Keller, 2012).

- **Generating ideas.** The hunt for fresh product ideas is the first step in the development process. Ideas originate from a variety of sources: employees, rivals, members of the

supply chain, and consumers (Duber-Smith & Black, 2012). Businesses produce ideas for new product development from internal sources such as the Research and Development department, external sources such as consumers and rivals, and other sources such as seminars, universities, investors, etc. (Gürbüz, 2018). According to Gürbüz (2018) it was made a survey which consisted of 750 CEOs from worldwide companies and it showed that 41 percent of new product ideas were developed by workers, 36 percent by consumers, and just 14 percent by the Research and Development department.

- **Idea Screening.** At this stage, all of the ideas which were generated are being screened and evaluated in order to reduce the number of ideas to a manageable number, including the most useful ones (Gürbüz, 2018). Internal feasibility (Are we able to accomplish it?) and external opportunity (Does just because we can do it mean we should do it?) should be used to filter ideas (Duber-Smith & Black, 2012).
- **Concept development and testing.** Attractive ideas must be turned into product concepts that can be tested. A product concept is a potential product that a corporation might sell to the market. A product concept is an expanded version of an idea described in consumer terms, implying that product ideas will be presented in a thorough and relevant manner (Kotler & Keller, 2012). The created product concepts will then be subjected to concept testing. During this test, selected consumer groups' ideas on new product concepts will be collected, and the product concept with the highest score will be chosen as a new product to be created (Gürbüz, 2018). Also, according to an article of Duber-Smith and Black (2012), after evaluating a product concept, it is prudent to perform market research which is commonly done through focus groups and surveys, which may be conducted in a variety of methods.
- **Marketing strategy development.** Following a successful idea test, the new-product manager will create a preliminary three-part strategy plan for bringing the new product to market. The first section explains the size, structure, and behavior of the target market, as well as the projected product positioning, sales, market share, and profit targets for the first few years. The second section describes the intended pricing, distribution method, and marketing budget for the first year. The third section of the marketing strategy plan includes the long-term sales and profit objectives, as well as the marketing-mix strategy throughout time (Kotler & Keller, 2012).
- **Business analysis.** After all previous steps, management may assess the proposal's commercial attractiveness. To establish if sales, cost, and profit estimates meet corporate objectives, management must produce sales, cost, and profit projections. If

they do, the concept will be advanced to the development stage (Kotler & Keller, 2012). Gürbüz (2018) proposes to divide the development of business strategy into two stages: estimating total sales estimating costs and profits. The first is the total of expected first-time sales, replacement sales, and repeat sales. Methods for estimating sales vary depending on whether the product is purchased only once, occasionally, or frequently. The second are the expenses projected by the departments of Research and Development, manufacturing, marketing, and finance (Kotler & Keller, 2012).

- **Product development.** A collection of approaches known as quality function deployment aids in the task of turning target customer requirements into a functional prototype. The process converts a list of desirable consumer characteristics derived from market research into a list of technical qualities that engineers may utilize (Kotler & Keller, 2012). Afterwards, samples will be evaluated to determine whether the new product concept is appealing to buyers. Several tests are performed on samples to ensure the safety, attractiveness, and efficacy of the new product concept. As a result, selecting the best sample may take some time throughout the testing procedure (Gürbüz, 2018).
- **Market testing.** After management is pleased with the product's aesthetic and functional performance, it is ready to be branded with a name, logo, and packaging and tested in the market (Kotler & Keller, 2012). Although not every organization does market research, but it can assist businesses avoid the consequences of ineffective trade methods. Marketing tests offer firms with an appropriate marketing strategy for new product concepts that will be commercialized at a later point (Gürbüz, 2018).
- **Commercialization.** The first step at this stage is to determine when the new product concept will be launched or offered to the market. The next step would be deciding the scale in which new product concept will be launched to the market. There is local scale – size of the city, medium scale – like the size of a region or large scale which would be like the national or worldwide market (Gürbüz, 2018). Also, it is crucially important to choose the right target market and how the product would be introduced in that market (Kotler & Keller, 2012).

1.4. Basic knowledge about launching product to the market

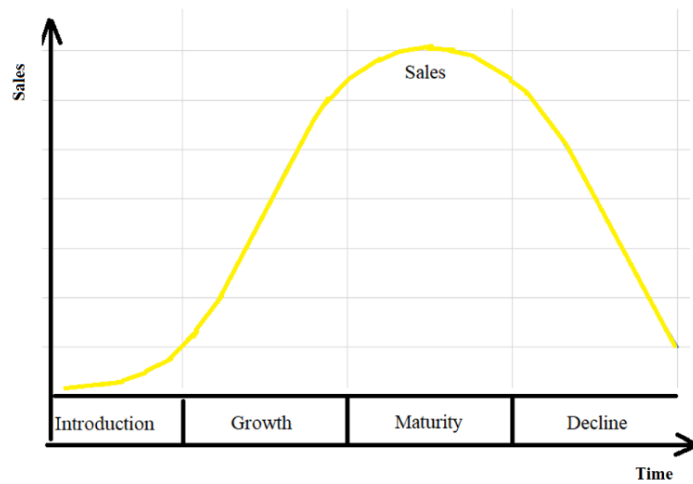
After all product design and development process time comes to for launching period, all the management hopes their product will be long lasting. The main purpose of the company is earning a decent profit and cover all the effort, fails and risks that went into launching it. Every product has its life cycle, and every company knows it but the difference about every product is that no one knows

the shape and the length of product life cycle in advance. The positioning and distinction policy of an organization must adjust as it does product, market and competitors are evolving over the life of the product. In general, there is four states about product life cycle (Kotler & Armstrong, 2017, Kotler & Keller, 2012):

1. Products have a limited life.
2. Brand purchases go through various levels, each posing different obstacles, opportunities, and challenges to the vendor.
3. Profits rise and fall at all points of the life cycle of the commodity.
4. Products include a range of marketing, economical, manufacturing, buying and human resource techniques at each point of the life cycle.

From a marketing viewpoint, the product life cycle is historically regarded as containing four distinct stages: introduction, growth, maturity, and decline (Steinhardt, 2017):

- At the **introductory** stage, the product is presented to the market through a concentrated and intensive marketing campaign aimed at creating a consistent brand and fostering full visibility. Depending on introduction of the project the numbers of trail or impulse sales could rise very rapidly or decrease.
- **Growth** is about customers interest in the product which is marked by a rise in sales and appearance of competitors. The stage of development is also marked by continued selling efforts on the part of the vendor with customers engaging in repeated patterns of purchasing behavior.
- The level of **maturity** is apparent as rivals start to exit the market, the pace of sales is drastically decreased, and the volume of sales is constant. At this stage, mainly loyal customers are interest of purchasing product.
- **Decline** – the earnings demonstrate a downward drift and the profits are reduced.



1-3 fig. Product life cycle model stages

Source: prepared by author, based on Steinhardt (2017)

Moreover, the life-cycle periods of a product are not necessarily an unbreakable rule, often it happens that the product does not hit the stage of growth and has to exit the market as soon as it reaches the market, sometimes there are situations where the product stays in maturity for a long time. As it appears that the product could meet the possibility of extinction, there are some ways how to return it back to growth stage by new promotion strategies.

Nowadays trends in market are changing very rapidly because of big competition in market, unstable customers' needs and it results in a shorter product life cycle. Companies must always be aware about potential hazards in the market, various risks should be identified in advance and that is the reason why enterprises have to pay attention to market developments and customers behavior and feedback to keep their product in the market if it is possible.

1.5. Relevance of design research and its influence on product life cycle

Design research approaches promote the design and development of advanced or innovative technologies by helping to deliver important insights, data, experience, and information by analyzing, capturing, and evaluating how customers interact with the environment in question. The main objects on which the research is focused is the front end of the design process, trying to the needs and what is the real desires of the final's product consumers. During the entire product design process, manufactures, designers, engineers are gradually understanding the value of comprehensive analysis and indeed assessing the entire life cycle of a product, from researching and evaluating the environmental, social and cultural effect of a given product from its creation and development throughout its lifespan to its final disposal and recycling (Rodgers & Milton, 2013).

If the main purpose of product designers is to minimize or even avoid any environmental effects on product, then it is necessary to have a clear vision of that product design life cycle – how it is produced, manufactured, transported, packaged, used and disposed of. It could be very useful because as usually theory is different from practice and the fact of the life of certain products does not follow the exact route which was considered during the research phase of design, and alternate eventualities should be considered. In order to realize what is weakest point of product and understand where the greatest improvements of product should lie it is crucially important to establish the exact environmental of upcoming product and its impacts on it and why they are caused by (Rodgers & Milton, 2013).

1.6. Models of developing a product

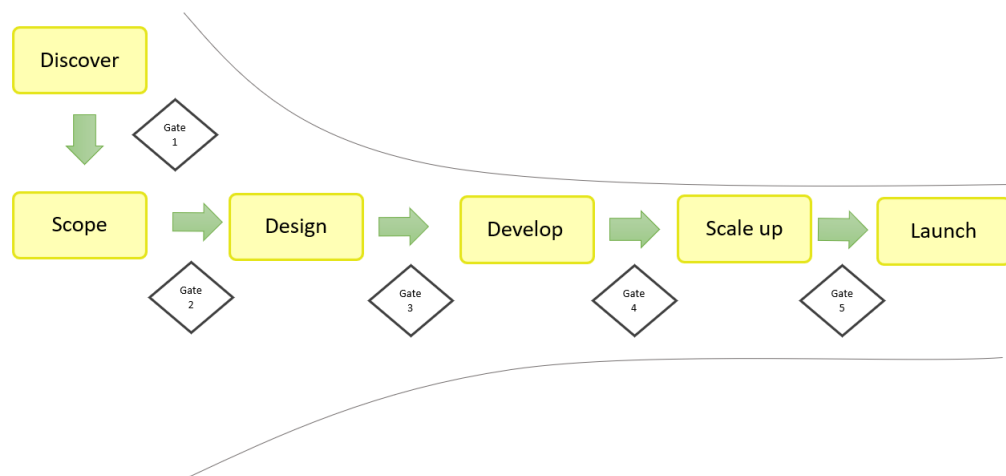
Product development is a complex model process which converts needs into commercial and technical solutions. It is called complex because it requires lots of technical issues to accomplish an idea of product. Product development requires lots of people who would be looking for various engineering solutions and management issues. Management research focuses on organizational difficulties that arise throughout product development, while engineers typically focus on formal structures involved in engineering design decisions (Smith & Morrow, 1999).

Technology-based businesses rely heavily on product development. The effectiveness of product development initiatives can determine the long-term viability of companies and economies. There are several models of product development. Each product development process is distinct, yet they all have certain characteristics or aspects. Process modeling has numerous goals, including learning about the process and providing strategies of the ways how to control it (Smith & Morrow, 1999).

“Design thinking” product development model is a human-centered technique that combines design, social, engineering, and business skills. To create breakthrough goods, systems, and services, it combines an end-user emphasis with interdisciplinary cooperation and iterative improvement. Through quick conceptual prototyping, design thinking provides a lively interactive environment that fosters learning. Design thinking is usually shown as a five-stage iterative process: need finding and benchmarking, body storm, prototype, test, and (re)define the problem. Need finding and benchmarking is about understanding the users, its behavior, culture and comparing them, body storm is about formulating an idea which would be attractive for consumers, prototyping means building an idea into a realistic model which follows testing stage that help learn more about the product and how it could be even more improved. The last stage is (re)define the problem tells that design never ends and that it is necessary to work on improvements of product constantly. The standard form of this

model looks very clear and simply because every stage goes one after another but in reality it is more complicated and complex. While the phases are straightforward, the adaptive knowledge is necessary to select the proper inflection points and next step is a higher-order cognitive activity that takes experience and may be learned (Plattner, Meinel & Leifer, 2010).

Stage – Gate model was originally founded by Stage-Gate International's co-founder Robert Cooper. This type of product development model is a value creating business process and risk model for turning an organization's finest new ideas into winning new products rapidly and profitably. The Stage-Gate method is founded on the premise that product creation begins with ideas and concludes with a successful market launch. It simplifies the very chaotic and complex process of developing a product from an idea to its launching to the market, this process put all necessary activities into smaller stages (where project's activities take place) and every stage has a gate (where business decisions such as Go/Kill are made). This method unifies pre-development efforts (customer-driven business rationale and preliminary feasibility), development activities (technical, marketing, and operations), and commercialization activities (market launch and post-launch learning) into a single, comprehensive business process (Edgett, 2018).



1-4 fig. Stage – Gate model by R. Cooper

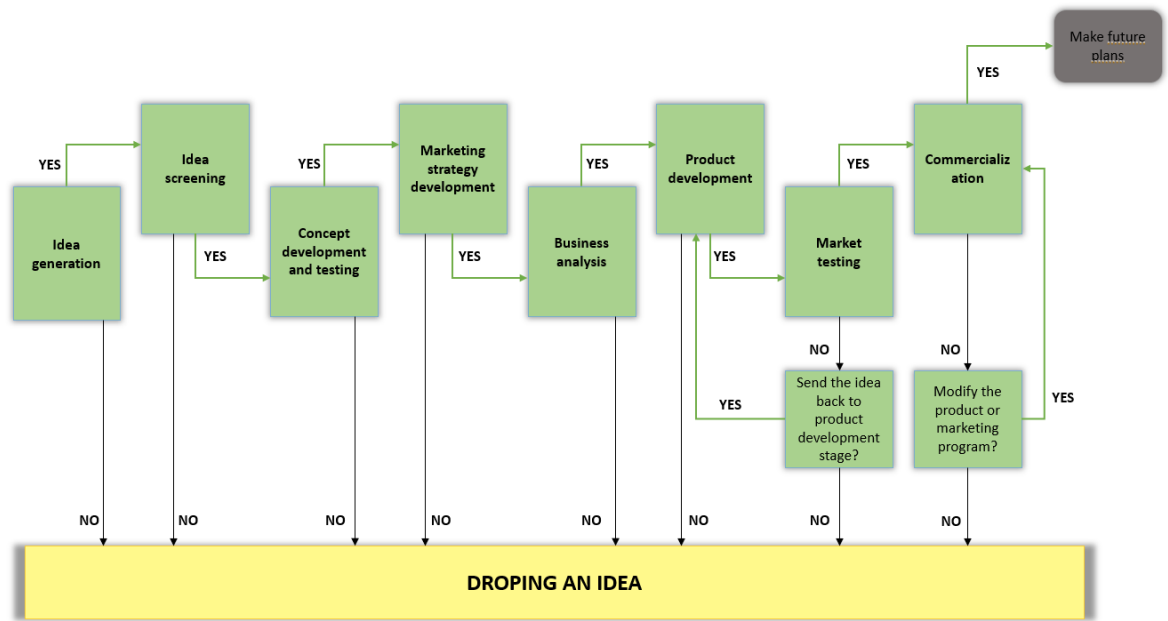
Source: prepared by author, based on Edgett (2018)

Typical Stage-Gate model consists of 5 stages such as scope, design, develop, scale up and launch. Each stage has activities within it which are based on gathering information of the specific field and it helps to reduce possibility to fail in the further stages. The output of this comprehensive analysis is a set of deliverables that are used in decision-making sessions (Gates) (Edgett, 2018):

- **Scope** (stage 1) – preliminary inquiry and scoping of the project may be done quickly and at a low cost. The majority of the research is done on a computer.
- **Design** (stage 2) – primary research (customer, market, and technical) that leads to a business case that comprises product and project definitions, project rationale, and the suggested development strategy.
- **Develop** (stage 3) – the real detailed design and development of the new product, as well as the design of the operations or manufacturing process that will be necessary for full-scale manufacturing in the future.
- **Scale up** (stage 4) – the seek to verify and confirm the proposed newly designed product by testing it in a lab, plant and marketplace.
- **Launch** (stage 5) – the part of commercialization which refers to the beginning of large-scale operations, such as manufacturing, marketing and sales.

A project goes through a gate before each stage, when it is decided whether to continue investing in it (a Go/Kill choice). These are quality-control checkpoints with three objectives: assure execution quality, analyze business justification, and approve the project plan and resources (Edgett, 2018).

New product development decision process model by Ph. Kotler and Keller consists of 8 stages like idea generation (is the idea worth considering?), idea screening (is the idea compatible with objectives, strategies and resources?), concept development and screening (can we find good concept that consumers would like to try?), marketing strategy development (can we find cost-effective affordable marketing strategy?), business analysis (will this product meet our profit goal?), product development (do we have a product that is technically and commercially reliable?), test marketing (have product met expectations?) and commercialization (are product sales meeting expectations?). As it could be seen every level has a question and if an answer to that question is NO it means that it is not worth to work on that idea anymore and it has to be rejected. If an answer is YES the development model goes consecutively and eventually in the case of success it would lay to future plans (Kotler & Keller, 2012).



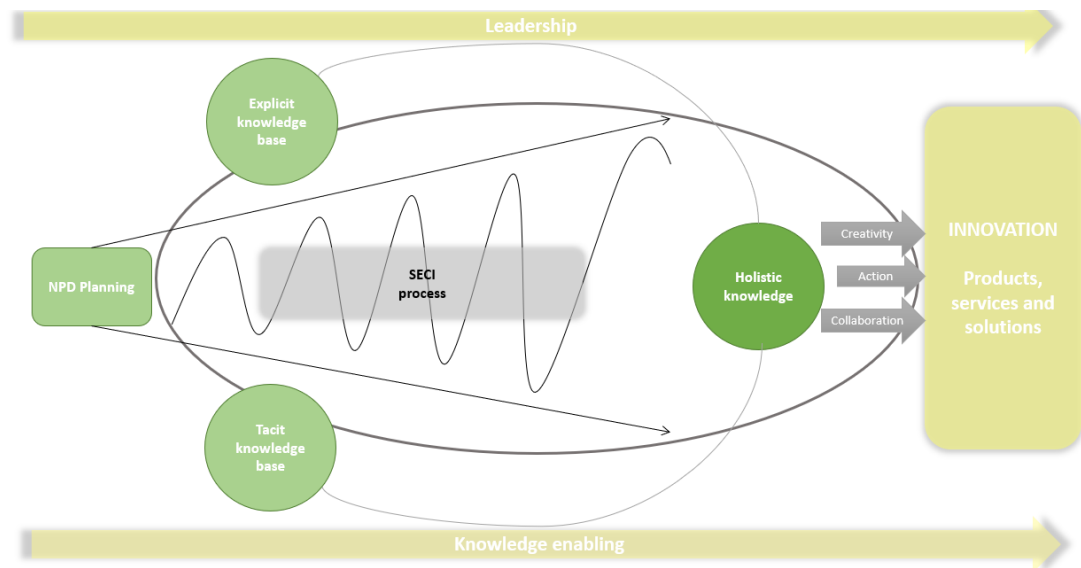
1-5 fig. New product development decision process model

Source: prepared by author, based on Kotler & Keller (2012)

Many businesses have many projects running in parallel, each at a distinct level of the process. Consider the procedure in the following way, let it say that a significant number of new-product ideas and concepts are first whittled down to a few high-potential products that are eventually launched to the market. However, the procedure is not usually followed in a straight line. Many companies adopt a spiral development approach, which emphasizes the need of going back to a previous stage to improve before moving forward (Kotler & Keller, 2012).

Knowledge-based product development. The production and transmission of information, as well as collaboration between organizations, are critical to the success of a project when introducing new goods or entering new markets. Knowledge is frequently cited as a major source of development.

Knowledge may be recognized as a key aspect in the success of product development, according to the company's perspective, which regards knowledge and competences as a fundamental foundation for the actions and competencies of organizations. Much of the essential knowledge for developing new products, according to Kohlbacher (2008), is implicit and discoverable outside the company, particularly regarding consumers, other stakeholders, rivals, suppliers, and partners. According to this model marketing – and management in general – must become knowledge-based, as must all marketing processes since knowledge has become a crucial source of competitive advantage.



1-6 fig. Knowledge-based product development model

Source: prepared by author, based on Kohlbacher (2018)

The generic development model has six stages. It starts with a phase of planning, which serves as a bridge between advanced research and activities of development. The project's mission statement is the output of the planning phase, and it is the input, which is necessary to begin the idea development phase, which is crucially important for the development team because it works as a guideline. The product launch marks the end of the product development process when the product is made available for purchase in the market. The generic development process is divided into six stages (Ulrich & Eppinger, 2015):

- **Planning** – also known as “phase zero” because it occurs before project approval and the start of actual product development process. The very first beginning of this phase begins with the identification of opportunities, which is directed by business strategy, as well as the evaluation of technological advancements and market goals.
- **Concept development** - the target market's requirements are determined, different product concepts are developed and assessed. Eventually one or a few concepts of product are chosen for future development and testing.
- **System-Level design** – covers the breakdown of the product into subsystems and components, the preliminary design of essential components, and the assignment of detail design responsibilities to both internal and external resources. During this phase, initial designs for the manufacturing system and final assembly are frequently established as well.
- **Detail design** – covers clarification of the exact geometry, materials, and tolerances of all unique pieces in the product, as well as the identification of any standard parts to be obtained

from vendors. For each item to be fabricated inside the manufacturing system, a process plan is prepared, and tooling is created.

- **Testing and refinement** – involve the creation and testing of several prototype versions of the product.
- **Production Ramp-up** – during this step, the product is created utilizing the planned manufacturing system. The ramp-up is used to train the staff and iron out any lingering issues with the manufacturing processes. Products manufactured during the ramp-up process are occasionally provided to favoured clients and are thoroughly inspected for any residual faults.

Agile. Improved productivity, flexibility, increased customer interaction, and responsiveness to changes in user needs are all characteristics of agile-based methodologies (Matharu, Misha, Singh & Upadhyay, 2015). Agile is a set of values and principles that helps organizations to achieve their goals. It is made up of four basic values and 12 principles. 4 Values of Agile principle would be (4 Values and 12 Principles..., 2021):

1. Individuals and interactions over processes and tools
2. Working product over comprehensive documentation
3. Customer collaboration over contract negotiation
4. Responding to change over following a plan

All of four mentioned core values comprises such principles like customer satisfaction is achieved by consistent product delivery, accept changing requirements even late in the project's development, deliver functional software regularly, throughout the project, businesspeople and developers must collaborate on a regular basis, build initiatives around motivated people, face-to-face communication is the most efficient and effective way of transmitting information to and within a development team, the key indicator of progress is functional software, agile procedures encourage long-term growth, continuous focus on technical excellence and smart design increases agility, simplicity, the skill of doing as little work as possible, is crucial, self-organizing teams produce the finest architectures, requirements, and designs, the team reflects on how to become more effective at regular intervals, then adjusts and adapts its behaviour accordingly (Agile Principles, n.d.).

Moreover, Scrum is one of the most widely utilized Agile approaches, and it's also popular in the manufacturing industry. Scrum is a tool that assists individuals, teams, and organizations in creating value by customizing solutions to challenging situations (Schwaber & Sutherland, 2020). The following are the primary components of Scrum, according to Cooper and Sommer (2018):

- Sprint planning meeting – the development team meets at the start of each sprint to agree on what it can accomplish in the sprint and to build a work plan.
- Daily stand-up meetings – The team meets to verify that plans are progressing in the direction of the organization's goals, assessing what has been accomplished in the past 24 hours and what should be accomplished in the next 24, and resolving any difficulties that may develop.
- Demo – product increments or new features built during the sprint are shown and verified with stakeholders, including management and consumers, at the end of each sprint.
- Retrospective meeting – the team meets at the end of each sprint to discuss how team members collaborated and how the team might improve.

Manufacturing organizations must first grasp the fundamental concepts of Agile in order to properly execute it.

Agile/Stage-Gate Hybrids model. The implementation of Scrum does not necessitate the elimination of Stage-Gate. Scrum can really be combined with Stage-Gate (Cooper 2014), resulting in an Agile/Stage-Gate hybrid that combines the best of both approaches. Cooper and Sommer (2018) claim that the rate of accelerating markets and technical change has reached a tipping point, with product life cycles rising to the point that standard new product development processes are no longer effective. In addition to that, Cooper (2014) argued that hybrid Agile/Stage-Gate techniques should outperform traditional Stage-Gate procedures and it is the reason why firms use Agile/StageGate hybrids to build new products.

Sommer et al. (2015) studied seven organizations, two of which wanted to better their new product development process by updating and enhancing an existing Stage-Gate process, while the other five included the Agile technique Scrum into the traditional stage model. Although the type and aim of the modifications adopted by the firms studied differed. All of the companies in the case improved their new product development processes. The study identifies the following benefits of the hybrid model:

- Connection between processes and instruments that is more dynamic and effective
- Enhanced team productivity and prioritization
- Increased adaptability
- Increased motivation and morale

Whereas the companies also faced such problems of Agile/StageGate hybrid model like challenges in establishing an Agile culture in the company, insufficient knowledge management at

all functional levels, insufficient resource allocation, a lack of consistency between the reward system and approach and a lot of bureaucracy in the project documentation are all obstacles to projects.

Moreover, an article of Cooper and Sommer (2016) clarified some more benefits from a case example of a toy company Lego on a hybrid model implementation. The advantages of this hybrid approach include a greater integration of customer voice, quicker and more adaptable reaction to changing consumer demands, enhanced the communication of team, increased development efficiency, and a shorter time to market. All the positive aspects to the project resulting in the introduction of this extremely successful and innovative new product only a year later. After a couple of years Cooper and Sommer (2018) examined the experiences of six organizations that used hybrid Agile-Stage-Gate product development frameworks. Before using hybrid models, all the organizations studied employed the classic Stage-Gate system. The companies just incorporated Agile into some or all phases in the traditional Stage-Gate procedures. Cooper and Sommer (2018) claimed that it was noticed significant increases in market and development performance, as well as faster reactions to changing market conditions and customer requests, and improved project teamwork. Besides, according to an article it showed that such methods cut product development time to market by roughly 30% and enhance productivity by up to 30% and it emphasizes how beneficial implementation of such model could be. However, companies confront several issues including distrust in management systems, difficulties in locating the resources needed by teams, difficulties in defining and developing seamless product definitions and development plans.

Furthermore, Ahmed-Kristense and Daalhuizen (2015) performed a case study of four manufacturing organizations to learn about their experiences developing new products utilizing hybrid Agile and Stage-Gate methods. To promote the evolution of the stage process, most firms have integrated Agile technologies into various levels of the Stage-Gate like conceptualization, product development, and testing phases. The advantage of using a hybrid model over Stage-Gate practice, according to the study's findings for all companies, is the ability to identify process or product areas that need to be changed more quickly, which is especially beneficial for manufacturing companies because it avoids processing costs. On the other hand, it was clearly noticed that companies have faced numerous challenges in attempting to balance Agile with Stage-Gate product. It has been shown that being flexible in the face of design changes constrained by rigid constraints, or even exchanging knowledge and information within Agile teams, is extremely challenging.

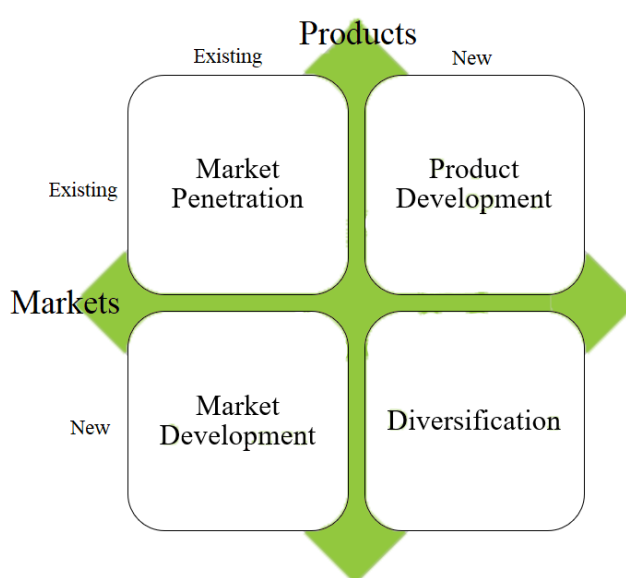
1.7. Analysis of strategic alternatives for launching a new design product

Strategy is a plan with a series of clearly steps how to achieve one more objective under conditions. It mainly consists of 4 elements: goal (purpose), resources, mood (personal desire to act),

operating principles. The first three are about the elements of the strategy, and the fourth is about combining these elements (Juozaitis, 2011).

These days the competition in the market is very aggressive and every organization has a strategy of launching its product to the market. That is reason why there is so many alternatives to for launching a new design product.

An American planning expert developed The Ansoff Matrix which is very useful strategic planning tool that ties the marketing approach of the company to its overall strategic direction. It consists of four alternative growth strategies in the form of a 2x2 table. One dimension is about “markets” existing about or about one’s ant the other dimension is applies to product existing or about new (Loredana, 2017).



1-7 fig. Ansoff Matrix

Source: prepared by author, based on Loredana (2017)

This matrix offers several marketing strategies which depends mostly on fact whether the product or the market is new or existing. The four strategies are (Achieving growth...,2021):

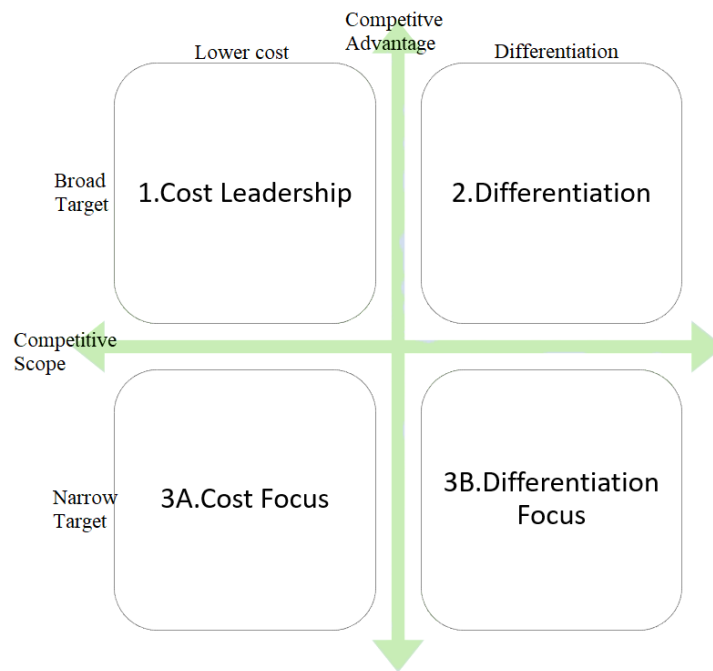
1. Market penetration – focuses on selling existing products in existing markets. The main purposes of this strategy are to maintain dominance in existing markets, to maintain or increase the market share of existing products what could be achieved by combining advertising, pricing strategy, sales promotion, etc. This type of the strategy does not require very deep market research and large investments, and it considered as a safe method when the whole business is in familiar environment.
2. Product development – means that this type of the strategy consists of developing new products for existing market. The main idea of this strategy is to find out how to meet the consumers’ needs with the new product and how to look more attractive for

the customers than the competitors. This strategy focuses on research, development and innovation of analogues, a detailed analysis of consumer needs and developments, and efforts to bring a new product to market first.

3. Market development – is about to find new markets for already existing products. In this case market research is necessary to identify where the organization must focus on. The application of different prices to different consumers or new market segments, selection of new markets geographically, new sales channels could help to achieve main goals. This type of strategy is riskier.
4. Diversification – is the riskiest strategy of all because a new product is offered for new markets. Using this strategy requires a good assessment of the potential risks and benefits of applying a diversification strategy. If successful, the strategy allows the business to establish itself and stabilize the introduction of a new design product to the market.

The other type of strategies is called generic strategies. This tool could be applicable to products or services in all sectors and to organizations of all sizes. It was developed by Michael Porter and first time described in 1985 in his book *Competitive Advantage: Creating and Sustaining Superior Performance* (Porter's Generic Strategies, n.d.).

The principle of generic strategies is that in the case when company decides to achieve a competitive advantage it must make a choice about exact type of competitive advantage and decide what type they want to get and it is very important to decide about the attaining scope size within which it will attain it. The generic strategies consist of three parts: cost leadership, differentiation, and focus. The stage of focus is subdivided into two parts: cost focus and differentiation focus (Porter, 1998).



1-8 fig. Three generic strategies

Source: prepared by author, based on Porter (1998)

Cost leadership is a strategy that allows you to stand out from the competition. Reducing costs and in that increasing profits and offering lower prices and, in that way, increasing market share are the ways main ways of achieving this strategy. Also, in applying this strategy, it is necessary to properly manage the company's resources to use as few operating costs as possible than in the activities of competitors. In this case, the mass production method is used, when production volumes are increased, and activities are expanded. This reduces the price of the product. There are products whose price is not as important to consumers, but there are consumer products whose only low price can help maintain competitiveness. There is always a risk that competitors could copy your strategy style of reducing costs and that is the reason why is very important to find new ways of reducing your products' costs (Porter, 1998).

The differentiation strategy claims that product must be unique to the consumer and larger than that offered by competitors. In this case, the focus is on the consumer. Key factors of success of this strategy are proper analyze of the market, good research, development and innovation, high quality of products, effective sales and marketing strategy. Differentiation must include tangible and intangible characteristics, as well as consumer-business relationships. To succeed with a differentiation strategy, proper segmentation of consumers is essential. It is most very important to decide whether the product will be used to reduce consumer costs or increase potential benefits (Porter's Generic Strategies, n.d.).

Organizations which prefer focus strategies concentrate on target markets create uniquely low-cost or well-specific products for the market. Since they represent consumers uniquely well in their market, they begin to create high brand loyalty with their customers. Whether the company use cost focus or differentiation focus, the key to success is to ensure adding something extra as a result of serving only targeted market (Porter's Generic Strategies, n.d.).

Also, there is some strategies based on price of the product like customer value-based pricing, good value - based pricing and value - added pricing (Kotler & Armstrong, 2017).

- **Customer value-based** pricing uses consumers' perceptions of value as the key to set the cost. That means that the marketer is unable to plan a product and selling scheme and then set the price. Price is considered along with all other variables of the marketing mix before the marketing program is developed (Kotler & Armstrong, 2017).
- **Good value – based** pricing is very popular strategies and because it is about getting great combination of price and quality of product (Kotler & Armstrong, 2017).
- **Value-added based** pricing does not entail just charging what consumers want to pay or setting low rates to meet competition. Instead, several businesses are implementing value-added pricing techniques. Instead of lowering costs in order to balance rivals, they incorporate quality, facilities and value-added products in order to distinguish their products and thereby sustain their higher prices (Kotler & Armstrong, 2017).

1.8. The importance of environmental analysis on launching product to the market

It is stated that the analysis of the environment, the development, the choice of strategy is a very important aspect, the development of the design product presented for market activities. A key factor of easier launching product process is analyses of environmental, internal and external sides, evaluating each potential strategy, various threats, weaknesses (Pulendran, Speed, & Widing, 2003).

The main and most popular methods helping to evaluate these factors are SWOT, PEST, and Porter's Five Forces.

SWOT analysis is the evaluation of company's strengths, weaknesses, opportunities, and threats. Opportunities and threats stand for external environment evaluating, and strengths and weaknesses is about internal company environment (Kotler & Lane, 2012). Brainstorming method is very efficient for this analysis especially with large group of various specialists who are responsible for specific spheres in the company. Typically, every part of this analysis has specific questions for start of the discussions which could be like (SWOT Analysis..., 2021):

- **Strengths** – What are you getting right? What specials tools do you use? What do rest of you see as your strength? Etc.

- Weakness – What will you do to improve? Where do you have fewer resources than others? What are other competitors going to see as your weaknesses? Etc.
- Opportunities – What opportunities are there for you? What patterns would you take advantage of? How can you turn your abilities into opportunities? Etc.
- Threats – What sort of threats could harm you? What are the plans of your competition? What threats do your weaknesses expose to you? Etc.

Knowing the answers to these and some other questions could help company to become more familiar with the whole situation in their environment and get a better knowledge where they should focus on.

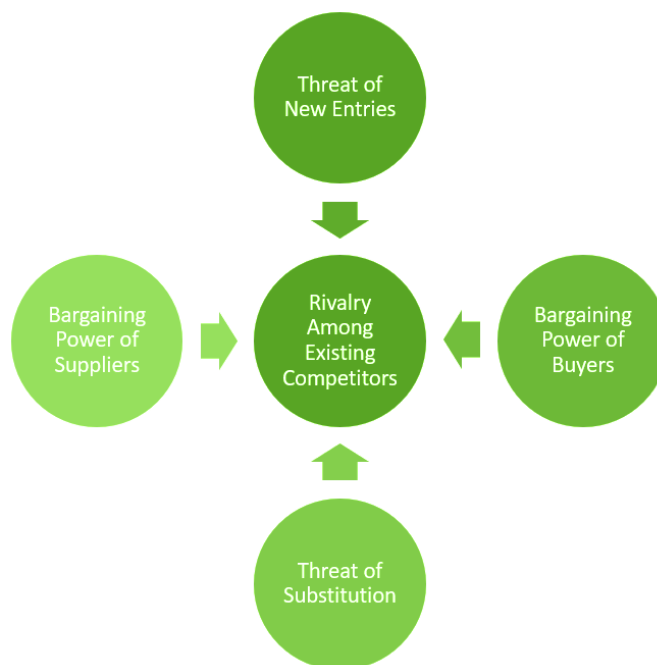
Moreover, as an additional for expanding analyses of SWOT usually it is used **PEST** (political, economic, social, technological) analysis. PEST covers political and regulatory issues, economic factors, social norms and attitudes, demographics, and developments in technology. The PEST analysis is being extended by some organizations to include legal and environmental concerns (PESTEL).

Competitive force analysis is the most critical factor, since the management of every company wants to consider how competing forces behave in the same market, and this determines the viability of the activities being produced and how the organization can choose to succeed. **Porter's Five Forces** framework is based on the perception that an organizational strategy should encounter the opportunities and threats in the organization's external setting (Bruijl, 2018).

The Porter's model of five competitive forces was developed to determine the potential of different industries. The five competitive forces help to recognize forms of competition in the market or business. The Porter's Five Forces are used by strategic analysts to understand the potential of new products and to find out if it could be profitable. The principle may also be used to define areas of strength, to strengthen vulnerabilities and to prevent errors. The five powers are as follows (Chartered Institute of Management Accountants, 2013):

- **Supplier power.** This part of production occupies a large share in the scale of product value. That is an assessment how organization is dependable on suppliers and how easy they can drive up their rates. The prices depend mostly on uniqueness of product, size and strength of supplier, possibilities of switching supplier.
- **Buyer power.** The same consumers use competitors' products. That is an assessment how customers influence price of the product. The key factors for it are the number of customers, demand of product, importance of every consumer to the organization, price difference between competitors.

- **Competitive rivalry.** The organizations which offer the same product. The number and the power of competitors in the market is the main driver. Many competitors, offering undifferentiated products and services, will reduce the attractiveness of the market.
- **Threat of substitution.** There is always a possibility that substitutes of a product or service that attract the consumer's attention. Customers could switch themselves to alternative or familiar product in response to price increase and in such a way the power and attractiveness of suppliers and market would decrease.
- **Threat of new entry.** There is always a chance that in a competitive business environment, new, better, more useful product competitors may emerge. Profitable markets draw new competitors, which reduces profitability.



1-9 fig. Porter's Five Forces

Source: prepared by author, based on Bruijl (2018)

The “Five Competitive Forces Model” proposed by Michael E. Porter can be successfully used to properly analyze the environment in which an organization is preparing to offer its product or service. Once the relevant aspects have been analyzed and identified, their potential consequences should be assessed, as well as the type of impact that the aspect may have on the organization.

1.9. Factors that influence new product launch success or failure

Project success becomes more important to an organization's business performance in times of increased global competition. Many projects, however, continue to face delays, scope adjustments, failures, and, in some cases, closure. Generally, these issues might arise as a result of ineffective project of risk management which has evolved to a critical component of effective project management (Segismundo and Cauchick Miguel, 2008). Besides, according to Segismundo and Cauchick Miguel (2008), one of the important success elements for introducing new products is the organization's attempts to reduce time-to-market. This criterion shows an organization's capacity to move fast from concepts to market-ready goods, consequently increasing its competitive advantage. However, it is crucial to remember that the influence of other elements, such as the kind of industry, the type of innovation, the complexity and scope of the project, must also be considered.

Moreover, Di Benedetto (1999) has conducted research on determining critical success criteria in the introduction of a new product. It investigated the strategic, tactical, and information-gathering operations of new product launches, as well as their influence on product success. A postal survey of Product Development and Management Association members yielded information on approximately 200 recent product launches. It was discovered that perceived better capabilities in marketing research, sales force, distribution, promotion, Research and Development, and engineering were associated to successful launches. Having cross-functional teams make crucial marketing and manufacturing considerations, as well as including logistics early in the planning process, were strategic actions that were highly associated with successful launches. Such tactical activities like advertising, high quality of selling effort, technical support, good management skills of launching services and excellent launching time were considered with the term of success. Likewise, market testing, customer feedback, advertising testing, and other information collecting approaches were highlighted as critical components of successful launches.

In a study of the influence of tactical launch decisions on the success of innovation, Garrido-Rubio and Polo-Redondo (2005) discovered characteristics that have a positive impact on this process:

- The communication expense is bigger than the competition's expenditure.
- A price skimming methodology is adopted, and this price is greater than that supplied by rivals.
- Trade shows, direct marketing, advertising by radio, television, prints, outdoor or any other type of advertising are all handled as means of communication.
- The product is marketed through extensive distribution networks.

Conversely, it is very likely to fail with the launch of a new product by not taking into account the aspects of success. Besides, Garrido-Rubio and Polo-Redondo (2005) concluded that launching a product into the market is more likely to fail:

- If the product is offered under its own brand (new brand name).
- If communication tactics aimed towards distributors are utilized - "push" strategies – and, therefore, less money is spent under this approach than the competitors.
- If a penetration pricing approach is employed, and this price is lower than one supplied by rivals.

Furthermore, it is some barriers that can be influenced into three categories, and it all complicates introducing products and services to the market. The first type is corporation-related barriers, which are tied to the own organization and hence should be easily affected by the company's management. The second type is customer-related barriers, which are more difficult to overcome. The last category is market-technical barriers, which are extremely difficult to affect by organizations seeking to effectively launch their idea to the market. The produced overview of potential barriers can provide managers with insight into which challenges may arise when their companies wish to deliver an innovative product to the market, as well as lead to fascinating ideas for future study (Tesink, 2004).

2. INDUSTRY ANALYSIS OF CUSTOMIZED EQUIPMENT FOR PROFESSIONAL KITCHENS

2.1. Analysis of the market for commercial kitchens

In 2020, the worldwide food service equipment market was estimated to be worth EUR 32.11 billion. From 2021 to 2028, it is predicted to increase at a compound annual growth rate of 5.5 percent. Some of the primary reasons driving the market include changing food consumption habits, growing demand for takeout, and the expanding hospitality industry. Besides, rigorous consumer safety requirements, increased digitization and the demand for sustainable and eco-friendly equipment are projected to generate significant development possibilities for the market in the near future. The market has swiftly changed in response to changing customer demands for kitchen area outfitting. Changing social norms, along with technology advancements, have produced a dynamic marketplace for the equipment used in the end-use industry (Food Service ..., 2021).

2.1.1. Key market trends and regional insights

Because of the exponential expansion in the number of foodservice providers, such as quick-service restaurants and full-service restaurants, the need for commercial kitchen appliances has expanded dramatically over the years. For efficient kitchen operations, hotels and restaurants demand efficient and modern superior kitchen appliances. These businesses prefer kitchen equipment that provide high-quality services in a short period of time. Globally, the need for fast service restaurants is expanding. People are becoming increasingly used to fast food because of urbanization, which is increasing the need for quick-service restaurants. Quick-service restaurants rely heavily on commercial equipment, and it is expanding their operations because the demand of quick services restaurants still grows. The growing trend of worldwide and local quick service restaurants outlets, as well as the introduction of new quick service restaurant brands, are expected to have a beneficial influence on the commercial cooking appliances market (Commercial Kitchen ..., 2021). Over the projection period, rail, cruise, and aircraft catering is predicted to grow at the fastest compound yearly growth rate of 8.1 percent, due to the substantial increase in the tourist industry, which is likely to boost demand for commercial kitchen equipment for catering (Commercial Kitchen ..., 2020).

In 2020, Asia Pacific had the greatest revenue share, close to 35.0 percent, and is predicted to retain its market dominance during the forecast period. The need for food service equipment in the area is being driven by rapidly westernizing eating traditions and the rise of the tourist industry, notably in Singapore, Malaysia, Indonesia, and Australia. In addition, the Asia Pacific region's

increased consumption of processed foods is likely to drive up demand for these appliances. Moreover, The United States led the market in 2020 and is expected to account for about 20% of revenue by 2028. Because of the existence of well-known brands such as McDonald's, Burger King Corporation, KFC Corporation, and Starbucks Coffee Company, the United States has emerged as the main market in the food service equipment business. Besides, Government measures impacting the country's tourist sector and immigration are expected to boost the restaurant business in the near future, which should bode well for the region's deployment rate of these equipment (Food Service ..., 2021).

2.1.2. Product insights, market drivers and impact of covid-19

Refrigerators, cooking appliances, dishwashers, and other specialized equipment make up the commercial kitchen appliances industry. Cooktops and cooking ranges, ovens, and other cooking appliances make up the cooking appliance category. The refrigerator sector had the highest revenue share of more than 40% in 2019 and is predicted to expand significantly during the forecast period. Furthermore, due to rising demand for combination ovens and induction cooktops and cooking ranges, the cooking appliance market is expected to rise at a compound annual growth rate of 7.6% (Food Service ..., 2021).

Furthermore, the commercial kitchen appliances industry is capital-intensive and fragmented, with multiple competitors competing for a share of the market. With significant technical improvements, the sector is dynamic, and the players are expanding their investments in product innovation. Meiko International, Falcon Professional Kitchen L.L.C, Carrier Corporation, Rational AG and Electrolux are some of the prominent participants in the commercial kitchen appliances industry (Commercial Kitchen ..., 2021).

Moreover, the commercial kitchen appliances sector is one of the hardest-hit industries as a result of pandemic situation. The COVID-19 was first seen in China, which is a key source of raw materials for manufacturers all over the world. The epidemic of COVID-19 has had a significant impact on the hospitality industry and commercial kitchens. In order to prevent the spread of the coronavirus, which has resulted in the suspension of production facilities and the disruption of the whole global supply chain, measures such as lockdown and transit bans were implemented. This has triggered a series of events, including a global economic slowdown. Logistics and transportation services were disrupted and delayed as a result of measures taken to stop the spread of COVID-19. Due to border restrictions and extra checks and processes, the flow of kitchen equipment supplies was delayed (Commercial Kitchen ..., 2021). In addition, the hotel business provides a significant portion of the revenue for the commercial kitchen appliances market. The closure of a significant

sector of the hospitality business, such as full-service restaurants, pubs and bars, and quick-service restaurants, has affected the selling of kitchen equipment significantly (Commercial Kitchen ..., 2021). As a result of the economic effect of COVID-19, supply chain instability and weaker consumer demand are a major challenge for the large appliance business. However, possibilities in products emerge in 2021 and beyond. Furthermore, most firms tend to fit into one of three types throughout the world at the moment. Specifically, those who may not be able to withstand the financial effects of the epidemic, those who are halting all expenditures in order to weather the pandemic crisis, and those who are either extremely busy or using this opportunity to go ahead with final product development (Commercial Kitchen ..., 2021).

2.2. Market analysis of shelves for serving lines



Companies strive to avoid product failure early in the development process in order to produce a new product or enhance an old one. Developing a profitable and innovative product includes the usage of widely utilized and commonly used new product development strategies. According to research conducted by Carbonell, Munuera, and Rodriguez (2004) five critical requirements for the development of a new product were identified:





- **Strategic fit** is mostly used in the approval of new product concepts. It is carried out in the early phases of the product development process as a strategic suitability indicator, assessing the project's fit for a target market.
- The **technical feasibility** dimension is critical in the approval of the new product concept and prototype. A product's technical capabilities and the availability of technology are frequently critical variables in the performance of a new product. The ease of managing the project's complicated technological capabilities is a critical factor in the product development and testing phases since it defines the product's viability. This criterion is divided into three parts: an estimate of the entire cost of the project over time, ease of access to resources, and utilization of the company's technical capabilities.
- **Customer acceptance** dimension is concerned with whether the product satisfies customer acceptance, customer satisfaction, and product quality objectives. Throughout the development process, the client acceptability dimension is used extensively. The criterion "product quality" is connected to the dimension of client acceptance. This connection makes sense since customer acceptance is concerned with whether the quality standards are acceptable to the consumer and if the product achieves acceptable performance levels for the customer.

- **Market opportunity** dimension is largely used to approve new product concepts and keep products on the market. In the new product development process, this sort of criterion indicates the likely market potential, such as market size, market share, and market growth. It was also discovered that market potential criteria are often used to evaluate new product success/failure after market launch.
- **Financial performance** is the most important in assessing the project's potential pay-out. Payback time and discounted cash flow, which includes net present value and internal rate of return, are the two most prevalent financial criteria for new product selection and prioritizing choices. Near the conclusion of the development phase, the use of financial performance criteria is most frequent.

As it could be noticed in 2.1 table it was developed a list of firms which make comparable sorts of items and operate in Europe in order to execute a targeted and effective examination of the evaluation of rivals' shelves for serving lines. This tool is simple to use for identifying the main differences between the shelves for serving lines from each manufacturer, allowing to assess the strengths and weaknesses of competitors in the later stages of the investigation while keeping the 5 critical requirements for developing a new product in mind.

2.1 table. Comparison of existing shelves for serving lines in the market

No.	Brand (country)	Product	Features
1.	Victor(The UK)		<ul style="list-style-type: none"> • Body is made from stainless steel sheets and tubes • The lighting and temperature control elements in the shelf are installed in the shelf housing • Toughened glass sneeze screen • Heavy duty construction
2.	IDEACER(ES)		<ul style="list-style-type: none"> • Body is made from stainless steel tubes • The lighting and temperature control elements in the shelf are installed in the shelf housing • Protective tempered glass from external environment • Glass could be straight or bent position

3.	Blanco(GE)		<ul style="list-style-type: none"> • Body is made from stainless steel sheets • The width of model's leg 80 mm • shelf control panel is mounted on the facade • Protective tempered glass from external environment • Lighting and heating shelf in one
4.	Scholl(GE)		<ul style="list-style-type: none"> • Body is made from stainless steel sheets and tubes • The lighting and temperature control elements in the shelf are installed in the shelf housing • Protective tempered glass from external environment
5.	Afinox(IT)		<ul style="list-style-type: none"> • Body is made from stainless steel tubes • The lighting and temperature control elements in the shelf are installed in the shelf housing • There are 3 types of shelves: heated shelf or neutral shelf with LED lighting or neutral shelf • Heated shelf has less ergonomic and minimalistic design • Protective tempered glass from external environment could be straight or bent
6.	Diamond(BE)		<ul style="list-style-type: none"> • Body is made from stainless steel sheets and pipes • The lighting and temperature control elements in the shelf are installed in the shelf housing • There are 2 similar design types of shelves: heated shelf or neutral shelf with LED lighting • Protective tempered glass from external environment

Some designs do not have a complete display design and, as a result, fail to fulfill customer expectations and market demands. Also, it was noticed that there are two most common types of shelf designs made only from stainless steel sheets or from sheets and pipes or tubes. All of it has protective tempered glass on the top, the designs in most of the case are similar from each manufacturer for both heated and neutral with LED lighting types of shelves. The main differences between different

manufactures are the design of shelves for serving lines because some of it has much more minimalistic design than others.

Besides, it is very important to find the best design solutions for shelf of serving lines but the other crucially important aspect is to bear in mind and consider the comments of clients and expectations. It is necessary to consider various issues when thinking about shelf for serving lines because it could happen that the shelf would be too wide and do not fit on the edge of the equipment or could arise such problems like the radiated temperatures deform over time and frequently crack at the attachment points, the heated and illuminated shelf in one serving line emits light of unequal heat, the heated shelves do not support the temperatures specified by the manufacturer or even the colour of shelf could be changing because of using chemical cleaning agents.

2.3. Methodology aspects of empirical research

The aim of this research is to get better understanding of the main aspects of successfully launching to the market newly designed product by the companies which operates in manufacturing of professional kitchen equipment. Such a knowledge will be helpful of preparing the model of launching shelf for serving lines to the market.

The tasks which will need to be performed during this research:

1. Theoretical research which consists of preparing questionnaire for companies, that manufacture professional kitchen equipment, based on collecting, analyzing, and concluding information on the theoretical methods of product design development and strategies of launching product to the market.
2. Theoretical research which consists of preparing questionnaire for customers based on collecting, analyzing, and concluding information on the theoretical methods of product design development and strategies of launching product to the market.
3. Analyzing the primary data collected from both questionnaires.

The company whose perspective the locations of consumers and competitors were picked would not be named due to the necessity of confidentiality.

Research object. The research object is newly designed shelf for serving lines which is made from stainless steel to various professional kitchens of hotels, restaurants, cruises, medical care centers or any other food related organizations. There are mainly two types of shelves for serving lines: neutral (with LED lighting) or heated shelf with an option to adjust temperature. It also could have some additional features like double stages, tempered glass as the protection from external environment factors, special mounting.

The purpose of the research is to suggest a model of launching to the market newly designed shelf for serving lines. The questionnaire for the companies that also manufacture equipment from stainless steel to professional kitchens will help to understand how other companies operate. The survey for customers will help to figure it out the needs and habits of the respondents. Afterwards, it would be suggested the model that could be a successful tool of launching product to the market based on the results of both surveys.

Research instrument: questionnaires. The most common instrument of collecting primary data is questionnaire which could be shared with respondents by phone, by email or even online. This type of method enables companies learn about people's knowledge, opinions preferences, or purchasing habits simply by simply asking them.

There are many different methods to ask questions in a questionnaire. One of the type of questions are closed-ended those inquiries provide all viable responses, and participants must choose one. Multiple-choice and scale questions are examples of these types of inquiries. The other type is open-ended questions which allow to answer in respondent's own terms or express its opinion (Kotler & Armstrong, 2017). Also, a Likert Scale is another popular approach to arrange answer options. On a response scale, each item is rated using a Likert scale. Participants, for example, are asked to rate each item in response to each question. You may pose several questions as statements on this scale, and participants can pick how strongly they agree or disagree with each statement (Colosi, 2006).

Most questionnaires are being arranged for customers to get a better understanding of their knowledge, thoughts, habits and long-term relationship strengthening. The book of Paul Rodgers and Alex Milton *Product design* (2011) covers the main aspects of developing product design. It says that the design of product should give an emotion to the customer because it builds deep relations between company and its customers and that is the way how loyalty is developed. The emotion could be created by color, size, weight, materiality, etc. of product or by communicating more honestly with the customer by giving some extra information which would make the customer feel more special. By the way, the study of consumers behavior proved that questionnaire based on consumers trends, habits could help to figure it out what do exactly is needed and how they could be attracted (Thapa, 2011).

Moreover, the other types of questionnaires could be applied for better understanding of competitors. An article *Marketing planning, market orientation and business performance* by Pulendran, S., Speed, R., & Widing, R. E. (2003) in European journal of marketing reveals that the successful products start with analyzing of the environment where it will be launched. The key factors of easier launching product to the market are analyzes of environmental, internal and external sides of company like the strengths and weaknesses of company and competitors, evaluating potential strategy, various threats, etc. Also, it was analyzed some research about launching products to the

market. The questionnaires covered such aspects like what kind of methods that companies use for selling their production, limits of companies' growth, flexibility of schedules of developing and manufacturing new products, the level of companies' management, reliance on new or mainstream products, the ability of company being an innovative, the picture of company and its production through the perspective of customers (Cox, R.A., Devlin, S., & Basu, R. 2013), (Enright, S. and Cormican, K. 2003), (Jibril, A & Odua, A. 2013).

In this case, it will be prepared two questionnaires:

- Questionnaire for competitor
- Questionnaire for consumer

Both surveys will help evaluate the whole situation competitors and have a better knowledge of customers which would allow to identify successful factors of launching product to the market.

Questionnaire for competitors. The target group of the questionnaire for the competitors is companies that manufacture equipment made from stainless steel for the professional kitchens. The survey is concentrated on the industrial companies of European Union countries, Organization for Economic Co-operation and Development (OECD) members and the neighbours of Lithuania.

Most of the competitors' companies are located in the West Europe countries like Italy, Germany, the UK, France, the Netherlands, Belgium, etc. Moreover, some of the companies manufacture only standard equipment for the kitchens, some offers also non-standard solutions depending on customer needs, other concentrating their production only for one or few types of professional kitchen products. The whole field of manufacturing products that are made from stainless steel for professional kitchens is quite narrow and it is worth to evaluate the whole situation how companies operating in this area of industry.

Questionnaire for customers. Various hotels, restaurants, cruises, medical care facilities, and other food-related organizations with professional kitchens built of stainless steel are the target group of the questionnaire for customers. The survey focuses on industrial enterprises in European Union nations, members of the Organization for Economic Co-operation and Development (OECD), and Lithuania's neighbours.

The bulk of clients' businesses are based in Europe, in nations such as Germany, France, the United Kingdom, Italy, Poland, Lithuania, etc. Because all the companies that consumers work in are so widespread, it is extremely probable that a potential client may be found in any city across the globe. As a result, the focus of the whole survey is mostly based the organizations named before. Having a greater perspective of consumers' knowledge and demands on a global scale might be quite beneficial, particularly for businesses operating in worldwide markets where each country functions differently.

Structures of questionnaires for competitors. The questionnaire for competitors is made of 20 questions which consists of closed-ended and open-ended questions. Also, the questionnaire a Likert scale-based blocks of questions that each has 6 questions. It was used a 5-point Likert scale that include the terms: “1 = Not Important At All”, “2 = Of Little Importance”, “3 = Of Average Importance”, “4 = Very Important”, “5 = Absolutely Essential” that helps evaluate how each statement is important for the respondent.

The whole questionnaire begins with some simple questions about competitors and as it goes deeper it mostly covers internal and external factors that affect companies.

2.2 table. Structure of questionnaire for competitors

Question	Topic that covered	The purpose of the question
Where is your company located?	Geographic segmentation	Simple question to figure it out where from is the company and which market it operates.
What is the experience of your company in this field of industry?	Demographic segmentation	The aim of the question is to find out whether it's a new company or an old one.
How big is the company that you work for?	Demographic segmentation	The main goal of the question is to determine the size of the respondent's company.
Where do you sell your products?	Geographic segmentation	Simple question to figure it out where from is the company and which market it operates.
What kind of methods does your company use to sell the products?	Sales	The question helps to identify the market which enterprise mostly working in.
How often company faces lack of workers with the skills required by the industry?	Labor market & Human resources managment	<p>External factor: the question shows</p> <ul style="list-style-type: none"> • how is the company attracted to qualified employees? • is the company able to attract qualified employees? <p>Internal factor: the question shows</p> <ul style="list-style-type: none"> • how important is to have qualified employee? • how careful they select employees? • how important is to keep positive the atmosphere at work?
What are the factors limiting the growth of your company?	Problematics	<p>Internal or external factor of the company depends on the problem.</p> <p>The main aim of the question is to find out the main problems of competitor that it stops the company from growing.</p>

What are the upcoming consumer trends on purchasing professional kitchen equipment?	Trends of customers	External factor. The question is made based on PESTEL analyzes method, social issue which covers consumers views. It shows what is the expectations from customers are nowadays.
Is it possible to fulfill most of the customer needs with the existing manufacturing technologies?	Technology development	External factor. The question is made based on PESTEL analyzes method, technological issue which covers maturing technologies and shows the capabilities of existing manufacturing equipment compared to the needs of the customers.
How loyal customers are to your products?	Importance of customers	External factor. The question is made based on M.Porter's 5 Forces analyzes method and covers the issue of threat of new entrants/of substitute products. The question shows how company and its customers are related to each other.
How sensitive is the price of the product?	Importance of external factors	External factor. The question is made based on M.Porter's 5 Forces analyzes method and covers the issue of bargaining power of customers. That question could show how strong the company in the eyes of customer, suppliers and other possible factors that could affect the price of product.
Is the company facing a strong competition in the market?	Situation in the market	External factor. The question is made based on M.Porter's 5 Forces analyzes method and covers the issue of threat of new entrants/of substitute products. The question evaluates the market that competitor operates in.
Does the firm's carbon emissions damage the brand image of the company?	Green solutions	External factor. The question is made based on PESTEL analyzes method, environmental issue which covers climate change problems. The question evaluates is the company paying any attention to the problems that is very relevant these days.
What are your company strengths compared to rivals?	Success of the company	Internal factor. The question is made based on SWOT analyses method, strength issue to emphasize the benefits of the competitor.
Which marketing and sales strategies are most familiar to your company?	The path of the company	Internal factor. The question is made based on Porter's value chain with nine categories of activity method by taking into marketing and sales strategies of the company.

		The aim of the question is to get a deeper understanding how the competitor operates and to determine the key activities.
Name the most popular product of the company	Differentiation of the company	Internal factor. The question is made based on SWOT analyses method, strength issue to emphasize the advantages of the competitors and its specializations.
How big is the pallet of colours that your company can provide for products?	Firm infrastructure	Internal factor. The question is made based on SWOT analyses method, strength and weaknesses issue to evaluate technological abilities of the company.
How often does your company receive complains of customers?	Quality competencies	Internal factor. The question is made based on strengths and weaknesses by Grünig & Kühn method to evaluate the quality of products and services of the company.
How quickly do you respond to customers complains?	Service	Internal factor. The question is made based on Porter's value chain with nine categories of activity method by taking into account service of the company. The aim of the question is figure it out how properly the customer service works.
How do you manage recurring complaints prevention?	Service	Internal factor. The question is made based on Porter's value chain with nine categories of activity method by taking into account service of the company. The aim of the question is find-out how the competitors solving problems related customers.

Also, it was made a six-segment block questions block which grading is based on the Licker scale. The block's major purpose is understanding the innovativeness of the rival companies. The responses might truly help to determine what each company's strategy is and what can be expected from them in the future.

The purpose of the other block of 6 questions that is included in the questionnaire was to help to evaluate what is the most important for the companies of doing business in the target market and what opportunities may exist based on their preferences.

Structure of questionnaire for customers. The client questionnaire consists of 17 questions, including closed-ended and open-ended questions. In addition, the questionnaire contains a Liker scale-based block with six questions. A 5-point Likert scale was used: “1 = Not Important At All”, “2 = Of Little Importance”, “3 = Of Average Importance”, “4 = Very Important”, “5 = Absolutely Essential” this assists in determining how essential each statement is to the respondent.

The questionnaire starts with some basic questions about customers and then moves on to subjects from the 4P marketing mix model, which includes product, price, place, and promotion.

2.3 table. Structure of questionnaire for customers

Question	Topic that covered	The purpose of the question
Where is your company located?	Geographic segmentation	It's a simple inquiry to figure out where the firm comes from and what market it serves.
What is the field that your company specializes in?	Behavioral segmentation	It's a basic question to determine the area in which the consumer does business in order to get a sense of what sort of professional kitchen equipment would be more appealing.
How old is your company?	Demographic segmentation	The purpose of the inquiry is to determine if the firm is new or old.
How big is your company?	Demographic segmentation	The main goal of the question is to figure out how big the respondent's business is.
What challenges do you face in the market?	Behavioral segmentation	The purpose of the question is to discover what kinds of issues clients have while dealing with different businesses.
What are the biggest objections when starting to use new services or products from new suppliers?	Behavioral segmentation	Customer buying behavioral considered question to get a better understanding what could object customer from starting to do business with other company.
What would encourage you to buy products from a supplier?	Behavioral segmentation	Customer buying behavior was examined to have a better understanding of what would entice customers to begin doing business with another company.
Which factors play the most for you while making a decision to buy certain product?	Product	4P marketing mix model segment of product. The goal is to figure out what type of features the buyer most wants from the acquired item.
What kind of features would you need in a shelf for serving line?	Product	4P marketing mix model segment of product. The objective is to determine what attributes a consumer expects from a certain product.
What is the length of shelf for serving lines needed the most often?	Product	4P marketing mix model segment of product. The goal of the question is to determine the most frequent size that customers expect from the specific product.
What is the maximum load that would be loaded on the shelf?	Product	4P marketing mix model segment of product. The aim of the current question is to find the maximum load that may be placed on top of a specific product.
What do you prefer more: price or quality?	Price	4P marketing mix model segment of price. The segment that is about this question tries to find out what customer more prefer the price of the product or the quality of it?
How much would you be able to pay for the shelf of serving line?	Price	4P marketing mix model segment of place. The purpose of the question is to get an opinion from customers about the suggested prices of such a product.

Where do you buy professional equipment?	Place	4P marketing mix model segment of place. This part of the survey tries to figure it out the places that most often supply the professional kitchen equipment to customers.
How do you learn about new products?	Promotion	4P marketing mix model segment of promotion. This section of the questionnaire aims to discover client behaviors in order to learn about new goods.
What social platforms do you use?	Promotion	4P marketing mix model segment of promotion. The purpose of this part of the survey is to learn about the clients' social media habits.
What channels do you use to communicate with other companies?	Promotion	4P marketing mix model segment of promotion. This part of the questionnaire is designed to find out how clients communicate with other businesses.

Besides, the main goal of the block of questions based on the Licker scale, which was integrated in the questionnaire, is to understand the importance of various professional kitchen equipment attributes to the customers. The block's results may help to determine if the company's working principles are sufficient or insufficient, as well as providing a clear picture of what should be improved in the company's business strategy.

3. RESULTS OF RESEARCH

The questionnaire for the competitors was active and accepted responses from companies for 2 weeks: from 22nd of November, 2021 till 06th of December, 2021. The survey was sent for the 138 companies via e-mail to the submitted e-mail on the website of each company. During the period of 2 weeks succeeded to collect answers of the survey from 10 respondents which is about 7 % of all contacted companies.

The consumer questionnaire was available online and accepting replies from businesses for two weeks, from November 2nd to November 16th, 2021. The questionnaire was delivered through e-mail to the 169 firms' supplied e-mail addresses on their websites. During a two-week period, 11 respondents, or around 6% of all contacted firms, responded to the survey.

3.1. Review of results of survey for competitors

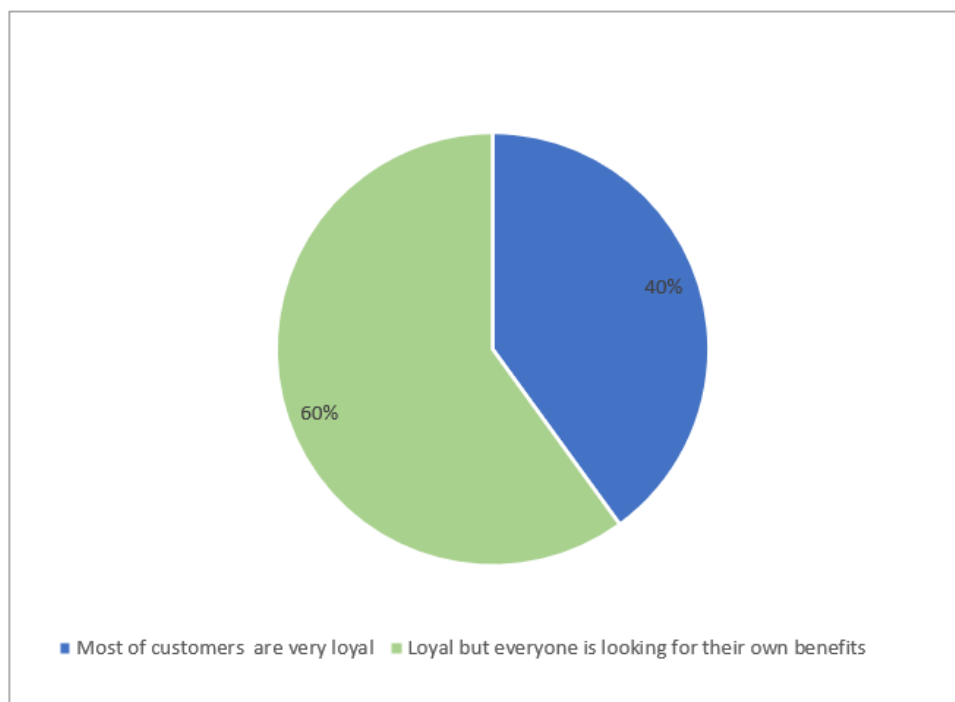
The survey results showed the 30 % of respondents was from Lithuania, 20 % from the Italy and the rest of competitors has 10 % that means one company from such countries like Poland, the UK, Belgium, France and Germany participated in the survey. Most competitors, which is about 60%, operate in this field of industry more than 10 years. Other 2 companies have experience of manufacturing professional kitchen equipment from 6 to 10 years and the rest of repliers answered that they have experience of 1-5 years. Also, it is clearly noticeable that most of the answers were received from big industrial enterprises which has 250 and more people who works there. Other responses came from smaller companies: 2 of them from the size of 50-249 people, one of them from 10-49 people and last one from very small company that has less than 10 members.

Moreover, the question about tendencies of selling production to local or foreign market showed that all the companies sell their products in the foreign market and 9 of 10 of respondents sell the equipment in a local market. All the businesses work of B2B principle and 4 enterprises apply B2C principle of selling their production.

Also, the research showed 40% of respondents seldomly facing the problem qualified employees, 3 companies sometimes have such an issue, couple of companies struggle quite often to find exactly what they need for they team and one of the enterprises have a big problem with a hiring well qualified employee. It means that lack of good and well-trained employees could be one of the reasons why the company do not grow very fast, but the survey also showed that limited financial resources and limited capabilities of manufacturing are the main problems of growing as an enterprise for 6 of 10 companies that participated in the questionnaire, one of the companies answered that logistic issues limiting the growth of the company and also one company mentioned the point of lack of knowledge about the market. All the companies revealed that customers always looking for the

good quality products at first and just then goes with an issue of price 40 % mentioned that and the equipment with latest technologies are very rarely important for customers from companies' point of view 20%. By the way, most of enterprises mentioned that sometimes it is hard to satisfy customer's need with an existing manufacturing technology.

Furthermore, as it could be seen at the figure 3-1 the question about the loyalty of customers to the brand showed customers most likely are loyal but sometimes they could be attracted with better offers because eventually everyone is always looking for its own benefit. The sensitivity of product price according to enterprises mostly depends on market price trends, some competitors emphasized that it could be affected by the suppliers. Besides, half of the respondents claimed the market that their company operate in are full of strong competitors, but the other half answered that almost all competitors have similar capabilities in their region. It is well known that greenhouse effect is a very big issue nowadays and all the industrial companies paying vital role in it. The companies that participated in the survey claimed that it still has not faced any problem regarding it so far, but it knows that it could happen in the future, 60% of respondents claimed that.



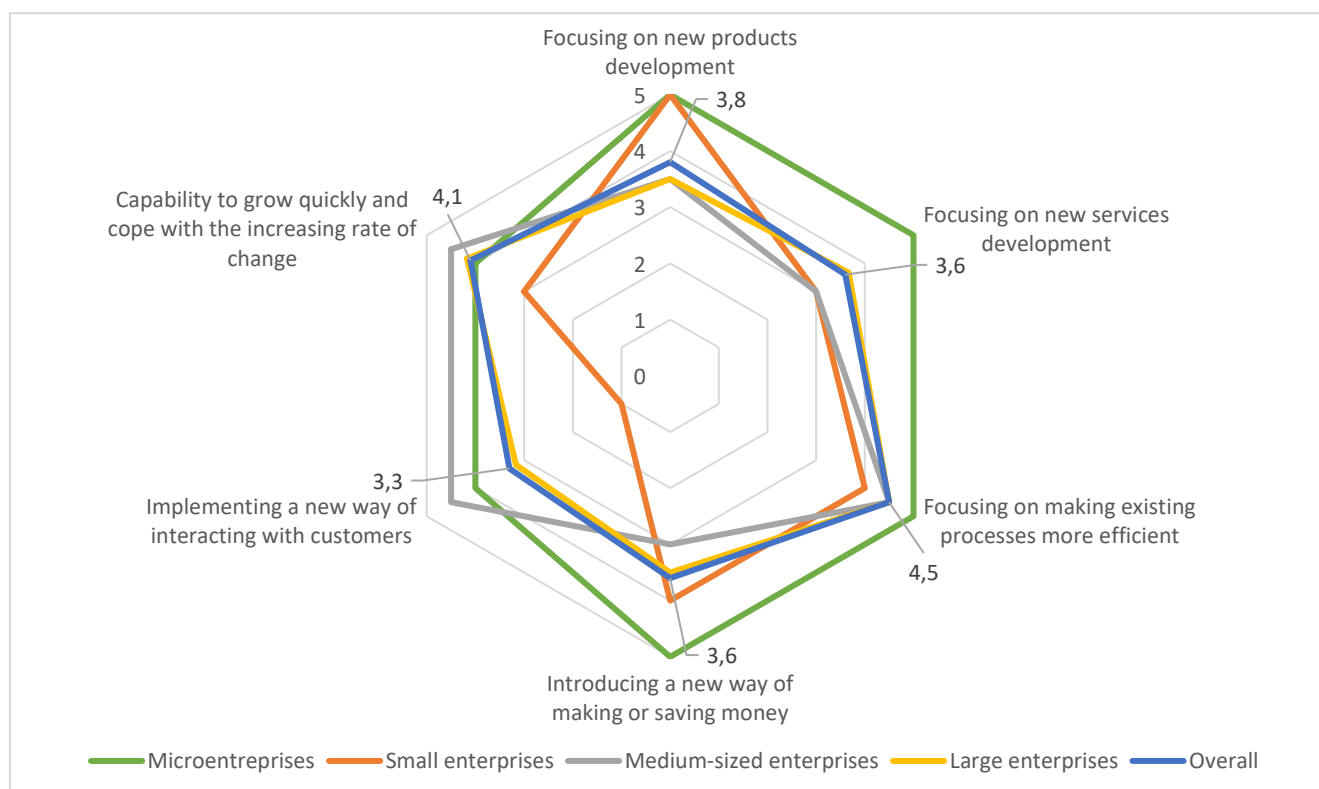
3-1 fig. Loyalty of customers

When it was asked to mention the strengths of company compared to the rivals most popular answers were quality of products (8 of 10 responses), price of products (7 of 10 responses), design of products (6 of 10 responses) and also was mentioned few times of some enterprises such benefits like variety of products, environmental benefits, and fast service. The most common reply about strategies of marketing and sales, which are most familiar for the companies, were application of discounts, 8 of 10 companies relies on that, and long-term partnerships with customers are crucial part

of their strategy for 7 enterprises. By the way, some competitors also mentioned such strategies like the importance of studying competitors' strategies, differentiation and "Blue Ocean" strategy.

The results below are analyzed using a benchmarking approach, which involves calculating weighted averages depending on company size or headquarters location.

The Likert scale-based block of question helped to find out how the level of innovativeness of each competitor. Each respondent evaluated from 1 (not important at all) to 5 (absolutely essential) the innovativeness strategies that are most familiar to their company.

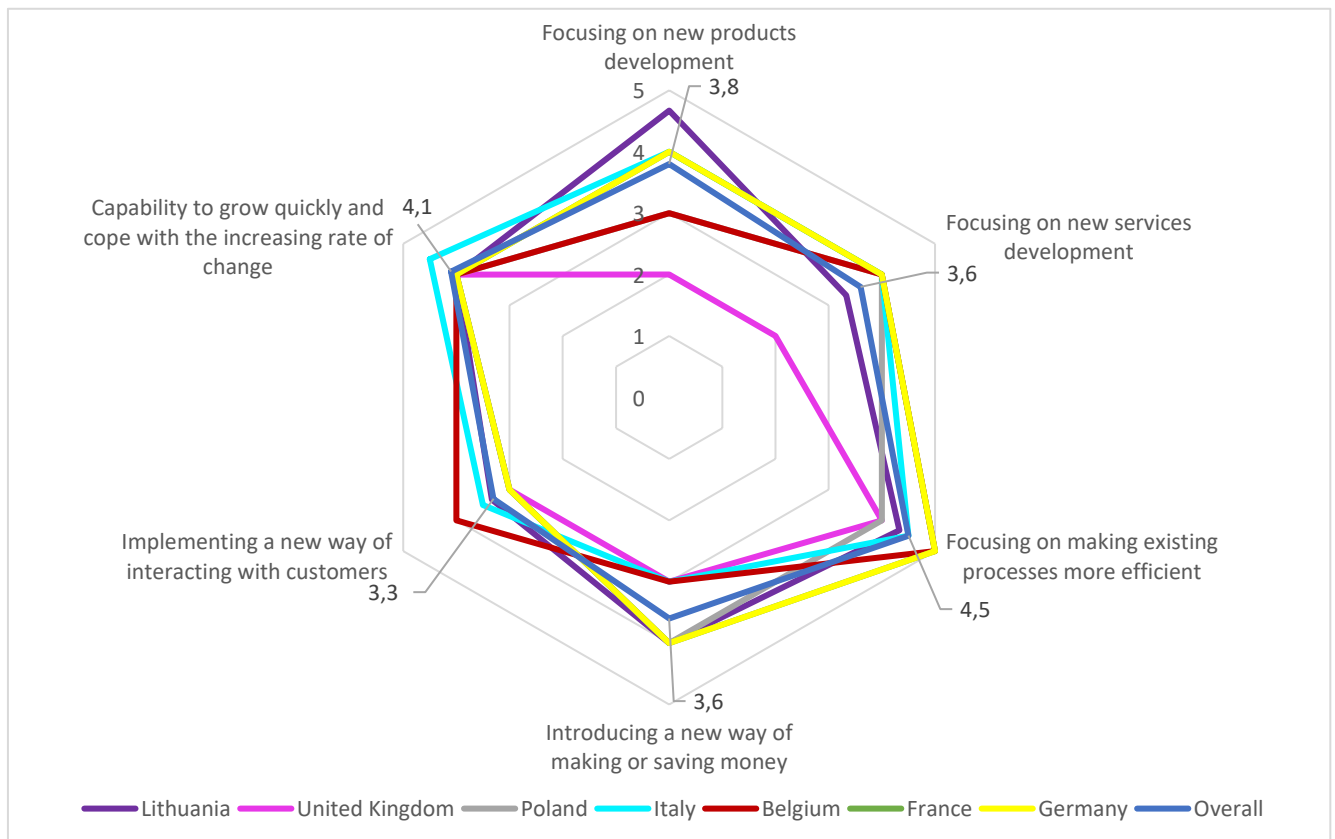


3-2 fig. Level of innovativeness of by size of company

In the graph above, a blue line represents the respondents' overall average evaluation, with the following outcomes: focusing on new products development - 3.8, focusing on new services development - 3.6, focusing on making existing processes more efficient - 4.5, introducing a new way of making or saving money – 3.6, implementing a new way of interacting with customers – 3.3 and capability to grow quickly and cope with the increasing rate of change - 4.1. The results showed that most attention almost all enterprises pay on focusing on making existing process more efficient with average evaluations from 4 to 5. The biggest difference was noticed on implementing a new way of interacting with customers it showed for small companies it does not look like very important – with 1 average evaluation, but it pays much more attention focusing on new products development. It is very interesting that microenterprises pay so much attention to almost all the strategies because it

requires a lot of work. Every enterprise has unique strategy in order to achieve their goals but answers from the respondents showed that innovativeness is a crucial part of their businesses, only difference is just that some companies have bigger capabilities to focus more on it than others.

Meanwhile, the same results could be analyzed according to the countries where the companies are established. The respondents' overall evaluations are clearly shown by a blue line with the values in the 3-3 figure.



3-3 fig. Level of innovativeness by region of company

The results from question block about innovativeness of company shows that there is no relevance of location aspect of the company because it is obvious from the graph that focusing on making existing process more efficient is very important for all enterprises. It makes sense because having as much efficient and fluent working process means better results for company that transforms to the profit. Besides that, it could be noticed that for some companies from such countries like Lithuania, Germany, Italy or even France innovation associates mostly with focusing on new product development but it is clearly noticeable that for an enterprise from The United Kingdom almost is not important at all. The same company that does not pay that much attention focus on new products development, but it is much more interesting in capability to grow quickly and cope with the

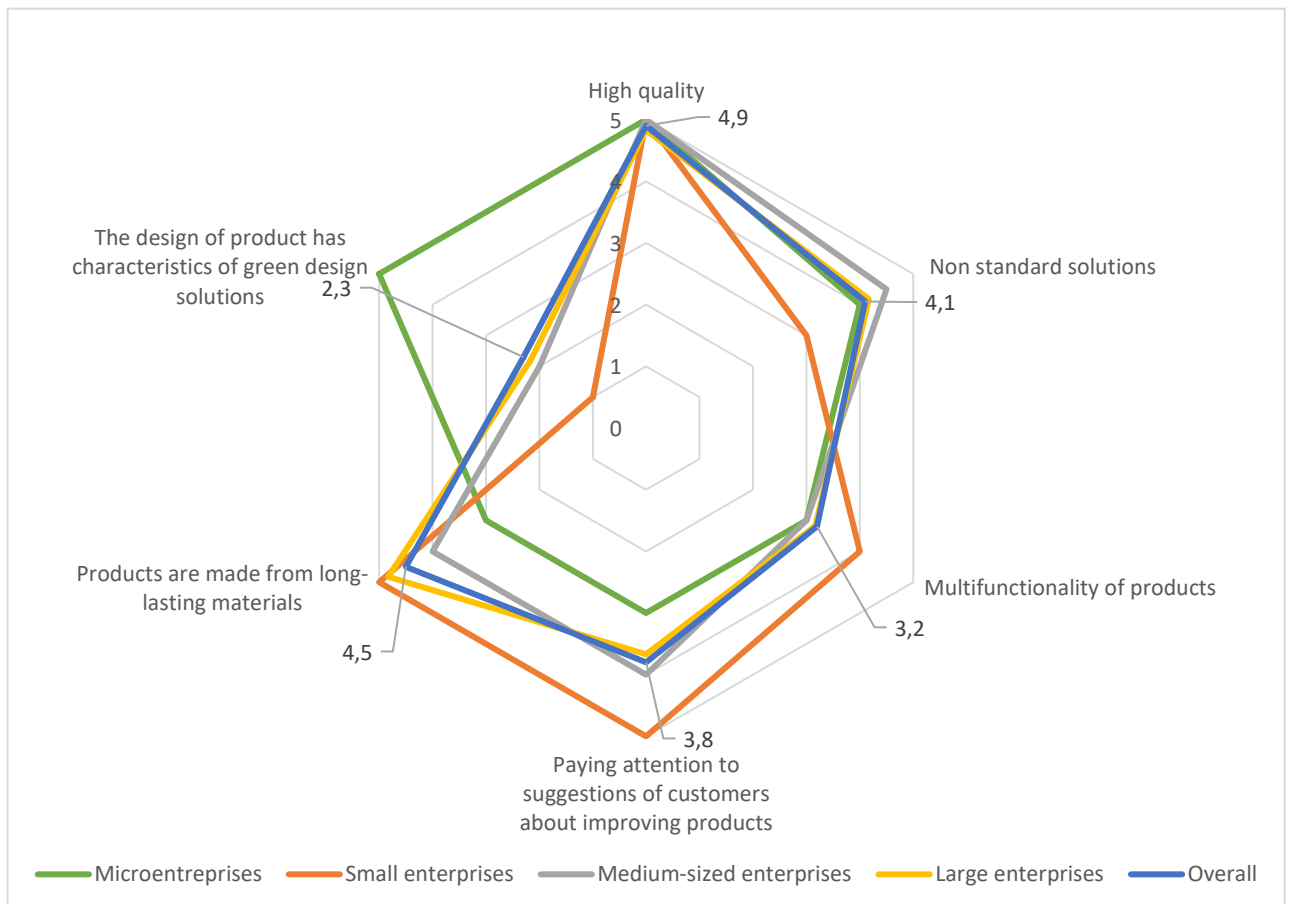
increasing rate of change. It is interesting because all the companies emphasize this type of strategy as relevant one and it is clearly noticeable from an overall evaluation with is equal to 4.1. It could be very easy noticeable that company from Lithuania pay most attention on new products development.

Furthermore, an open-ended question which was included in the survey asked the companies to mention the most popular product and respondents mentioned such products like:

- Professional kitchen tables
- Equipment for the bars
- Serving line systems, cooling counters
- Stands for dishwashers, convention ovens
- Shelves and cupboards

Some of the answers were mentioned more than once but, in any case, it shows that companies can concentrate their work either on very similar and wide production or even just on professional kitchen equipment. In addition, for the evaluating the technological capabilities of company was asked about capabilities of colouring production and it showed that the majority of respondents could provide any colour customers' needs or at least others can provide most common 6-10 colours.

Likewise, the other question block assessed the significance of several production criteria that the enterprise focuses on. Respondents assessed each of the claims presented in the block from 1 (not important at all) to 5 (absolutely essential) in terms of how well they described the organizational approach toward manufacturing and major strengths of their company. The overall evaluation of the replies is indicated by a blue line in the graph below, with the following results: high quality -4.9, nonstandard solutions – 4.1, multifunctionality of products - 3.2, paying attention to suggestions of customers about improving products – 3.8, products are made from long-lasting materials – 4.5 and the design of product has characteristics of green design solutions 2.3 evaluation.

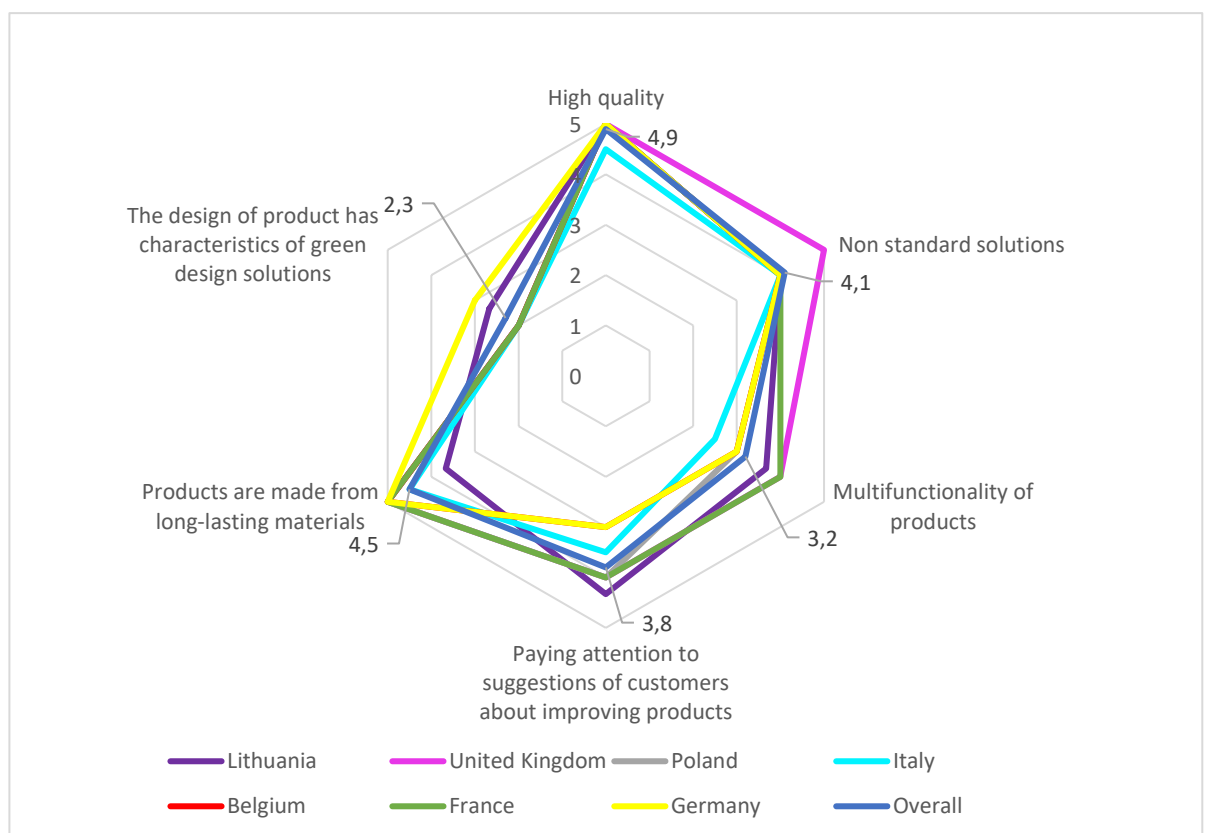


3-4 fig. Strategy of company by size

The 3-4 figure discloses that most important for all the companies are high quality of their production that is totally normal because an industry of professional kitchen equipment especially if the products are made from stainless steel has very high hygiene requirements. The other attribute that most of the respondents' care was the condition that products must be made from long lasting materials, and it also refers high hygiene requirements of such products. The biggest difference between the results could be noticed on an attribute of that product should has characteristics of green design solutions just microenterprises valued it very high - 5 but the overall evolution is just 2.3 and it means that other companies does not pay attention a lot to it but it interesting that small company do not care about it at all, but it pays more attention on other factors as it could be seen. It is hard to become a strong competitor in the market for new and such small companies' and it requires unique decisions like in this case. The graph clearly shows that bigger companies can focus on more attributes than smaller ones and have a good product looking at it from different angles and it does not require being specific good at one issue like it is for smaller enterprises.

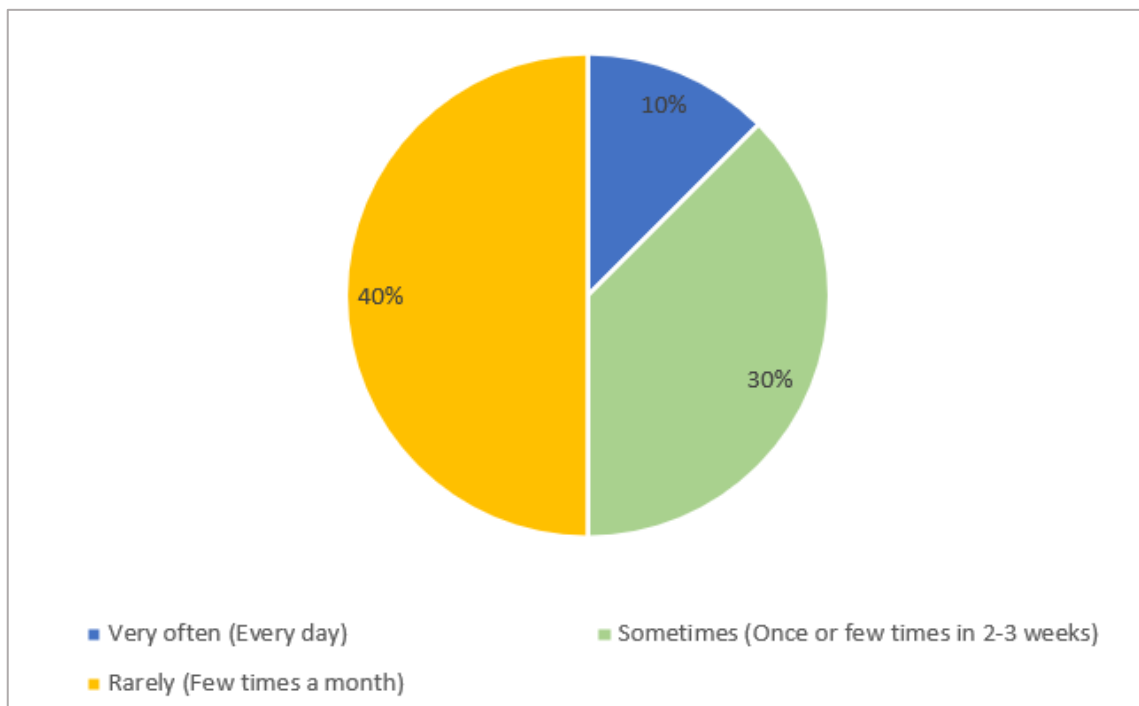
Moreover, the same data might be evaluated based on the nations in which the enterprises are located. A blue line with the numbers in the graph clearly shows the respondents' overall assessments. 3-5 figure.

Analyzing the data from this point of view it is clearly seen that attributes like high quality of products and that it should be made from-lasting materials are still the most important for the respondents. It still shows that green design solutions for the products does not like very attractive from most of the companies. Only the company from the United Kingdom clearly emphasized that their key to success is nonstandard solutions in their productions and it showed that Italian companies are not that interested in multifunctionality of products, but the rest of results implies that there is not any strong geographical impact in this industry for the companies and their attitude on the production.



3-5 fig. Strategy of the company by region

Finally, the complains from the customers is an inalienable part of the business and it happens from time to time as the results of survey shows that 40 % of companies receives it rarely (few times a month) other a bit more often like 2-3 time a week but it all depends on the attitude and how the company operates. The most important is to satisfy the customer and it is crucial important to respond to those all complaints as far as possible. The rival companies most often (70 % of companies) respond to the customer about various issues per day but for example the rest of respondents (30 %) claim that seek is to give an answer for the consumer within few hours. Add to that, the scale of the problems could be very wide, but everyone has their own methods how to solve the complaints regarded consumers.



3-6 fig. Frequency of receiving complaints from customers

The participants' responded to an open-ended question about how to prevent reoccurring complaints were as follows:

- “Our company has a special system for customer claims. If we see complaints recurring, we explain the reasons without delay and change product, transport, communication style, analyze the price or materials, perform tests etc.”
- “Our quality department tries to solve every problem that customers face. The product could be changed to other one or it could be fixed by us, or another solution could be proposed. Priority is to satisfy customer’s needs.”
- “It depends on the problem, but the main goal is to solve our mistake by satisfying customer needs.”

- “We have the systems in our company that analyzes recurring problems and in such a way we try to minimize complaints from customers”
- “We analyze every complaint from customers and trying to make actions to prevent recurring problems”
- “Including new solutions for those questions”
- “It depends on the field of the problem, but our priority is to satisfy our customers. If the complaints start to recurred, we would analyze it more deeply.”
- “Customer service tries to find the best solution for customer personally. Quality department analyzes causes of that problem.”

Most of patterns of dealing with reoccurring complaints from consumers are very similar and consist of analyzing problem and finding the way roots of it in order to prevent from it in the future.

Correlation matrix

A correlation analysis of the data acquired during the survey was undertaken at this stage of the study. This strategy is used to determine associations between two or more variables. The correlation coefficient can have values ranging from -1 to 1, with the number closer to -1 or 1 indicating a greater relationship between the variables. The direction of the found link is indicated by a positive or negative correlation coefficient. a positive coefficient value implies that as one variable grows, so does the other.

It could various sizes (strengths) of correlation coefficients which could be interpreted differently: (Jaadi, 2019)

- 0.90 to 1.00 (-0,90 to -1.00) – very high positive (negative) correlation
- 0.70 to 0.90 (-0,70 to -0.90) – high positive (negative) correlation
- 0.50 to 7.00 (-0,50 to -0.70) – moderate positive (negative) correlation
- 0.30 to 0.50 (-0,30 to -0.50) –low positive (negative) correlation
- 0.00 to 0.30 (-0,00 to -0.30) – negligible correlation

The correlation matrix was created using the results from the 2 blocks of 6 questions each.

3.1 table. A correlation matrix from questionnaire for competitors

	<i>Focusing on new products development</i>	<i>Focusing on new services development</i>	<i>Focusing on making existing processes more efficient</i>	<i>Introducing a new way of making or saving money</i>	<i>Implementing a new way of interacting with customers</i>	<i>Capability to grow quickly and cope with the increasing rate of change</i>	<i>High quality</i>	<i>Non standard solutions</i>	<i>Multifunctionality of products</i>	<i>Paying attention to suggestions of customers about improving products</i>	<i>Products are made from long-lasting materials</i>	<i>The design of product has characteristics of green design solutions</i>
Focusing on new products development	1,0000											
Focusing on new services development	0,4005	1,0000										
Focusing on making existing processes more efficient	0,2294	0,6547	1,0000									
Introducing a new way of making or saving money	0,5534	0,5593	0,3015	1,0000								
Implementing a new way of interacting with customers	-0,1598	0,0217	0,0995	-0,2700	1,0000							
Capability to grow quickly and cope with the increasing rate of change	-0,1704	-0,1216	0,1857	-0,4479	0,6837	1,0000						
High quality	-0,0765	-0,1455	0,3333	0,3015	-0,2322	0,0619	1,0000					
Non standard solutions	-0,5964	-0,5268	-0,1857	-0,4479	0,6837	0,6552	0,0619	1,0000				
Multifunctionality of products	-0,1147	-0,4001	0,0000	0,2010	-0,5970	-0,3714	0,6667	-0,0619	1,0000			
Paying attention to suggestions of customers about improving products	0,0920	-0,6999	-0,5345	-0,1612	-0,3191	0,0496	0,3563	0,0496	0,5345	1,0000		
Products are made from long-lasting materials	-0,4268	0,0000	-0,1240	-0,1870	-0,5554	-0,5758	-0,2067	-0,3455	0,2067	-0,1657	1,0000	
The design of product has characteristics of green design solutions	0,2711	0,5158	0,2727	0,5756	0,4613	-0,0506	-0,2121	0,1182	-0,3939	-0,6560	-0,3947	1,0000

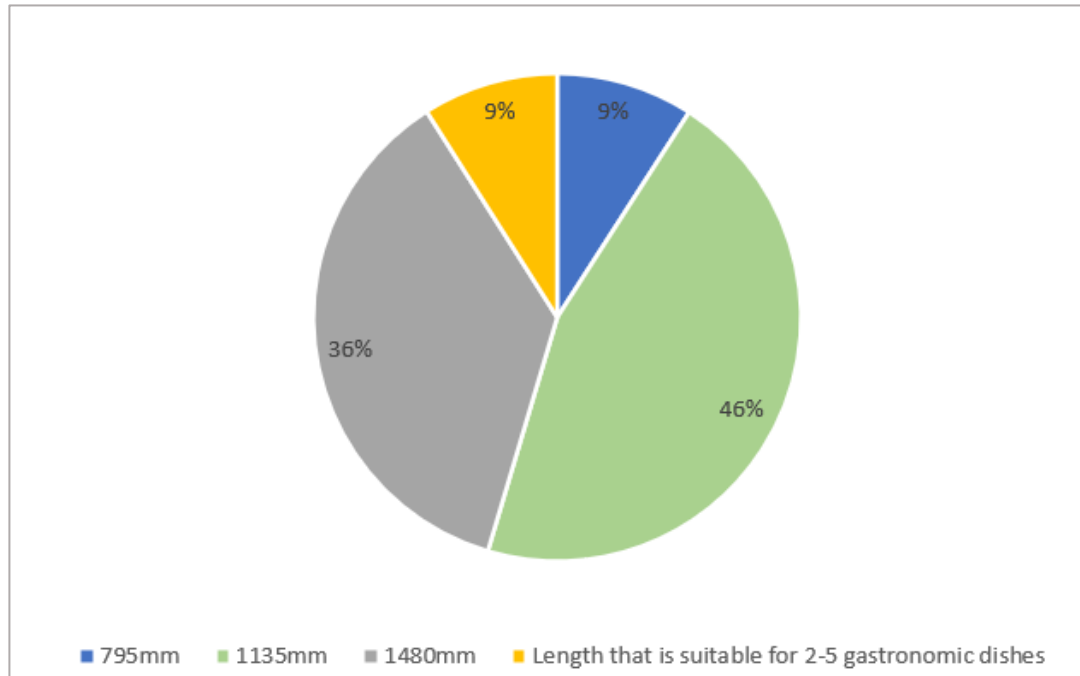
As it could be seen from the 3.1 table, there is not high correlation between any of variables. It could be noticed only moderate positive correlation between some of variables. The moderate positive relationship it is noticeable between nonstandard solutions and implementing a new way of interacting with customers with a value of 0.6837. The main explanation for the poor association is that the survey had a little number of responses, which is a common difficulty with primary data analyses because finding a very high relationship between data requires considerably more data.

3.2. Review of results of survey for customers

To start with, according to the survey results, 63.6 % of respondents were from Lithuania, which suggests that 7 firms are based here, while the remaining respondents each had 9.1 %, indicating that there are also enterprises from Poland, the Netherlands, the United Kingdom, and the Czech Republic. The questionnaire also showed that the majority of customer specializes in business of restaurants, some other customers focus on hotels and the rest of respondents operates in cruises, grocery stores or supermarket chains. The age of the most companies which participated in the questionnaire were not very high: 5 of them is 6-10 years old, 4 customer companies are active for about 1-5 year and only just 2 customers operate more than 10 years. Besides, the sizes of companies that answered the questions distributed quite equally: 3 of enterprises have more 250 people in their organization, 2 companies have 50-249 employees, from 10 to 49 members in their company has 3 of companies and 3 businesses of customers have less than 10 people.

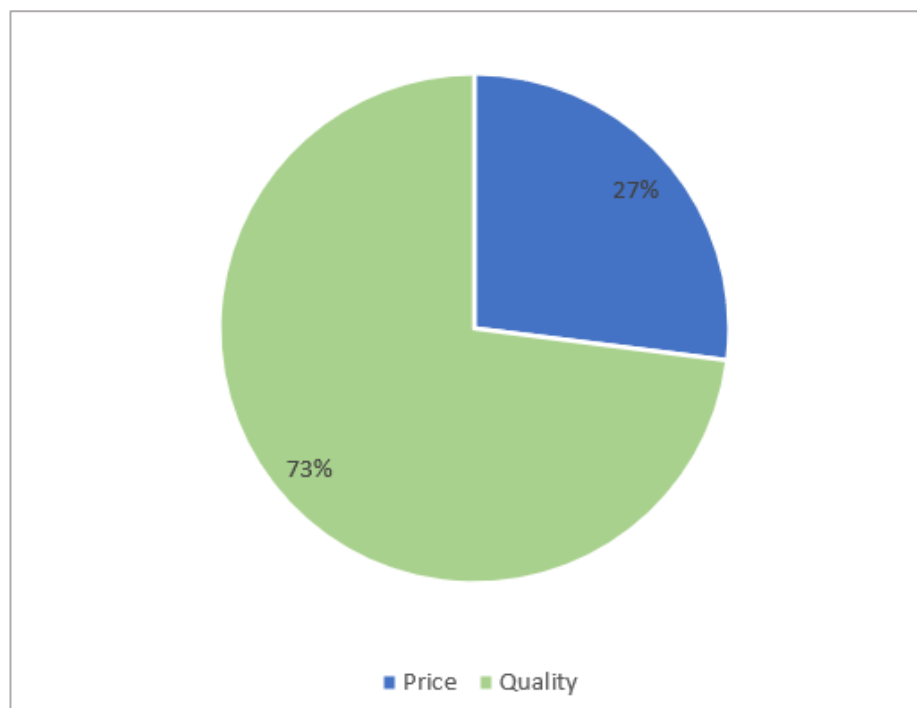
Moreover, customers always face some challenges in the market. The survey showed that most common issues that consumers face nowadays are low supply of customized, non-standard equipment and lack of good quality equipment, both challenges have been mentioned by 6 respondents. Also, long delivery time is a problem too that was mentioned 5 times, the expensiveness of products was mentioned 4 times and couple of customers named poor variety of products. The main reason which was mentioned 6 times in the questionnaire of all responses why customers do not start partnerships with new companies is the reason that they cannot satisfy the needs of the consumers, 4 of customers answered that usually they do not have enough knowledge about the potential supplier and twice was mentioned that suppliers have not have enough experience in this field of industry. In addition, such things like special attention (7 responses), discounts (5 responses), flexible payment terms (4 responses) or long-term partnerships (5 responses) encourages customers of buying production from the supplier. The criteria that play the most of buying the certain product are functionality, materiality, unique design.

Furthermore, the shelf for serving lines could be customized according to the needs of customers. The question that covered the features that shelf should have, and majority of the respondents (10 responses of 11) claimed need LED lighting, other two most popular answers was heating option and mounted the protective tempered glass from external environment.



3-7 fig. Evaluation of possible lengths of shelves for serving lines

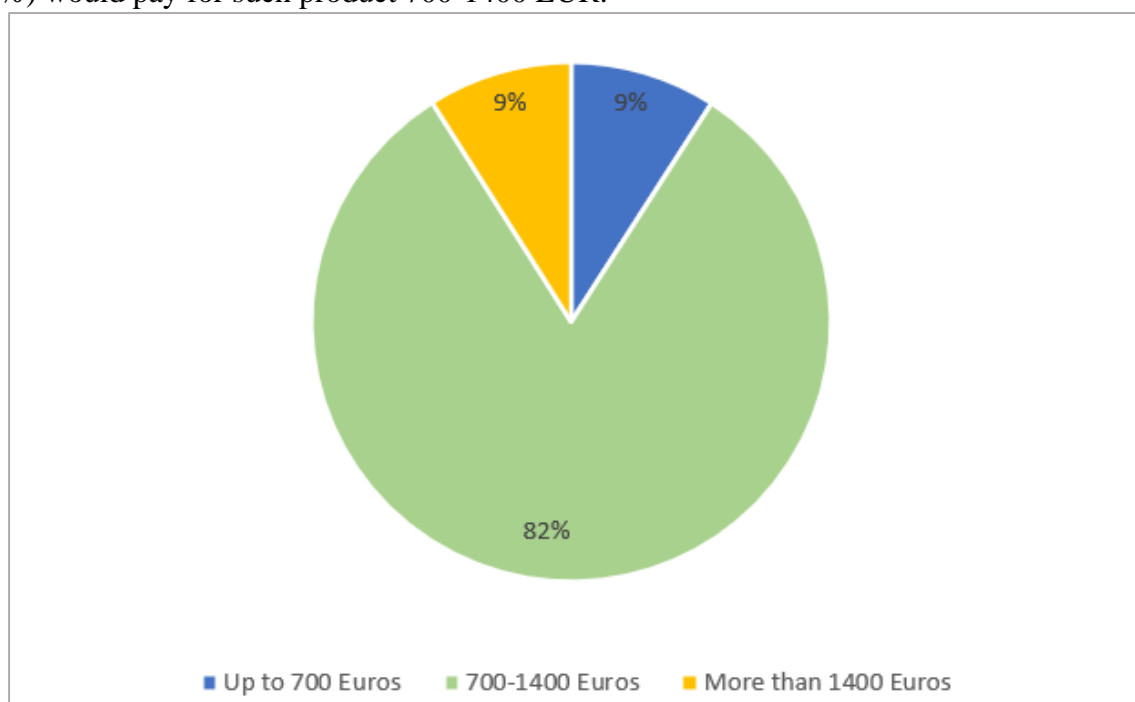
The most common length of the shelf that was mentioned by customers was 1135mm (45.5 %), the length of 1480mm has 4 responses (36.4 %). One of the customers expressed the need of 795mm



3-8 fig. Importance of product price and quality

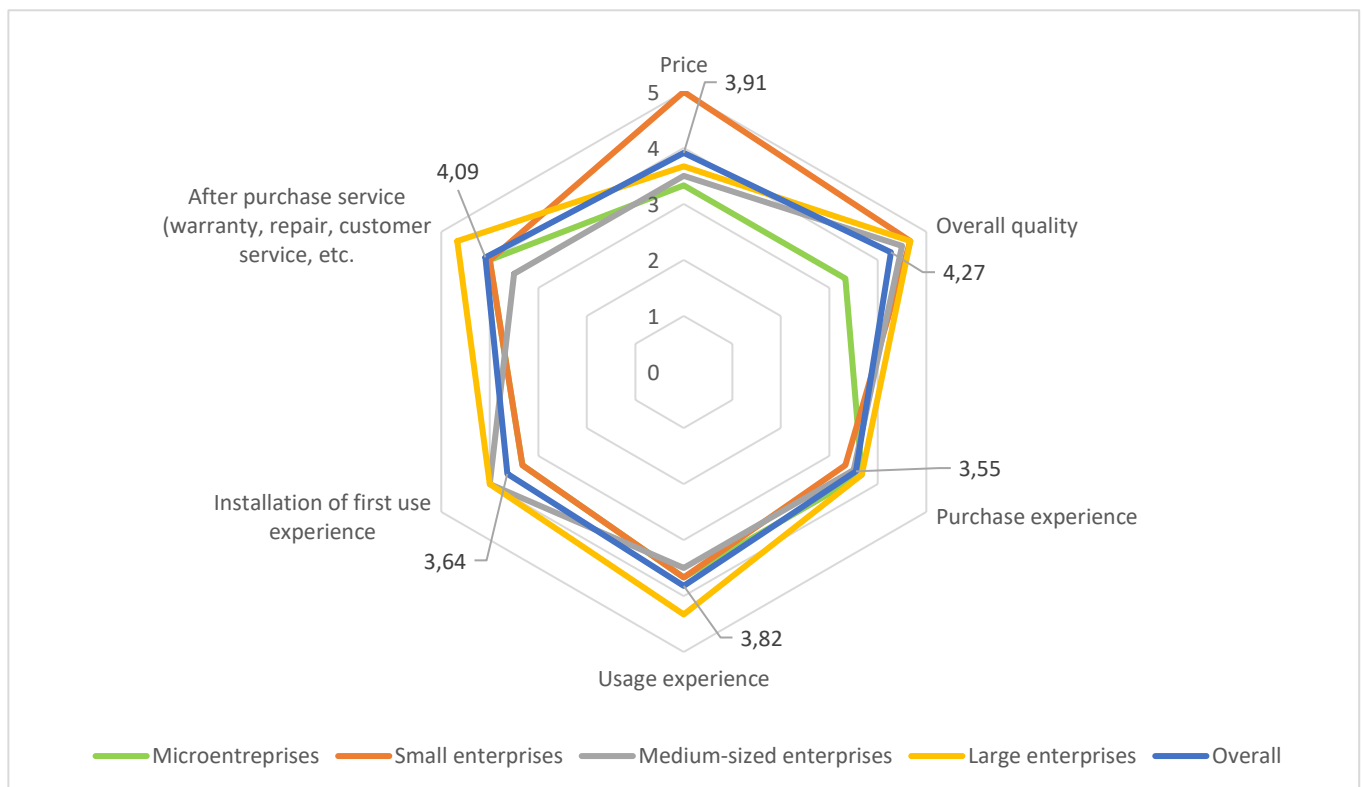
and one more respondent asked for the length of shelf that would be suitable for 2-5 gastronomic dishes. The shelf for serving lines usually goes with tempered glass on top and that is the reason why it is important to find out the maximum load that would be loaded on the shelf. 81.8 % respondents of the survey claimed that maximum load carried on the shelf would be 6-10 kg. Also, 72.7 % of participants of the survey would prefer good quality of the shelf than a better price (27.3%).

The question that covered the price of the shelf of serving line showed that most of customers (81.8 %) would pay for such product 700-1400 EUR.



3-9 fig. Preferable price for shelf for serving lines

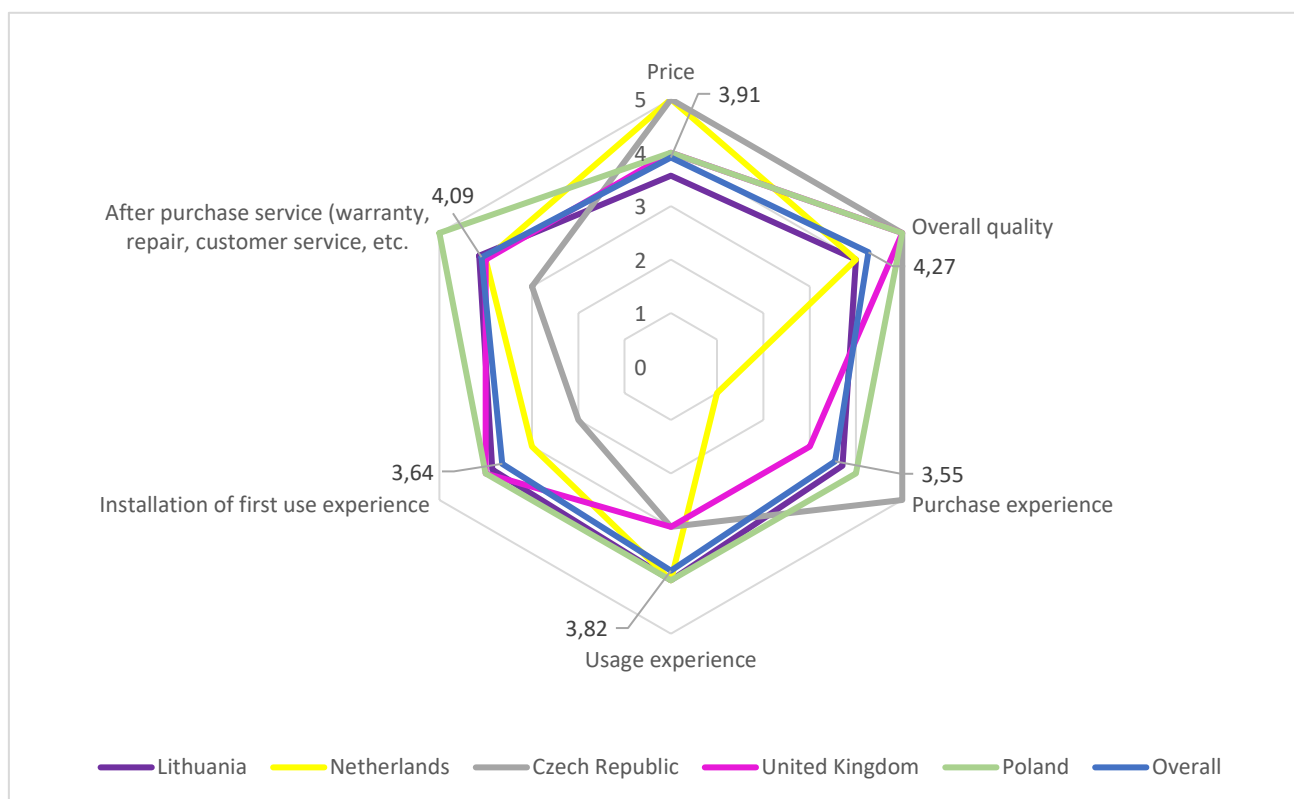
Besides, the Likert scale-based block of questions from the questionnaire are evaluated using a benchmarking method, which entails generating weighted averages based on company size or headquarters location. The block of questions helped to find out the most important aspects of purchasing products for customers. Each respondent evaluated from 1 (not important at all) to (absolutely essential) the most familiar aspects to their company's philosophy. A blue line in the graph below indicates the overall evaluation of the responses, with the following results: price – 3,91, overall quality – 4.27, purchase experience – 3.55, usage experience – 3.82, installation of first use experience – 3.64 and after purchase service (warranty, repair, customer service, etc) - 4.09 evaluation.



3-10 fig. Importance of purchasing product by size of company

The graph shows that most attention customers pay to the quality of products the average evaluations are even above overall evaluation for almost all the sizes of companies except microenterprises. It makes sense because afford highest quality products for some very small companies could be an issue. In addition to that, it is obvious that afford very expensive products for small companies could be a problem and it reflects on the graph with a high average evaluation of 5 compared to the overall average value. After purchase service mostly is important for large enterprises as it could be seen. The results clearly shows that bigger companies of customers can afford better products with better quality and expect much better experience with it than smaller enterprises.

Likewise, the same data might be evaluated based on the countries where the consumers have established their businesses. A blue line with the values clearly shows the respondents' overall assessments in the 3-11 figure below.



3-11 fig. Importance of purchasing product by region of company

When the data is analyzed from this perspective, it is seen that the trends of purchasing products differs a lot more compared with the previous one. It shows that such aspects like price, overall quality, purchase experience are crucially important for Czech Republic market, but it does not care that much about installation of first use experience or services after purchase equipment. The market of The Netherlands does not pay attention to purchase experience, but it cares a lot about the price and the rests of aspects it looks like is very important. Customers from Poland mostly cares about after purchase services and overall quality of products. The rest of the countries where the companies of customers are established give a similar amount of attention to every aspect of purchasing professional kitchen equipment according to the values in the graph which are very close to the overall evaluation values.

The survey's final four questions focused on how customers prefer to communicate and purchase equipment. Most of the customers (8 of 11 responses) make purchases directly from manufacturer, some of them also buying from retailers, e-commerce and from resellers. The channels that consumers learn about new products most often are internet or by recommendations. Also, very

popular channels among customers are social media, exhibitions or even seller's offers. Facebook is the most popular social media network (9 of 11 responses), although several respondents listed Instagram, Twitter, LinkedIn, and even WhatsApp several times. The most frequent method of communication with other firms, according to 10 of 11 survey participants, is via mail, another popular method is by telephone (8 of 11 responses) or in person (6 of 11 responses).

Correlation matrix

An additional correlation analysis of the data collected during the survey was conducted. This strategy is used to determine associations between two or more variables. The evaluation principle of correlation matrix will be used as it was earlier. The matrix was made based on the results from the block of 6 questions related importance for customers of buying products by various factors.

3.2 table. A correlation matrix from questionnaire for customers

	<i>Price</i>	<i>Overall quality</i>	<i>Purchase experience</i>	<i>Usage experience</i>	<i>Installation of first use experience</i>	<i>After purchase service</i>
Price	1,0000					
Overall quality	0,4523	1,0000				
Purchase experience	0,1219	0,4886	1,0000			
Usage experience	-0,0289	0,2833	0,1491	1,0000		
Installation of first use experience	0,0593	0,5481	0,3356	0,6900	1,0000	
After purchase service	0,1514	0,1748	-0,1303	0,5244	0,6159	1,0000

The 3.2 table shows that there is no high correlation between any of variables. It could be noticed only moderate positive correlation between some of variables with a value of 0.6900 which is between installation of first use experience and usage experience. The survey for customers faced the same problem as the questionnaire for the competitors - a relatively small number of replies and this is the main reason for the moderate relationship between variables.

4. PROPOSED MODEL FOR DEVELOPMENT AND MARKETING OF SHELF FOR SERVING LINES FOR CUSTOMIZED PROFESSIONAL KITCHENS

It was developed a model for developing and launching to the market shelf for serving lines to industrial enterprises which operate in commercial kitchen appliances industry. The model was adapted to the specific product, but it is versatile, and it could be adapted to any product in most of industrials. The purpose of the model is increasing the effectiveness of developing and marketing product in such a way making the whole process easier and much more successful.

The proposed model is hybrid type, and it has segments from the models which were reviewed earlier. It based on the principles of proposed by Stage-Gate, Decision process model which was suggested by Kotler and Keller and Agile. Also, it was developed based on review of financial aspects of this field of industry, examples of existing prototypes of shelves for serving lines and the results from the surveys. The model illustrates the key stages of new product development as well as recommended strategies for their execution, as well as other aspects of new product development and market launch.

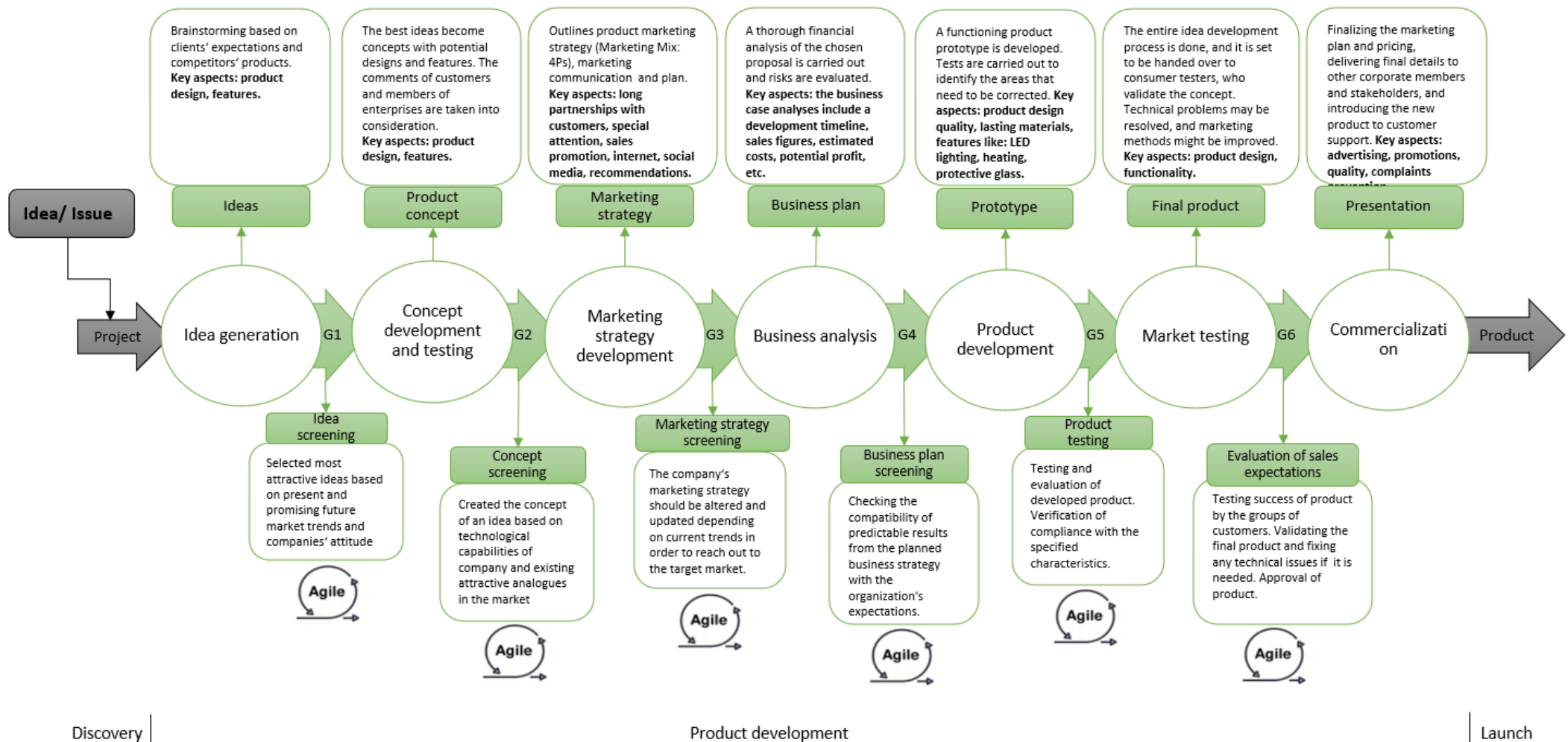
Every project that is related to product development comes up from an idea from external or internal environment of the company or it could even be a problematic issue that needs to be eliminated or improved. If the enterprise decided that it is important enough and that it would be beneficial it comes up to the “real” project state where this type of model could be used.

At each step, a different aspect of the project is implemented using pre-determined concepts and procedures. Below are detailed descriptions of the most crucial components of each step.

Idea generation basically is about hunting the best ideas based on multiple factors for the wished product which would be suggested to the market at final stage. There are lot of ways how the ideas could be generated but in this case the method of brainstorming is suggested which would gather people from different sectors of the company. According to the reviewed principles of such models of developing products, existing similar products in the market and the results from the surveys the key aspects of this brainstorming should design of the shelf for serving lines and the features of it.

Concept development and testing. After generating lots of ideas, the best ones should be filtered and transformed to concept which is more developed version of the idea described in words that consumers can understand. The concepts of potential shelf design and features should be shown to certain consumers and members of the organization in order to receive some feedback, as the key aspects are the same as they were in the idea generating process.

Marketing strategy development. After a successful concept test, the next step is to create a preliminary strategy plan for presenting the new product to the market based on the Marketing Mix:



4-1 fig. A model for developing and launching to the market shelf for serving lines

4Ps theory. The key aspects which should be considered in the process of developing this stage of model were determined through the survey for customers. It showed that customers appreciate a lot special attention, various sales promotions, and possibility of having long partnership and that the most common ways of hearing about new products are recommendations, advertisements on Internet or contacting through social media.

Business analysis. Management can assess the proposal's business attractiveness after developing the product idea and marketing plan. To verify if sales, cost, and profit estimates meet corporate objectives, management must produce sales, cost, and profit projections. Key aspects of this stage of model include a development timeline, sales figures, estimated costs, potential profit, etc.

Product development. The product has only existed in the form of a written description, a picture, or a prototype up to this point. The product idea is converted into a technically and commercially viable product if the enterprise reaches this stage. In addition, testing is performed on the product to discover areas that require improvement. Analyses of similar serving line shelves and survey responses were used to determine key qualities of this stage of the model, such as product design, the importance of quality and materiality, and features such as LED lighting, heating, and protective glass.

Market testing. The complete idea development process is finished after management is pleased with functional and emotional performance, and it is ready to be turned over to consumer testers to validate the prototype. Technical issues may be fixed, and marketing strategies could be enhanced based on the feedback. Product design and functionality, that could be improved, are two important factors to consider at this step.

Commercialization. The scope of the product delivery and the projected timetable are established in the final stage if the preceding stages have been completed and accepted. Finalizing the marketing strategy and price, as well as communicating final information to other corporate members and stakeholders and introducing the new product to customer service. Eventually, the public is informed about the product's entrance on the market. Advertising, marketing, assuring quality, and preventing complaints are all major elements at this stage.

Moreover, the suggested model also has 6 gates which is designed to support ongoing project evaluation. Each stage except commercialization has a gate where the project is examined and evaluated to determine whether it fulfils the company's requirements and objectives and if it can, the project could go to the next stage. The idea could be dropped if the gates shows that it is not worth to develop it or it could show that the project still needs some improvement, and it is needed to take the step back.

G1 – Idea screening. Once a bunch of ideas were generated during brainstorming, it must be moved on to the first gate and therefore screened by the organization's decision makers. The most appealing ideas should be chosen based on current and prospective future market trends, as well as company attitudes.

G2 – Concept screening. The major purpose of this stage is to analyze the concept based on the company's technological capabilities. In order to realize the product in the future, the firm must be able to complete all necessary operations. Furthermore, it is critical to consider the product's target market. The researchers must understand the product's strengths and weaknesses, as well as what it will give to a potential customer. It's critical for researchers to know who and what's now on the market, as well as what may be created in the future.

G3 – Marketing strategy screening. The main goal of this gate is to assist with the adaptation and updating of the company's selected marketing strategy based on current developments in the area in order to reach out to the target customers.

G4 – Business plan screening. This gate assesses the product's marketing strategy and business plan for compatibility with the organization's goals, as well as the financial predictions' compatibility with the expected organizational goals. The accepted concepts and financial project go forward to the product development phase if all the conditions fulfil the enterprise's expectations.

G5 – Product development. The gate's objective is to test and assess the generated product and ensure that it meets the defined specifications.

G6 – Evaluation of sales expectations. It's the last checkpoint before products' commercialization. It involves procedures such as evaluating the product's success with groups of customers, verifying the finished product, resolving any technological difficulties that arise, and eventually approving the product.

In addition to that, the model includes several characteristics based on an Agile set of values and principles that provide a team with a consistent framework for making decisions about how to create the product. Having such a collection of beliefs might assist the team and the entire enterprise in achieving their main aim - customer satisfaction. The decisions made at each gate of the model should be based on the core ideals and principles of Agile. Companies are advised to perform sprints with review-type meetings where product increments or new findings are given at the conclusion of each stage-gate, which would be validated by the management team and stakeholders. It might also be scheduled stand-up meetings or even retrospective sessions on an as-needed basis.

This model mostly is indicative and as it was mentioned it is adapted of developing and launching to market shelf for serving lines, but organizations may simply modify and adjust it to include other project phases, implementation ideas, or methods and use it for their needs.

CONCLUSIONS AND PROPOSALS

The primary goal of this master thesis, as stated at the opening, was to investigate the commercial kitchens sector and the elements that influence the success of launching a newly developed shelf for serving lines, as well as to present a model for product launch proposals for this sort of business. The following conclusions and recommendations are offered based on a review of the literature and a study of the development and launch of new products in the commercial kitchens industry:

1. Product development is a complicated model process that turns demand into commercial and technological solutions, as revealed by the literature review. It is considered complex since it involves several technological challenges in order to realize a product idea. It was determined that the success of a product launch is linked to the tactical and strategic decisions made by the company during the development process. According to the authors, having a clear vision of the whole product development process, a well-prepared marketing plan, and varied data collection methods are key components of successful product launches. Furthermore, evaluations of current well-known product development models revealed that hybrid type models could outperform traditional Stage-Gate or other traditional models, which is the major reason why companies choose hybrid product development models. Such insights gained from the literature research resulted in the decision to design a hybrid model of product development based on Stage-Gate model concepts, principles of model proposed by Kotler and Armstrong, and that it should include a set of Agile values and principles.
2. The review of the financial aspects of commercial kitchens industry showed that in 2020 the worldwide food service equipment market was estimated to be worth EUR 32.11 billion and it is predicted that from to increase at a compound annual growth rate of 5.5 percent from 2021 to 2028. The main reason of such a growth is because the need for commercial kitchen appliances has grown considerably as the number of foodservice providers, such as quick-service restaurants and full-service restaurants, has increased. Besides, the review of shelves for serving lines that other companies provide showed that the two most common types of shelf designs are made entirely of stainless-steel sheets either those that are made entirely of stainless-steel sheets and pipes or tubes. The tops of all of them have protective tempered glass, and the designs for both heated and neutral with LED lighting types of shelves are extremely similar from one manufacturer to the next. The primary distinctions between various manufacturers are the designs of serving

line shelves, as some are considerably more minimalistic than others, even though the concept and idea are comparable in most situations.

3. The empirical research for companies that manufacture equipment for professional kitchens showed that all companies operate in foreign market that means that all of it should consider the ways how to satisfy the needs of customers because that is the main reason why customers do not start partnerships with new companies. According to both surveys the major requirement for the equipment for professional kitchens is quality what is totally normal because an industry of professional kitchen equipment especially if the products are made from stainless steel has very high hygiene requirements. Most companies that participated in the survey claimed that one of the main aspects of their production is the quality, but it also added that some of it facing the problem of hiring qualified employees which means that lack of good and well-trained employees could be one of the reasons why it is so hard to satisfy the customers properly. In addition, the review of already existing shelves for serving lines in the market showed that some designs do not have a complete display design and, as a result, fail to fulfil customer expectations and market demands. The good thing is that companies that manufacture this type of equipment claimed the most attention is being paid at the moment on making existing process more efficient and that should eventually turn into fulfilling customers' expectations. It makes sense because having as much efficient and fluent working process means better results for company that would transform to the profit. Besides, such things like special attention for customers or applying of discounts could be very beneficial for suppliers in selling their production. In addition, considering the features that should be implemented most of the respondents (90.9 %) claimed need LED lighting is necessary, other two most popular answers were heating option and mounting protective tempered glass from the outside environment Also, 72.7 % of participants prefer high shelf quality above a lower price (27.3%). The inquiry on the pricing of a serving line shelf revealed that most customers would spend 700-1400 EUR for such a product. Also, the correlation matrixes showed only moderate positive relationships between some of variables because of small number of replies in both surveys. It is a frequent problem with primary data analysis since obtaining a high correlation between data requires a lot more data and in this case it indicates about the limitations of empirical research and all the results should not be taken for granted but more like recommendations.
4. The model which was proposed at the end of master's thesis is based on all the reviews and research which were made and all the gathered data that was examined and

systematized before being displayed as a visual model. The proposed model is hybrid type, and it based on the principles of Stage-Gate model, Decision process model which was suggested by Kotler and Keller and Agile set of values and principles. It has 7 stages and in each of it a different aspect of the project is implemented using pre-determined concepts and procedures. Also, stages have 6 gates where the project is assessed and evaluated to see if it meets the company's objectives, and if it does, it moves to the next stage. The project might be cancelled if the gates indicate that it is not worthwhile to pursue it, or if the gates indicate that the project still need some work and that a step back is required. As already stated, the model comprises a set of characteristics based on Agile values and principles which could help the team and the company achieve their main goal: customer satisfaction. At each stage of the model, decisions should be made based on Agile's core values and principles. Companies should conduct sprints with review-style meetings at the end of each stage-gate when product increments or new findings are presented and verified by the management team and stakeholders. As the model is mostly indicative and as it was mentioned it is adapted of developing and launching to market shelf for serving lines, but organizations may simply modify it by including other project phases, implementation ideas, or methods. As it is a recombinational tool of launching the product to the market, the problematic issues can only be detected and improved by customizing the model to a specific case and assessing its success. The company loses the opportunity to achieve better performance without analyzing and adjusting existing organizational processes, so only by constantly improving its operations the company can expect to find a way to ensure the long-term success of new products in the market, which is why the model includes an Agile set of values and principles that can change an organization's attitude.

LITERATURE

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APPENDICES

A Appendix

The questionnaire for companies that manufacture equipment made from stainless steel for the professional kitchens

Development of shelf for serving lines

I am Albertas Valiokas, a student of VilniusTech University, Industrial Engineering and Innovation Management. This survey is part of SHELF FOR SERVING LINES DEVELOPMENT AND LAUNCHING TO THE MARKET Master's thesis. It is carried out for industrial companies which specializes in manufacturing of professional kitchen equipment. The purpose of the survey is to get a better knowledge of those companies, their products design and to evaluate products launching to the market methodology within them. The field is educational and research, afterwards the data will be deleted when no longer needed. In case of any questions, requests or concerns please contact me via albertas.valiokas@stud.vilniustech.lt

* Required

1. Where is your company located? *

Mark only one oval.

- ☐ Australia
- ☐ Austria
- ☐ Belarus
- ☐ Belgium
- ☐ Bulgaria
- ☐ Canada
- ☐ Chile
- ☐ China
- ☐ Colombia
- ☐ Costa Rica
- ☐ Croatia
- ☐ Cyprus
- ☐ Czech Republic
- ☐ Denmark
- ☐ Estonia
- ☐ Finland
- ☐ France
- ☐ Germany
- ☐ Greece
- ☐ Hungary
- ☐ Iceland
- ☐ Ireland
- ☐ Israel
- ☐ Italy
- ☐ Japan
- ☐ South Korea
- ☐ Latvia
- ☐ Lithuania
- ☐ Luxembourg
- ☐ Malta
- ☐ Mexico
- ☐ Netherlands

- ☐ New Zealand
- ☐ Norway
- ☐ Poland
- ☐ Portugal
- ☐ Romania
- ☐ Russian Federation
- ☐ Slovakia
- ☐ Slovenia
- ☐ Spain
- ☐ Sweden
- ☐ Switzerland
- ☐ Turkey
- ☐ United Kingdom
- ☐ United States

2. What is the experience of your company in this field of industry? *

Mark only one oval.

- ☐ Up to 1 year
- ☐ 1-5 years
- ☐ 6-10 years
- ☐ More than 10 years

3. How big is the company that you work for? *

Mark only one oval.

- ☐ Less of 10 people
- ☐ 10-49 people
- ☐ 50-249 people
- ☐ 250 or more people

4. Where do you sell your products? *

Check all that apply.

- ☐ Local market
- ☐ Foreign market

5. What kind of methods does your company use to sell the products? *

Check all that apply.

- ☐ Business-to-Business (B2B)
- ☐ Business-to-Consumer (B2C)

6. How often company faces lack of workers with the skills required by the industry? *

Mark only one oval.

- ☐ Almost always
- ☐ Often
- ☐ Sometimes
- ☐ Seldom
- ☐ Never

7. What are the factors limiting the growth of your company? *

Check all that apply.

- ☐ Limited financial resources
- ☐ Limited capabilities of manufacturing
- ☐ Logistic issues
- ☐ Lack of knowledge about the market
- ☐ Other: _____

8. What are the upcoming consumer trends on purchasing professional kitchen equipment? *

Check all that apply.

- ☐ Looking for the cheapest products
- ☐ Looking for the good quality products
- ☐ Looking for the equipment with latest technologies
- ☐ Other: _____

9. Is it possible to fulfill most of the customer needs with the existing manufacturing technologies ? *

Mark only one oval.

- ☐ Always possible
- ☐ Sometimes hard to satisfy customer's needs
- ☐ Most of the orders are complicated

10. How loyal customers are to your products? *

Mark only one oval.

- ☐ Most of customers are very loyal
- ☐ Loyal but everyone is looking for their own benefits
- ☐ Not loyal at all

11. How sensitive is the price of the product? *

Check all that apply.

- ☐ It completely relies on suppliers
- ☐ It depends on the market price trends
- ☐ Not sensitive at all
- ☐ Other: _____

12. Is the company facing a strong competition in the market? *

Mark only one oval.

- ☐ Yes, market is full of strong competitors in our region
- ☐ Almost all of competitors have similar capabilities in our region
- ☐ No because there is not too much companies that operates in this field in our region
- ☐ Other: _____

13. Does the firm's carbon emissions damage the brand image of the company? *

Mark only one oval.

- ☐ Yes, it is a big issue
- ☐ It has happened few times but did not have much of an impact
- ☐ No, but it could be a problem in the future
- ☐ No, company operates good enough considering this question

14. What are your company strengths compared to rivals? *

Check all that apply.

- ☐ Design of products
- ☐ Variety of products
- ☐ Price of products
- ☐ Quality of products
- ☐ Environmental benefit
- ☐ Fast delivery
- ☐ Fast service
- ☐ Other: _____

15. Which marketing and sales strategies are most familiar to your company? *

Check all that apply.

- ☐ Studying competitors strategies
- ☐ Differentiation
- ☐ Overall cost leadership
- ☐ Application of discounts
- ☐ Long term partnerships with customers
- ☐ "Blue ocean" - seek out of an unoccupied positions in the market
- ☐ Other: _____

The importance of innovativeness strategies to your company

1 = Not Important At All; 2 = Of Little Importance; 3 = Of Average Importance; 4 = Very Important; 5 = Absolutely Essential

16. *

Mark only one oval per row.

	1	2	3	4	5
Focusing on new products development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Focusing on new services development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Focusing on making existing processes more efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Introducing a new way of making or saving money	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implementing a new way of interacting with customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Capability to grow quickly and cope with the increasing rate of change	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Name the most popular product of the company *

18. How big is the pallet of colours that your company can provide for products? *

Mark only one oval.

- ☐ 1-5 colours
- ☐ 6-10 colours
- ☐ Any colour customer needs

Importance of these attributes on your companies' products

1 = Not Important At All; 2 = Of Little Importance; 3 = Of Average Importance; 4 = Very Important; 5 = Absolutely Essential

19. *

Mark only one oval per row.

	1	2	3	4	5
High quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non standard solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multifunctionality of products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paying attention to suggestions of customers about improving products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Products are made from long-lasting materials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The design of product has characteristics of green design solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. How often does your company receive complains of customers? *

Mark only one oval.

- ☐ Very often (Every day)
- ☐ Often (Few times a week)
- ☐ Sometimes (Once or few times in 2-3 weeks)
- ☐ Rarely (Few times a month)
- ☐ Scarcely ever (Few time per quarter)

21. How quickly do you respond to customers complains? *

Mark only one oval.

- ☐ In a few hours
- ☐ Per day
- ☐ In a few days
- ☐ Per week
- ☐ Longer period of time

22. How do you manage recurring complaints prevention? *

23. If you would like to get survey results, please type your email address below

B Appendix

The questionnaire for food related companies that are interested in equipment made from stainless steel for the professional kitchens

Development of shelf for serving line

I am Albertas Valiokas, a student of VilniusTech University, Industrial Engineering and Innovation Management. This survey is part of SHELF FOR SERVING LINES DEVELOPMENT AND LAUNCHING TO THE MARKET Master's thesis. It is carried out for customers who are interested in professional kitchen equipment. The purpose of the survey is to get a better knowledge of the customers, their needs and desires. The field is educational and research, afterwards the data will be deleted when no longer needed. In case of any questions, requests or concerns please contact me via albertas.valiokas@stud.vilniustech.lt

* Required

1. Where is your company located? *

Mark only one oval.

- ☐ Australia
- ☐ Austria
- ☐ Belarus
- ☐ Belgium
- ☐ Bulgaria
- ☐ Canada
- ☐ Chile
- ☐ China
- ☐ Colombia
- ☐ Costa Rica
- ☐ Croatia
- ☐ Cyprus
- ☐ Czech Republic
- ☐ Denmark
- ☐ Estonia
- ☐ Finland
- ☐ France
- ☐ Germany
- ☐ Greece
- ☐ Hungary
- ☐ Iceland
- ☐ Ireland
- ☐ Israel
- ☐ Italy
- ☐ Japan
- ☐ South Korea
- ☐ Latvia
- ☐ Lithuania
- ☐ Luxembourg
- ☐ Malta
- ☐ Mexico
- ☐ Netherlands

- ☐ New Zealand
- ☐ Norway
- ☐ Poland
- ☐ Portugal
- ☐ Romania
- ☐ Russian Federation
- ☐ Slovakia
- ☐ Slovenia
- ☐ Spain
- ☐ Sweden
- ☐ Switzerland
- ☐ Turkey
- ☐ United Kingdom
- ☐ United States
- ☐ Other: _____

2. What is the field that your company specializes in? *

Check all that apply.

- ☐ Restaurants
- ☐ Hotels
- ☐ Cruises
- ☐ Cafe
- ☐ Grocery stores
- ☐ Supermarket chains
- ☐ Medical care centers
- ☐ Other: _____

3. How old is your company? *

Mark only one oval.

- ☐ Up to 1 year
- ☐ 1-5 years
- ☐ 6-10 years
- ☐ older than 10 years

4. How big is your company ? *

Mark only one oval.

- ☐ Less than 10 people
- ☐ 10-49 people
- ☐ 50-249 people
- ☐ 250 and more people

5. What challenges do you face in the market? *

Check all that apply.

- ☐ Lack of good quality equipment
- ☐ Too expensive products
- ☐ Long delivery time
- ☐ Poor variety of products
- ☐ Low supply of customized, non standard equipment
- ☐ Poor customer service
- ☐ Other: _____

6. What are the biggest objections when starting to use new services or products from new suppliers? *

Check all that apply.

- ☐ Lack of knowledge about the supplier
- ☐ Inability to satisfy needs
- ☐ Poor experience in this field
- ☐ Other: _____

7. What would encourage you to buy products from a supplier? *

Check all that apply.

- ☐ Special attention
- ☐ Discounts
- ☐ Flexible payment terms
- ☐ Long-term partnership
- ☐ Other: _____

8. Which factors play the most for you while making a decision to buy certain product? *

Check all that apply.

- ☐ Unique design
- ☐ Ergonomic
- ☐ Materiality
- ☐ Funcionality
- ☐ Color option
- ☐ Other: _____

9. What kind of features would you need in a shelf for serving line? *

Check all that apply.

- ☐ Protective tempered glass from external environment
- ☐ LED lighting
- ☐ Heating
- ☐ Special mounting
- ☐ Double stages
- ☐ Additional tempered glass on one side
- ☐ Other: _____

10. What is the length of shelf for serving lines needed the most often? *

Mark only one oval.

- ☐ 795 mm
- ☐ 1135 mm
- ☐ 1480 mm
- ☐ Other: _____

11. What is the maximum load that would be loaded on the shelf?

Mark only one oval.

- ☐ Up to 5 kg
- ☐ 6-10 kg
- ☐ more than 10 kg
- ☐ Other: _____

12. What do you prefer more: price or quality? *

Mark only one oval.

- ☐ Price
- ☐ Quality

How important are these features purchasing professional kitchen equipment for you?

1 = Not Important At All; 2 = Of Little Importance; 3 = Of Average Importance; 4 = Very Important; 5 = Absolutely Essential

13. *

Mark only one oval per row.

	1	2	3	4	5
Price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purchase experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usage experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installation of first use experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After purchase service (warranty, repair, customer service, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. How much would you be able to pay for the shelf of serving line? *

Mark only one oval.

- ☐ Up to 700 euros
- ☐ 700-1400 Euros
- ☐ More than 1400 euros

15. Where do you buy professional equipment? *

Check all that apply.

- ☐ Directly from manufacturer
- ☐ From retailers
- ☐ E-commerce
- ☐ From resellers
- ☐ Other: _____

16. How do you learn about new products? *

Check all that apply.

- ☐ Social media
- ☐ Radio/TV
- ☐ Internet (various articles)
- ☐ Exhibitions
- ☐ Seller's offers
- ☐ Recommendations
- ☐ Other: _____

17. What social platforms do you use? *

Check all that apply.

- ☐ Twitter
- ☐ Facebook
- ☐ Instagram
- ☐ LinkedIn
- ☐ Reddit
- ☐ WhatsApp
- ☐ Other: _____

18. What channels do you use to communicate with other companies? *

Check all that apply.

- ☐ Email
- ☐ Telephone
- ☐ Texting
- ☐ In person
- ☐ Social websites
- ☐ Other: _____

19. If you would like to get survey results please type below your email address

MECHANICS, MATERIAL SCIENCE, INDUSTRIAL ENGINEERING AND MANAGEMENT
MECHANIKA, MEDŽIAGŲ INŽINERIJA, PRAMONĖS INŽINERIJA IR VADYBA

SHELF FOR SERVING LINES DEVELOPMENT AND LAUNCHING TO THE MARKET

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Abstract. In today's market, there is a very intense competition, as well as the unpredictability of customer desires and market trends that change at a rapid speed, resulting in a shorter product life cycle. The purpose of this article is to examine the industry of commercial kitchens and the main aspects could be the key of successfully launching shelf for serving lines to the market. The empirical research background for this study is defined by the performed survey-questionnaire. The results of the survey of enterprises that specialize in manufacturing professional kitchen equipment, as well as the results of the survey of customers who are interested in such products, are presented in this article. The aim of both surveys was to determine which success aspects the company should rely on, and which are the most important for successful product development and market launch. Based on the result of the research and the information which was gathered, a model for the successful development and launch of a shelf for serving lines was developed and proposed.

Keywords: Product, development, launching, professional kitchen equipment, commercial kitchen, shelf for serving lines, factors, aspects, market.

Introduction

Nowadays there is a very high level of competition in the market, as well as the unpredictability of client wants, market trends are changing at a quick pace, resulting in a shorter product life cycle. Companies must be constantly aware of potential market dangers, various risks must be detected in advance, and companies must pay attention to market changes as well as consumer behavior and feedback in order to retain their product on the market if at all possible. New product development is the process of bringing an innovative product concept to market (Sutton, 2021). It's a time-consuming and expensive procedure, yet without it, no firm can succeed. The first stage is to gain a thorough knowledge of the users' wants and expectations, as well as to generate new ideas and ensure that the functional groups collaborate closely to meet the users' needs. Although product development differs per industry, it may be broken down into five or even thirteen processes. The fundamental phases of every product development model include ideation, research, planning, prototype, sourcing, pricing, and commercialization (Kotler & Keller, 2011).

As it was mentioned, companies strive to avoid product failure early in the development process in order to produce a new product or enhance an old one. Developing a profitable and innovative product includes the usage of widely utilized and commonly used new product development strategies. According to research conducted by Foulquié, Alemán, and Escudero (2004) five critical requirements for the development of a new product were identified:

- Strategic fit is mostly used in the approval of new product concepts. It is carried out in the early phases of the product development process as a strategic suitability indicator, assessing the project's fit for a target market.

- Technical feasibility dimension is critical in the approval of the new product concept and prototype. A product's technical capabilities and the availability of technology are frequently critical variables in the performance of a new product.
- Customer acceptance dimension is concerned with whether the product satisfies customer acceptance, customer satisfaction, and product quality objectives.
- Market opportunity dimension is largely used to approve new product concepts and keep products on the market.
- Financial performance is the most important in assessing the project's potential payout.

As product innovations are such an important component of every business, more attention should be devoted to their development. This is significant for businesses since it assists in increasing competitiveness and maintaining or expanding current positions in domestic and international marketplaces. Through constantly inspecting and recording already completed tasks, a model based on traditional product development processes may not only help assure higher product quality, but also lower the chance of mistakes or faults in the complicated and lengthy process of producing goods. The purpose of this article is to explore the commercial kitchens industry and the factors that impact the success of launching a newly developed shelf for serving lines, as well as to provide a model with product launch proposals for this type of businesses.

Industry of customized equipment for professional kitchens

In 2020, the worldwide food service equipment market was estimated to be worth EUR 32.11 billion. From 2021 to 2028, it is predicted to increase at a compound annual

growth rate of 5.5 percent. Some of the primary reasons driving the market include changing food consumption habits, growing demand for takeout, and the expanding hospitality industry. Besides, rigorous consumer safety requirements, increased digitization and the demand for sustainable and eco-friendly equipment are projected to generate significant development possibilities for the market in the near future (Food Service ..., 2021).

Due to the exponential expansion in the number of foodservice providers, such as quick-service restaurants and full-service restaurants, the need for commercial kitchen appliances has expanded dramatically over the years. For efficient kitchen operations, hotels and restaurants demand efficient and modern superior kitchen appliances. Globally, the need for fast service restaurants is expanding. People are becoming increasingly used to fast food as a result of urbanization, which is increasing the need for quick-service restaurants. Quick-service restaurants rely heavily on commercial equipment, and it is expanding their operations because the demand of quick services restaurants still grows (Commercial Kitchen ..., 2021). In addition, Over the projection period, rail, cruise, and aircraft catering is predicted to grow at the fastest compound yearly growth rate of 8.1 percent, due to the substantial increase in the tourist industry, which is likely to boost demand for commercial kitchen equipment for catering (Commercial Kitchen ..., 2020).

The commercial kitchen appliances sector is one of the hardest-hit industries as a result of COVID-19. In order to prevent the spread of the coronavirus, which has resulted in the suspension of production facilities and the disruption of the whole global supply chain, measures such as lockdown and transit bans were implemented. This has triggered a series of events, including a global economic slowdown. The hotel business provides a significant portion of the revenue for the commercial kitchen appliances market. The closure of a significant sector of the hospitality business, such as full-service restaurants, pubs and bars, and quick-service restaurants, has affected the selling of kitchen equipment significantly. Besides, as a result of the economic effect of COVID-19, most firms tend to fit into one of three types throughout the world at the moment. Specifically, those who may not be able to withstand the financial effects of the epidemic, those who are halting all expenditures in order to weather the pandemic crisis, and those who are either extremely busy or using this opportunity to go ahead with final product development. (Commercial Kitchen ..., 2021)

It was developed a list of firms which make comparable sorts of items and operate in Europe in order to execute a targeted and effective examination of the evaluation of rivals shelves for serving lines. This tool is simple to use for identifying the main differences between the shelves for serving lines from each manufacturer, allowing to assess the strengths and weaknesses of competitors in the later stages of the investigation while keeping the 5 critical requirements for developing a new product in mind. The review of shelves for serving lines from such

companies Victor (The UK), IDEACER (Spain), Blanco (Germany), Scholl (Germany), Afinox (Italy), Diamond (Belgium) like showed that some designs do not have a complete display design and, as a result, fail to fulfill customer expectations and market demands. Some manufacturers also provide extra alternatives when buying shelves for serving lines, such as heated consoles or two-story display shelves, however this is less common in the food industry, or at least it is not listed in manufacturers' catalogs. Also, it was noticed that there are two most common types of shelves' designs made only from stainless steel sheets or from sheets and pipes or tubes. All of it has protective tempered glass on the top, the designs in most of the case are similar from each manufacturer for both heated and neutral with LED lighting types of shelves. The main differences between different manufactures are the design of shelves for serving lines because some of it has much more minimalistic design than others even the concept and the idea is similar in most of the cases.

Research methodology

The aim of this research is to get better understanding of the main aspects of successfully launching to the market newly designed product by the companies which operates in manufacturing of professional kitchen equipment.

The research object is newly designed shelf for serving lines which is made from stainless steel to various professional kitchens of hotels, restaurants, cruises, medical care centers or any other food related organizations. There are mainly two types of shelves for serving lines: neutral (with LED lighting) or heated shelf with an option to adjust temperature.

The instrument which was used for this research was the questionnaire. It was prepared two questionnaires one for the companies that manufacture equipment from stainless steel to professional kitchens which will help to understand how other companies operate and the other one for customers which will help to figure it out the needs and habits of the respondents. The questionnaire was arranged based on closed-ended questions which inquiries provide all viable responses and participants must choose. It had also some open-ended questions which allow to answer in respondent's own terms or express its opinion (Kotler & Armstrong, 2018). Also, it included boxes of questions in a Likert Scale which is another popular approach to arrange answer options. On a response scale, each item is rated using a Likert scale. Participants, for example, are asked to rate each item in response to each question. You may pose several questions as statements on this scale, and participants can pick how strongly they agree or disagree with each statement. (Colosi, 2006).

The target group of the questionnaire for the competitors is companies that manufacture equipment made from stainless steel for the professional kitchens. The survey is concentrated on the industrial companies of European Union countries, Organization for

Economic Co-operation and Development members and the neighbors of Lithuania.

Moreover, various hotels, restaurants, cruises, medical care facilities, and other food-related organizations with professional kitchens built of stainless steel are the target group of the questionnaire for customers. The survey focuses on industrial enterprises in European Union nations, members of the Organization for Economic Co-operation and Development, and Lithuania's neighbors.

The whole questionnaire for competitors begins with some simple questions about age, size, location, the field that company operates and as it goes deeper it mostly covers internal and external factors that affect companies. Besides, it was integrated a six-segment block questions block which grading is based on the Licker scale. The purpose of the other block was to evaluate what is the most important for the companies of doing their business in the target market and what opportunities may exist based on their preferences. Furthermore, the questionnaire which was developed for the consumers started with questions about age, size, location, the field that company of customers specializes moves on to subjects from the 4P marketing mix model, which includes product, price, place, and promotion segments. The block of questions based on the Licker scale, which was integrated in the questionnaire, may help to determine if the company's working principles are sufficient or insufficient, as well as providing a clear picture of what should be improved in the company's business strategy in order to reach customers.

The information was gathered using the Google Forms platform, and then it was processed and evaluated in Excel. The results and findings of this empirical investigation will be utilized to develop a new model.

The results of research will be presented in the next section.

Results of survey for competitors

The online survey for competitors was sent for the 138 companies via e-mail to the submitted e-mail on the website of each company. During the period of 2 weeks succeeded to collect answers of the survey from 10 respondents which is about 7 % of all contacted companies. As the survey results showed the 30 % of respondents was from Lithuania, 20 % from the Italy and the rest of competitors has 10 % that means one company from such countries like Poland, the UK, Belgium, France and Germany participated in the survey. Most competitors, which is about 60%, operate in this field of industry more than 10 years. Other 2 companies have experience of manufacturing professional kitchen equipment from 6 to 10 years and the rest of repliers answered that they have experience of 1-5 years. Also, it is clearly noticeable that most of the answers were received from big industrial enterprises which has 250 and more people who works there. Moreover, the question about tendencies of selling production to local or foreign market showed that all the companies sell their

products in the foreign market and 9 of 10 of respondents sell the equipment in a local market. All the businesses work of B2B principle, and 4 enterprises apply B2C principle of selling their production.

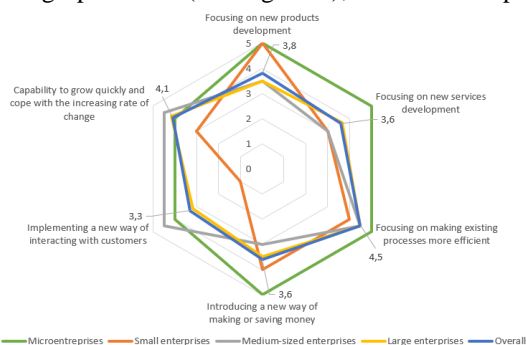
Also, the research showed 40% of respondents seldomly facing the problem qualified employees, 3 companies sometimes have such an issue, couple of companies struggle quite often to find exactly what they need for they team and one of the enterprises have a big problem with a hiring well qualified employee. It means that lack of good and well-trained employees could be one of the reasons why the company do not grow very fast, but the survey also showed that limited financial resources and limited capabilities of manufacturing are the main problems of growing as an enterprise for 60 % respondents in the questionnaire, 10 % mentioned logistic issues limiting the growth of the company and only 1 participant mentioned the point of lack of knowledge about the market. All the companies revealed that customers always looking for the good quality products at first and just then goes with an issue of price 40 % mentioned that and the equipment with latest technologies are very rarely important for customers from companies' point of view 20%. By the way, most of enterprises mentioned that sometimes it is hard to satisfy customer's need with an existing manufacturing technology.

Furthermore, the question about the loyalty of customers to the brand showed customers most likely are loyal but sometimes they could attract with better offers because eventually everyone is always looking for its own benefit. The sensitivity of product price according to enterprises mostly depends on market trends 90%, some competitors emphasized that it could be affected by the suppliers 40 %. Besides, half of the respondents claimed the market that their company operate in are full of strong competitors, but the other half answered that almost all competitors have similar capabilities in their region. It is well known that greenhouse effect is a very big issue nowadays and all the industrial companies paying vital role in it. The companies that participated in the survey claimed that it still has not faced any problem regarding it so far, but it knows that it could happen in the future, 60% of respondents claimed that.

When it was asked to mention the strengths of company compared to the rivals most popular answers were quality of products (80 %), price of products (70%), design of products (60%) also was mentioned few times of some enterprises such benefits like variety of products, environmental benefits, and fast service. The most common reply about strategies of marketing and sales which were most familiar for the companies of respondents were application of discounts (80%) and long-term partnerships with customers (70%). By the way, some competitors also mentioned such strategies like the importance of studying competitors' strategies, differentiation and "Blue Ocean" strategy.

The Likert scale-based block of question helped to find out how the level of innovativeness of each competitor. Each respondent evaluated from 1 (not important at all) to 5 (absolutely essential) the innovativeness strategies that are most familiar to their company.

In the graph above (see Figure 1), a blue line represents



the respondents' overall average evaluation, with the

Figure 1. Innovativeness of the company (source: created by the author)

following outcomes: focusing on new products development - 3.8, focusing on new services development - 3.6, focusing on making existing processes more efficient - 4.5, introducing a new way of making or saving money - 3.6, implementing a new way of interacting with customers - 3.3 and capability to grow quickly and cope with the increasing rate of change - 4.1. The results showed that most attention almost all enterprises pay on focusing on making existing process more efficient with average evaluations from 4 to 5. The biggest difference was noticed on implementing a new way of interacting with customers it showed for small companies it does not look like very important - with 1 average evaluation, but it pays much more attention focusing on new products development. It is very interesting that microenterprises pay so much attention to almost all the strategies because it requires a lot of work. Every enterprise has unique strategy in order to achieve their goals but answers from the respondents showed that innovativeness is a crucial part of their businesses, only difference is just that some companies have bigger capabilities to focus more on it than others.

Meanwhile, the same results could be analysed according to the countries where the companies are established. (see Figure 2) The respondents' overall evaluations are clearly shown by a blue line with the values in the graph.

The results from question block about innovativeness of company shows that there is no relevance of location aspect of the company because it is obvious from the graph that focusing on making existing process more efficient is very important for all enterprises. It makes sense because having as much efficient and fluent working process means better results for company that transforms to the profit. Besides that, it could be noticed that for some companies from such countries like Lithuania, Germany, Italy or even France innovation associates mostly with focusing on new product development but it is clearly noticeable that for an

enterprise from The United Kingdom almost is not important at all. The same company that does not pay that much attention focus on new products development, but it cares a lot about capability to grow quickly and cope with the increasing rate of change. It is interesting because all the companies emphasize this type of strategy as relevant one and it is clearly noticeable from an overall average 4.1 evaluation.

Furthermore, an open-ended question which was included in the survey asked the companies to mention the most popular product and respondents mentioned such products like: professional kitchen tables, equipment for

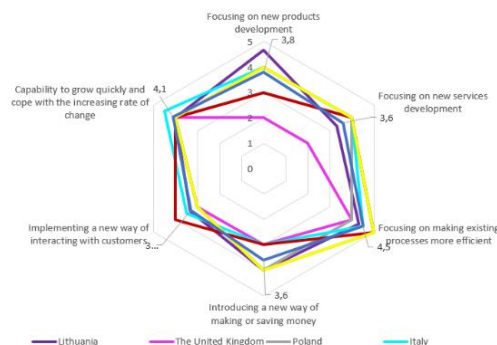


Figure 2. Innovativeness of the company by location (source: created by the author)

the bars, serving line system, cooling counters, stands for dishwashers, convention ovens, shelves and cupboards. Some of the answers were mentioned more than once but, in any case, it shows that companies can concentrate their work either on very similar and wide production or even just on professional kitchen equipment. In addition, for the evaluating the technological capabilities of company was asked about capabilities of colouring production and it showed that the majority of respondents could provide any colour customers' needs or at least others can provide most common 6-10 colours.

Likewise, the other question block assessed the significance of several production criteria that the enterprise focuses on. Respondents assessed each of the claims presented in the block from 1 (not important at all) to 5 (absolutely essential) in terms of how well they described the organizational approach toward manufacturing and major strengths of their company. The overall average evaluation of answers are indicated by a blue line in the graph below (see Figure 3), with the following results: high quality -4.9, nonstandard solutions - 4.1, multifunctionality of products - 3.2, paying attention to suggestions of customers about improving products - 3.8, products are made from long-lasting

materials – 4.5 and the design of product has characteristics of green design solutions 2.3 evaluation. The graph discloses that most important for all the companies are high quality of their production that is totally normal because an industry of professional kitchen equipment especially if the products are made from

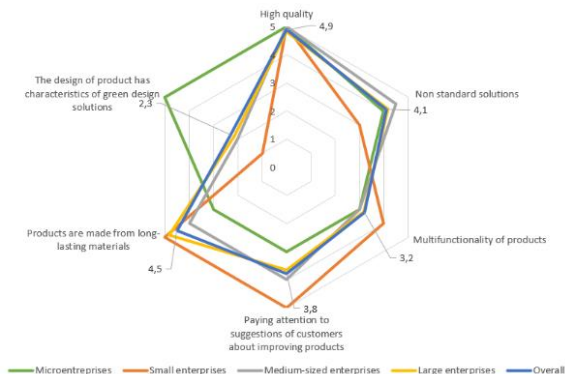


Figure 4. Significance of production criteria's by company (source: created by the author)

stainless steel has very high hygiene requirements. The other attribute that most of the respondents' care was the condition that products must be made from long lasting materials, and it also refers high hygiene requirements of such products. The biggest difference between the results could be noticed on an attribute of that product should have characteristics of green design solutions just microenterprises valued it very high - 5 but the overall evolution is just 2.3 and it means that other companies does not pay attention a lot to it but it interesting that small company do not care about it at all, but it pays more attention on other factors as it could be seen. It is hard to become a strong competitor in the market for new and such small companies' and it requires unique decisions like in this case. The graph clearly shows that bigger companies can focus on more attributes than smaller ones and have a good product looking at it from different angles and it does not require being specific good at one issue like it is for smaller enterprises.

Moreover, the same data might be evaluated based on the nations in which the enterprises are located. A blue line with the numbers in the graph below (see Figure 4) clearly shows the respondents' overall assessments.

Analyzing the data from this point of view it is clearly seen that attributes like high quality of products and that it should be made from-lasting materials are still the most important for the respondents. It still shows that green design solutions for the products does not like very attractive from most of the companies. Only the company from the United Kingdom clearly emphasized that their key to success is nonstandard solutions in their productions and it showed that Italian companies are not that interested in multifunctionality of products, but the rest of results implies that there is not any strong geographical impact in this industry for the companies and their attitude on the production.

Finally, the complains from the customers is an inalienable part of the business and it happens from time to time as the results of survey shows that 40 % of companies receives it rarely (few times a month) other a bit more often like 2-3 time a week but it all depends on

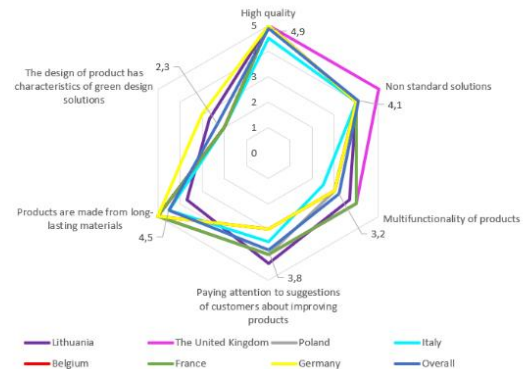


Figure 3. Significance of production criteria's by company location (source: created by the author)

the attitude and how the company operates. The most important is to satisfy the customer and it is crucial important to respond to those all complaints as far as possible. The rival companies most often (70 % of companies) respond to the customer about various issues per day but for example the rest of respondents (30 %) claim that seek is to give an answer for the consumer within few hours. Add to that, the scale of the problems could be very wide, but everyone has their own methods how to solve the complaints regarded consumers. The participants' responses to an open-ended question about how to prevent reoccurring complaints were as follows:

- “Our company has a special system for customer claims. If we see complaints recurring, we explain the reasons without delay and change product, transport, communication style, analyze the price or materials, perform tests etc.”
- “Our quality department tries to solve every problem that customers face. The product could be changed to other one or it could be fixed by us, or another solution could be proposed. Priority is to satisfy customer's needs.”
- “It depends on the problem, but the main goal is to solve our mistake by satisfying customer needs.”
- “We have the systems in our company that analyzes recurring problems and in such a way we try to minimize complaints from customers”
- “We analyze every complaint from customers and trying to make actions to prevent recurring problems”
- “Including new solutions for those questions”
- “It depends on the field of the problem, but our priority is to satisfy our customers. If the complaints start to recurred, we would analyze it more deeply.”
- “Customer service tries to find the best solution

for customer personally. Quality department analyzes causes of that problem.”

Most of patterns of dealing with reoccurring complaints from consumers are very similar and consist of analyzing problem and finding the way roots of it in order to prevent from it in the future.

Results of survey customers

The online questionnaire was delivered through e-mail to the 169 firms' supplied e-mail addresses on their websites. During a two-week period, 11 respondents, or around 6% of all contacted firms, responded to the survey.

According to the survey results, 63.6 % of respondents were from Lithuania, which suggests that 7 firms are based here, while the remaining respondents each had 9.1 %, indicating that there are also enterprises from Poland, the Netherlands, the United Kingdom, and the Czech Republic. The questionnaire also showed that the majority of customer specializes in business of restaurants 72.7 %, some other customers focus on hotels 45.5 % and the rest of respondents operates in cruises, grocery stores or supermarket chains. The age of the most companies which participated in the questionnaire were not very high: 5 of them is 6-10 years old, 4 customer companies are active for about 1-5 year and only just 2 customers operate more than 10 years. Besides, the sizes of companies that answered the questions distributed quite equally: 3 of enterprises have more 250 people in their organization, 2 companies have 50-249 employees, from 10 to 49 members in their company has 3 of companies and 3 businesses of customers have less than 10 people.

Moreover, customers always face some challenges in the market. The survey showed that most common issues that consumers face nowadays are low supply of customized, non-standard equipment and lack of good quality equipment, both challenges have 54.5 %. Also, long delivery time is a problem too that was mentioned 5 times. The main reason which has 54.5 % of all responses why customers do not start partnerships with new companies is the reason that they cannot satisfy the needs of the consumers. In addition, such things like special attention (63.6 %), discounts (45.5%), flexible payment terms (36.4 %) or long-term partnerships (36.4 %) encourages customers of buying production from the supplier. The criteria that play the most of buying the certain product are functionality (63.6 %), materiality (45.5 %), unique design (45.5 %).

Furthermore, the shelf for serving lines could be customized according to the needs of customers. The question that covered the features that shelf should have, and majority of the respondents (90.9 %) claimed need LED lighting, other two most popular answers was heating option and mounted the protective tempered glass from external environment each response received 63.6 %. The most common length of the shelf that was mentioned by customers was 1135mm (45.5 %), the length of 1480mm has 4 responses (36.4 %). One of the customers expressed the need of 795mm and one more

respondent asked for the length of shelf that would be suitable for 2-5 gastronomic dishes. The shelf for serving lines usually goes with tempered glass on top and that is the reason why it is important to find out the maximum load that would be loaded on the shelf. 81.8 % respondents of the survey claimed that maximum load carried on the shelf would be 6-10 kg. Also, 72.7 % of participants of the survey would prefer good quality of the shelf than a better price (27.3%). The question that covered the price of the shelf of serving line showed that most of customers (81.8 %) would pay for such product 700-1400 EUR.

Furthermore, the block of questions helped to find out the most important aspects of purchasing products for customers. Each respondent evaluated from 1 (not important at all) to (absolutely essential) the most familiar aspects to their company's philosophy. A blue line in the graph below (see Figure 5) indicates the overall average evaluation of the responses, with the following results: price – 3,91, overall quality – 4.27, purchase experience – 3.55, usage experience – 3.82, installation of first use experience – 3.64 and after purchase service (warranty, repair, customer service, etc) - 4.09 evaluation.

The graph shows that most attention customers

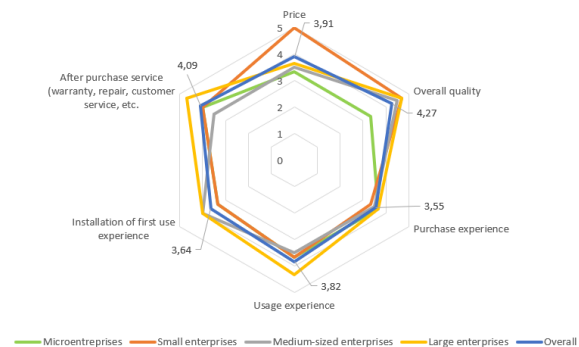


Figure 5. Importance of aspects that influence on deciding of purchasing equipment (source: created by the author)

pay to the quality of products the average evaluations are even above overall evaluation for almost all the sizes of companies except microenterprises. It makes sense because afford highest quality products for some very small companies could be an issue. In addition to that, it is obvious that afford very expensive products for small companies could be a problem and it reflects on the graph with a high average evaluation of 5 compared to the overall average value. After purchase service mostly is important for large enterprises as it could be seen. The results clearly shows that bigger companies of customers can afford better products with better quality and expect much better experience with it than smaller enterprises.

Likewise, the same data might be evaluated based on the countries where the consumers have established their businesses. A blue line with the values clearly shows the respondents' overall assessments in the graph below. (see Figure 6)

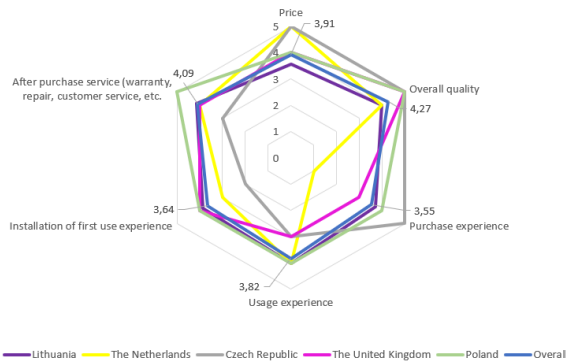


Figure 6. Importance of aspects that influence on deciding of purchasing equipment by location (source: created by the author)

When the data is analyzed from this perspective, it is seen that the trends of purchasing products differs a lot more compared with the previous one. It shows that such aspects like price, overall quality, purchase experience are crucially important for Czech Republic market, but it does not care that much about installation of first use experience or services after purchase equipment. The market of The Netherlands does not pay attention to purchase experience, but it cares a lot about the price and the rests of aspects it looks like is very important. Customers from Poland mostly cares about after purchase services and overall quality of products. The rest of the countries where the

professional kitchen equipment according to the values in the graph which are very close to the overall evaluation values.

The survey's final four questions focused on how customers prefer to communicate and purchase equipment. Most of the customers make purchases directly from manufacturer according to the responses of the questionnaire which has 72.7 % of all responses, some of them also buying from retailers 27.3 %, e-commerce 18.2 % and from resellers 9.1 %. The channels that consumers learn about new products most often are internet (72.7 %) or by recommendations (72.7 %). Also, very popular channels among customers are social media, exhibitions or even seller's offers. Facebook is the most popular social media network (81.8 %), although several respondents listed Instagram, Twitter, LinkedIn, and even WhatsApp several times. The most frequent method of communication with other firms, according to 10 of 11 survey participants, is via mail, another popular method is by phone (72.7 %) or in person (54.5 %).

Model for development and marketing of shelf for serving lines for customized professional kitchens

It was developed a model (see Figure 7) for developing and launching to the market shelf for serving to industrial enterprises which operate in commercial kitchen appliances industry. The model was adapted to the specific product, but it is versatile, and it could be adapted to any product in most of industrials. The purpose of the model is increasing the effectiveness of developing and marketing product in such a way making the whole process easier and

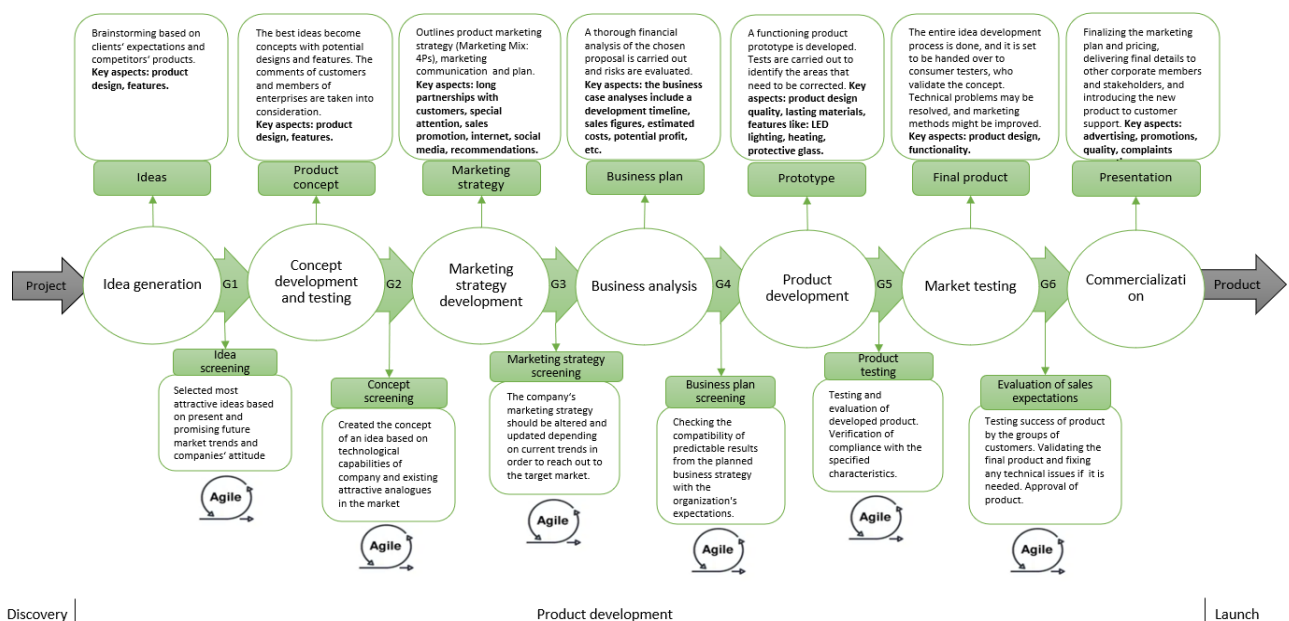


Figure 7 Proposed model for development and launching to the market shelf for serving lines (source: created by the author)

companies of customers are established give a similar amount of attention to every aspect of purchasing

much more successful.

The proposed model is hybrid type, and it based on the principles of Stage-Gate model, Decision process model which was suggested by Kotler and Keller and Agile. Also, it was developed based on review of financial aspects of this field of industry, examples of existing prototypes of shelves for serving lines and the results from the surveys. The gathered data was examined and systematized before being displayed as a visual model. The model illustrates the key stages of new product development as well as recommended strategies for their execution, as well as other aspects of new product development and market launch. As it could be seen in the Figure 7 it has 7 stages and each of it has a brief description with segment of key aspects which came from the results of surveys and review of existing analogues in the market. Key aspects are adapted for the development of exact proposed product, and it suggests for developers the main issues which should be considered in each of that stage in order to achieve the best results. Moreover, the suggested model also has 6 gates which is designed to support ongoing project evaluation. Each stage has a gate where the project is examined and evaluated to determine whether it fulfils the company's requirements and objectives, or if it can forward to the next. The idea could be dropped if the gates shows that it is not worth to develop it or it could show that the project still needs some improvement, and it is needed to take the step back. In addition to that, the model includes several characteristics based on an Agile set of values and principles that provide a team with a consistent framework for making decisions about how to create the product. Having such a collection of beliefs might assist the team and the entire enterprise in achieving their main aim - customer satisfaction. The decisions made at each gate of the model should be based on the core ideals and principles of Agile. Companies are advised to perform sprints with review-type meetings where product increments or new findings are given at the conclusion of each stage-gate, which would be validated by the management team and stakeholders. It might also be scheduled on an as-needed basis, such as daily or weekly stand-up meetings or even retrospective sessions.

Conclusions and proposals

The primary goal of this article, as stated at the opening, was to investigate the commercial kitchens sector and the elements that influence the success of launching a newly developed shelf for serving lines, as well as to present a model for product launch proposals for this sort of business.

The review of the financial aspects of commercial kitchens industry showed that in 2020 the worldwide food service equipment market was estimated to be worth EUR 32.11 billion and it is predicted that from to increase at a compound annual growth rate of 5.5 percent from 2021 to 2028.

The survey for competitors showed that all companies operate in foreign market that means that all of it should

considered the ways how to satisfy the needs of customers because that is the main reason why customers do not start partnerships with new companies. According to both surveys the major requirement for the equipment for professional kitchens is quality what is totally normal because an industry of professional kitchen equipment especially if the products are made from stainless steel has very high hygiene requirements. Most companies that participated in the survey claimed that one of the main aspects of their production is the quality, but it also added that some of it facing the problem of hiring qualified employees which means that lack of good and well-trained employees could be one of the reasons why it is so hard to satisfy the customers properly. In addition, the review of already existing shelves for serving lines in the market showed that some designs do not have a complete display design and, as a result, fail to fulfill customer expectations and market demands. The good thing is that companies that manufactures this type of equipment claimed the most attention is being paid at the moment on making existing process more efficient and that should eventually turn into fulfilling customers' expectations. It makes sense because having as much efficient and fluent working process means better results for company that transforms to the profit. Besides such things like special attention for customers or applying of discounts could be very beneficial for suppliers in selling their production. The model which was proposed at the end on this article is based on all the reviews and research which were made and all he gathered data was examined and systematized before being displayed as a visual model. The model is mostly indicative and as it was mentioned it is adapted of developing and launching to market shelf for serving lines, but organizations may simply modify and adjust it to include other project phases, implementation ideas, or methods. As it is a recombinational tool of launching the product the problematic issues can only be detected and improved by customizing the model to a specific case and assessing its success. The company loses the opportunity to achieve better performance without analyzing and adjusting existing organizational processes, so only by constantly improving its operations the company can expect to find a way to ensure the long-term success of new products in the market, which is why the model includes an Agile set of values and principles that can change an organization's attitude.

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Ekspozicinės lentynos kūrimas ir įvedimas į rinką

A.Valiokas

Santrauka

Šiuolaikinėje rinkoje vyrauja labai intensyvi konkurencija: nuolat besikeičiančios rinkos tendencijos ir nepastovūs, nenuspėjami klientų norai trumpina produkto gyvavimo ciklą. Šio straipsnio tikslas yra išnagrinėti profesionalių virtuvių įrangos gamintojų rinką bei nustatyti pagrindinius aspektus, kurie galėtų būti raktas į sėkmingą ekspozicinės lentynos paleidimą į rinką. Šio empirinio tyrimo pagrindą sudaro apklausos klientams ir įmonėms, specializuojančioms šioje pramonės srityje. Šiame straipsnyje pateikiami įmonių, kurios specializuojasi profesionalios virtuvės įrangos gamyboje apklausos rezultatai, taip pat tokiais gaminiais besidominčių klientų apklausos rezultatai. Abiejų apklausų tikslas buvo nustatyti, kokiais sėkmės aspektais įmonė turėtų pasikliauti, siekiant sėkmingo produkto kūrimo ir įvedimo į rinką. Remiantis tyrimo rezultatais ir surinkta informacija, buvo sukurtas ir pristatytas modelis, kuriuo remiantis galima tikėtis sėkmingo ekspozicinės lentynos kūrimo ir įvedimo į rinką.

Reikšminiai žodžiai: Produktas, kūrimas, įvedimas, profesionali virtuvinė įranga, komercinė virtuvė, ekspozicinė lentyna, faktoriai, aspektai, rinką.