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Development of strategic mechanisms for high-tech enterprises in the digital economy environment

Разработка Стратегических Механизмов Высокотехнологичных Предприятий в Среде Цифровой Экономики

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Abstract

The article is devoted to the development of conceptual provisions and recommendations for the development of strategic mechanisms for the work of high-tech enterprises in order to form an effective leadership strategy in the digital economy. The methodological basis of the study is based on the use of fundamental concepts, publications of modern specialists and scientists on the problems of digitalization. We used such scientific techniques and methods as: synthesis, comparative analysis, systemic and structural approach and method of expert assessments. The theoretical basis of the study was made up of scientific works of foreign and Russian scientists in the field of organizing strategic management, developing strategies and mechanisms for the development of enterprises operating in various sectors of the economy and conducting digital transformation. The process of client-oriented management is considered from the perspective of ecosystem development, which made it possible to form a set of rules for the effective construction and management of ecosystems. The author proposes a model of a roadmap necessary for developing a leadership strategy; the central element of the proposed map is a business model modified based on the synthesis of digital technologies.

Keywords: strategic management, digital ecosystems, technological transformation, digital economy, economic systems.

Аннотация

Статья посвящена разработке концептуальных положений, рекомендации по развитию стратегических механизмов работы высокотехнологичных предприятий с целью формирования эффективной стратегии лидерства в среде цифровой экономики. Методическая основа исследования построена на использовании фундаментальных концепций, публикаций современных специалистов и ученых по проблемам проведения цифровизации. Применялись такие научные приемы и методы как: синтез, сравнительный анализ, системный и структурный подход, метод экспертных оценок. Теоретическую базу исследования составили научные труды зарубежных и отечественных ученых в сфере организации стратегического управления, разработки стратегий и механизмов развития предприятий, работающих в различных отраслях экономики, проведения цифровой трансформации. Процесс клиентоориентированного управления рассмотрен с позиции экосистемного развития, что позволило сформировать набор правил эффективного построения и управления экосистемами. Автором предлагается макет дорожной карты необходимой для разработки стратегии лидерства, центральным элементом предлагаемой карты является модифицированная на основе синтеза цифровых технологий бизнес-модель.

Ключевые слова: стратегическое управление, цифровые экосистемы, технологическая трансформация, цифровая экономика, экономические системы.

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Introduction

A new stage in the development of the technological process is associated with the integration of a complex of digital technologies into various sectors of the economy. The economies of almost all countries are currently faced with an important choice: to leave their product policies unchanged or to embark on the difficult path of digital transformation that will reorganize markets and will also help to form fundamentally new consumption patterns, which will be based on the information component of Everything as a Service (EaaS) (Frolov et al., 2019; Zakharov et al., 2019; Boev, 2020). The development of a strategy for the development of a high-tech enterprise must necessarily take into account the changes that occur at the physical level, i.e. changes in the nature of production assets, which means the digitalization strategy acquires the status of an actual tool for implementing the transformation process, in order to adapt to changes in the digital technological environment (Weissman et al., 2017). The digital strategy being developed is a unique document of the enterprise, which is based on promising programs and development plans, including, of course, innovative/investment ones, which means that in no case can they be copied, and in this regard, development methods acquire special relevance, which should answer the questions "how?" and "what?". The classic strategy answers the question "how?" by well-known and proven methods, but "what?" depends on environmental factors, then within the framework of a digital strategy, these issues need to be worked out (Cordon et al., 2016; Ageev, 2019). Are high-tech enterprises changing their previous strategy to successfully overcome the challenges of digital transformation and take advantage of the new opportunities that digital technologies provide, or is the spectrum of these technologies already being applied without any changes in enterprise strategy? For any strategy, long-term goals are very important, since it is the time horizon that makes it possible to determine the constancy of the goal and only a sharp change in external factors or internal conditions are good reasons for revising goals. At the same time, the main strategic trends are (Gerasimenko & Slepikova, 2019):

- creation of a digital environment at the enterprise, but based on the use of platform solutions, within which interaction between various participants will be carried out through the use of digital services (Butkovskaya & Sumarokova, 2019);
- development of a system for organizing digital asset management of an enterprise; implementation of analytical transitions from: descriptive to predictive and then to prescriptive;

gradual transition from using an audit approach to a fully controlled business model;
application of technology "digital twins" for technological processes;
expanding the functionality of the service model within the framework of EaaS concept;
application of the concept of E2E-business to better take into account the interests of end users (Agarwal & Helfat, 2009).

Without taking into account the above tendencies, the process of survival of a high-tech enterprise, as well as the preservation of business, becomes almost impossible. This means that search, selection, development and subsequent adaptation of methods aimed at forming an effective digital strategy for a high-tech enterprise is an urgent and demanded task, and the digital strategy toolkit is becoming the most important intangible asset of the industry (Sharko & Saveliev, 2019; Asadullina, 2020). The hypothesis of scientific research is that for the process of developing a multi-component development strategy for a high-tech enterprise operating in the digital economy environment, it is necessary to apply a transformation mechanism based on the integration of assessing the level of its digital maturity, which must correspond to the resource provision of the enterprise. The purpose of the research carried out in the article is to develop recommendations related to the formation of a leadership strategy for high-tech enterprises in the digital environment (Veas Iniesta & Estay Sepúlveda, 2021).

Theoretical Basis

The number of scientific publications and studies related to digitalization and the use of various digital technologies is quite large, but in a lot of works, as a rule, only certain types of solutions are contained, or the solutions are rather conditionally generalized, which does not allow them to be fully applied to high-tech enterprises. Scientific papers highlighting the issues of the concept of "Industry 4.0" often promote solutions that are associated with technical, production and technological upgrades (including IoT technologies), as a result of which will lead a high-tech enterprise to a strong dependence on the environment, consumers and suppliers, because they consider the environment as a given element (Kwilinski, 2018) (Porter & Heppelmann, 2015; Abdelaal et al., 2018). The use of such a term as "infocommunication" enterprises leads to an attempt to reduce the role played by high-tech industrial enterprises, but at the moment there is no practical evidence that it is infocommunication companies that receive clear economic and production advantages (Hill, 2017). In connection with this circumstance, it can be concluded that there are very few developments that

are aimed at digitalizing the production structures of an enterprise that contain practical solutions.

Fundamental theoretical research in the strategic management environment is presented in scientific works of the following authors: H. I. Ansoff, D. Kiple, A. O. Lewis, R. Helm-Stevens, R. Ansoff, (2019), E. Penrose (1955), A. Jr. Chandler (1990), J. Trout (2004), M. Porter, J. E. Heppelmann (2015), R. Grant (1991), S. Thun, P. F. Kamsvåg, B. Kløve, E. A. Seim, H. Y. Torvatn (2019), C. Cordon, P. Garcia-Milà, T. F. Vilarino, P. Caballero (2016), R. Agarwal, C. E. Helfat (2009), T. Hill (2017). When analyzing the new innovative business environment, the authors of the study used the works of: B. Demil, X. Lecocq, V. Warnier, (2018), B. W. Wirtz, A. Pistoia, S. Ullrich, V. Göttel, (2016), G. R. Carroll, Y. P. Huo, (1986), M. Hossain, A. H. Lassen, (2017), et al. The study of issues related to the competitive advantages received by enterprises after digital transformation was considered in the works of: A. Teslinov (2020), E. D. Weissman, N. S. Nikiforova, S. A. Nosova (2017), Yu. A. Kovalchuk, I. M. Stepnov (2017), etc. When studying aspects of the digital maturity of an enterprise, the authors took as a basis for the work the following authors: A. Boev (2020), A. Ageev (2019), A. Asadullina (2020), I. Tarasov (2019), V. Ya. Zakharov, O. V. Trofimov, V. G. Frolov, D. I. Kaminchenko, A. A. Pavlova, (2018), etc.

The approaches to determining the effectiveness of digital strategies that have formed to date do not give a fully unambiguous answer to the question of why the low level (if we take research conducted by consulting firms as a basis) investments in the digital transformation of enterprises and how it is possible to create a favorable climate within the enterprise for additional the inflow of investments aimed at digital transformation (Stepnov & Kovalchuk, 2018; Gerasimenko & Slepenskova, 2019). In today's difficult conditions, a comprehensive view of digitalization of high-tech enterprises has a high degree of relevance, which means that the chosen topic of the research conducted in the article has an important practical aspect (Kovalchuk & Stepnov, 2017; Stepnov, 2018). The analysis of practical experience in the construction and operation of ecosystems allows highlighting the basic rules necessary for the construction and effective management of an ecosystem, which will increase its chances of success in carrying out the digital transformation of a high-tech enterprise (Weissman et al., 2017; Zakharov et al., 2018):

1. To make the choice of the right type of ecosystem. The choice in this case has a direct degree of dependence on the current position of the enterprise in the market, its capabilities and goals and, of course, strategic objectives.

It is assumed that several types of ecosystems may be required for a wide variety of purposes. The ecosystem management model will depend on the type of ecosystem choice in the future (Tarasov, 2019).

2. To determine the type of the driving model. Any ecosystem must have a "conductor", i.e. the main company that organizes and manages the ecosystem, forms the strategy for the participants, sets the level of responsibility, determines the interaction mechanisms so that all partners know what to expect. The main factor required for the development of an ecosystem is the ability to scale technologies, since the needs of our customers are becoming more and more diverse every day, which means that the platform is becoming more complex. A personalized attitude will require companies to adapt technology and scale it depending on the market of presence.
3. To develop a monetization strategy. It is necessary to consider how the system will create value and generate an approach. A competent definition of the value proposition of the platform will allow filling the void formed in the market, which in the future will require maintaining a balance of supply and demand. A product based on intelligent technologies has a high price and is able to generate a stream of income received from the service, while the platforms can take on part of the transaction cost (Stepnov & Kovalchuk, 2018; Ansoff et al., 2019).
4. The priority of partnership is a high level of value. It is necessary to focus on partners who have high levels of commercial/strategic importance in order to further maximize the value created within the ecosystem. It is necessary to take a step-by-step approach to the design and development of the ecosystem, because the process of its creation may be delayed. In order to scale up quickly, attention must be paid to and shortened the time of partners/complementors in the ecosystem.
5. Maintain a high level of flexibility and mobility. Partner agreements with a high degree of flexibility and mobility will allow the ecosystem to respond quickly to various changes taking place in the business landscape. The platform business requires a different mindset, i.e. we need to be prepared for the fact that some ideas will fail and will not bring income to the enterprise (Carroll & Huo, 1986).

The analysis shows that the most effective strategies are those aimed at increasing income/sales through the use of various digital technologies. It is practically impossible to confirm or prove at a theoretical level that any reduction in costs resulting from the integration of intellectual tools will continue to lead to a decrease in costs

(Zakharov et al., 2019; Teslinov, 2020). The exception in this case is the group of processes related to the implementation of mutual settlements and IoT. Table 1 shows the final results of

comparing the use of general methods aimed at the formation of digital transformation strategies in the classification compiled by T. Hill (2017).

Table 1. Comparative analysis of the possibility of using general methods aimed at the formation and development of strategies in the framework of digital transformation based on the classification proposed by T. Hill (2017)

Strategy formation methods	Basic goals	What takes into account							What provides						
		T-1	T-2	T-3	T-4	T-5	T-6	T-7	P-1	P-2	P-3	P-4	P-5	P-6	P-7
Marketing concept "4P"	Develop an effective marketing mix	+	±	±	-	+	±	-	+	-	-	-	±	±	-
ADL/LC matrix	Strategic business units	+	±	±	-	±	+	±	-	-	+	±	-	±	±
AIDA model	Organization of links in marketing	+	±	-	-	+	±	-	-	-	±	±	±	+	+
Benchmarking	Growth of key quality indicators	-	-	+	+	+	+	+	+	-	-	+	±	±	±
BCG matrix	Forming product portfolio	±	±	+	+	+	+	-	-	+	+	-	-	-	-
Assessment and analysis of competitors' behavior	Identification of strengths and weaknesses	+	±	+	+	+	+	+	±	+	-	-	-	-	-
Diffusion of innovation	Development and launch of a new product	-	-	+	+	±	±	-	-	-	-	-	±	±	±
Targeted policy matrix	Segment prioritization	-	-	+	+	+	+	-	-	-	-	±	+	+	+
Greiner's growth model	Recognize the growth phases of an enterprise in time	-	-	+	±	±	±	-	-	±	+	±	±	±	±
F. Kotler's five-level model	Adding value product	+	+	±	±	+	+	-	-	-	-	±	±	+	+
Determination of market capacity	Determine capacity and service cost	+	+	+	+	±	±	-	±	-	-	-	±	+	+
7S model	Checking "health" of enterprise	±	-	-	-	-	+	+	±	±	+	±	-	-	-
New product pricing	Identification of the price of a new product	+	+	±	±	±	±	-	+	-	-	-	±	+	+
PEST analysis	Analysis of macro factors and the future of enterprise	±	±	+	+	±	±	-	+	-	-	-	+	±	±
Price elasticity	Price rise/fall analysis	+	+	±	±	-	-	-	-	-	-	-	-	+	+
Product life cycle	Formation of enterprise strategy	±	+	±	±	±	±	-	-	-	-	-	-	±	±
Segmentation	Creation of competitive advantages	+	+	±	±	+	+	-	-	-	-	-	±	+	+
SERVQUAL	Results of the enterprise	+	+	±	±	±	±	-	-	-	-	-	-	±	±
SIMALTO	Customer evaluation of product upgrades	+	+	±	±	±	±	-	-	-	-	-	-	+	+
Stage-Gate model	Development and launch of new products	±	±	±	±	+	+	-	-	-	-	-	-	+	+
SWOT analysis	Company assessment and product growth	+	±	+	+	+	+	+	+	±	-	-	-	-	-
Equivalent value line in business strategy	Product price and benefit management	+	±	+	+	+	+	-	±	-	-	-	±	±	±

Note:

It takes into account (T):

- change of consumers (short-term (T-1), within 5 years (T-2));
- impact of new trends (on the enterprise (T-3), on competitors in the industry/business (T-4));
- degree of influence of digital platforms (on the level of competition (T-5), on the organization of cooperation (T-6));
- degree of maturity of IT infrastructure (T-7).

It provides (P):

- definition of digital goals (P-1);
- formation of the process of transition from the current state to the target (P-2);
- transformation of the organizational structure (P-3);
- increase in digital culture indicators (P-4);
- emergence of new unique digital business models, digital ecosystems (P-5), services (P-6), sharing (P-7).

Materials and Research Methods

The fundamental concepts presented in the works of the classics of economic theory and management and publications of modern scientists on the problems of digitalization were used as the methodological basis of the study. Such scientific methods and techniques were used as analysis, synthesis, deduction and induction, systematic approach, comparative analysis, system-structural approach and method of expert assessments. The hypothesis of the study is that in order to develop a strategy for an industrial enterprise operating in a digital economy, it is necessary to use a transformation mechanism based on the introduction of an assessment of its digital maturity, corresponding to the resources and opportunities for cooperation and cooperation of the business model, taking into account the implementation of the ecosystem approach.

The method aimed at forming a digital leadership strategy is based on the classic idea of J. Schumpeter, which is that the main (strategic) task of entrepreneurs is to update the production structure by purchasing innovative technologies/products/services/materials for the subsequent production of a new type of product or service. The digital leadership strategy, which

is in the "Industry 4.0" concept, is reduced to the transformation of the production structure of a high-tech enterprise (Penrose, 1955). The digital ecosystem has managed to combine various features, which will allow it to carry out the task of transforming the structure, due to the fact that the business within the framework of this system gains an advantage in the speed of accounting for changes in the new environment, i.e. it is able to quickly detect new trends and then make management decisions based on actual data (Hossain & Lassen, 2017; Zakharov et al., 2018). Digital leadership has two main types: aimed at developing various opportunities, which subsequently help to develop and implement new business models, or involves the transformation of an existing business model (Carroll & Huo, 1986). A digital leadership strategy is a process of quality development of ecosystem opportunities followed by economic assessment that will allow control over the value chain. As a part of the study, the authors developed a digital leadership strategy that will allow enterprises to operate in the digital economy (Figure 1).

The practice of organizing the management of pilot projects, as one of the features of the project office, which is most often used for the development of various programs of the digital economy, is not a prerequisite for its scaling. In the course of the study, it was determined that the scaling process did not become an integral part of digital projects/programs, but required additional costs, as well as adaptation of primary-level solutions (Butkovskaya & Sumarokova, 2019; Thun et al., 2019). Digital solutions and in particular artificial intelligence have a certain degree of dependence on the types of the program/strategy for the development of digital technologies chosen by the enterprise. It becomes obvious that the overwhelming number of well-known strategies, such as: growth strategy, cost optimization and "deep ocean", on the one hand, turn out to be immune to digital processes, but on the other hand, their choice will require additional justification from the management of the enterprise. A significant role is assigned to the head, who is directly responsible for digitalization. The integration of digital technologies and artificial intelligence should be dealt with by specialized experts/specialists in the field of management, their presence in such industries that are not experiencing the first digital wave (aircraft construction, medicine, mechanical engineering, chip design, etc.) is very important (Wirtz et al., 2016).

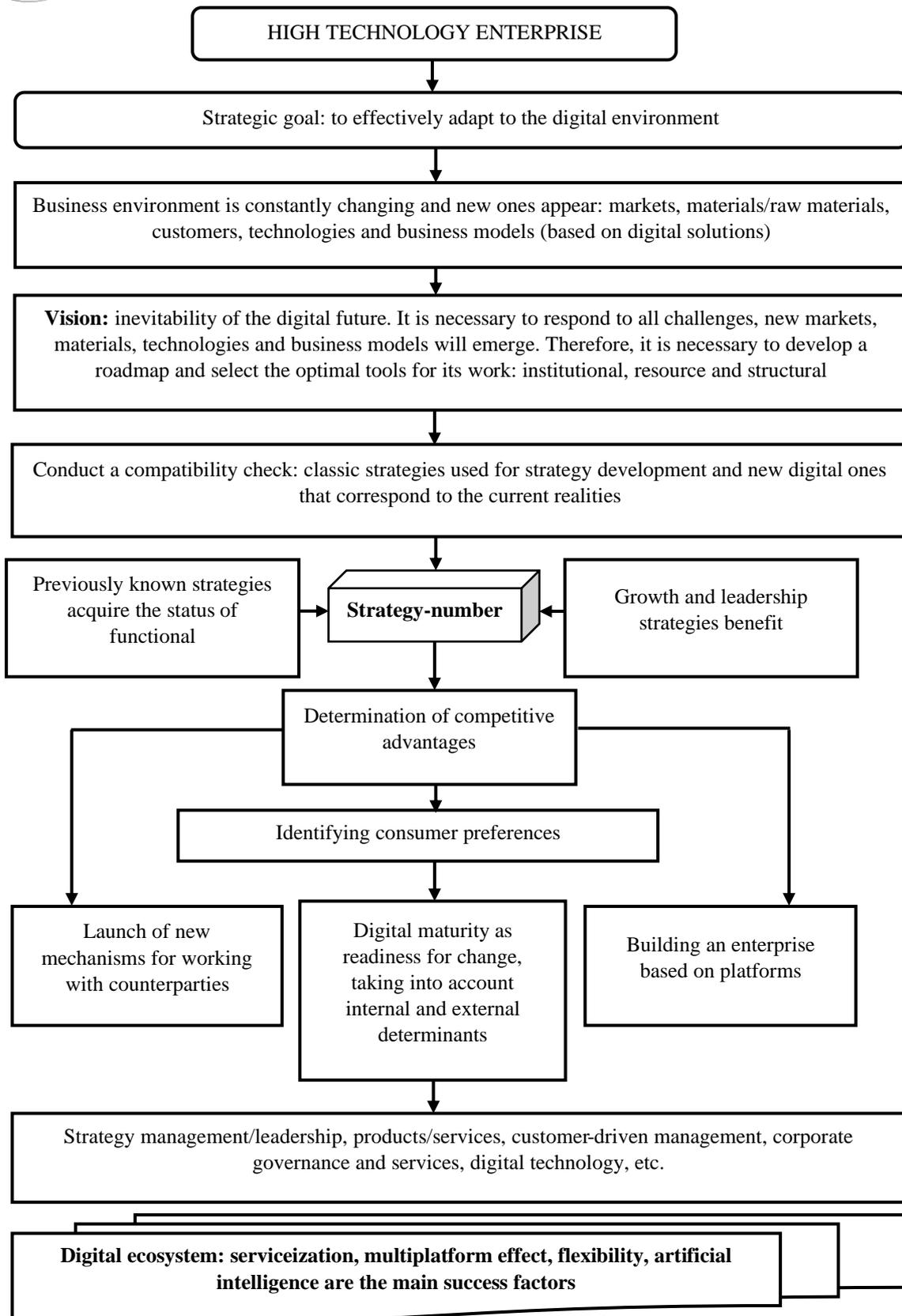


Figure 1. Development of a leadership strategy within the framework of the "strategy-digital" view (source: author)

A significant role is given to the functionality of the manager, who is directly responsible for digitalization. The issues of integration of digital technologies and artificial intelligence should be dealt with by specialized experts/specialists in the field of management, their presence in industries that are no longer experiencing the first digital wave (aviation, medicine, mechanical engineering, microchip design, etc.) is especially important (Trout, 2004; Zakharov et al., 2019). Private tools for digital marketing work do not currently provide tangible benefits that could be confirmed by digital analysis.

Artificial intelligence to date has not been able to convert the speed of calculations and the amount of information used into quality and offer an effective unique effective management solution (Lecocq et al., 2010; Boev, 2020). The question

of subordination arises: if the overwhelming majority of managers do not consider it expedient to submit to artificial intelligence, then polls among specialists show the opposite effect (Grant, 1991). It is especially important to note the organization of interaction between different artificial intelligences, since the currently existing view to assessing the effectiveness of digital solutions is not yet able to demonstrate any significant assessment of the possibility of organizing interaction between artificial intelligence of different enterprises, which can lead to possible leakage of information and commercial data (Kovalchuk & Stepnov, 2017; Demil et al., 2018). Taking into account the problems outlined above, the authors propose a version of the roadmap, which will be a continuation of the “strategy-figure” view (Figure 2).

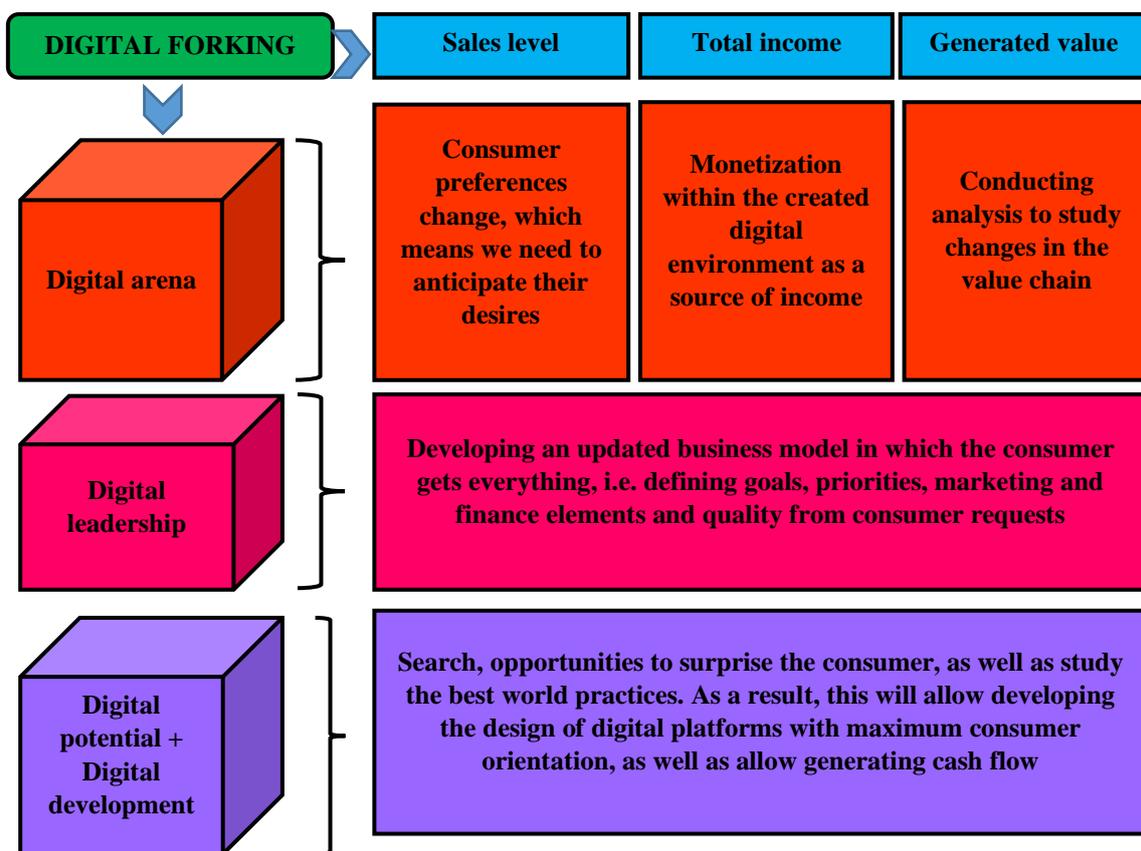


Figure 2. Roadmap model for the implementation of the leadership strategy (source: author)

Results

Digital leadership is the development of ecosystem opportunities and strategy of digital leadership is determined by economic evaluation of the share of control over the value chain. The author's view on the leadership strategy for the conditions of the digital economy, taking into

account the concept of "strategy - digital" is presented in the Figure 3. Digital solutions, and especially artificial intelligence, turn out to be dependent on the type of strategy that the company implementing the "digit" implements. It is quite obvious that many well-known strategies (including growth strategies, cost reduction strategies and blue ocean strategies)

turn out to be, on the one hand, immune to digitalization in a particular industry, and on the other hand, their choice requires additional justification. The set of functions of the head responsible for digitalization plays an important role. Despite the widespread popularity of "digital officers", the implementation of artificial intelligence should be dealt with by professionals in the field of strategic management, especially in industries that are experiencing not the first

(such as medicine and education), but the second or third wave of digitalization: aircraft manufacturing, chip design, etc. The passion for private tools, including as for digital marketing, does not currently lead to unambiguous confirmation of the effectiveness of digital analysis. Artificial intelligence has not yet been able to turn the speed of calculations and the amount of data used into quality, offering a truly unique solution.

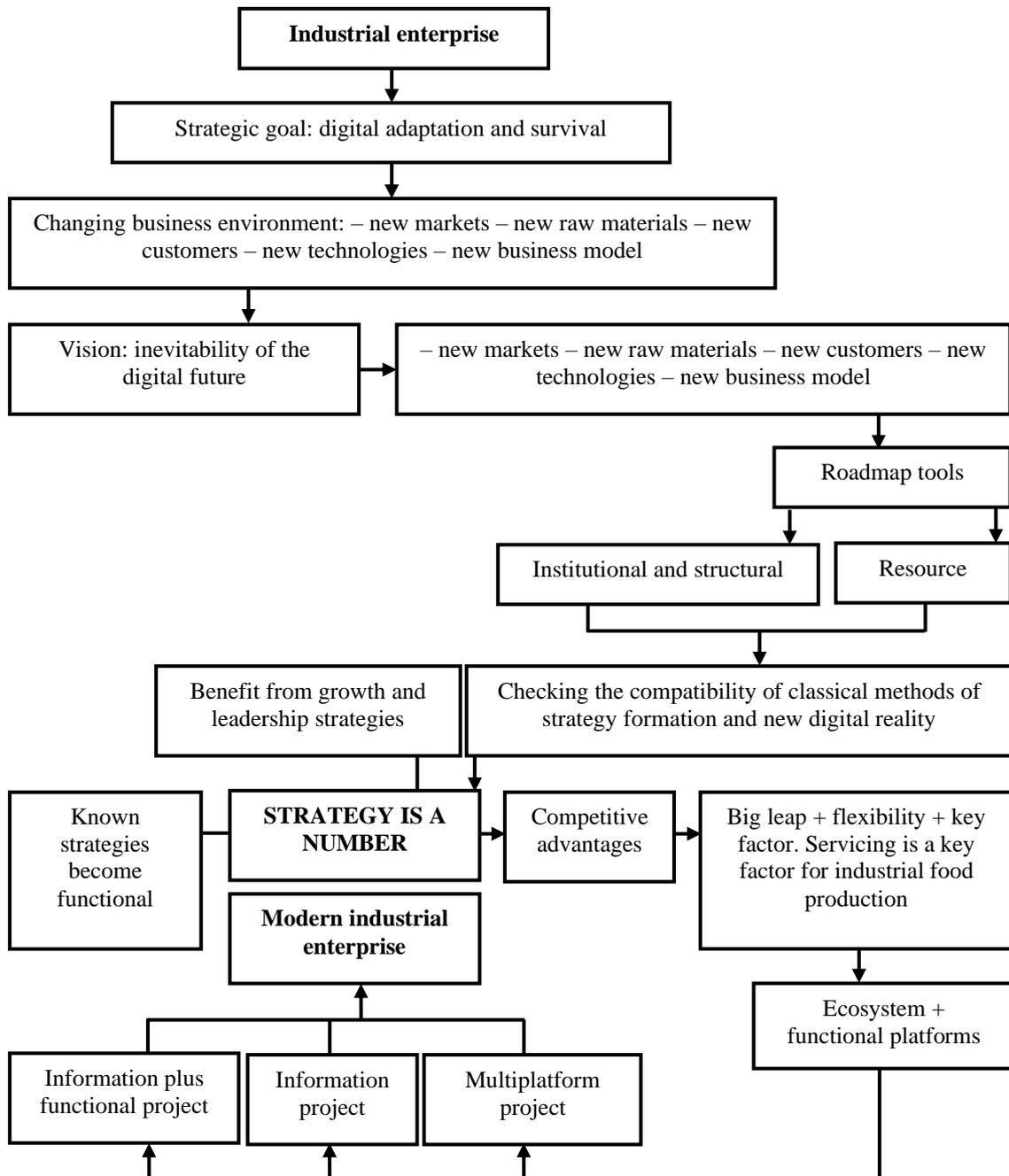


Figure 3. Development of a leadership strategy within the concept of "strategy - digital" (source: author)

In organizations that focus on existing market offerings, it is much more difficult to create fundamentally new business models. It points to a paradoxical situation that requires the creation of new organizational mechanisms that provide both enough autonomy to create new business models and a way to ensure implementation. Potential solutions for this could be, for example, the use of regulated processes in a working organization that have a clear goal (specified to specific key indicators) to ensure organizational integration (for example, through a sandbox mechanism) for updating business models or improving performance measurement systems, and controls that directly account for the actual application of the updates. In the study, the author found that the selection of a competitive environment ("sandbox" mechanism) is more effective.

Possible organizational decisions should be systematized into four types of projects for strategic adaptation of the service model within the enterprise:

- initiative type "I", within one unit (existing, newly created or invited external team) based on the idea of one or more initiators who are directly involved in the provision of services;
- initiative plus functional type "IF", when, at the initiative of external suppliers, the developed concept is implemented in several departments of enterprises, usually related to sales;
- logistic type "L", which uses the principles of the sharing economy of products located in warehouses and with individual consumers; this type of project is practically independent of the main business process of the organization and can be launched inside and outside the organization, using only access to resources (finished products and logistics);
- multiplatform type "MP", fully focused on the needs of customers and allows integrating own business processes and third-party vendors.

The analysis of four types of projects made it possible to establish that they can become the

core of a practical strategic adaptation of service for an industrial enterprise. One of the key takeaways is that early assessment of value added by incorporating features into a business model (before manufacturing changes are initiated) is critical. In addition, scaling up (from Type I to Type MP) suggests that the smallest working platform can yield more results than waiting for the most efficient platform, provided there is enough time to create a Type I project. But at the same time, it should be understood that minimalism provides efficiency, but limits the completeness of new transformations. The advantage of "IF" type projects is that they create new business opportunities supported by digital product platforms using a separate business development function. At the same time, it should be noted that they will be conservative in relation to the idea of early integration into a single platform.

Undoubtedly, projects of type "I" and "IF" are not feasible without entrepreneurial initiative. This need, at least initially, is not driven simply by an internal process or management level within organization. Therefore, for those companies that focus on product strategies (and related platforms), it is necessary to recommend organizational forms in which a legacy strategic approach can coexist with a more independent entrepreneurial spirit. The contradiction between projects "L" and "MP" is radical, because in the first case, the initiative of the business model does not affect production, and in the second case it is the driving element. On the other hand, for projects "I" and "IF", the potential synergy between the old and the new in the organization will not be realized, but instead the need to create the right conditions for new product offerings increases. These conclusions allow recommending the following: given the availability of resources, the type "L" project can be a separate business solution, while the implementation of another project, or be carried out independently.

As a result, the Figure 4 shows the process of organizing the selection of projects focused on the service strategy of industrial enterprises.

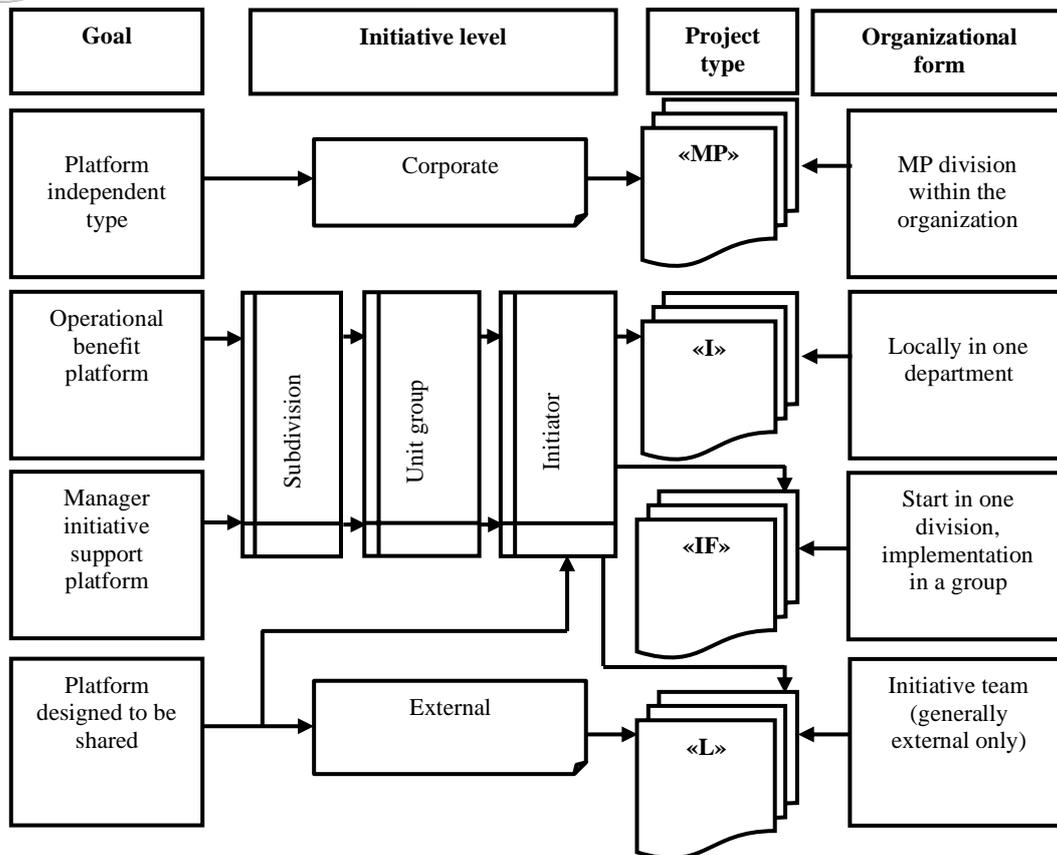


Figure 4. The process of organizing the selection of projects focused on the service strategy of industrial enterprises (source: authors)

In general, the sequence of actions for industrial enterprises to adapt the service strategy seems to be the following sequence:

- analysis of the results of the digital maturity assessment and conclusions about the readiness of individual departments, entire corporation and interaction with the external environment;
- choice of leadership strategy;
- substantiation of the need for product maintenance (as a minimum level of service);
- substantiation of the need to refuse to purchase and the possibility of acquiring a service (as the highest level of service);
- determination of the possibility of cooperation with competitors on the basis of service platform;
- assessment of business model changes;
- selection of the type of project for the implementation of the service platform;
- substantiation of organizational forms;
- integration into a single system of implemented projects.

Discussion

The widely known technological concept "Industry 4.0" currently does not have a unified scientific and practical methodology, but it already fully claims to be a universal digital production and technical standard. As a result, this leads to the fact that a rather frequent mention of "Industry 4.0" in the context of a certain technological breakthrough is interpreted by each company independently, which fully confirms the opinion about the free design of the environment. A number of tasks can still be successfully solved by already well-established methods that allow developing an effective strategy, for example, based on a structural or resource approach. Taking into account the rather frequent mention of the strategy associated with reducing the level of costs, the proven fact of effective implementation is still a strategy based on leadership, and not a strategy for optimizing costs. Refusal to take on costs does not mean that there will be a general decrease in the level of costs. When developing a strategy, the role played by the competitive environment remains, but the degree of its variability increases; it becomes not given, as in classical methods

(Porter & Heppelmann, 2015; Stepnov & Kovalchuk, 2018; Sharko & Saveliev, 2019).

The analysis of scientific literature, carried out within the framework of the article, showed that there are a huge variety of opinions that it is competitive advantages that ultimately become the value that is present in business models, which allows concluding about its leading role. A modern industrial enterprise must definitely start implementing internal and external platforms, because it is the platform development process that is the main way of carrying out the transformation process, after digitization. The basis for the formation of competitive advantages in the digital economy is the business model used by the enterprise, therefore, we can agree with the conclusion made by many specialists and experts that the strategy forms a competitive advantage, people and innovative culture support and develop it, and technology and communications, allow realizing these competitive advantages in practice. Of course, it is the business model that is the mirror image of the communication process, as a system of relations between all participants, without exception, to generate income (Wirtz et al., 2016).

Many high-tech enterprises fully understand the values of the new digital technologies that they plan to implement, but they cannot use them instantly, for this they need to transform the business model. The process of forming a business model is inextricably linked with management based on a customer-oriented approach, within which the interaction of internal and external platforms takes place (Stepnov, 2018; Asadullina, 2020). The structure of platforms is heterogeneous, which means that it is possible to use several types of platforms at once when making a strategic choice, for example, from data/information transfer to joint design development. The analysis of the properties of the business model allows coming to the conclusion: rapid growth of innovative technologies is observed in horizontal strategies within which the merger takes place, for example, value chains are created. The direction of further research should be aimed at analyzing the development of digital cooperation within the boundaries of the created ecosystems, since it is they that allow enterprises to obtain significant advantages. Separately, it is necessary to study the issue of the development of vertically integrated enterprises that can simulate the creation of ecosystems in order to maintain their leading positions.

Conclusions

The formation of abilities capable of changing over time should become one of the key elements of the management system of a high-tech enterprise in the digital economy environment. The vector of orientation of the digital economy consists in the emergence of various breakthrough technologies, ideas in completely different areas, which means that for effective work, high-tech enterprises need to constantly monitor technological, production and information know-how, and then integrate into their activities only those that are most consistent enterprise profile. For a high-quality and effective integration of digital innovation, a high-tech enterprise needs to have absorptive capacity, which, taking into account its internal dynamic capabilities, coupled with the necessary resources, will contribute to the formation of a long-term advantage.

It should be noted that for the almost ubiquitous "digitalization", all innovations taking place in the economy, including their subsequent interaction with each other, will be fully provided at the expense of a person. The degree of progress in any economic sector depends primarily on the potential of employees and specialists of the enterprise, as well as on the quality of work of enterprises operating in these sectors. The value of human capital in the digital economy will continue to grow and become a defining component of the success of a high-tech enterprise. The spectrum of digital technologies will enable creative people to fully express themselves through the practical implementation of new innovative ideas, which will allow the enterprise to acquire new opportunities for obtaining "know-how". Undoubtedly, all this will actively contribute to obtaining the additional factors necessary for the creation of a competitive advantage by the enterprise.

In the digital economy environment, the structural methodological basis of strategic planning will not change. The new leadership strategy, which is created through the work of modern platforms, will be put into practice, which will allow launching new technologies in the management sphere. However, these technologies will be based on well-known, classical methods and principles of management and planning. Advanced technical tools will enable enterprise managers to apply a wide range of tools in the field of strategic planning, but to understand the principles of this process; it will additionally require managers to manage complex digital technical tools. The trend of the

digital economy is to improve the qualifications of employees and, of course, the integration of various technical means into various types of processes of a high-tech enterprise. In this context, a certain contradiction is formed when, on the one hand, technical means provide significant assistance to the management process, and on the other hand, they require certain skills/abilities from employees and managers, which already today raises the question of the need to update the professional training and qualifications of these specialists in order to implement full transition to the digital economy.

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