VILNIUS UNIVERSITY
BUSINESS SCHOOL

INTERNATIONAL BUSINESS PROGRAMME

Dovydas Stasytis

Augustinas Janutaitis

BACHELOR THESIS

Inovacijų diegimo galimybės: Kauno miesto gamybos įmonių analizė	***Innovation Implementation Possibilities: Case of Kaunas Manufacturing Companies***

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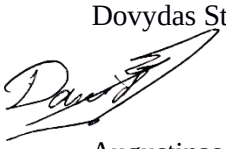

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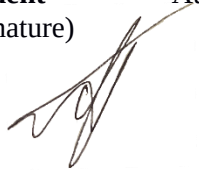

Supervisor prof. dr. Saulė Mačiukaitė-Žvinienė

Vilnius, 2021 m.

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SUMMARY

VILNIUS UNIVERSITY BUSINESS SCHOOL

INTERNATIONAL BUSINESS STUDY PROGRAMME

DOVYDAS STASYTIS, AUGUSTINAS JANUTAITIS

INNOVATION IMPLEMENTATION POSSIBILITIES: CASE OF KAUNAS MANUFACTURING COMPANIES

Supervisor – Prof. Dr. Saulė Mačiukaitė-Žvinienė

The academic paper has been prepared in Vilnius, 2021

The academic paper consists of 55 pages

Number of tables included 26 pcs.

Number of figures included 8 pcs.

Number of literature and sources 60 pcs.

A concise description of the academic paper

Analysis of innovation implementation possibilities in Kaunas manufacturing companies.

Aim and objectives of the academic paper

Analyze the peculiarities of the innovation implementation and evaluate the possibilities of innovation implementation in Kaunas manufacturing companies. Objectives - introduce and define innovation, its classification and implementation process from a theoretical viewpoint, according to the experts involved in the study assess the main difficulties and stimulants for innovation implementation in Kaunas manufacturing companies and provide basis for further research on innovation implementation possibilities in Kaunas manufacturing companies.

Methods used in the academic paper

A quantitative survey of experts working in Kaunas manufacturing companies, gathered using certain criteria.

Research conducted and results obtained

In the quantitative experts‘ survey 17 out of 23 experts from Kaunas manufacturing companies completed the survey, showing that the biggest motivator to innovate in these

companies would be outside financing.

Conclusions of the academic paper

The theoretical analysis shows that innovation can be understood differently depending on the situation because of the various ways it can be interpreted and classified. However, there are a few ways that are largely similar across academia. Specifically in the case of Kaunas manufacturing companies empirical research of experts shows that the most important as well as the most difficult type of innovations to develop and implement are internal innovations, such as processes and business models, and the best way to stimulate innovation in these companies overall is external funding, either from other businesses or governmental institutions.

SANTRAUKA

VILNIAUS UNIVERSITETO VERSLO MOKYKLA
TARPTAUTINIO VERSLO (ANGLŲ KALBA) STUDIJŲ PROGRAMA
DOVYDAS STASYTIS, AUGUSTINAS JANUTAITIS

INOVACIJŲ DIEGIMO GALIMYBĖS: KAUNO MIESTO GAMYBOS ĮMONIŲ ANALIZĖ

Darbo vadovė – Prof. Dr. Saulė Mačiukaitė-Žvinienė

Darbas parengtas – 2021 m. Vilniuje

Akademinį darbą sudaro 55 puslapiai.

Lentelių skaičius darbe – 26 vnt.

Paveikslų skaičius darbe – 8 vnt.

Literatūros ir šaltinių skaičius – 60 vnt.

Trumpas darbo apibūdinimas:

Inovacijų diegimo galimybių Kauno gamybos įmonėse analizė.

Darbo tikslas ir uždaviniai:

Rašto darbo tikslas – išanalizuoti inovacijų diegimo ypatumus ir įvertinti inovacijų diegimo galimybes Kauno miesto gamybos įmonėse. Uždaviniai – pristatyti ir apibrėžti inovacijas, jų klasifikavimą ir diegimo procesą teoriniu požiūriu, pagal tyrime dalyvavusių ekspertų nuomonę įvertinti pagrindinius inovacijų diegimo Kauno gamybos įmonėse sunkumus ir stimulus bei sudaryti pagrindą tolesniems inovacijų diegimo galimybių Kauno gamybos įmonėse tyrimams.

Darbe panaudoti metodai:

Buvo atlikta Kauno gamybos įmonių aukštas pareigas užimančių darbuotojų kiekybinė apklausa, atlikta vadovaujantis atrankos kriterijais.

Atlikti tyrimai ir gauti rezultatai:

Į apklausos tyrimą buvo atrinkti 23 ekspertai, iš kurių 19 sudalyvavo apklausoje, o 17 buvo tinkami pagal numatytus kriterijus.

Darbo išvados:

Inovacijos gali būti suprantamos skirtingai, atsižvelgiant į situaciją, nes jas galima įvairiai interpretuoti ir klasifikuoti. Tačiau yra keletas būdų, kurie iš esmės yra panašūs visoje akademinėje bendruomenėje. Konkrečiai Kauno gamybinėse įmonėse sunkiausias inovacijų tipas

yra vidinės inovacijos, o geriausias būdas paskatinti inovacijas šiose įmonėse apskritai yra išorinis finansavimas iš kitų įmonių ar valstybinių institucijų.

INTRODUCTION

Lithuania is rapidly speeding up its growth in innovation but is still considered as a moderate innovator by the European Commission (European Commission, n.d.). Research, such as (Kekys, 2010) analyzes and compares the innovation implementation tendencies of Lithuanian companies in different sectors, whereas academical works done by researchers such as (Bružas, 2014) focus on individual sectors, or as (Meschi et al., 2015) focuses on both specific sectors and geographical regions. Research done in the past states that there are differences in both regions and industries when developing and implementing innovations. Therefore, to comprehensively analyze innovation development and implementation possibilities, authors of the work chose to specify both the region and the industry.

Kaunas is an attractive area for manufacturing companies, having recently attracted the likes of Hella and Continental. Besides, the manufacturing sector still has a low percentage of its focus towards high-tech manufacturing (European Commission, 2021). With Kaunas being an attractive location for the manufacturing industry, it is pertinent to explore the innovation tendencies and opportunities of Kaunas manufacturing companies (Kauno laisvoji ekonominė zona, n.d.).

This paper will focus on analyzing the current situation of innovation implementation in manufacturing companies located in Kaunas, defining the most important types of innovation, the internal and external factors that have an impact and the biggest motivators to innovate for these companies. Innovation is a very wide subject that has been covered many times in different scientific literature, thus there are many ways to define innovation, more ways to classify it and many ways to implement it. Thus, the paper will focus on the innovation classification tools that are to most pertinent to the innovation of manufacturing companies.

In the paper, the definition of innovation will be introduced in order to set a basis for further analysis, followed by the analysis of the ways that innovation can be classified and implemented, from some earlier basis of analysis, followed by the most recent understandings of innovation and its processes. The theoretical analysis will be concluded by outlining the main ways that innovation is understood, classified, and what are the main models that are used to implement innovation. The theoretical base will be followed and evaluated by a survey of 17 executives from different manufacturing companies located in Kaunas and will evaluate the

importance of innovation, the main factors that are interfering with innovation, and the main motivators to implement innovation in their respective companies.

Results of the theoretical and survey-based analysis show that while innovation is widely understood as very difficult to standardize, there are ways to classify innovation in a way that would be complementary to the decision at hand, opting for the variety of classification needs that best adapt to the situation at hand. With this being the case, Kaunas based manufacturing companies are open to most types of innovation but being the most open to developing new products and solutions, acting more conservative when innovations reach the internal levels of the organization. The companies surveyed are mostly affected by economic and technological outside factors. The recommendations for these companies are to engage more in the overall innovation implementation processes through motivating their existing personnel to come up with ideas, or to hire employees for innovation management roles.

The input of both authors writing the entire paper was similar, with A. Janutaitis focusing more on the theoretical part, and D. Stasytis having a more focused view towards the survey and analysis. The final conclusions and recommendations were discussed and created by both authors.

1. THEORETICAL ASPECTS OF INNOVATION IMPLEMENTATION POSSIBILITIES

This section of the paper will introduce and define innovation, its classification, typology, and implementation from an academic viewpoint as well as put the base for the further research of innovation implementation possibilities.

1.1. Introduction to innovation

As mentioned by (Varadarajan, 2018) in his paper "Innovation, Innovation Strategy, and Strategic Innovation", many conceptualizations and definitions of innovation can be found in different academic and non-academic literature sources. Therefore, it is difficult to distinguish one particular definition of innovation, as it depends on the context used. As a word, innovation is not new - the first records of its use in English come from the 16th century. It originated from the Latin verb i*nnovate*, which means "to renew" and includes the root *novus,* meaning "new".

In essence, the word's meaning has remained unchanged to this day. To innovate is to improve or replace something, such as a process, a product, or a service. According to Ove Grandstrand and Marcus Holgersson paper "Innovation ecosystems: A conceptual review and a new definition", innovation could be described as a process by which something is renewed and brought up to date by applying new processes, introducing new techniques, or establishing successful ideas to create new value (Granstrand & Holgersson, 2020).

To give a broader understanding of the definition of innovation, such examples can be found in various sources: "The use of a new idea or method" as described by the dictionary of the university of Cambridge, or alternatively as "The act or process of introducing new ideas, devices or methods" as described by the (Cambridge University Press, n.d.) and (Merriam-Webster, n.d.).

In the context of business, the meaning of innovation can be described as such: innovation is a process that an individual or organization undertakes to conceptualize brand new products, processes, and ideas, or to approach existing products, processes, and ideas in new ways (Purcell, 2019).

As mentioned in the executive summary of the U.S. Chamber Foundation, in recent times, innovation is an essential driver of economic progress that benefits individuals, businesses, and the economy overall. It fuels competitiveness between businesses, creates jobs for individuals and creates additional social and economic value to the global economy. Innovation is also the key to staying relevant in the continuously changing world. Without innovation, there is no progress. If an individual or an organization is not making any progress, it simply cannot stay relevant in the market (U.S. Chamber of commerce, 2014).

Joseph Schumpeter was one of the first economists in the world to emphasize the importance of introducing and commercializing innovative changes as a stimulant of economic growth. According to him, as mentioned by Hassan Shirvani in his article in the Cameron School of business blog, competitiveness which is brought by innovative changes is more impactful than the competitiveness in current product prices. The economy is more prone to grow with the introduction of new products rather than with variations in prices of the current products. Schumpeter also emphasizes that innovation does not equal invention. Invention is related to technological and scientific research, whereas innovation is the next stage of invention research or the application and commercialization in practice (Shirvani, 2016).

Although innovation can have undesirable consequences, such as digitalization of jobs that were previously done by a human workforce (Twerenbold, 2017), change is inevitable, and in most cases, innovation creates positive change in both macro and micro levels. As mentioned by Julia Kylläinen in her article “The importance of innovation – what does it mean for business and our society”, innovation is the core reason why we live in a modern world, but usually it comes at a price (Kylliäinen, 2019a).

Innovation as a concept is well defined in both a broad sense and in specific contexts of business. It is widely understood as one of the most important concepts of business as it is the driving force behind new products, services and other solutions, even though it can have its associated costs, it usually brings positive changes to the economy.

1.2. Innovation classification

To analyze innovation, it is beneficial to know how to classify certain types of innovation and understand that there are multiple ways to look at innovation from an academic standpoint. For the purposes of this paper, multiple ways of classifying innovation will be presented.

The definition of innovation can be broad and interpreted differently, depending on the context it is used in. It leads to diverse sources of literature that provide various classifications of innovation using different parameters. Different authors depict the classification of innovation in both similar and different ways. Authors classify innovations by its content, level of implementation, the extent of implementation, level of novelty, organizational features, nature, result and more.

Considering the diversity of innovation classification, such groups of classification usually prevail:

1. Content classification (Edwards-Schachter, 2018)
    a. Technological innovation. It is the creation of new technologies and their application in various fields of activity.
    b. Product innovation. Product is the development, production and use of new and finished products.
    c. Process innovation. Describes innovations concerning processes, by improving production or delivery methods.
    d. Service innovation. Innovations based on a technology or systematic method
    e. Business model innovation. Describes innovations that are simultaneous in the entire business process.
2. Level of implementation (Baur et al., 2015):

Type of company, institution, organization; an industry-type organization with a branch of industry or other activity; society and the state; ecosystem; the world.

3. Extent of implementation (Boylan & Demack, 2018):
    a. One-time - implemented once.
    b. Multiple - their implementation occurs several times.
4. Level of novelty (Pasciaroni & Barbero, 2020):
    a. Radical - new measures to meet new or already known needs that qualitatively changes the way society operates.
    b. Incremental - modifying, improving and supplementing; guaranteeing an improvement in existing measures to adapt to the changing needs of society.
5. Organizational features (Baur et al., 2015):
    a. Internal organizational - organizing the innovation implementation process for only one organization.
    b. Interorganizational – distribution of individual functions of the innovation implementation process between different organizations.
6. Nature of innovation (Badiru & Lamont, 2021):
    a. Quantitative - productivity, production volumes, etc. increase in quantitative aspects.
    b. Qualitative - production, management, quality improvement.
7. Result of innovation (Dziallas & Blind, 2019):

a. Fundamental - the result is a scientific theory presented in written form. The organization and management of such innovative activity are very advanced compared to other innovations.

b. Experimental - the result is an experimental product example based on scientific theory.

c. Basic - the result is the mass production of an experimental product in a specific organization for the first time.

d. Diffusive – The innovation is a result of an exploration of possibilities when developing another innovation.

e. Conditional – The result is an innovation that only works under certain conditions, not under all of the foreseen conditions.

These models can be used in order to distinguish what type of innovation would be optimal for an organization depending on the goals that it is trying to reach. This type of differentiation can not only help to adhere to or disrupt the market but also save resources when developing an innovation because of its targeted goals.

1.3. Types of Innovation

One of the main ways to classify innovations is to evaluate the impact of different innovations and what problems can be solved. This section will analyze types of innovation to better understand the impact it has, as well as provide examples for each type of innovation.

Innovation, as stated previously, is a process of renewing while creating additional value. As the environment and the needs of the consumers are constantly changing, businesses need to focus on different areas and find ways to address emerging problems by offering improved solutions with added value that accommodate the changes in customer behavior.

Companies operating in different industries face various challenges, therefore it is beneficial to understand the types of innovation to discover the ones that are the most relevant

for the company. Focusing on the most potent type of innovation helps companies to solve emerging problems and create new value for their customers (Kylliäinen, 2019b).

1.3.1. Innovation matrix

Innovations can be categorized in different ways when taking into account various things, such as whether it is categorized for a specific industry, product or service. Another approach to differentiating innovation is to categorize it based on its effect on the market, its cost, benefits, and value proposition to customers. Though they have different features, a small part of the categorizations is overlapping.

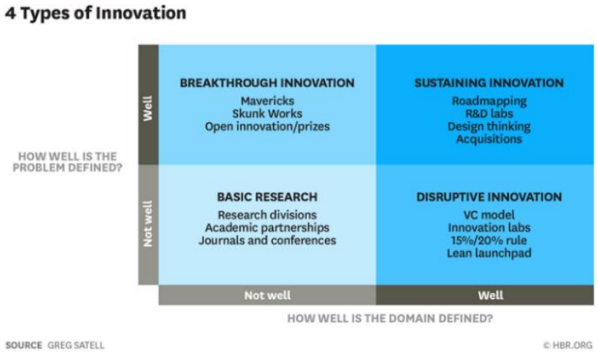
According to Greg Satell in his 2017 article "The 4 types of innovation and the problems they solve", one way to categorize innovation for businesses and to choose the most relevant type is based on two dimensions (Satell, 2017):

- How well can a company define the problem;
- How well can a company define the resources needed to solve it.

Greg Satell has also created an innovation matrix to help visualize these two dimensions and categorize innovation into 4 types:

- Sustaining innovation
- Disruptive innovation
- Breakthrough innovation
- Basic research

Figure 1. Four types of innovation



Source: (Satell, 2017)

1.3.2. Sustaining innovation

Innovation can easily be associated with breakthrough and game-changing new products and services, but one of the most common forms of innovation that can be observed is sustaining innovation, according to (Satell, 2017) in the same article, this type of innovation uses existing technologies within an existing market, by gradually and continuously improving the existing versions of products and services, without changing its core functionality.

According to Lauren Landry in her 2020 article for the Harvard Business School journal (Landry, 2020), incremental innovation can also be described as a series of small improvements to already existing products or services to furthermore differentiate from the surrounding competition. (Kylliäinen, 2019b) adds, that with constant improvement, products can be made smaller or more cost-effective to manufacture, services can be made easier to use or more accessible with low-cost improvements, therefore retaining customers, extending the current market and increasing the profits.

In fact, according to the (Harvard Business Review, 2018), companies that focus more on marginal improvements to existing products are more likely to be more successful and have a better return on investment than those focusing on high-risk breakthrough innovations.

One of the leaders in the mobile phones market, Apple, with a cultivated reputation of radical innovation and market disruption, portrays a great example of sustaining innovation with its popular product iPhone. Since the iPhone's unveiling in 2007, Apple has regularly released upgraded versions that offer small-scale improvements, such as larger screens,

better camera, and battery life longevity, that do not depart from the iPhone's core functionality.

As David Curry states in his "Apple statistics" article for Business of Apple, The iPhone is Apple's most valuable product and since 2008 has been its main source of income, accounting for more than 50 per cent of total revenue (David Curry, 2021).

1.3.3. Disruptive innovation

The term disruptive innovation was defined and first analyzed in 1995, by (Bower & Christensen, 1995). In 1997, Clayton M. Christensen further explained disruptive innovation in his book "The Innovator's Dilemma" (C. Christensen, 1997). His introduction and definition of disruptive innovation has been called the most influential business idea of the early 21st century.

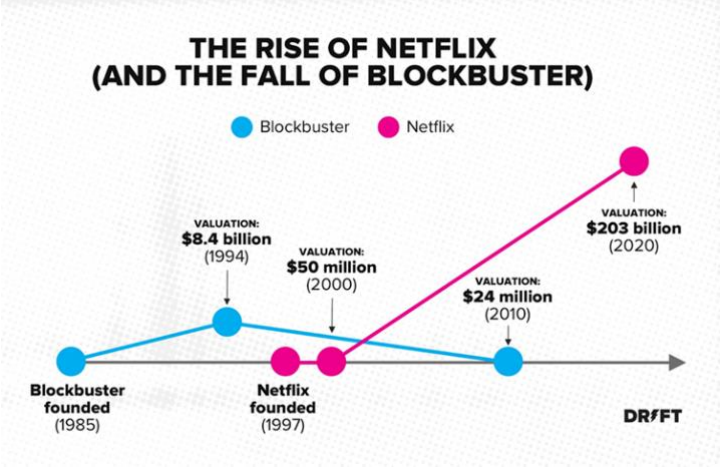
In business, disruptive innovation is an innovation that creates a new value network either by entering an existing market or by creating a completely new market and changing how consumers interact with it, this is still true 21 years later, as the same ideas first presented by Christensen, are once again analyzed and backed up by Christensen himself and his two peers, Rory McDonald and Jonathan Palmer in their paper "Disruptive Innovation: An Intellectual History and Directions for Future Research" (C. M. Christensen et al., 2018). According to Christensen, such innovations typically enter a market with lower performance, measured by the traditional metrics of that market, but offer value in an alternative way to a small segment of the market for whom that alternative is highly important.

Eventually, with the bridgehead of that small segment, it displaces market-leading companies and products, as established organizations tend to be completely rational with their decision-making related to their existing business. They fail to adjust to the new competition because of the focus on the existing and success-proven business model.

A well-known example of disruptive innovation is given by (Satell, 2014) in his article "A look back at why Blockbuster really failed and why it didn't have to" for Forbes. According to Satell, When Netflix launched in 1997, Blockbuster was a successfully established business of physical video rental, with more than 2800 brick-and-mortar stores around the world and an evaluation of more than 8.4 billion dollars (see *Figure 2*). Netflix disrupted the home-video sales

and rental industry by offering the world's first online DVD-rental store with almost the entire catalogue of DVDs at the time and later introduced a monthly subscription concept with unlimited rentals without due dates, late fees, shipping and handling fees, or per-title fees. Due to Blockbuster failing to adapt, Netflix took over as the leading market player and in 2010 Blockbuster filed for bankruptcy. *Figure 2* shows how Blockbuster, being too late to adopt innovative solutions, went into bankruptcy, while Netflix soared to never seen heights.

Figure 2. Valuation of Netflix and Blockbuster



Source: (Sloan, 2020)

1.3.4. Breakthrough innovation

Another way to describe a type of innovation is breakthrough innovation, according to thedefinition.com, breakthrough innovation could be described as an innovation that fundamentally changes the dynamics of a given industry or market, or a unique, state-of-the-art technological advancement (The-definition, n.d.).

Referring to Greg Satell's innovation matrix breakthrough innovation has a well-defined problem, but an undefined needed skills and resources domain. Therefore, breakthrough innovation can be defined as the solution to a well-defined problem, which, on the other hand, is

difficult to solve (Satell, 2017). According to Thomas Kuhn in his book “The structure of scientific revolutions, most of the breakthrough innovations originate from inside of a business organization by expanding the skill-domain to unconventional fields (Kuhn, 1996).

A great illustration of breakthrough innovations during the last decade are the achievements of new commercial space companies, such as SpaceX, Blue Origin and Virgin Galactic. The most impactful innovation in this sector is the ability to land and re-use rockets that have been to orbit. To achieve that, several breakthrough technologies needed to be developed as is stated in the article by (Reddy, 2018). Also, according to Steinar Lag in his article for DVN “Reusable rockets, revolutionizing access to space”, reusable parts dramatically decrease the costs of space launches, therefore lowering the barrier of access to space and the industry itself (Steinar Lag, 2019).

(Starlink, n.d.) themselves state that this cost-efficiency fundamentally changed the dynamics of the space industry and already brought a new wave of space-related technologies and businesses.

1.3.5. Basic research

Current advancements in technology and the modern society overall could have only been futuristic ideas in the past. Albert Einstein’s discoveries in the 19th century, such as quantum mechanics or general relativity, did not immediately evolve into innovative technologies and no one could have guessed how these discoveries would be used in the future. Nowadays these discoveries play vital roles in technologies such as GPS satellites and computers, and even nuclear energy (Thales Group, n.d.).

As Desiree Schauz writes in her 2014 paper “What is basic research? Insights for historical semantics” breakthrough innovations never come fully formed and always begin with the discovery of some new phenomenon (Schauz, 2014). The concept of basic research emerged between the end of the 19th century and the beginning of the 20th century. Basic research is a tool for generating new ideas, principles, and theories. Its purpose is to gain a deeper understanding of a subject, phenomenon, or basic law of nature. This type of research is motivated by a desire to learn more about the unknown and is focused on expanding knowledge

rather than fixing a particular issue. Referring to Greg Satell's innovation matrix, basic research has neither a well-defined problem nor domain. It can be done in a variety of fields, with the primary goal of expanding the frontiers of knowledge and broadening the scope of these fields of study.

Basic research can help to plan for the future. Governments and businesses constantly invest in basic research for an early peek at future technology. The United States of America alone has invested $107.8 billion of US dollars into basic research in 2018 (Sargent, 2021). Basic research funded by governments is usually a public domain, therefore companies by monitoring scientific journals, participating in conferences and working closely with government agencies can already gain benefits (Satell, 2016a). Large businesses, such as IBM, have their own research laboratories. Others, such as Google, invite researchers to the company to pursue basic research and fund about 250 academic projects annually. Being that close to basic research has proved a great return on investment (Satell, 2016b). According to Colin MacIlwain in his 2010 article "Science economics: what science is really worth", basic research has a return on investment of 20-40% (MacIlwain, 2010).

In conclusion, there are 4 main types of innovation, which are based on its performance towards the market and the overall goal it is trying to achieve regarding either adherence to or disruption of market trends. Every type of innovation has its own benefits and disadvantages; therefore, companies should analyze which type of innovation would be the most beneficial for current or planned activities.

1.3. Innovation implementation process

Innovation is not only a result, but also a process to obtain that result (Granstrand & Holgersson, 2020). After analyzing the classification of innovations to better understand what types of innovations suit the needs, it is important to analyze the process of innovation implementation as well.

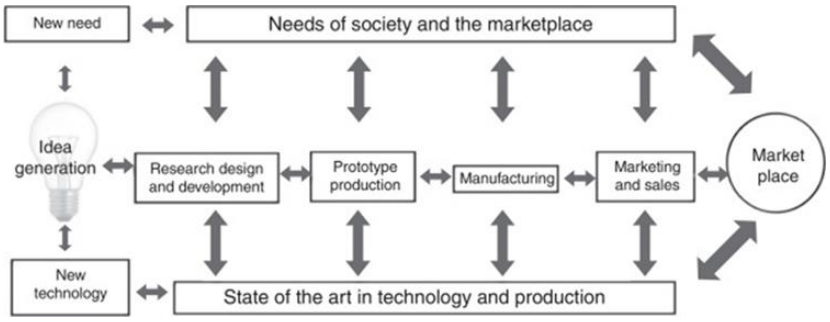
While seeing the different ways that innovation can be classified, we must understand that this is not only to be done retroactively, but also when developing new innovations. Knowing what type of innovation is needed helps with the implementation process, of which

there can also be multiple types. Innovation implementation is one of the key characteristics of a successful modern business. It determines the businesses' competitiveness in both the local and international markets. Nowadays, businesses must respond quickly to changes in the business environment. Adjusting these changes, such as new technological solutions or business models, determines the future of the business. Organizations must be faster than their competitors to launch innovations into the market to keep the advantage.

According to the paper “Innovation development process in small and medium technology-based companies” by Fabiana Matos da Silva, Edson Aparecida de Araujo Querido Oliveira and Marcela Barbosa de Moraes, the innovation implementation process can be divided into three main stages. It starts from the generation of innovative ideas, acceptance of

the idea, which consists of screening the idea and experimenting, and the realization of it - implementation and commercialization (Silva et al., 2016). The whole innovation implementation process described by Fabiana Matos da Silva can be seen in *Figure 3*.

Figure 3. Innovation implementation process



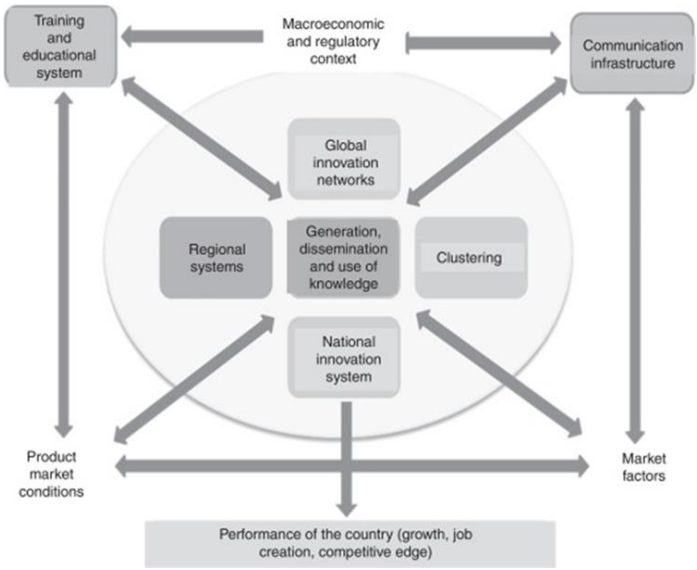
Source: (Silva et al., 2016)

The implementation of an innovation is a difficult and dynamic system. The success of innovation depends not only on the company, but also on the environment. Innovation implementation effectiveness depends on the external business environmental factors that affect the company.

Innovation implementation is usually a long and incrementally more complicated process, which consists of many decisions. It can develop in a certain system, which includes the

technical (science and technology), social, cultural, economic and political environment. The innovation implementation process is supported by information resources through the various environments to which it relates.

Figure 4. Environment of innovation implementation



Source: (Silva et al., 2016)

This scheme allows to comprehensively analyze and evaluate potential factors that have an impact on the success of innovation implementation. It can have an impact of political, economic, societal, technological or market factors.

1.3.1. External factors

This section focuses on the most important external factors that influence the system of innovation implementation.

The company's external environmental factors cannot be directly controlled by the company. These factors can be obstacles or create the right set of circumstances for the company's innovation implementation success (OECD, 2019).

Companies must consider the external environment when making strategic choices in areas such as the innovation implementation process. First, there are political factors that have a lot of significance for any economic process: the state's legal and economic policy, its approach to innovation processes, the tax system, customs duties, the legal protection of consumers and entrepreneurs, and the rule of law. Without the introduction of political factors, it is impossible to plan the innovation process effectively. That information is necessary whether it directly or indirectly affects innovation processes. Social factors such as political views, values of life, traditions, religion, education indirectly but very strongly influence the innovation process. The social environment is constantly changing, it is not stable. That change is partly due to changes in political and economic factors. The efficiency of production-oriented innovation processes can be determined by technological changes that are constantly taking place in the external environment. Without considering technological factors, the outcome of the innovation process may become uncompetitive. When assessing market factors, it is important to keep in mind that these factors are constantly changing, that they need to be monitored, that changes in the future process need to be assessed and that the innovation process needs to be adjusted.

1.3.1.1. Political

The political environment is one of the key factors for successful innovation in both the public and private sectors. In the absence of key policy guidelines for innovation in business organizations, for example strategic documents, the strategic approach of the authorities, the political will and other, the successful implementation of innovations is not possible.

Companies that are developing innovations should thoroughly examine and pay attention to the political factors due to the political and legal changes taking place in the state: the tax

system, law enforcement and even customs. Companies must assess which laws regulate innovation, how they stimulate or hinder the development of innovation, as well as ensure that their innovation activities are according to the laws (OECD, 2019).

- Political actions that can impede innovation activities: tax system changes, statutory patent-licensing restrictions, antitrust laws.

- Political actions that can stimulate innovation activities: incentives to encourage innovation, governmental aid programs, lower taxes on innovation activities.

1.3.1.2. Economical

It is necessary to assess not only the economic situation of the company itself, but also the domestic and international economic situation, regardless of whether they directly and indirectly affect innovation activities. It must be understood that a specific change in the economic environment can be a major advantage for one innovative activity and a disadvantage for another. Therefore, the economic analysis of the environment needs to be given attention and possible options for the whole period of innovative activity need to be forecasted (Tomaszewski & Świadek, 2017).

- Economic actions that impede innovation activities: lack of financing for innovation projects, importance of current production interests.

- Economic actions that stimulate innovation activities: availability of additional financial resources, financial promotion of innovative activities.

1.3.1.3. Social

It is observed that the values of life, beliefs, values, traditions and political views can indirectly but strongly influence the results of innovation activities. The social environment is not stable, it is constantly changing, and it is affected by politics and the economy (Bitzer & Hamann, 2015). Changing societal relations, habits and attitudes can lead to innovative activities, so in order to respond to social factors effectively, it is necessary to constantly monitor, evaluate and consciously develop and respond to them to steer innovation in the right direction.

- Social factors that impede innovation activities: resistance to innovation, fear of uncertainty, unfounded fear of failure, resistance to change, which can have negative consequences.

- Social factors that stimulate innovation activities: public recognition, moral encouragement, the possibility of self-realization, normal psychological climate of the team.

1.3.1.4. Technological

The efficiency of production-oriented innovation is determined by technological developments that occur in the external environment on a regular basis. For innovation activities, information that aids in timely and accurately assessing technological elements such as new technologies, materials, or procedures is critical. It can be disastrous if companies do not respond quickly enough to external changes, as in the case of Netflix and Blockbuster (Chopra & Veeraiyan, 2017).

- Technological factors that impede innovation activities: weak material and technical base, worn-out equipment, lack of spare capacity, high labor, energy and material costs in the production process.

- Technological factors that stimulate innovation: available economic and scientific-technical infrastructure, advanced modern equipment.

1.3.1.5. Market

As with all the factors mentioned, the market is also undergoing constant changes that need to be monitored and adapted quickly. The product or service of an innovative activity, its price and available quantity, market receptivity, market position compared to the competitors all depend on market factors. Suppliers, customers and partners can also be included in the external factors influencing the innovation process. When planning an innovative activity, it is necessary to know whether the innovative product or service will be purchased. In addition, it is necessary to know the scope of production or availability and possible price (OECD, 2019).

When analyzing all these factors within the market, it is necessary to understand that the market is constantly changing, therefore, while implementing innovation, it is necessary to constantly monitor all existing market changes, whatever they may be. After evaluating them, businesses must make the right decisions and change their innovative activities quickly and efficiently.

The interaction of innovation activities with the external environment forms the life cycle of innovation. Therefore, it is necessary to realize that the market is constantly changing, and during innovation activities it is necessary to constantly monitor these changes, correctly assess and quickly change the course of innovation activities, adapt to changing conditions and guarantee the viability of innovations. Thus, in summary, it can be stated that the effective interaction of the above-mentioned external factors with the internal environment of the company in the process of innovation implementation is the basis for the successful implementation of innovations.

1.3.2. Internal factors

After the analysis of external factors, internal factors must be evaluated as well. Many authors distinguish a few main internal factors. Amongst different authors, there are four internal factors that are the most important in assessing the internal environment of the company: employees, information, resources and organizational culture (Bashir & Verma, 2019; Shatilo, 2020).

1.3.2.1. Personnel

The company's personnel are knowledge resources. A qualified and motivated workforce is more capable of creating and developing innovations. Without the right personnel, it will be difficult to implement innovations (Antonelli et al., 2013).

1.3.2.2. Information

It is necessary to collect all relevant information when implementing or drawing up an innovation plan. Planning for innovation development in the company, it is first necessary to determine whether the company has a reliable information system, since its effectiveness will

depend on the quality of management decision-making and, on the latter, on the quality of innovation operational efficiency. It should be noted that in the absence or control of detailed information or if it is very limited, decisions on innovation activities become riskier (Huang et al., 2019).

1.3.2.3. Resources

When analyzing the available financial, knowledge and human resources, it is necessary to discover their weaknesses, and to think properly about what to do for better quality, cheaper raw materials or where to get additional resources.

1.3.2.4. Organizational culture

As Chang Zhu argues in her 2014 paper "Organizational culture and instructional innovations in higher education: Perceptions and reactions of teachers and students", in order to create a proper internal culture, it is necessary to think carefully about how the culture of the innovation team will be developed, how to connect the minds and feelings of all employees into one (Zhu & Engels, 2014).

The innovation plan must set out how the culture of the innovation team will be developed, how the knowledge, mind and feelings of all employees will be linked for the benefit of innovation and themselves. Without an internal culture directed towards innovation, results from innovation activities will be affected, as even the best modern technologies cannot replace the creativity of people.

In addition to the elements listed above, other features of the organization, such as companies' vision, mission, philosophy, organizational strategy and goals can influence organizational culture.

Authors argue that the most crucial factor of innovation implementation success is the involved personnel, as without people any innovation will be doomed to failure (Antonelli et al., 2013; Eschberger, 2018).

However, the information environment should be given equal attention, as without it, decision-making would be quite a challenging task. Information must be constantly circulating within the company.

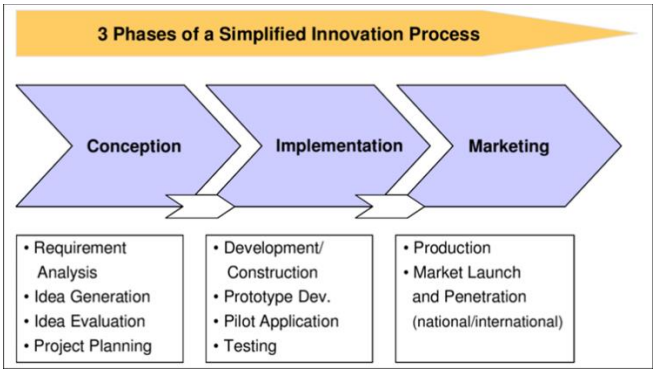
To summarize, it can be said that effective use of knowledge about the aforementioned external and internal effects on innovation allows companies analyze the environment and to comprehensively develop the innovation implementation process with probable risks in mind.

More detailed analysis of innovation implementation process is presented in the following section.

1.3.3. Models of innovation implementation

Although there are several ways to classify innovation, and there is no singular consensus to the full extent of innovation classification, there is a consensus regarding the implementation of innovation. Basically, there are two main ways to implement innovation, but at the end of the day, they both boil down to three steps, conception, implementation, and marketing. This is because innovation is first an idea, then it is developed, and then marketed or sold as a product or solution (Baporikar, 2017).

Figure 5. Simplified innovation process



Source: (Vadastreanu et al., 2015)

After analyzing the external and internal environment affecting innovation, it is necessary to get acquainted with how the innovation implementation process proceeds through its general stages. There are several ways to classify the stages of innovation implementation process. To effectively implement different types of innovation within the organization, different innovation implementation models can be used. After analyzing the stages of the innovation process presented in the scientific literature, it can be stated that different authors divide the stages of innovation process differently.

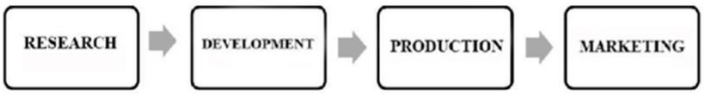
One of the most common and basic models of innovation implementation is the linear innovation model, that can be traced to the 1940s, presented by (Oliveira, 2014).

1.3.3.1. Linear model of innovation implementation

As described by the work of Marcos Barbosa Oliveira "Technology and basic science: the linear model of innovation", the linear model of innovation implementation was first introduced in the 1980s, while the first mentions can be traced back to the 1940s. Linear innovations have a linear path through pre-determined stages in development, and later have a pre-determined, standardized plan. These stages are:

1. Research
2. Development
3. Production
4. Marketing.

Figure 6. Linear model of innovation



Source: authors of the work based on (Oliveira, 2014)

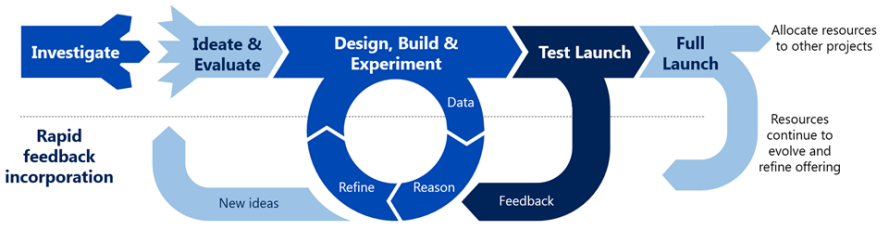
While this model is very simple, it has one flaw that is widely criticized. The model assumes that the research and development stages will provide perfect information as to what needs to be the final product, whereas in reality, most companies tend to try and have feedback loops to continually research the project through the development and production stages (Oliveira, 2014).

Another common model of innovation implementation is the circular model, which is widely regarded as superior to the linear model, as presented by (Schmitt & Hansen, 2018).

1.3.3.2. Circular model of innovation implementation

As mentioned by Oliveira, the linear innovation model has a significant drawback, that is covered by the circular model of innovation. This model is described in more detail by Julia C. Schmitt in her paper "Circular Innovation Processes: The Role of Absorptive Capacity, Innovation Communities, and Integrated Management Systems in Cradle-to-Cradle Product Development". The circular innovation implementation process is different from the linear model in the way that when an innovation stage is passed, it is not yet considered out of the equation.

Figure 7. Circular model of innovation



Source: (Skillicorn, n.d.)

This means that organizations keep "circling" back to the research stage when there are difficulties in development, production and marketing, just as during production and marketing stages sometimes "circle back" to the research and development stages and so on. This means that when difficulties arise, the entire system is prepared to work on them from the ground up,

making the circular approach much more popular among organizations rather than the linear one (Schmitt & Hansen, 2018).

1.3.3.3. Innovation lifecycle

Like all business processes, innovation also has a lifecycle. The most accepted innovation lifecycle is the three-step process of insight, problem identification, and the production of a solution. All these aspects are described in the article by Carmen Nobel, “Clay Christensen’s Milkshake Marketing”, published in the Harvard Business School (Carmen Noel, 2014).

The article describes that all innovations, at the end of the day, boil down to these three aspects. Once a problem is identified, it is isolated, and later, a solution is produced.

While this is a quite simple way to look at the innovation implementation process overall, it gives us a basic understanding of how innovations are implemented in general, this helps us understand everything covered in the paper beforehand, from the types of innovation to the ways that innovations can be implemented.

There are basically two ways of looking at the innovation lifecycle, circular and linear, and while the circular model is thought of as the better one, the linear model is more efficient. However, both models share the same basic structure as all innovation implementation, that is conceptualization, realization, and marketing.

2. RESEARCH METHODOLOGY

This part of the paper will discuss the main aspects of this work: aim and objectives of the research, research methods used, details of the organization of the survey, determination of the surveys sample size, survey instrumentation, data analysis methods.

The object of the research - innovation implementation in Kaunas manufacturing companies.

The aim of the empirical research - to evaluate additional possibilities of innovation implementation in Kaunas manufacturing companies.

Objectives of the research:

1. To find out the external and internal factors that positively and negatively influence innovation implementation possibilities in Kaunas manufacturing companies.

2. To find out the experts' opinion about the types of innovations that are the most important in Kaunas manufacturing companies and which ones would be the easiest to implement.

3. Assess the potential for innovation implementation in Kaunas manufacturing companies.

4. Provide basis for further research on innovation implementation possibilities in Kaunas manufacturing companies.

Research methods

For this research, such research methods were used:

1. Quantitative experts survey.

2. Descriptive and graphical data depiction.

In scholar literature it is stated that an expert survey can be conducted in either a questionnaire or interview format. For this research, a questionnaire was chosen.

Expert survey is a specific type of survey, where the subjects are specifically chosen by the researchers. These chosen subjects have knowledge in a particular field and are most competent and reliable to provide accurate data about the research problem.

In the case of this research, an expert survey is the way to find out the specificity of the innovation implementation possibilities in Kaunas city manufacturing companies. During the research, the representatives of Kaunas city manufacturing companies were surveyed, who know the course of the innovation implementation, the problems that arise and the ways to solve them according to their competence. Using criteria to choose respondents is effective, as it assures that the respondent has knowledge about the research area, and it provides accurate data.

Selection of experts

In this expert survey, such criteria were chosen:

1) High-level position in the company (director, department director, senior specialist).

2) Higher level education.

3) Not less than 4 years of experience in the manufacturing field.

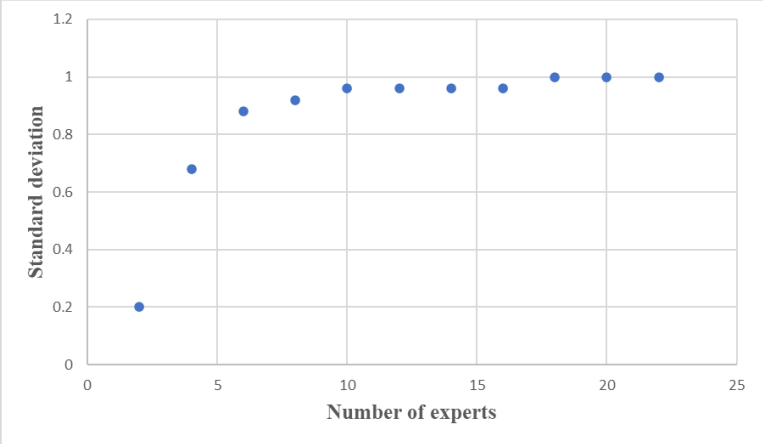
4) Location – Kaunas.

When conducting an expert survey, it should be considered that respondents do not have the same level of competence, there are differences in value orientation, and therefore responses and actions in similar situations may differ.

Determination of the sample size of experts

Methodological assumptions, that were formulated in classical test theory, were used to determine the acceptable number of experts. The sample size and it's acceptability in the researched was based on the work of Robert Libby and Roger K. Blashfield in their paper "Performance of a composite as a function of the number of judges, where they first outline the usage of this method. In this paper it is stated that the reliability of aggregated solutions and the number of decision-makers, in this case, experts, is linked by a rapidly declining non-linear relationship. It is proven that in modules of aggregated expert assessments with equal weights, the decisions and the accuracy of assessments of small group of experts are not inferior to the decisions and the accuracy of assessments of a large group of experts (Libby & Blashfield, 1978).

Figure 8. Dependence of the standard deviation of expert assessments on the number of experts



Source: authors of the work based on (Libby & Blashfield, 1978)

Organization of research

The research data was collected using an online "Google Forms" survey (Annex A). It was distributed directly by approaching potential expert survey participants via phone, e-mail and LinkedIn. In total, the questionnaire was sent to 23 people, 19 answers were collected. Only 17 answers were suitable for this research, as two respondents did not match one or several criteria (education, work experience in the manufacturing field, job position), which are presented above in this research. Such number of responses is enough to consider the results of the research reliable (Libby & Blashfield, 1978).

Research instrument

The questionnaire was created by the authors of the work based on theoretical analysis of academic literature. This method was used because of the relative cheapness of conducting an experts' survey, as well as the possibility to quickly gather more data and more easily analyze it.

Structure of the questionnaire

The structure of the questionnaire is built as such to respectively evaluate whether the respondent can be considered an expert, collect demographical data, evaluate the internal and external company's orientation towards innovation, assess the current innovation implementation situation as well as analyze the peculiarities of innovation implementation possibilities of Kaunas manufacturing companies. Both demographic and main parts of the questionnaire allow authors to form a comprehensive opinion about the current situation in Kaunas manufacturing companies in terms of innovation and its implementation and to estimate additional possibilities for innovation implementation.

The questionnaire consists of:

1. **Introductory part** (introduction of the authors of the work and the purpose of the research)

2. **The demographic part** consists of five questions about the expert and two questions about the company:

   a. Gender

   b. Work experience in the manufacturing industry

   c. Level of education

   c. Job position in the company

   d. Work experience in the current company

   e. Number of employees in the company

   f. Age of the company

3. **The main part of the survey consists of five sections:**

   a. Two grouped Likert scale questions related to the assessment of company's internal innovation encouragement and orientation towards innovation.

b. Two multiple choice questions related to collaboration with other organizations in innovation implementation.

c. Two multiple choice questions related to the current main and preferred main source of funding for innovation in the company.

d. Four grouped Likert scale questions related to the assessment of the current innovation implementation situation in Kaunas manufacturing enterprises.

e. Four grouped Likert scale questions related to the assessment of innovation implementation possibilities in Kaunas manufacturing companies.

Analysis of collected data

Data collected during this research was analyzed using Microsoft Excel and SPSS (*Statistical Package for the Social Sciences*) programs.

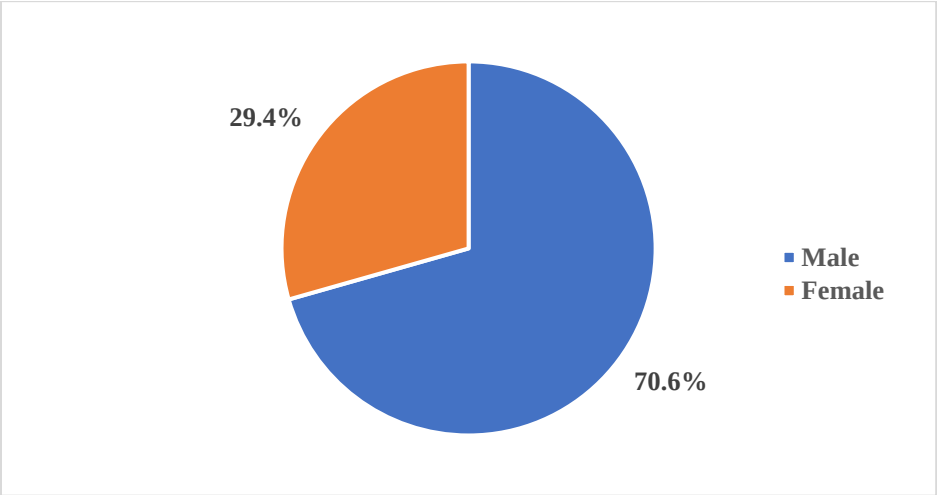
3. ANALYSIS OF THE RESEARCH RESULTS

This part of the work presents and discusses the results obtained from the experts' survey.

3.1. Demographic characteristics of experts

First, it is appropriate to do an overview of the characteristics of the experts that participated in the survey. These characteristics are respondents' gender, work experience in the manufacturing industry, current job position, years of experience in the current company. Respondents' distribution of gender is shown in *Table 1*.

Table 1. Depicting the distribution of respondents' gender.

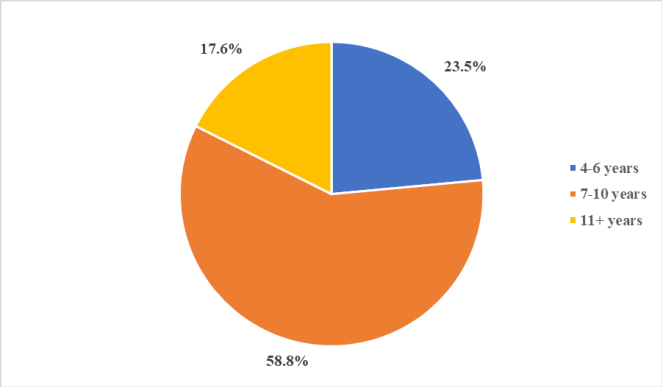


Source: authors of the work.

There was a total of 17 suitable respondents. Out of them, 12 are men and 5 are women. Respectively, that accounts to 70.6 and 29.4 per cent. Therefore, it can be said that the data collected in this research more likely represents the male gender opinion.

One of the crucial criteria in the selection of respondents was work experience in the manufacturing sector. Only those respondents who have at least 4 years of experience have been defined to be eligible for this survey. The distribution of respondents' years of experience is shown in *Table 2*.

Table 2. Depicting the distribution of respondents' work experience in manufacturing.

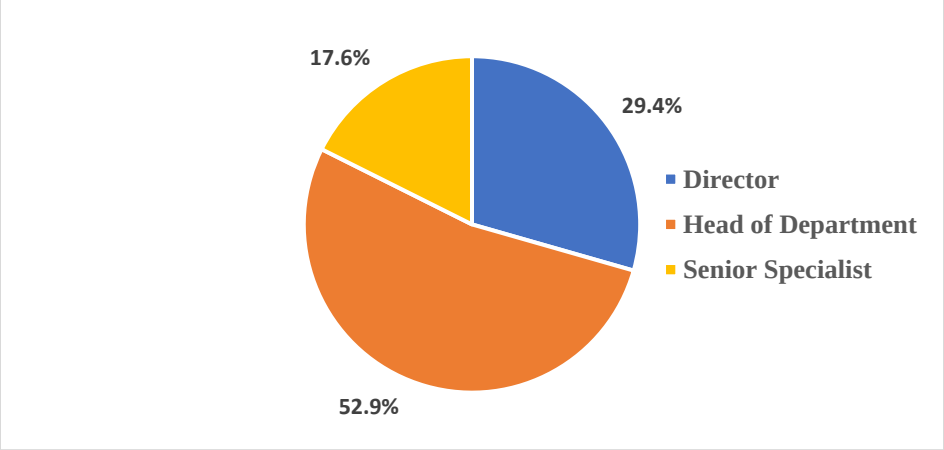


Source: authors of the work.

Most of the experts, 58.8 per cent, have 7-10 years of experience, almost a quarter of respondents, accounting for 23.5 per cent, have 4 to 6 years of experience and 17.6 per cent have between 4-6 years of experience.

Next, respondents were asked to state their current job position in the company (*Table 3*).

Table 3. Depicting the distribution of respondents' job position.

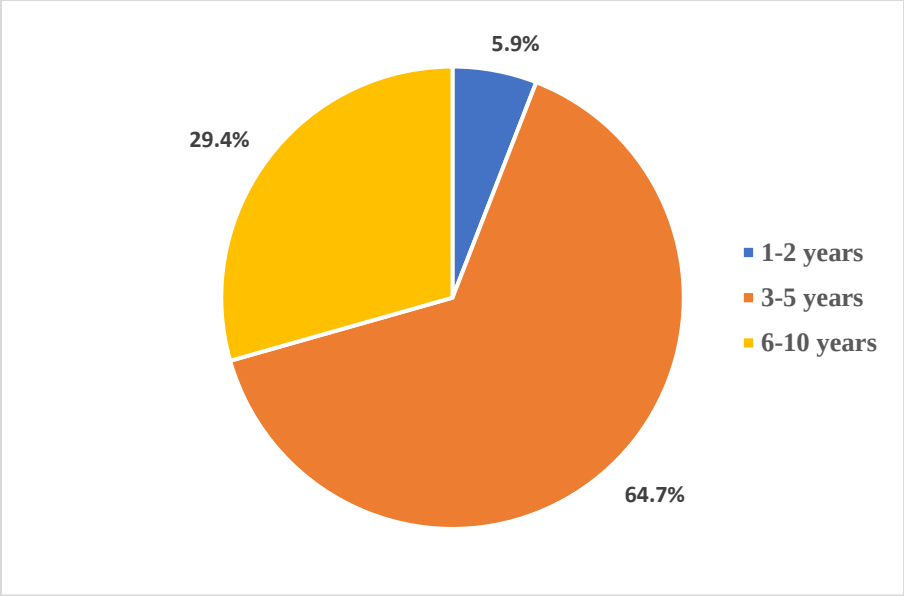


Source: authors of the work.

Another important criterion was the job position of survey participants. This is crucial to determine what level of knowledge the person has in the field of innovation. More than half of the participants are heads or directors of their respective departments, accounting for 52.9 per

cent (9 out of 17 respondents). The second-largest group of participants were directors of the company, accounting for 29.4 per cent (5 out of 17 respondents). The last group which suits the criterion of the research are senior specialists, which accounted for 17.6 per cent (3 out of 17 respondents).

Table 4. Depicting the respondents' work experience in the organization.

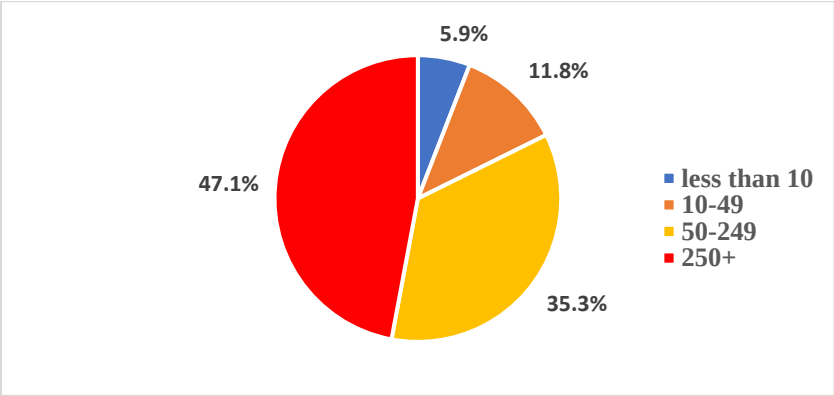


Source: authors of the work.

Most of the respondents have work experience in a current organization of 3-5 years, with 64.7% choosing this option, as compared to 29.4% of respondents working for 6-10 years in the company, and only 5.9% having worked for 1-2 years.

The following information is about the demographics of the company that experts currently work at - the number of employees in the enterprise where the respondents work (*Table 5*) and the company's age (*Table 6*).

Table 5. Depicting the distribution of the number of employees in the company.

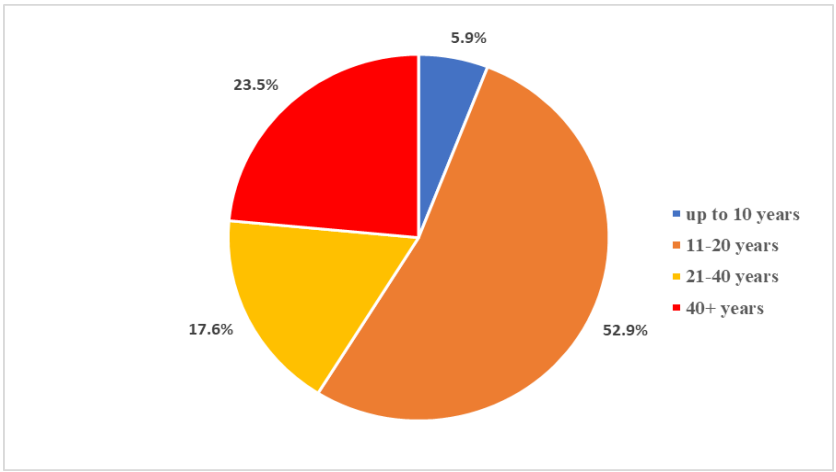


Source: authors of the work.

When comparing companies in size of the number of employees, slightly less than half of the surveyed respondents are working at companies with more than 250 employees, at 47.1 per cent. The second largest group are working at companies with 50-249 employees, accounting for 35.3 per cent, and 11.8 per cent working in companies with 10-49 employees. The smallest group of respondents are working at companies with less than 10 employees, accounting for 5.9 per cent.

The following information is the years of activity of the enterprise where the respondents work (*Table 6*).

Table 6. Depicting the distribution of respondents' company's years of activity.



Source: authors of the work.

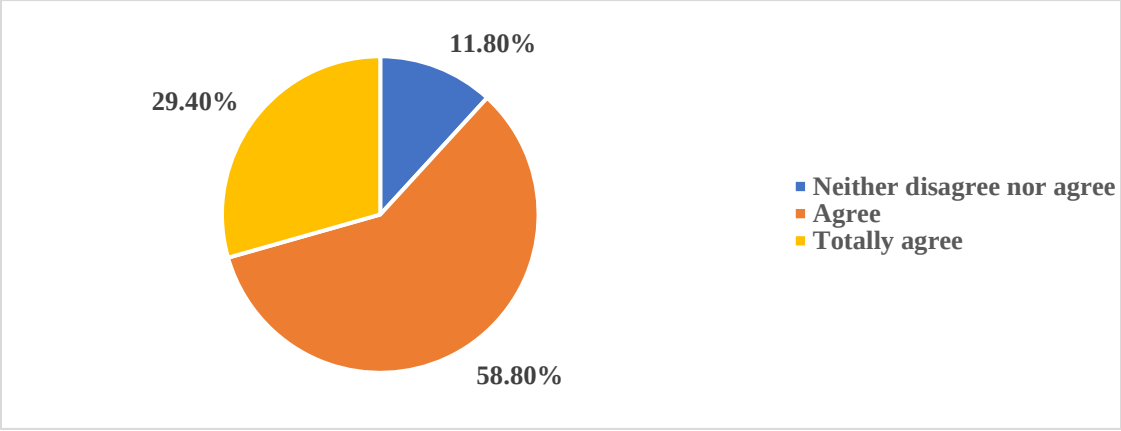
The majority of the respondents are working in an enterprise which is active for 11-20 years, accounting for 52.9 per cent of the respondents. The second-largest group of respondents are working at companies that are more than 40 years old, constituting 23.5 per cent. Third and fourth groups of respondents respectively accounted for 17.6 and 5.9 per cent, working for companies aged between 21-40 years and up to 10 years.

3.2. Internal innovation promotion and company's orientation towards innovation

After analyzing important characteristics of the respondents (experts), such as their gender, level of education, work experience and the main aspects of their companies where they currently work – job position, number of employees in the company, company age, further in the research their opinions about their evaluation of company's internal innovation promotion and company's orientation towards innovation.

The following information is the distribution of evaluation of innovation promotion in the current company where the respondents work (*Table 7*).

Table 7. Depicting the distribution of evaluation of innovation promotion in the company.

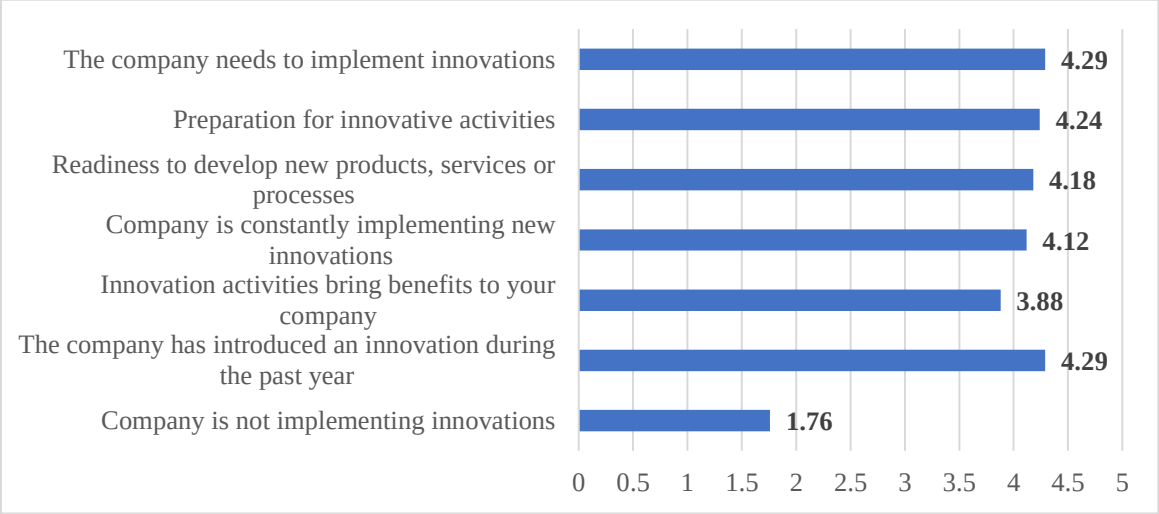


Source: authors of the work.

Most respondents agree or totally agree that their companies promote innovation activities internally, with 58.8 and 29.4 per cent agreeing and totally agreeing respectively. 11.7 per cent of respondent's state that their company neither demotes nor promotes innovation activities. No other options, such as *disagree* or *totally disagree* were chosen.

After evaluating their company's internal innovation promotion, respondents were asked to evaluate the orientation of their company's activities towards innovation by 7 factors. Evaluation was done on a Likert scale of 1 to 5 (1 – *totally disagree*, 5 – *totally agree*).

Table 8. Depicting the opinion of respondents as to how oriented their company is towards innovation



Source: authors of the work.

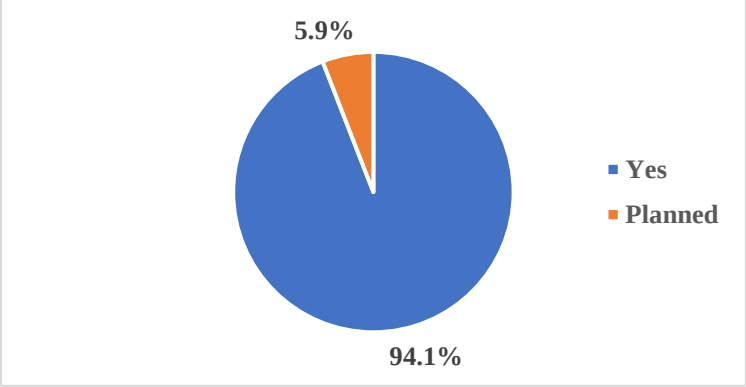
Derived averages from the obtained results show that experts evaluate that there is a need for innovation implementation in their companies, as well as that their company has introduced an innovation during the past year, with an equal score of 4.29 out of 5. Experts also state that their companies are ready for innovative activities (score of 4.24 out of 5) and are ready to develop new products, services or processes (score of 4.18), as well as that they are constantly implementing them (score of 4.12). Nevertheless, compared to the need for innovation, readiness and constant innovation implementation, experts lack trust in the benefits that innovation implementation brings (score of 3.88). Experts disagree that their companies do not implement innovations (score of 1.76).

3.3. Collaboration with organizations

Findings of (González-Benito et al., 2016) show that companies are more successful in their innovation activities when there is a collaboration with other organizations. As overviewed in the theoretical part of this work, there are two main types of collaboration – with other companies or governments and with academic institutions.

Respondents were asked to provide answers regarding collaboration with both other companies and academic institutions. The following information is the distribution of answers regarding collaboration with other local or foreign companies towards innovation development and its implementation (*Table 9*).

Table 9. Depicting the distribution of companies that are collaborating with other local or foreign companies towards innovation development and implementation and those planning to do so.



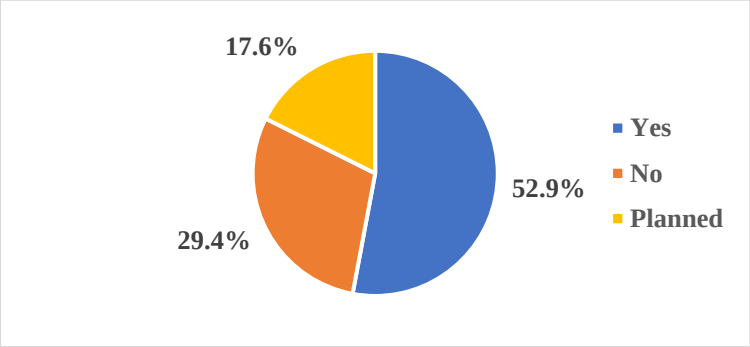
Source: authors of the work.

The dominating response from the respondents was that their company is actively collaborating with other local or foreign companies towards innovation development and implementation, accounting for 94.1 per cent and 5.9 per cent answered that their companies are planning to do so. Out of 17 respondents, none gave a negative answer towards active collaboration with other companies.

From the results obtained it could be concluded that companies do see the benefits of collaboration with other companies and are actively cooperating.

The following information is the distribution of answers regarding collaboration with academic institutions (*Table 10*).

Table 10. Depicting the distribution of respondents that are in active collaboration with academic institutions and research, those that are not doing so, and those planning to.



Source: authors of the work.

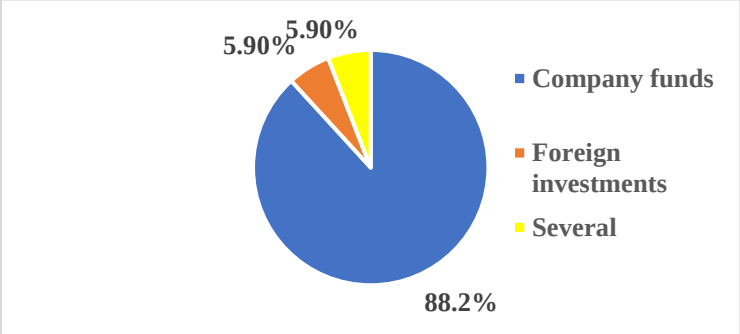
Most of the respondent's state that their companies are in partnership with institutions that carry out academic activities and research, accounting for 52.9 per cent. More than a quarter of respondents, 29.4 per cent, state that there are no active partnerships with such institutions and 17.6 per cent are planning to participate in such partnerships.

In conclusion, more than half of respondents answered that their companies collaborate with both other companies and academic institutions in pursuit of their innovative activities. Almost all respondents state that they collaborate with other companies or governments but are more passive in collaboration with academic institutions.

3.4. Innovation funding

After analyzing collaborations with different types of organizations, further in the research experts were asked to provide answers about sources of funding for innovation. Respondents were asked to indicate their company's main source (*Table 11*) as well as what would be the preferred main source of funding for innovation (*Table 12*).

Table 11. Depicting the distribution of respondents' answers of their company's main source of funding for innovation.

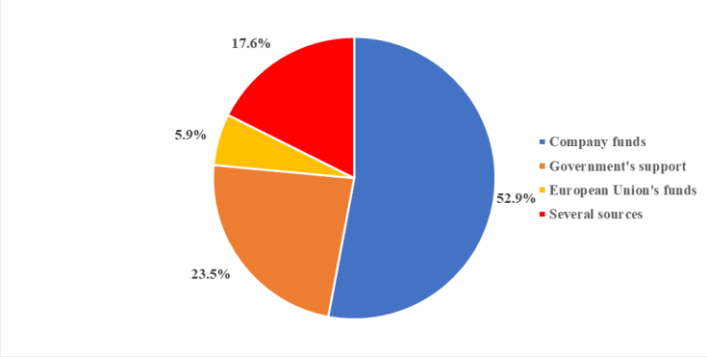


Source: authors of the work.

Respondents had to choose from 5 main sources of funding: company's funds, government's aid, European Union funds, borrowed capital, foreign investments and a combination of a few. Only three options were chosen. Majority of the respondents indicated that the main source of funding for innovation in their companies is company's funds, accounting for 88.2 per cent. Only two respondents, accounting for 5.9 per cent each, chose other options: foreign investment and a combination of several sources.

The following information is the distribution of answers regarding preferred main source of funding for innovation (*Table 12*).

Table 12. Depicting the distribution of respondents' answers of their company's preferred main source of funding for innovation.



Source: authors of the work.

More than half of experts answered that the main source of funding for innovation should be company's funds, accounting for 52.9 per cent. The second most preferred source of funding is government's aid at 23.5 per cent, followed by a combination of several funding sources at 17.6 per cent. The least chosen option is European Union's funds, accounting for only 5.9 per cent (or one respondent). None of the experts chose borrowed capital and foreign investment options.

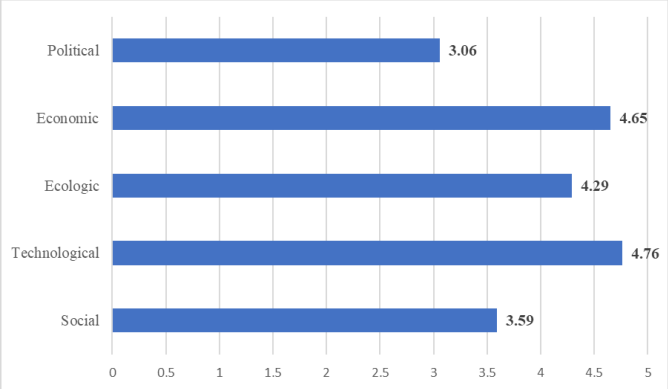
In conclusion, most of the experts indicate that the main source of funding for innovation is and should be the company's funds. Nevertheless, almost half of the companies expect to have an external main or supportive source of funding for innovation.

3.5. Current innovation implementation situation in manufacturing companies located in Kaunas

This section of the paper will analyze the experts' assessments regarding the current innovation implementation situation in manufacturing companies. Expert assessments will be provided not only by deriving averages but also by comparing several sections. It will be analyzed and graphically depicted how the opinion of experts differs on one or another question depending on their job position and work experience in the manufacturing field.

First, experts were asked to evaluate which external factors influence innovation possibilities the most in their companies.

Table 13. Depicting the importance that the respondents gave to factors regarding the importance of external factors impact on innovation possibilities in their companies.

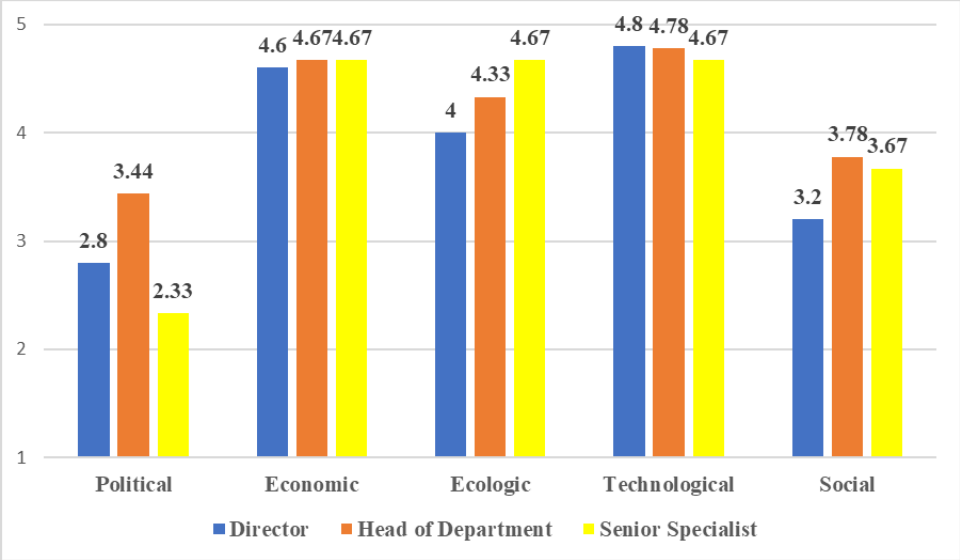


Source: authors of the work.

Respondents were asked about how much certain external factors affect the company's innovation possibilities on a Likert scale from 1 to 5 (1 – not important at all, 5 - very important). The evaluation of the results obtained, and the derived averages show that, according to the experts, the most influential external factors affecting the innovation possibilities in manufacturing companies are technological (4.67 out of 5) and economic (4.65 out of 5). The least influence has political and social factors, respectively scoring 3.06 and 3.59. Ecologic factor scores in the middle, being neither too influential nor not important, with a score of According to respondents, positive changes in the technological and economic environments would stimulate opportunities for innovation the most.

It is also appropriate to examine how the assessment of experts in this regard varies depending on their job position (*Table 14*) and work experience (*Table 15*).

Table 14. Depicting the importance that the respondents gave to factors that impact their innovation implementation opportunities according to their job position.



Source: authors of the work.

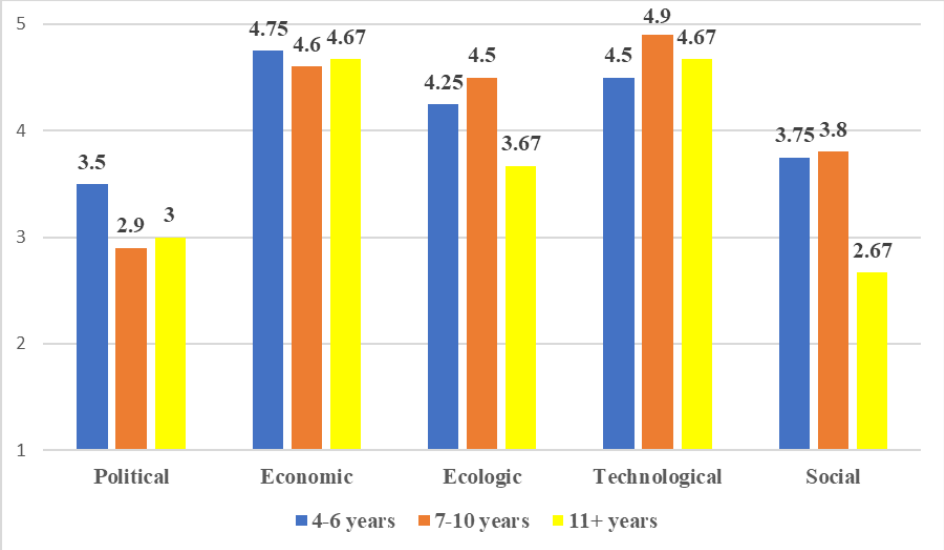
After deriving averages of the expert's opinion on the importance of certain factors that impact innovation implementation opportunities according to their current job position it can be concluded that there is no significant difference. Directors, heads of departments and senior specialists all consider that the economic and technological factors are the most important, whereas political and social are the factors that impact the innovation implementation opportunities the least.

Nevertheless, some differences can be seen. Directors and heads of departments consider the technological factor to be the most important (score of 4.8 and 4.78 out of 5 respectively), whereas senior specialists consider that economic, ecological and technological factors are all equally most important, at a score of 4.67 out of 5.

The results above can be explained by the fact that each job position has its own responsibilities of work, therefore often only face specific aspects, so the influence on the innovation implementation opportunities of some factors receives higher or lower evaluation.

The following information is the distribution of answers regarding the factors that influence innovation implementation possibilities according to their work experience (*Table 15*).

Table 15. Depicting the importance that the respondents gave to factors that impact their innovation implementation opportunities according to their work experience.



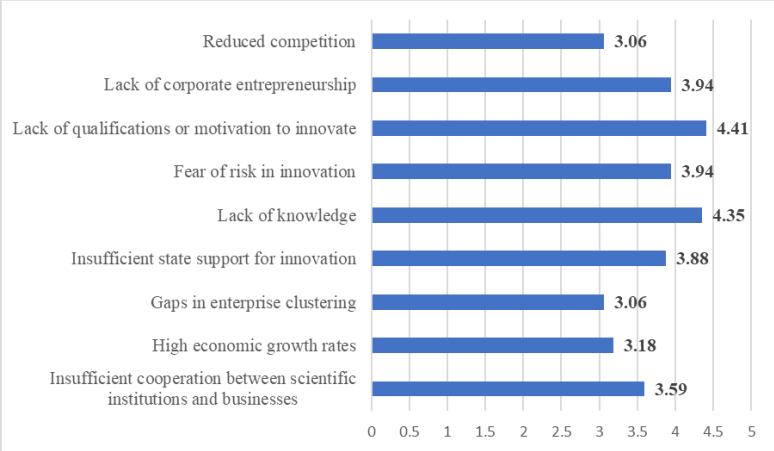
Source: authors of the work.

Regarding the experts' opinion on the importance of certain factors that impact innovation implementation possibilities according to their work experience in the manufacturing industry both similarities and differences can be seen.

All experts, independently of their work experience, agree that economic and technological factors are the most important. Although experts do not agree on which factor is the least important. Those respondents that have between 4-6 and 7-10 years of experience in the manufacturing sector evaluate that the political factor is least important, whereas those who have worked 11 and more years in the manufacturing industry state that the least important factor is the social one.

In conclusion, nevertheless the experts' job position or work experience, there is an agreement that the most important factors are economic and technological, as well as agree that political and social factors influence innovation implementation possibilities the least, but there are differences when evaluating which of these factors is the least important.

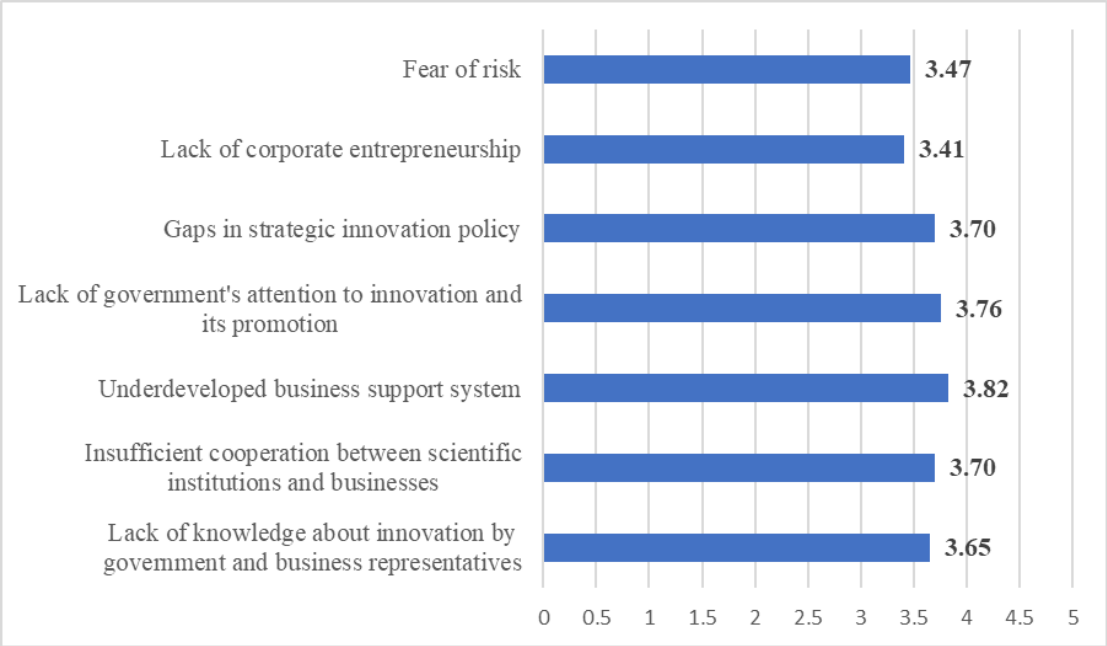
Table 16. Depicting the importance that the respondents gave to factors that impact their innovation implementation process.



Source: authors of the work.

When asked about the importance of factors that impact their company's innovation implementation processes on a Likert scale from 1 to 5 (1 – no impact, 5 – large impact), the factor with the largest impact was reported to be the lack of qualifications or motivation to innovate, with a score of 4.41. The second most impactful factor is marked to be the lack of knowledge with an average score of 4.35. Factors like the lack of corporate entrepreneurship and fear of risk in innovation are equally important with scores of 3.94. Other factors like insufficient state support for innovation, insufficient cooperation between scientific institutions and businesses, and reduced competition also show scores of above 3 points on average, meaning they are given less consideration, but are still important factors in the innovation implementation process. Reduced competition and gaps in enterprise clustering are rated as the least impactful factors, with a score of 3.06 out of 5.

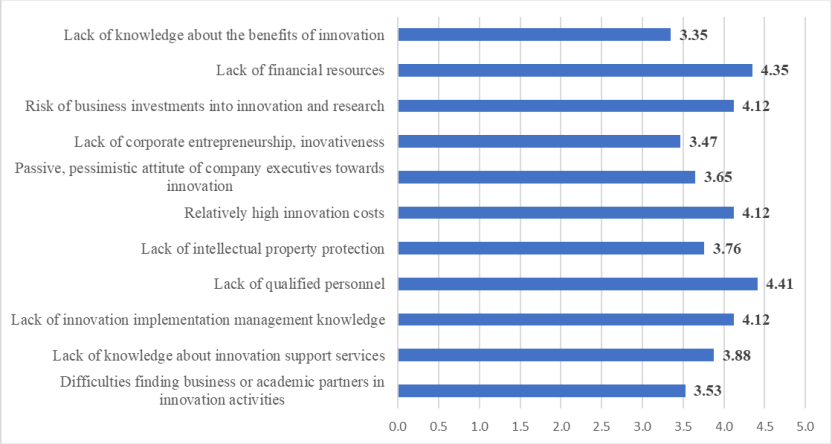
Table 17. Depicting the importance that the respondents gave to factors that can slow down the development of innovation in their companies.



Source: authors of the work.

Respondents were asked about the effect certain factors have on their respective company's decrease in innovation implementation possibilities on a Likert scale from 1 to 5 (1 – not important at all, 5 - very important). The obtained averages show, that an underdeveloped business support system is the biggest factor regarding decreased innovation implementation possibilities, with an average importance score of 3.82. It is followed in importance by the lack of government attention to innovation and its promotion, with a score of 3.76. The impact of other factors like gaps in strategic innovation policy, insufficient cooperation between scientific institutions and businesses and the lack of knowledge about innovation by government and business representatives are rated comparatively high, with scores ranging from 3.65 to 3.7. The least important factors that can slow down the development of innovation are the lack of corporate entrepreneurship and the fear of risk, with respective scores of 3.41 and 3.47 out of 5.

Table 18. Depicting the importance that the respondents gave to factors that interfere with the innovation implementation processes in their respective companies.



Source: authors of the work.

Respondents were also asked about the impact of 11 different factors that interfere with the innovation implementation process on a Likert scale of 1 to 5 (1 – very little to no impact, 5 - a large impact). While all the factors are above 3.34 on the scale, meaning that they are all important, the least impact according to the results is made by the lack of knowledge about the benefits of innovation with a score of 3.35. The biggest interference to the innovation implementation process is the lack of qualified personnel, closely followed by the lack of financial resources, with scores of 4.41 and 4.35 respectively. This means that even though there are a lot of factors that can interfere with the innovation implementation process and all of them are important, the least important factor is the lack of knowledge about the benefits of innovation. The most difficult factors to overcome are finding qualified personnel and financial recourses to innovate, which can also be understandably intertwined because the more qualified a person is the more financing they are going to require, which can be difficult for businesses in smaller countries like Lithuania.

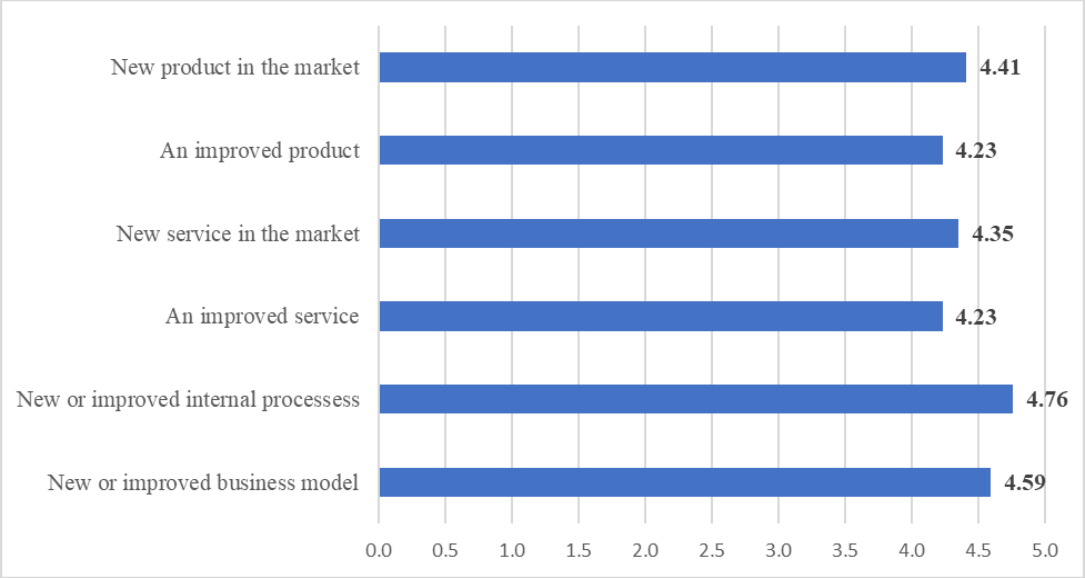
3.6. Innovation implementation opportunities and perspectives in Kaunas manufacturing companies

This section of the paper will analyze the experts' assessments regarding the possibilities and perspectives of innovation in manufacturing companies. Expert assessments will be provided not only by deriving averages but also by comparing several sections. It will be analyzed and

graphically depicted how the opinion of experts differs on one or another question depending on their job position and work experience in the manufacturing field.

First, experts were asked to evaluate which types of innovation are the most important in their companies. Evaluations were made on a scale of 1 (totally unimportant) to 5 (essential).

Table 19. Depicting the importance that the respondents gave to the most important types of innovations for their respective companies.



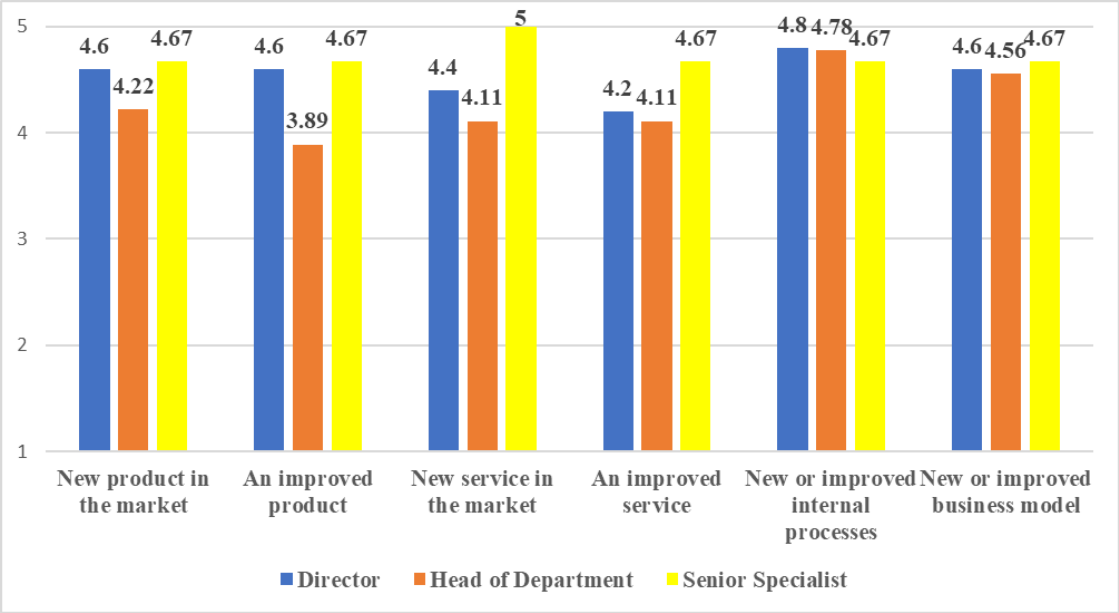
Source: authors of the work.

Respondents were also asked to evaluate the importance of different types of innovations in manufacturing companies on a Likert scale of 1 to 5 (1 being completely unimportant and 5 being very important). The most important are new or improved internal processes with an average score of 4.76, while the least important is an improved product and an improved service, with scores of 4.23. This shows that even though not all types of innovations are equally important, with the lowest score of 4.23, all the types of innovations are important.

In summary, it is possible to state that for manufacturing companies located in Kaunas innovations are most important and influential in the area of internal processes. New or improved internal processes can lower the costs of manufacturing, increase productivity, and make the operations more fluent, thus saving time.

The opinion of experts in this matter is crucial to the objectives of this research. Therefore, the experts' opinion on the most important type of innovation in the manufacturing industry will be compared to the experts' job position (*Table 20*) and his or her work of experience (*Table 21*).

Table 20. Depicting the importance that the respondents gave to the most important types of innovations for their respective companies according to their job position.

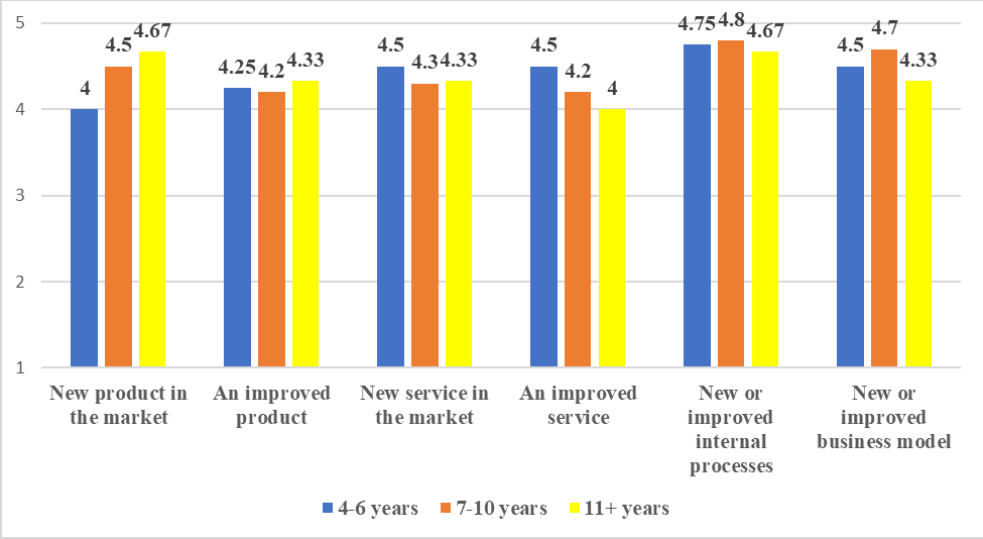


Source: authors of the work.

All experts, despite their current job position, agree that all listed types of innovation are important, with the lowest score of 3.89 out of 5. Although they have minor differences excluding the most and least important types of innovation. Directors and heads of departments state that new or improved internal processes influence their companies the most, whereas senior specialists consider new services in the market to be considered the most important. Directors rate an improved, existing service innovation to be least influential, whereas heads of departments rate an improved, existing product innovation least important. Senior specialists, on the other hand, consider all types of innovation very important, especially new service in the market, at 5 points out of 5, and evaluate other types of innovation equally highly important, at 4.67 out of 5.

The following section is the distribution of answers regarding the most important types of innovation in manufacturing companies according to their work experience (*Table 21*).

Table 21. Depicting the importance that the respondents gave to the most important types of innovations for their respective companies according to their work experience in the manufacturing sector.



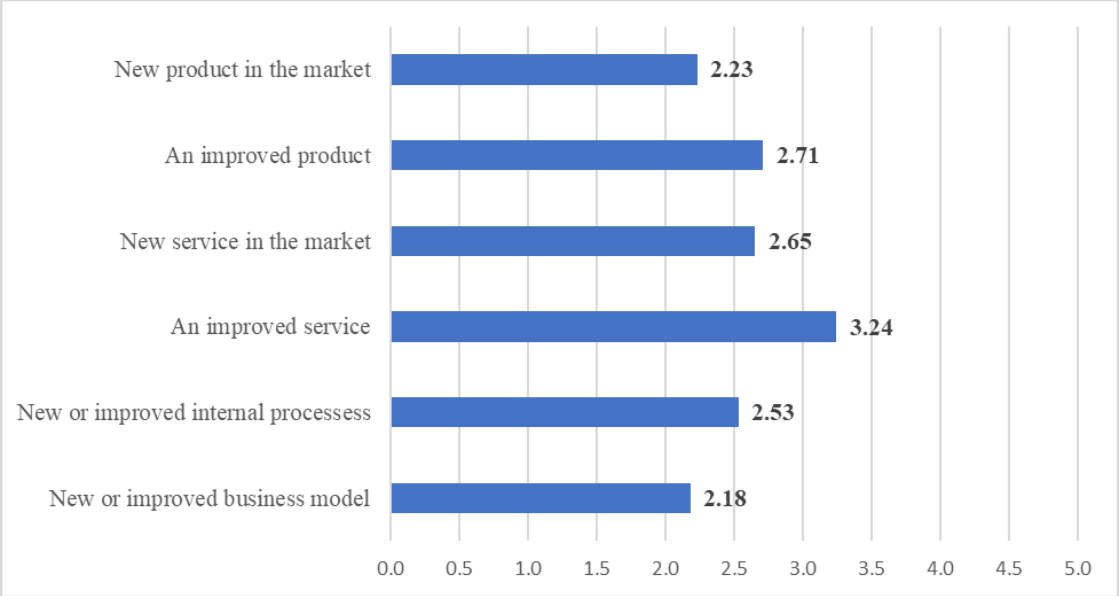
Source: authors of the work.

When analyzing the data obtained, no clear differences can be described. All experts, despite their work experience, consider all types of innovations to be important or highly important, with the lowest score of 4 out of 5. They also agree that new or improved internal processes have the highest influence of all types of innovation for their companies. On the other hand, there are minor differences in their evaluations. Those experts that have work experience of 4-6 years in the manufacturing industry state that new or improved internal processes are the most important, whereas new products in the market are the least important. Experts with 7 to 10 years of experience agree with the previous group on the most important factor but evaluate improved products and services equally in the last place. Respondents with 11 or more years of experience rate equally new or improved internal processes and new products in the market as the most important factors and improved service to be the least influential for the company.

In conclusion, there are only minor differences on the expert's evaluation of the most important type of innovation both according to their job position and work experience, but they all evaluate that all types of innovation are important, stressing that innovations in internal processes are the most important.

The following section is the distribution of answers regarding the ease of implementation of types of innovation in manufacturing companies (*Table 22*).

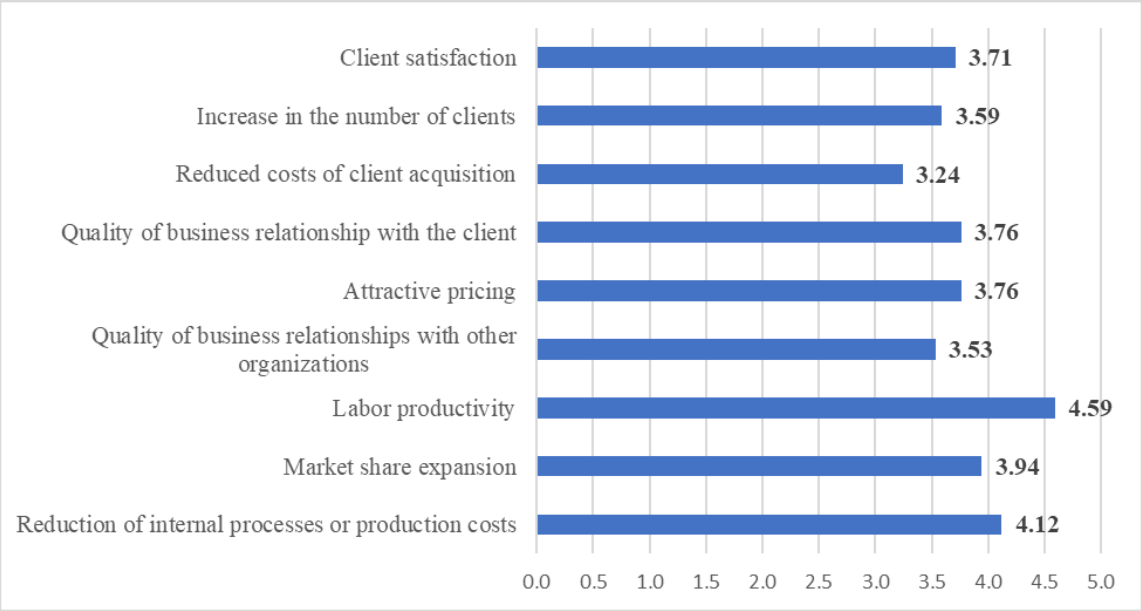
Table 22. Depicting the importance that the respondents gave to different types of innovation based on the ease of implementation.



Source: authors of the work.

When asked about the easiness in implementing various types of innovation on a Likert scale of 1 to 5 (1 – very difficult, 5 – very easy). The respondents answered that an improved service is the easiest type of innovation to implement by a quite large margin with a score of 3.24, while the second easiest type of innovation to implement is an improved product with a score of 2.71. The most difficult is a new or improved business model at 2.18 and a new product in the market is also not as easy with a score of 2.23. This shows that new products and internal innovations are more difficult to implement.

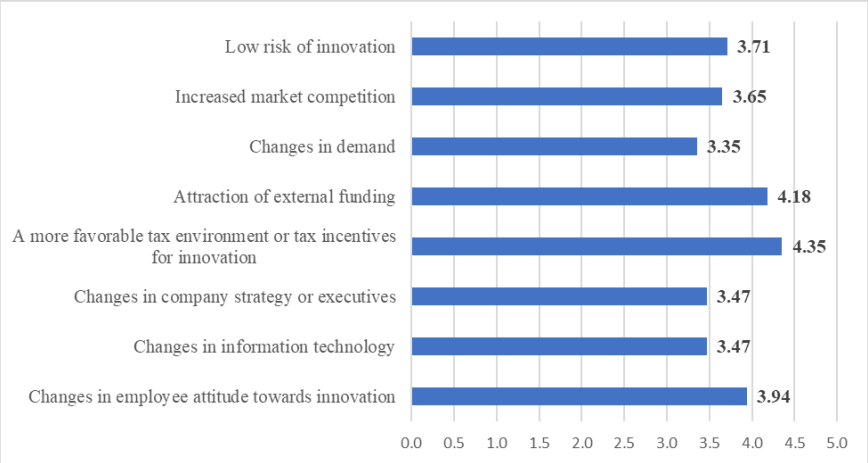
Table 23. Depicting how much according to the respondents' certain aspects of their businesses are improved by innovations.



Source: authors of the work.

Respondents were also asked to evaluate how much certain aspects of their businesses are affected by innovation on a Likert scale of 1 to 5 (1 – very little, 5 - very much). After evaluation, all 9 of the aspects, the lowest score on average was given to reduced costs of client acquisition, at 3.24, and the highest score on average was given to labor productivity, at 4.59. The second most improved aspect of the business is rated to be the reduction of internal processes or production costs at 4.12. This shows us that innovations have a very high positive impact on all the internal processes within a manufacturing business, whereas the impact on other aspects of the business are rated between being averagely and firmly.

Table 24. Depicting the impact that certain factors may have in order to motivate the companies to implement innovations in manufacturing companies.



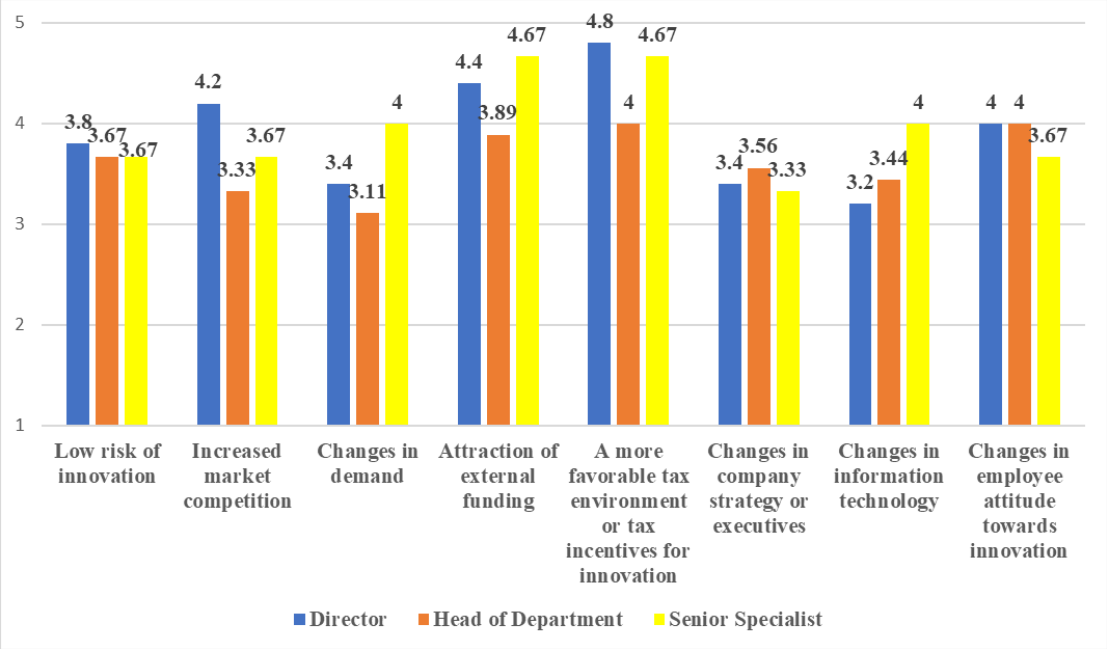
Source: authors of the work.

Finally, the respondents were asked to evaluate how certain factors would motivate their manufacturing companies to innovate. This was done by asking experts to evaluate factors on a Likert scale of 1 to 5 (1 – very little, 5 - very much). Out of eight different factors, experts evaluate that a more favorable tax environment or tax incentives for innovation would motivate their companies to innovate the most, at a score of 4.35. According to the experts, the second most important stimulant ant of innovation would be the attraction of external funding, at 4.18 out of 5. Changes in demand, company strategy or executives and changes in information technologies are all respectively rated as the least stimulant factors, at 3.35 and 3.47 out of 5 for the latter two factors.

Experts agree that all factors would stimulate their companies to innovate more, but the evaluations show that financial factors are the most influential. Lower taxes or external funding would strongly motivate companies to innovate more.

The opinion of experts in this matter is crucial to the objectives of this research. Therefore, the expert's opinion on the factors that would stimulate manufacturing companies to innovate more will be compared to the experts' job position (*Table 25*) and his or her work of experience (*Table 26*).

Table 25. Depicting the impact that certain factors may have in order to motivate the companies to implement innovations in manufacturing companies.

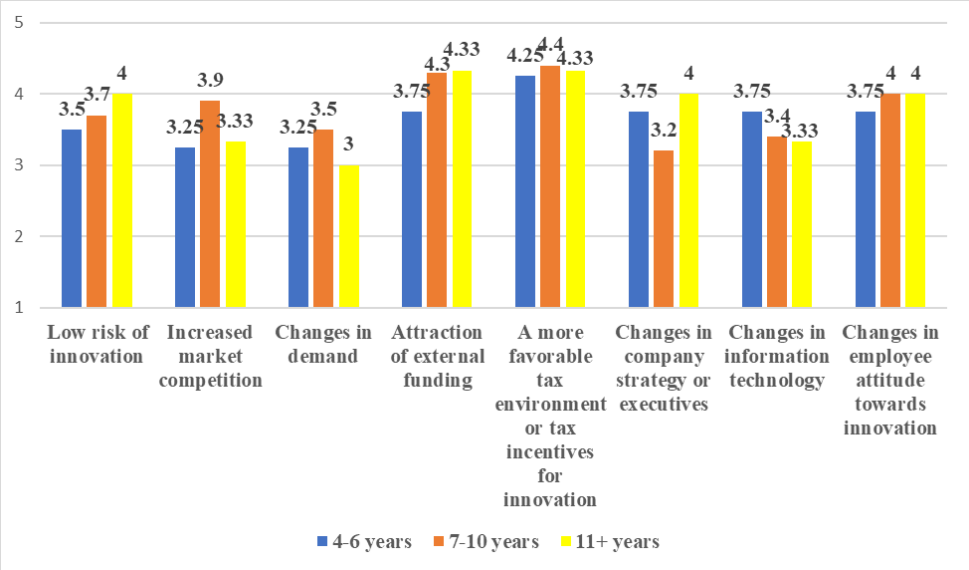


Source: authors of the work.

When comparing opinions of experts according to their job position of different factors that would stimulate manufacturing companies to innovate more, distinguishable differences can be seen. Directors state that the best stimulant for innovation is a more favorable tax environment or tax incentives for innovation, at a score of 4.8 out of 5, whereas the least important stimulant is the changes in information technology (3.2 out of 5). Heads of departments are more passive on the topic of factors that would stimulate innovations, as their ratings are considerably lower in many areas, but still agree with the previous group as well as equally stressing the importance of changes in employees' attitude towards innovation. They rate the least influential factor to be the changes in demand (3.11 out of 5). Senior specialists equally highly evaluate the stimulation of attraction of external funding and a more favorable tax environment or tax incentives for

innovation (4.67 out of 5) and consider low risk of innovation, increased market competitiveness and changes in employees' attitude towards innovation to be equally least important compared to other factors, at a score of 3.67 out of 5.

Table 26. Depicting the impact that certain factors may have in order to motivate the companies to implement innovations in manufacturing companies.



Source: authors of the work.

Experts, when considering their work experience in the manufacturing industry, have more different opinions on the impact of certain factors that motivate their companies to innovate more. Respondents who have 4-6 years of experience consider the attraction of external funding and a more favorable tax environment or tax incentives for innovation to be of the highest influence to innovate more (4.33 out of 5) and equally least important factors are increased market competitiveness and changes in demand, with a score of 3.25 out of 5. Experts with 7 to 10 years of experience also agree that the most important stimulant for innovation is a more favorable tax environment or tax incentives for innovation but evaluate the changes in the company's strategy or executive team to be the least important stimulant. Those who have 11 or more years of experience equally evaluate attraction of external funding and a more favorable tax environment or tax incentives for innovation to be the most important stimulants, whereas changes in demand have the least influence to innovate more.

In conclusion, nevertheless the job position or work experience in the manufacturing industry, experts agree, that the most stimulant factors for innovating more are the attraction of external funding and a more favorable tax environment or tax incentives for innovation activities. Also, previously in the research, experts have stated that there is a need for more information about incentives for innovation activities, therefore it can be concluded that companies could be lacking knowledge about external funding possibilities and tax incentives for innovation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. Innovation implementation is a difficult process during which it is a must to consider both internal and external variables, as well as the type of innovation that is being implemented. After further analysis, it is understood that in Kaunas manufacturing companies, it is more difficult to implement internal innovations and that the biggest motivator to implement them would be external funding.
2. Further analysis of the theoretical literature regarding innovation has proven that innovation is differently understood and categorized in different scientific sources. Innovation is a wide array of processes and outcomes that can be difficult to categorize in a standardized way due to each group of innovators using a form of categorization that is the most suitable for them.
3. Analysis of theoretical materials has shown that even though innovation is a complex process, it usually has three main parts – conception, execution, and finally marketing.
4. The process of innovation implementation cannot be analyzed without the internal and external factors influencing it. At each stage of innovation, there is an interaction of internal and external factors that can influence the further course of the process. Kaunas manufacturing companies consider economic, technological and personnel factors to be most influential.
5. Even though most Kaunas manufacturing businesses highly value innovation and understand that it has an impact on the overall business process, most manufacturing companies are much more motivated to innovate via external funding rather than internally. This can be attributed to the opinion that it is much more difficult to innovate the more internal innovations get, and some management personnel might be too conservative when it comes to changing foundational aspects of the company. Only 52.9 per cent of respondents are actively working with both economic and academic enterprises, therefore it can be concluded that Kaunas manufacturing companies do not fully use the opportunity to develop innovations with other companies, academic institutions and governments.

6. Companies in Kaunas are reluctant to innovate mostly due to the monetary and labor costs associated with innovation.
7. The largest problems faced by Kaunas manufacturing companies in implementing innovations are the lack of financial resources as well as the lack of qualified staff.

Recommendations

After analyzing innovation implementation from a theoretical viewpoint, with reference to the empirical level of research, after conducting a study of the possibilities and perspectives of innovation implementation in Kaunas manufacturing companies, it is possible to submit recommendations to manufacturing companies intending to implement innovations:

1. It is advised that manufacturing companies take a more structural approach towards innovation, possibly assigning a position or department within the company specifically for the purposes of finding and implementing different innovations.
2. It is advisable to constantly look for sources of external financing through European Union and government programs that subsidize innovation development and implementation.
3. It is advisable to carry out a survey of the company's employees in order to find out their attitude to the implementation of innovations in the company, how employees understand the implementation of innovations, what innovations would be the most beneficial to implement.
4. Manufacturing companies should invest in courses for appropriate employees in order to educate and up-skill their workforce to have more qualified and motivated personnel.
5. It would be advised for the manufacturing companies in Kaunas to have periodical surveys and interviews with their customer base in order to know what they expect from the companies and be able to plan their innovations accordingly
6. While performing research for new innovations, collaborate with educational institutions and involve students in various competitions regarding innovations in a specific area to generate more innovative ideas.
7. Innovations in business models and internal processes are the most difficult to implement as well as are highly important for Kaunas manufacturing companies. Therefore, it is recommended to continue researching types and difficulties of innovations in internal

processes and business models in order to conclude an innovation implementation process for Kaunas manufacturing companies.

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ANNEXES

Annex A

Inovacijų diegimo galimybės Kauno gamybos įmonėse

Gerb. Respondente,

esame 4 kurso Tarptautinio verslo krypties Vilniaus Universiteto Verslo Mokyklos studentai. Rašome baigiamąjį bakalauro darbą apie inovacijų diegimo galimybes Kauno mieste.

Šios apklausos tikslas - įvertinti inovacijų diegimo galimybes Kauno gamybos įmonėse.

Maloniai prašau Jus skirti laiko ir užpildyti anketą nuoširdžiai atsakant į klausimus. Apklausa vykdoma anonimiškai, todėl atsakymai į klausimus bus analizuojami tik apibendrinta forma. Jūsų atsakymai padės atlikti išsamų tyrimą ir pasiekti gerų rezultatų.

I. Demografiniai klausimai apie ekspertą ir atstovaujamą gamybos įmonę

1. Jūsų lytis

- Vyras
- Moteris

2. Jūsų darbo patirtis gamybos sektoriuje

- Iki 4 metų
- 4-6 metai
- 7-10 metų
- 11 ir daugiau metų

3. Jūsų išsilavinimas

- Nebaigtas vidurinysis
- Profesinis
- Vidurinis
- Aukštesnysis
- Nebaigtas aukštasis
- Aukštasis

4. Kurios iš išvardintų pareigų geriausiai apibūdina Jūsų pareigas dabartinėje įmonėje

- Generalinis direktorius

- Valdybos pirmininkas/narys
- Skyriaus vadovas
- Vyresnysis specialistas
- Specialistas
- Kita (prašome įrašyti)

5. Jūsų darbo stažas įmonėje

- Iki metų
- 1-2 metai
- 3-5 metai
- 6-10 metų
- 11 ir daugiau metų

6. Darbuotojų skaičius Jūsų įmonėje

- Iki 10
- 10-49
- 50-249
- 250 ir daugiau

7. Kiek metų Jūsų įmonė vykdo veiklą

- Iki 2 metų
- 2-5 metus
- 6-10 metų
- 11-20 metų
- 21-40 metų
- 40 ir daugiau metų

II. Inovacijų skatinimas ir įmonės orientacija į inovacijų diegimą

8. Skalėje nuo 1 iki 5 (1 - visiškai nesutinku, 5 - visiškai sutinku), įvertinkite ar Jūsų įmonė skatina inovacijų diegimą

Ar Jūsų įmonė skatina inovacijų diegimą	1 - Visiškai nesutinku	2 - Nesutinku	3 - Nei nesutinku, nei sutinku	4 - Sutinku	5 - Visiškai sutinku

9. Ar Jūsų įmonės veikla yra orientuota į įnovacijų diegimą? Skalėje nuo 1 iki 5 (1 - visiškai nesutinku, 5 - visiškai sutinku), įvertinkite žemiau pateiktus kriterijus

	1 - Visiškai nesutinku	2- Nesutinku	3- Nei nesutinku, nei sutinku	4 - Sutinku	5 - Visiškai sutinku
Jūsų įmonėje reikalingas					

inovacijų diegimas					
Esate pasirengę naujovėms savo įmonės veikloje					
Esate pasirengę kurti naujus produktus, procesus ar paslaugas					
Per pastaruosius metus įmonės veikloje buvo įdiegta inovacija					
Jūsų įmonėje diegiate inovacijas					
Inovacijos veiklos atneša Jūsų įmonei naudą					
Inovacijų savo įmonėje nediegiame					

III. Įmonių bendradarbiavimas su kitomis organizacijomis

10. Ar Jūsų įmonė bendradarbiauja su kitomis, vietinėmis ar užsienio, įmonėmis ties inovacijų kūrimu ir diegimu

- Taip
- Ne
- Planuojame

11. Ar Jūsų įmonė bendradarbiauja su institucijomis vykdančias akademinę veiklą bei mokslinius tyrimus

- Taip
- Ne
- Planuojame

IV. Inovacijų finansavimo šaltiniai

12. Koks yra Jūsų įmonės pagrindinis inovacijų finansavimo šaltinis

- Įmonės lėšos
- Valstybės parama
- Europos Sąjungos fondai
- Skolintas kapitalas
- Užsienio investicijos
- Kita

13. Kaip manote, kas turėtų būti pagrindinis inovacijų finansavimo šaltinis

- Įmonės lėšos
- Valstybės parama
- Europos Sąjungos fondai
- Skolintas kapitalas
- Užsienio investicijos
- Kita

V. Dabartinė inovacijų diegimo situacija Kauno gamybos įmonėse

14. Įvertinkite svarbą veiksnių lemiančių inovacijų diegimo galimybes gamybos srityje (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 - Visiškai nesvarbu	2- Nesvarbu	3- Nei nesvarbu, nei svarbu	4 - Svarbu	5 – Labai svarbu
Politinis					
Ekonominis					
Ekologinis					
Technologinis					
Socialinis					

15. Įvertinkite pateiktus veiksnius nurodydami, kurie iš jų dažniausiai sąlygoja sumažintas inovacijų diegimo galimybes gamybos įmonėse (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 - Visiškai nesutinku	2- Nesutinku	3- Nei nesutinku, nei sutinku	4 - Sutinku	5 – Visiškai sutinku
Sumažėjusi konkurencija					
Įmonių verslumo stoka					
Kvalifikacijos ar motyvacijos inovuoti stoka					
Rizikos baimė inovuojant					

Žinių stoka					
Nepakankama valstybinė parama inovuojant					
Įmonių klasterizacijos spragos					
Dideli ekonomikos augimo tempai					
Nepakankamas mokslo ir verslo bendradarbiavimas					

16. Įvertinkite, kurie iš pateiktų veiksnių šiuo metu daro didžiausią įtaką lėtai inovacijų plėtrai (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 - Visiškai nesutinku	2- Nesutinku	3- Nei nesutinku, nei sutinku	4 - Sutinku	5 – Visiškai sutinku
Rizikos baimė					
Įmonių verslumo stoka					
Strateginės inovacijų politikos spragos					
Menkas valdžios dėmesys inovacijoms bei jų skatinimui					
Nepakankamai išplėtota verslo paramos sistema					
Nepakankamas mokslo ir verslo bendradarbiavimas					
Valdžios bei verslo atstovų žinių apie inovacijas stoka					

17. Įvertinkite, kokie šiuo metu dažniausiai pasitaikantys inovacijų diegimo trukdžiai gamybos įmonėse (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 – Labai retai	2- Retai	3 - Vidutiniškai dažnai	4 – Dažnai	5 – Labai dažnai
Žinių apie					

inovacijų naudą stoka					
Finansinių resursų trūkumas					
Rizikingos įmonių investicijos į inovacijas ir mokslinę veiklą					
Nepakankamas įmonių verslumas, inovatyvumas					
Pasyvus, pesimistinis įmonių vadovų požiūris į inovacijų diegimą					
Sąlyginai dideli inovacijų kaštai					
Intelektinės nuosavybės apsaugos stoka					
Kvalifikuoto personalo stoka					
Inovacijų diegimo valdymo įgūdžių stoka					
Žinių apie inovacijų paramos paslaugas stoka					
Sunkumai, ieškant partnerių inovacinei veiklai					

VI. Inovacijų diegimo galimybių ir perspektyvų vertinimas

18. Įvardinkite, kurios iš žemiau pateiktų inovacijų rūšių yra svarbiausios gamybos versle (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 – Visiškai nesvarbu	2- Nesvarbu	3- Nei nesvarbu, nei svarbu	4 - Svarbu	5 – Labai svarbu
Naujas produktas rinkoje					
Pagerintas, rinkoje esantis produktas					
Nauja paslauga rinkoje					

Pagerinta, rinkoje esanti paslauga					
Nauji ar pagerinti vidiniai procesai					
Naujas ar pagerintas verslo modelis					

19. Įvertinkite, kurias iš žemiau pateiktų inovacijų rūšių šiuo metu būtų lengviausia įgyvendinti gamybos įmonėse (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 – Labai sunku	2- Sunku	3- Nei sunku, nei nesunku	4 - Nesunku	5 – Visiškai nesunku
Naujas produktas rinkoje					
Pagerintas, rinkoje esantis produktas					
Nauja paslauga rinkoje					
Pagerinta, rinkoje esanti paslauga					
Nauji ar pagerinti vidiniai procesai					
Naujas ar pagerintas verslo modelis					

20. Nurodykite, kiek inovacijų įdiegimas padeda gerinti žemiau išvardintas gamybos įmonės sritis (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 – Visiškai mažai	2- Mažai	3- Vidutiniškai	4 - Daug	5 – Labai daug
Klientų pasitenkinimas					
Klientų skaičiaus padidėjimas					
Klientų pritraukimo išlaidų sumažinimas					
Verslo santykių kokybė su klientais					
Patrauklūs užsakymo tarifai					
Verslo santykių					

kokybė su kitomis organizacijomis					
Darbo produktyvumas					
Rinkos dalies plėtimasis					
Vidinių procesų ar gamybos išlaidų sumažinimas					

21. Pateikite savo nuomonę apie tai, kas labiausiai paskatintų diegti inovacijas gamybos įmonėse (skirtingos veiksnių grupės gali būti vertinamos vienodais balais)

	1 – Visiškai mažai	2- Mažai	3- Vidutiniškai	4 - Stipriai	5 – Labai stipriai
Maža rizika					
Padidėjusi rinkos konkurencija					
Kintanti paklausa					
Išorinio finansavimo pritraukimas					
Palankesnė mokestinė aplinka arba mokestinės lengvatos inovacijoms					
Pasikeitusi įmonės strategija ar vadovai					
Informacinių technologijų kaita					
Pakitęs darbuotojų požiūris į inovacijas					

Ačiū Jums už skirtą laiką anketos pildymui.