

IMPROVED INNOVATIVE PRODUCT STRATEGY ASSESSMENT MODEL IN MARKET RESEARCH CONTEXT

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Abstract. In the innovation economy, companies more often face the need quickly and efficiently evaluate not only their existing product and service portfolios in the context of the industry's potential, but also evaluate theoretical concepts of innovations. There are various systems for evaluating innovation concepts and already existing products and/or services for companies that are planning to expand their business in a new industry. The innovation economy is characterized by the convergence of innovations and the most demanded products on the market with continuous market upgrades. A company which wants to grow in a new industry faces an assessment challenge between already existing, demanded products and the choice of innovative concepts in the context of the company's most perspective growth. As market examples show, a successful company's entry into a new industry can be related to both an innovative concept and an innovative business model of existing, demanded market products. The aim of the study is to analyse the appropriateness of the existing assessment systems of innovations concepts and market bestselling products from the perspective of an enterprise, considering an expansion into new industry. The theoretical benefit of the study is to highlight a new, complementary model in the assessment of the company's growth strategy in the context of developing new industries and markets. The practical contribution of the study is an improved combined industry and company assessment model. Proposed model is company growth perspective assessment tool in the context of new products, either it is completely new to market or new to company, but already known in the market.

Key words: *NPD evaluation model, industry attractiveness model, company growth analyses, market research.*

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Introduction

Why is it important? Innovation economy requires from companies a continuous new product creation. Development of innovations is time and resource-intensive with a low success rate. Organizational growth begins with an evaluation of resources that exert leverage on competitive advantage and the identification of sources of synergy or "fit" (Day, G.S., Wensley, R., 1988) Research on the success of the NPD (new product development) projects, has focused on available firm resources and has linked these positional advantages and performance outcomes (Di Benedetto 1999; MontoyaWeiss and Calantone 1994).

Selecting the right strategic decisions is crucial for the success of an organization (Drucker P., 2000, Müller R., Martinsuo M., Blomquist T., 2008) Available investment alternatives usually far exceed the number of projects that can

be executed with an organization's limited resources at any given time, and, therefore, choosing the right products and projects in a particular context is seldom easy (Engwall M., Jerbrant A., 2003). Therefore, academics and practitioners have sought to develop methods to address the product selection problem. While financial criteria play a significant role in defining the optimal state, qualitative strategic assessments are also significant contributors (Englund R.L., Graham R.J., 1999).

Effective management of an innovation or new product is no longer sufficient. In today's business market, proactive management of the innovation product portfolio has become increasingly important to achieve long-term success and competitive advantage. To create a viable product concept, opportunities have to be discovered, ideas created and as a result a foundation for a future project, portfolio, and corporate success is laid. (Heising W., 2012)

Pose research question that needs to be answered. How to effectively identify the most promising company's new products affected by multiple factors among similar options and at the same time taking into consideration market demand, company's resources, competencies, and the growth vision? **How do the findings contribute to the discipline?** **The theoretic summary and** assessment gives an insight in available product assessment methods which can be used to assess or compare results derived with different methods. The research also offers an improved assessment model to which missing dimensions are added. **Description of study.** In the research product assessment both industrial environment and academic environment strategies are compiled and its content analysis conducted; based on the results, an improved combined model is offered. **Research aim.** The aim of the study was to analyse the appropriateness of the existing assessment systems of innovations concepts and market bestselling products from the perspective of an enterprise, considering an expansion into new industry. **Research methods applied.** The research was based on the study of the meta and content analyses, and an analysis of the most recent scientific and professional literature available. Additionally, in-depth interviews with scientists and directors of the companies from the industries were conducted. **Research novelty.** The research offers a new, combined approach to new product assessment as a result of complex factors. The research also offers unprecedented summarizing analysis on the approach of the existing methods in the context of the research object. **Problematic questions of the conducted research and theoretical discussion.** Several discourse questions have been highlighted during the research. One of the most problematic questions is the approbation of methods in the context of industry research and its potential assessment. Considering that directly influencing internal and external environmental factors are constantly changing, the research aims to answer whether the method approbation in an empirical environment is practically possible. This aspect is highlighted as problematic by several developers of other methods, as well as, entrepreneurs of the industrial environment. **Information sources.** In-depth interviews with directors of SMEs (small-to-medium enterprises) and scientific literature databases were used as information sources. **Delimitations of research subjects.** The research reviews methods used and described in the industrial and academic environments. The research does not analyze approaches of institutional environment. The research does not analyze and compare methods mutually against empirical problem.

Research results and discussion

In industrial (in companies and organizations providing consulting services to companies), academic and research environment, as well as, in institutional environment exist many and various new product and their growth strategy assessment systems. They are defined and structured in various departments in an industrial environment, and in various disciplines in the social sciences context. Assessment systems and growth strategies of new products can be found in R&D, project management and product portfolio management areas. In the context of company's product portfolio's management, the most widely known assessment systems are McKinsey Matrix, BCG Matrix, Ansoff Matrix, VRIO

framework, Porter's 5 Forces model. Project management systems use other approaches to identify the most promising company projects which are based on the project management systems, mostly on the financial assessment approaches.

In the R&D field various matrices are used to assess new products (NPD); the best-known are P. Kotler's New Product Development Matrix (Ashford N.A., Hall P.H., 2018) G. Cooper's Assessment System (Cooper G., 1997), although generally they are less known in the business environment than company's product assessment systems. Wildly known are institutional assessment systems which are intensively used in the public sector, providing similar assessment (OECD, 2015, 2018). However, the critical questions are which of these approaches should be chosen by a company when assessing an innovation concept or business model to be developed in the future. The discussion highlights a range with multiple options, assessing appropriateness of the available assessment methods. The discussion also indicates an uninitiated range. As researchers emphasise, no single set of broad guidelines exists that guarantees the selection of successful projects; however, the process is not random. (Thamhain H. J., 2014) The matrix offered in the research highlights a new and unique combined approach with a goal to create a method to be applied in applied research.

1. Evaluation of existing product strategy assessment models

In the table below a summary of existing product strategy assessment methods is provided. Methods are divided in 3 basic groups which have been discussed previously.

Table 1

Available product strategy assessment models

No.	Assessment model	Brief description	Gaps in the context of complex product strategy assessment
Selected organization product portfolio assessment models			
1.	McKinsey Matrix (Amatulli C., Caputo T., Guido G., 2011)	Framework that evaluates business portfolio, provides further strategic directions and helps to prioritize the investment needed for each existing business unit	Lacks innovation or new to company product evaluation scale
2.	P. Drucker Industry Attractiveness Model (Daidj N., 2015)	Framework that evaluates industry attractiveness and helps to prioritize the investment areas	Lacks company resources, capabilities and vision evaluation scale
3.	Porter 5 Forces (Hargroves K., Smith M.H., 2006)	Analysis tool that uses five industry forces to determine the intensity of competition in an industry and its profitability level	Lacks horizontal structural framework to compare various industries and products
4.	Ansoff Growth Matrix (Daidj N., 2015)	Analysis tool that identifies four growth strategies through 4 market segments: market penetration, market development, product development, and diversification	Lacks company resources, capabilities and vision evaluation scale
5.	VRIO Framework (Peng M.W., 2017)	Tool used to analyse company internal resources and capabilities to find out if they can be a source of sustained competitive advantage	Lacks horizontal structural framework to compare various industries and products
New product and innovation assessment models			
5.	Cooper NPD assessment model (Cooper R. G., Kleinschmidt E.J., 1995)	Analysis tool that uses various determinants to identify most perspective innovation concept	Lacks complex industry assessment scale

No.	Assessment model	Brief description	Gaps in the context of complex product strategy assessment
6.	DELI (Natter M., Mild A., 2003)	Analysis tool that uses various 3 step approach to cluster innovation determinants to identify most perspective new product attributes	Lacks in-depth company resources, capabilities and vision evaluation scale
7.	Effective NPD Schemes (Natter M., Mild A., et al, 2001)	New model for determination the new product success through development process	Lacks in-depth company resources, capabilities and vision evaluation scale
8.	PSS evaluation (Kim K.J., Lim CH., Heo J.Y., et al., 2016)	Product–service system (PSS) which integrates products and services to fulfil customer needs and create sustainability according 94 evaluation criteria	Lacks in-depth company resources, capabilities and vision evaluation scale
9.	InnoMatrix (Batraga A., Salkovska J., et al., 2018, 2019)	Analysis tool that uses various determinants to identify most perspective innovation concept	Lacking in-depth company resources, capabilities and vision evaluation scale
10.	NPD Transparency flow (Rogers H., Ghauri P., Kulwant S., 2005)	Methodology highlights that transparency of measures at the individual project level is key important, aside to move product development performance up the corporate training agenda; and concentrate on the core processes.	Focuses on NPD process, lacks in-depth company resources, capabilities and vision evaluation scale
11.	0–1 nonlinear integer programming model (Abbassi M, Ashrafi M, Sharifi E., 2014)	Model maximizes R&D project portfolio values while taking into account various types of R&D projects, uncertain nature of these projects and their interdependencies. Helps construct the organizations' R&D project portfolio by accurate assessment of the key variables affecting portfolio values.	Lacking complex industry assessment scale
12.	Balanced portfolios method (Oh J., Yang J., Lee S., 2012)	Analyse the product matrices of the scoring model and manages portfolios to ensure that the projects are well balanced in terms of periods, risks and profits.	Lacks innovation or new to company product evaluation scale
13.	Fuzzy set theory and multi-criteria group decision making method (Wei C.C., Chang H.W., 2011)	Model takes into account project performance, project delivery and project risk, and formulates the selection decision of NPD project portfolio as a fuzzy linear programming problem. The illustrative example shows that the model proposed can generate projects with the highest success rate under limited resources and manpower.	Lacks complex industry assessment scale
14.	4 success dimensions method (Harmancioglu N., Droge C., Calantone R.J., 2009)	Analyse the key 4 matrices to identify most perspective innovation concept	Lacks complex industry assessment scale

Source: author's summary of new product strategy assessment methods based on industry and scientific literature analyses, 2019

Overall, the management of research and development project assessment and selection processes highlights a comprehensive research process in all segments of the company and its environment segments to mitigate risks, uncertainties, and flaws the company is facing to determine the value-added to a new product, in comparison with other options. Reviewed methods emphasise some of the growth aspects; however, as it is also mentioned by the management science experts and scientists, there are no one common guidelines which would guarantee a successful project selection. (Thamhain H. J, 2014). However, it is also stressed that the process and strategy selection are not accidental. Improved understanding of organizational dynamics that affect project performance, and factors that contribute to cost, revenue, and other benefits, can help to get a better and more relevant insight into the value of a future new product. Researching both quantitative and qualitative measures included in a combined rational assessment process is often the most plausible predictor of values and desirability of the future project. It is equally important that the process requires leadership and strong planning, organizational, and communication skills. To build a meaningful and credible consensus among all stakeholders, a management style that encompasses an understanding of common goals and experience is needed.

Frequently the methods emphasize that first of all, the project assessment team lead has to be talented and experienced manager who understands and has the capacity to combine the product strategy assessment's multifunctional process and its determinants.

Main results and findings of the theoretical study highlight a large quantity of product strategy assessment models which exhaustively analyze several strategic guidelines for product strategy selection. However, the authors of the article did not identify a complex methodical approach which would link together company's new product with a complex industry assessment and a company's resources, competencies, and vision. The authors of the article identified approbated and detailed approaches in every aspect mentioned; therefore, the authors of the article offer an improved model for a company's new product strategy assessment.

2. New combined view of industry assessment and business potential strength in new product context

The offered model by the authors of the article is based on modern business management experts' Peter Drucker and Philip Kotler's conceptual approach of models. The elaborated assessment model projects that in the first stage the specifically chosen perspective in the industry context for the company's new product. In the second stage the product is assessed against company's perspective of competition, competence and the vision; in the third stage the two latter indicators are combined in an assessment matrix, creating the total assessment of industry attractiveness in the context of a new product and organization's resources, competencies, and conformity with the vision.

Industry attractiveness of the sector assessment is based on 19 industry and potential product indicators. These 19 indicators combine important and comprehensive aspects with an objective for a company to be able to index (to assess mathematically) new products industry attractiveness, in the context of the product potential and the capacity of the company itself.

Industry assessment should be based on results of a previously conducted in-detail market analysis which comprehensively reviews every industry and its segments involved. 19 assessment elements of the industry attractiveness are as follow: **1. Size of the industry and its sectors** which marks the relative size of the market and which are assessed against other industries and products; **2. Estimated growth rate of the industry sector** and the perspective in the next five years; **3. Industry and its sector capacities**, which includes industry assessment from the perspective of demand and supply: whether industry supply meets demand or demand is less than supply; **4. Profitability of the industry and its sectors**, which includes the difference in net income against sales and the gross profit margin. Profitability of the

industry is the average profitability of the companies in this industry, which is relatively comparative to other assessment products. It is recommended that the assessment is based on industry's and its sectors professional assessment, using expert calculations, comparative assessments of several databases and studies; **5. Entry barriers** in the industry sector that include a wide range of measures assessed relative to other industries and products; **6. Exit barriers** in the industry sector that include a wide range of measures assessed relative to other industries and products; **7. Product type**, which according to the P. Drucker's method (, is segmented into 3 basic categories: 1) more expensive than an analogue (either strictly professional or luxury category) in its industry sector, 2) different from other analogues (innovation, limited edition or a price preference) atšķirīgs no citiem analogiem (inovācija, limitēta pieejamība vai cenas priekšrocība), 3) or as widely available commodity (Drucker P., 2002); **8. The level of the product innovation** which according to the method of P. Drucker is assessed in 3 levels where a high level means radical-significant technological innovation, a medium level identifies significant updates to existing functions of existing products, and a low level identifies insignificant improvement of existing functions (Drucker P., 2002); **9. Threat of emerging substitute goods** indexes the opportunity level how relatively easy other market participants can offer the same or similar goods. A substitute good is a product that can offer the same or similar benefits/ advantages as a product from a different industry. In the research, the threat of substitute goods can be assessed by Porter's Five Force model analysis; **10. Supplier capacity/ impact** in the industry sector is analyzed, using Porter's Five Force model analyses which assesses Suppliers' ability to put pressure on Buyers to benefit from trade advantages. According to the Porter's Five Force industry analysis system, Suppliers capacity is one of the powers that develops the structure of the industry competition; **11. Buyers power/ impact** in the industry sector is analyzed, using Porter's Five Force model analyses which assesses Buyers' ability to put a pressure on Suppliers to get higher quality products, better customer service, and lower prices. According to the Porter's Five Force industry analysis system, Buyers capacity is one of the powers that develops the structure of the industry competition; **12.** It is recommended that **the number of competitors** in the industry to be analyzed, using Porter's Five Force model analysis, assessing the competition intensity level among competitors. If competition is fierce, competitors will try to take over profits and market shares from other competitors, assuming that the growth of the market sector is low or non-existent. According to the Porter's Five Force industry analysis system, the number of competitors is one of the powers that develops the structure of the industry competition (Hargroves K., Smith M.H., 2006); **13. Technological change** in the industry sector identifies how mutable in the context of the technology is the specific industry sector - how many technological innovations are implemented in the industry sector and how significantly they have changed the industry overall. **14. Required capital investments** identify how much capital investment is needed to start a business in a particular industry; **15. Government regulations for the industry sector with a positive impact** identifies if the industry has a particularly favourable status with regards to economic policy; **16. Government regulations for the industry sector with a negative impact** identifies if the industry has a particularly restrictive status with regards to economic policy; **17. Industry impact on the economy** identifies if the product represents an industry which is one of the leading industries in the economy; **18. Export potential** identifies the potential product demand, based on a detailed export and import flow and analysis of export indices. **19. Time required for product development** identifies the relative new product development cycle after the decision has been made.

As estimated by Drucker's industry assessment, the industry's elements are assessed on a 10-point system, highlighting 3 main assessment categories - high impact, moderate or low impact. Each of the 19 industry element assessments is given a score that evaluates the industry-specific component directly in the context of a new product or product group in which the company is considering. In the table below is listed a scoring system in the context of industry elements. The assessment is dividend in 3 basic categories - 10, 5, or 0 points, except one component - the size of the industry sector - where the medium-sized market's assessment can score 7 points (Daidj N., 2015). Table 2.

Table 2

Industry Assessment Indices

No.	Industry-Descriptive Component	<i>Significance / Impact of the Component in the Context of a Given Product and Assessment Points (0 is low and 10 is high)</i>		
		High	Medium/ Moderate	Low
1.	Size of the industry sector	Large market (5 points)	Medium-sized market (7 points)	Small-sized / niche market (10 points)
2.	Estimated growth rate of the industry sector	Rapid growth (10 points)	Slow, stagnant growth (5 points)	Negative growth (0 points)
3.	Capacity of the industry sector	Supply exceeds demand (0 points)	Capacity = demand (5 points)	Demand is higher as capacity (10 points)
4.	Profitability of the industry sector	High profitability (10 points)	Moderate profitability (5 points)	Low profitability (0 points)
5.	Entry barriers	Difficult to enter the industry sector (10 points)	Average costs to enter the industry sector (5 points)	Easy to enter the industry sector (0 points)
6.	Exit barriers	High costs to exit (0 points)	Average costs to exit (5 points)	Low costs to exit (10 points)
7.	Product type	Expensive (10 points)	Different (5 points)	Commodity (0 points)
8.	Level of the product innovation	High (10 points)	Medium (5 points)	Low (0 points)
9.	Threat of emerging substitute goods	High (0 points)	Moderate (5 points)	Low (10 points)
10.	Suppliers power/ impact on the industry sector	High impact (0 points)	Moderate impact (5 points)	No or low impact (10 points)
11.	Power of buyers/ impact in the industry sector	High (10 points)	Moderate (5 points)	Low (0 points)
12.	Number of industry competitors	Many competitors (0 points)	Average number of competitors (5 points)	Weak or no competition (10 points)
13.	Technological changes in the industry sector	High (0 points)	Medium (5 points)	Low (10 points)
14.	Required capital investments	High capital investments required (10 points)	Medium-sized capital investments required (5 points)	Low capital investments (0 points)
15.	Government regulations for the industry sector with a positive impact	High impact (10 points)	Moderate impact (5 points)	No or low impact (0 points)
16.	Government regulations for the industry sector with a negative impact	High impact (0 points)	Moderate impact (5 points)	No or low impact (10 points)
17.	Industry impact on the economy	High impact (10 points)	Moderate impact (5 points)	No or low impact (0 points)
18.	Export potential	High (0 points)	Average (5 points)	Low (10 points)
19.	Time required for product development	Relatively long (0 points)	Relatively average (5 points)	Relatively short (10 points)

Source: author's assessment based on P. Drucker general industry assessment evaluation, 2019.

In the second stage the specific product which is assessed by the organization as a potential growth object, is assessed against a company's perspective on competition, competence, available resources, and vision. In the second stage the following 8 elements on a 10-point scale are assessed, where 10 means that the rating component conforms completely and 0 indicates that there is no match. The following 8 components are assessed: 1. The conformity of the company's vision, mission, and goals with the industry sector and product; 2. Company's marketing experience and competencies in

this industry sector against the potential product; 3.Experience and competence of the company in this industry sector in respect to the potential industry sector and product; 4.Company’s access to sufficient financial resources to enter the industry sector with the intended product; 5.Company’s current sales approaches to sales channels in the relevant industry sector; 6. Competences of the Research and Development department on the relevant industry sector; 7.Competencies of the Procurement and Supply department on the relevant industry sector; 8.Company’s access to necessary material resources in accordance with the relevant industry sector and product. See table 3.

Table 3.

Company new product evaluation indexes upon company mission, vision, competencies and available resources

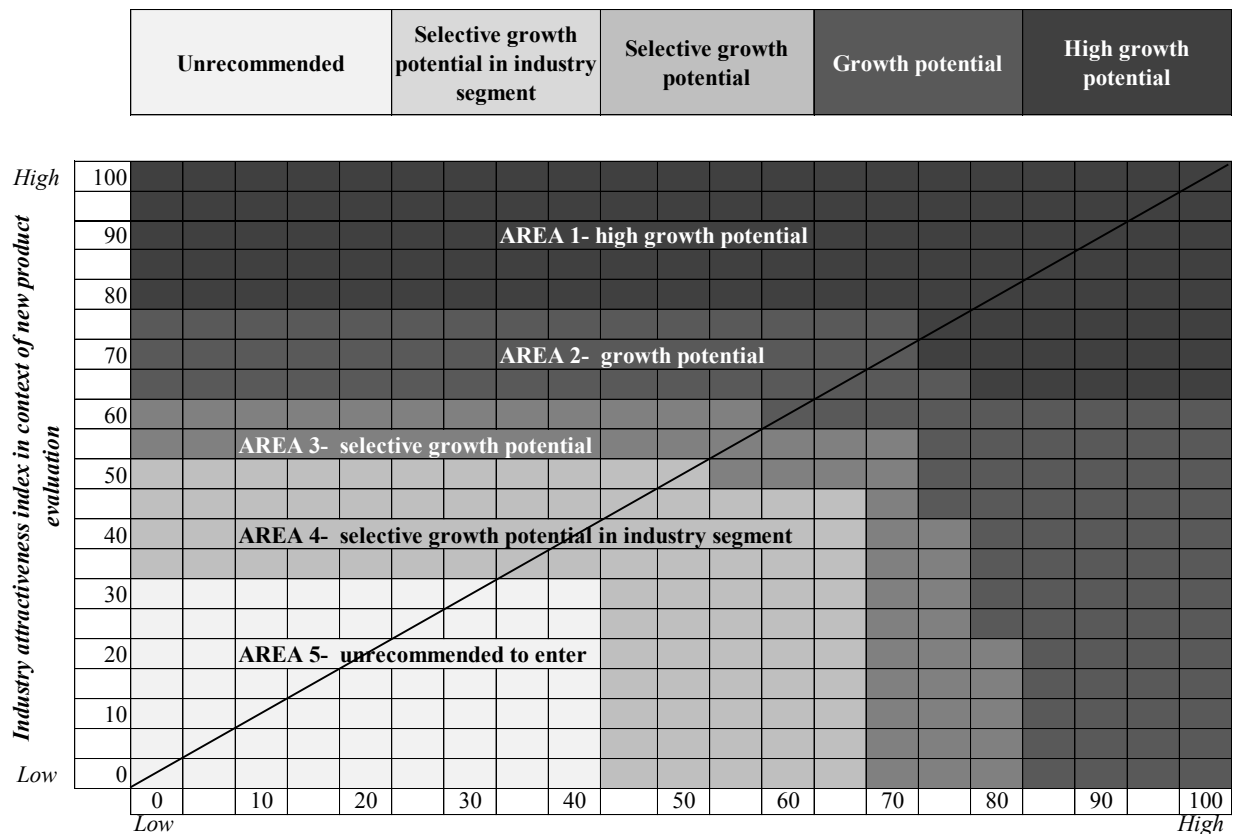
No.	Company's competition and competence perspective's component	Relative Importance (weight) (A)	Expert Assessment (B)	Index (A x B)
1.	Company’s vision, mission, and goals’ conformity with the relevant industry sector and product.	0,20		
2.	Company’s marketing experience and competencies in this industry sector against a potential product.	0,15		
3.	Company’s manufacturing experience and competencies in this sector against a potential industry sector and product.	0,10		
4.	Company’s access to sufficient financial resources to enter the relevant industry sector with the intended product.	0,15		
5.	Company’s access to existing sales channels in the relevant industry sector.	0,15		
6.	R&D department’s competence on the specific industry sector.	0,10		
7.	Procurement and supply departments’ competencies on the relevant industry sector.	0,05		
8.	Company’s access to necessary material resources in accordance with the relevant industry sector and product.	0,10		

Source: author’s assessment based on P. Kotler general new industry assessment evaluation matrix, 2019.

For the company assessment, it is recommended to use at least 4 company experts who have substantial knowledge on the company and are familiar with the results of the industry research.

3. Combined Assessment model to identify new product potential in context

In the third stage of the research two previous indicators were combined in an assessment matrix, creating industry attractiveness in a context of a new product and the total assessment of organizational resources, competencies and conformity of vision which allows a company to identify a growth direction based on calculations. The assessment matrix consists of 2 vectors where the vertical vector identifies the level of attractiveness; the horizontal vector identifies an assessment of company’s resources, competencies, and vision. See Figure 1.



An organization's current resource, competence, and compliance vision index in the context of new product evaluation

Source: author's construction based on P. Drucker and P. Kotler assessment methodologies, 2019.

Fig. 1. Industry attractiveness and company opportunity combined assessment model of new product (both new to company and new to market).

Area 1 identifies that the industry and the potential product are highly attractive. If organization considers enter it with the specific product, it is recommended that this industry and potential product received resources and an experienced manager is appointed in order to make detailed calculation on starting a business activities. It is possible that is relatively hard to enter the industry, and, therefore, it is recommended to consider an option to acquire a company that is already operation in the relevant industry sector. Area 2 identifies that the industry and potential product are sufficiently attractive for an organization to consider entering it with the specific product. If the organization already participates in any of the relevant industry's sectors, it is recommended to consolidate resources to become a leader in the industry or its sector. If the organization is not represented in the sector, it is recommended to enter the sector, especially if it is a closely held organization with similar sectors, and has an expertise or an option to split the costs with an existing business structure. Area 3 identifies that the industry and the potential product is neither highly attractive nor highly unattractive. The resources available to the organization, the vision of growth, the position of competition and competencies that can be transformed into this industry are the pre-requisite of a success in a case of an assessment as this. Area 4 identifies that industry is not attractive for the company and the product which is being considered for entering the industry. However, it is possible to be a leader of a niche segment if the organization has specific advantages as a unique resource that is not available to other competitors. Area 5 identifies that the industry is not attractive for a company and the potential product which is considered for an entry.

Conclusions, proposals, recommendations

1. As a result of the research it was concluded that among the available business management assessment tools available, there is no universal multi-factor assessment matrix that would help a company to identify the most promising new products in the context of market-perspective attractiveness, company's resources and the growth vision.
2. As a result of the research, methods widely known both in the industrial environment and innovative methods developed in the academic environment were collected and assessed. The summary of methods provides a company an opportunity to mutually compare results obtained with different methods.
3. The study resulted in development of an innovative, new products prospective growth assessment matrix. The model can assist companies and organizations to identify the most promising products for organizational growth. The model is suitable for business industry and company assessments.

The innovative matrix encompasses the P. Drucker's industry's attractiveness assessment, updated with essential innovative economy's assessment elements, and P. Kotler's innovation assessment method within an organization which are summarized and complemented in two dimensions - an assessment of the industry's attractiveness in the context of a new product against the company's competences.

4. The method assessment combined approach was validated by experienced company management and market experts.
5. The updated method was tested in the JSC "Latvia's State Forests" market research, where the most promising products based on industry and company assessments were determined. (Latvia's State Forests, 2019).
6. It is recommended to use multi-factor matrix in the business research to promote the company growth based on a calculated growth.
7. It is recommended that the results of the multi-factor matrix to be evaluated in the perspective of the medium term, analyzing the achieved results by the organization in detail.

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