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FORMALIZATION OF THE PROCESS OF THE STRATEGIC ADAPTATION OF THE MANUFACTURING COMPANY TO INTEGRATION OF COMPLEX-TECHNICAL SYSTEMS IN THE SUPPLY CHAIN

Ідентифіковано мотиви інтеграції виробничого підприємства у ланцюг поставок складно-технічних систем з використанням інструментів стратегічного аналізу. Досліджено вплив інтеграційної стратегії ланцюга створення складно-технічних систем на бізнес-стратегію виробничого підприємства. Формалізовано процес стратегічного адаптування виробничого підприємства до інтеграції в ланцюг поставок створення складно-технічних систем ринку безпеки України.

Ключові слова: ланцюг поставок складно-технічних систем, інтеграційна стратегія, SCOC-аналіз, проектний підхід.

1. Introduction

Over the past four decades, a huge backlog of works devoted to the strategic aspects of the functioning of entrepreneurial structures. Many attempts have been made to systematize the main influential factors, tools, techniques, analytical methods and tools, on the basis of which the implementation of strategies depends. Despite this, the percentage of companies that manage to successfully implement a strategic initiative remains low. In 1990 there were published scientific works, which say that only 10 % of companies managed to successfully implement their strategy. The same percentage is also characteristic for describing the success of companies after 2000: according to Fortune magazine research in 2006, less than 10 % of effectively formulated strategies are effectively implemented. Taking into account the general economic situation of domestic business, there are grounds to assert that this indicator in Ukraine is not the best.

Such statistics gives rise to as many questions as it causes many scientists and practitioners to rethink the content of the strategy, its significance and effective mechanisms for its implementation.

Therefore, it is urgent to study practical aspects of implementing strategic initiatives by enterprises, in particular, towards integration with other actors on the basis of strategic partnership. This is one of the most effective ways to strengthen our own competitiveness potential on the basis of establishing effective interaction with the external environment.

2. The object of research and its technological audit

The object of research is the process of strategic adaptation of the manufacturing enterprise to integration into the supply chain. This is a promising form of organization of effective interaction of the enterprise with numerous external partners. It will ensure the achievement

of competitive advantages, in particular in the market of complex technical systems of the security industry of Ukraine.

Beginning in the mid-1990s, one of the main trends in the area of strategic management is the growing interest in concepts that promote two areas – innovation in all its manifestations and partnerships. It's about the blue ocean strategy of Kim Chan and Renee Morborn, the concept of the eco-system of James F. Moore and the «co-operation» concept of Adam M. Brandenburger and Barry J. Nalebuff. They are generally based on a conscious departure from «competition» in its traditional understanding or its replacement by milder forms of interaction with the environment: cooptition, cooperation, integration. The world practice shows that these two directions continue to be dominant in the current conditions for following development of the world industry to the level of «Industry 4.0» and the unprecedented spread of information technologies in all spheres of human activity. The result is a departure from unipolarity of both strategic and tactical orientations: a combination of efficiency and elasticity, while differentiation and low costs, both high quality and affordable price. Among the various theories and conceptual designs arise and develop within the indicated areas, the concept of supply chains has a significant potential (English SCM – Supply Chain Management). It allows to obtain satisfactory results of simultaneous achievement of goals in the plane of efficiency, quality, elasticity, customer service, innovation, responsibility to society and the environment. Thanks to its impressive results, this concept has in practice become widespread in all spheres of business and constitutes the modern foundation of leading business schools and consulting firms.

Given the low competitiveness of Ukrainian business, numerous financial, technological and resource problems, it is possible to state the lack of sufficient strategic capacity for its development. This, in turn, shows the need to adapt the best business models, in particular, the concept of supply chain management, to its activities.

3. The aim and objectives of research

The aim of research is formalization of the process of strategic adaptation of an individual enterprise to integration into the supply chain by the example of a manufacturer of complex technical systems of the Ukrainian security market.

To achieve this aim, the following tasks are defined:

1. To identify the motives for integrating a manufacturing enterprise into the supply chain of complex technical systems.
2. To investigate the influence of the integration strategy of the creation chain of complex technical systems on the business strategy of the production enterprise.
3. To formalize the process of strategic adaptation of an individual enterprise to integration into the supply chain by the example of the manufacturer of complex technical systems of the Ukrainian security market.

4. Research of existing solutions of the problem

The fundamental basis of the concept of supply chain management is labor recognized by the world science and business practice of the authors [1–4]. A number of well-known authorities in the theory of logistics and supply chain management have made a distinctive impact on the process of adapting the world models for obtaining the positive effects of the transition to an alternative business model based on supply chain management in the Ukrainian business environment [5–10].

In the works of these authors, the content of «supply chain» and «supply chain management» concept is defined, the main links and participants, conditions and prerequisites for their harmonious functioning are identified. Also, business processes are structured, logistics and marketing tools are created in achieving these competitive advantages by these structures and a number of other important provisions.

One of the key aspects of successful supply chain management, which is emphasized by most of the mentioned authors, is the high degree of synchronization of actions of all its participants in the chain. This increases the importance of coordination and partnership along the entire supply chain [1–4, 6]. The authors refer to the known ways of establishing coordination in supply chains [6]: modern information technologies for information exchange and synchronization of data between participants in supply chains. For example, the same encryption of goods moved to the chain, joining companies to the Global Data Synchronization Network (GDSN). And also a unified classification of products, the use of CPFR (English Collaborative Planning, Forecasting and Replenishment), SRM (English Supplier relationship management) and CRM (Customer Relationship Management) technologies.

At the same time, as the experience of functioning supply chains in Ukraine and abroad shows, the use of information technology is an indisputably important step in the movement towards the desired coordination and synchronization of processes. However, this step can only benefit if it is preceded by a properly developed supply chain strategy. And this requires reconciliation with the strategy of those enterprises that are its participants. Analyzing the fundamental works on the theory of supply chain management, it can be argued that in the vast majority of sources the provisions for the strategic development of the supply chain are developing from the position of its key person, the integrator. At the same time, studies aimed at strategic adaptation of a particular participant to new business conditions with the strategy of this supply chain are clearly not enough. In the supply chain, there is a constant search for a compromise between the goals, objectives and business processes of a wide range of participants. A consequence of the lack of a methodology for adapting an enterprise's strategy to integration into the supply chain is not only a lack of understanding by Ukrainian entrepreneurs of the potential benefits and threats of such integration, but also hostile to it.

World experience of functioning of successful supply chains makes it possible to reveal systemic benefits associated with the implementation of this approach to business organization (Fig. 1). At the same time, the analysis of the security market makes it possible to identify a number of opportunities and threats typical for Ukrainian enterprises, which in turn testify to the huge unrealized potential of this business. The potential of Ukrainian business can be strengthened by building partnerships between key market participants in the process of creating and bringing to the consumer a sought-after value (Fig. 2).

A promising area of research is development of a methodology for strategic adaptation of an individual enterprise to integration into the supply chain. And also the coordination of its strategy with the strategy of the supply chain in terms of the impact of this form of strategic partnership on the competitiveness of these enterprises in the long term.

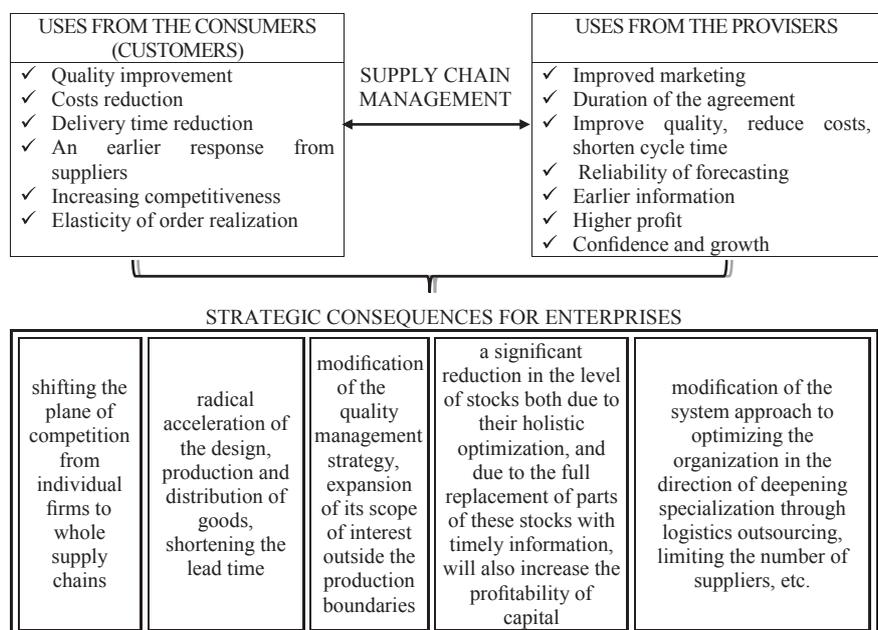


Fig. 1. Potential benefits associated with the application of the supply chain management concept (adapted on the basis of [5, 11])

ADVANTAGES	DISADVANTAGES	
<ul style="list-style-type: none"> ✓ Presence of internal and external markets. ✓ Growing demand. ✓ Presence of a large number of small enterprises that are notable for their flexibility and rapid adaptation to environmental conditions. ✓ Presence of large manufacturing enterprises capable of uniting around themselves medium and small enterprises 	<ul style="list-style-type: none"> ✓ Exacerbation of price competition. ✓ Lack of proper technological level. ✓ Complex financial situation of enterprises. ✓ Significant pressure on the domestic market from importers 	<i>Internal environment</i>
OPPORTUNITIES	THREATS	
<ul style="list-style-type: none"> ✓ Revitalization of the real estate market. ✓ An unprecedented increase in crime rates. ✓ Introduction of safety and security standards of the European Union (hereinafter referred to as «the EU») and the North Atlantic Treaty Organization. ✓ Increase in budget expenditures on defense and national security. ✓ The launch of a new system of online procurement, which should simplify tendering in public procurement of equipment in the security and security services sector. ✓ Development of integration processes 	<ul style="list-style-type: none"> ✓ Low purchasing power. ✓ The influx of cheap suppliers. ✓ Inefficient legislative regulation 	<i>External environment</i>

Fig. 2. Matrix of SWOT analysis of the Ukrainian security market (compiled on the basis of analysis [12–14])

5. Methods of research

To solve the tasks, the following methods were used: analysis and synthesis, logical generalization, analogies, comparative comparison.

6. Research results

The strategic adaptation of an individual enterprise to integration into the supply chain should be based on the alignment of its strategy with the supply chain strategy. Obviously, the first step of such coordination should be to identify the main motives, to encourage enterprises to move away from the traditional approach to managing the concept of the supply chain.

Identification of the motives for such transition should begin with the identification of the main characteristic features of the product, which underlies the supply chain and understanding of the characteristics of the market. This corresponds to the generally accepted practice of adapting the supply chain to the participants' business strategy [6].

The analysis of the detailed product segmentation of the Ukrainian security market allows to state that in the overwhelming majority of objects of sale simple and complex technical systems that meet the needs of consumers in both physical and information protection. At the same time, the market also offers next to finished goods also the provision of a comprehensive service that includes finished product/products with a set of related services. Complex service begins with the selection of the required set of technical equipment, their installation and ends with subsequent maintenance. Suppliers of such services are usually an integrator company or a developer of integrated solutions that plays the role of a unifying link between suppliers and consumers in the security market. Such product feature of the market, as well as its subject structure, which covers such major players as:

- Ukrainian and foreign manufacturers of simple and complex technical systems (hereinafter referred to as CTS);

- distributors of well-known brands of complex technical systems;
- Ukrainian and foreign manufacturers of components for the production of simple and complex technical systems;
- integrators and developers of integrated solutions;
- installers, whose activities are related to the installation and commissioning of fire alarm and video surveillance, technical support (maintenance) and turn-key systems;
- customers, that is, direct customers from among legal entities and individuals.

This allows to distinguish two types of supply chains that operate in the security market: short (incomplete) and integrated (full). Unlike the short supply chain, a complete or integrated chain in the environment of the market for complex technical systems in the security field differs from other characteristics (long-term nature of cooperation, information exchange with partners, chain management, harmonization of procedures and cooperation rules, joint risk of activities enterprises, etc.), as well as two characteristic features. The first feature is related to the product aspect – while short supply chains are commodity-oriented, integrated on the contrary – oriented services. The second feature is related to the subjective aspect. In the complete supply chain, the key role belongs to the integrator, which is also the link, is in close proximity to the consumer. At the same time, the producer plays the main role in the short supply chain, and the distributor is the nearest link to the consumer.

In view of the foregoing, it can be concluded that approaches to managing the strategic aspects of the development of these two types of supply chains and their individual participants will have significant differences at all stages and levels of government. This means that the direct benefits and threats of integrating an individual enterprise into the supply chain and a vision of the potential consequences of integration also differ. Taking into account the specifics of the products and the market, and also the potential benefits of implementing the concept of supply chain management from the perspective of the

manufacturing enterprise, it is possible to identify the motives for such integration using classical instruments of strategic analysis. Such tools can be the Porter model, the analysis of key success factors and SWOT analysis. And also it is possible to use a number of alternative tools, such as:

- SOAR (Strengths, Opportunities, Aspirations and Results) – analysis of strengths, opportunities, aspirations and results;
- SOPA (Strengths, Opportunities and Positive Action) – analysis of strengths, opportunities and positive actions;
- SCOC (Strength-Challenges-Opportunities-Challenges) – an analysis of strengths and opportunities and their respective challenges.

Each of these tools has its advantages and disadvantages.

In the context of identifying the motives for integrating the manufacturing enterprise into the supply chain of complex technical systems for the security market, it is suggested to use SCOC analysis. In this SCOC analysis, along with the strengths and opportunities for such integration, the obvious impact of immediate threats to their successful achievement that exist from the external and internal environment (Fig. 3).

Analysis of the compiled matrix allows to reflect the vision of the integration potential of a manufacturing enterprise in the chain of creating complex technical systems at the angle of internal uses that are usually generated in supply chains and are the strong sides of such integration. As well as external opportunities that can be achieved in case of successful implementation of the manufacturer's business strategy in the corporate strategy of the supply chain. All this takes place against the backdrop of a set of restrictions on the part of the external and internal environment that, acting in a complex or uncoordinated, can significantly hamper the company obtain positive effects from integration.

Let's believe that in order to obtain a more complete picture of opportunities and threats, each element of the quadrants of the SCOC analysis matrix should be analyzed at the angle of probability (risk) of achievement. The end result should be compared with the results of a parallel analysis of alternative strategic instruments. And also necessarily with a classic SWOT analysis of the strengths and weaknesses of the enterprise itself, which intends to integrate with a higher-order structure. This will allow to assess the presence of possible conflicts, their strength and the

consequences of potential interaction with partners on long-term principles, through the mechanism of coordination and synchronization of actions in the supply chain.

Based on the proposed scheme for identifying the motives for integrating an enterprise into the supply chain, it becomes possible to obtain an answer to the general question «Why is integration necessary?» And also the ground is created for making a decision about its untimely or, conversely, relevance. In the latter case, it is important to develop a new business strategy for the enterprise in a partnership and interaction environment within the supply chain.

The experience of leading companies in the world allows to outline common (typical) principles and approaches to the implementation of integrated supply chain management (Fig. 4).

The implementation of the presented principles and approaches to the management of the integrated supply chain requires the full integration of functions and processes between its participants and links. At the strategic level, the set of decisions that determine the integration of functional and managerial types of interaction between enterprises and other enterprises is commonly referred to as the integration strategy [15].

STRENGTH	THREATS	
<ul style="list-style-type: none"> ✓ Stabilization of business conditions through the establishment of long-term relationships with counterparties. ✓ Potential for growth in profitability/productivity due to: <ul style="list-style-type: none"> – concentration of efforts in key competencies; – growth in the scale of production; – rationalization, including the rhythm of production; – accelerating decision-making at the operational level; – reduction of transaction costs due to preferential terms for concluding contracts with partners; ✓ Increase in the updating of sales forecasts and replenishment plans. ✓ Consolidation of orders. ✓ Information, technical support from the integrator. ✓ Avoidance of liquidation, bankruptcy. ✓ Maintaining financial independence and control over all processes 	<ul style="list-style-type: none"> ✓ Limited production capacity. ✓ A higher level of capital raising compared to independent actions. ✓ High level of extravagance and inadequate management system. ✓ Poor quality of products, non-compliance with standards. ✓ Low level of automation and computerization of business processes. ✓ Lack of motivation for integration among workers. ✓ The risk of selecting unsuitable suppliers and entering into long-term contracts with them 	Internal environment
OPPORTUNITIES	THREATS	
<ul style="list-style-type: none"> ✓ Modernization of the ways of conducting activities – increase of elasticity (flexibility), search for know-how in the sphere of organizational decisions in the supply chain. ✓ Updating the product range and production processes. ✓ High level of involvement of suppliers in the process of developing new products in the supply chain. ✓ Integration of appropriate development programs by the integrator for the manufacturer and its suppliers. ✓ Reducing costs in research and development. ✓ Diversification of risks 	<ul style="list-style-type: none"> ✓ Uncertainty of market conditions, prices, exchange rates, taxes, customs barriers, money market. ✓ Increased competition from potential participants (producers) of the chain. ✓ Problems in establishing communication and coordination between participants in the supply chain. ✓ Are not developed or there are no electronic data exchange systems that unite buyers with suppliers. ✓ Imposition of terms of cooperation with specific suppliers on the part of the integrator of the chain. ✓ Reduced freedom of action 	External environment

Fig. 3. Matrix of SCOC analysis of the potential of integration of a production enterprise into the chain of creation of complex technical systems

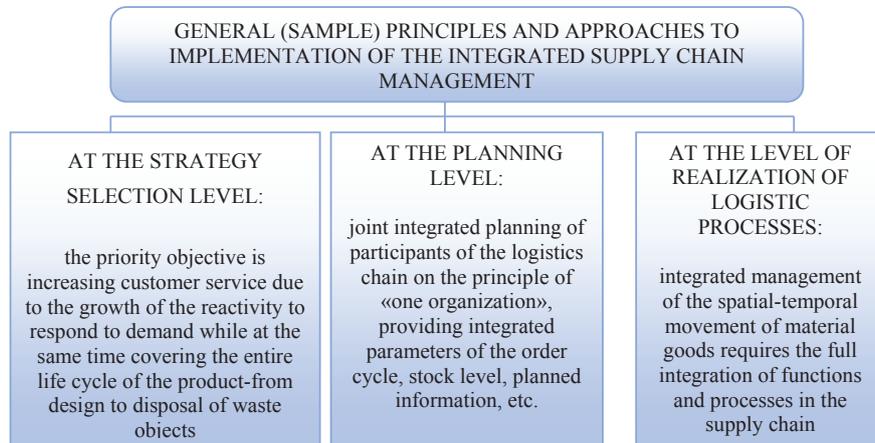


Fig. 4. General (conventional) principles and approaches to the implementation of integrated supply chain management [11]

In the most general definition, the proposed [16] integration strategy is a managerial approach to the definition of long-term operational goals, methods, techniques and tools for their achievement, and in particular also the prospects of integrating the business structure among other rational economic alternatives for a specified period of time. It is necessary to take into account changes in the external environment and internal abilities and characteristics (organizational, economic, legal) in order to ensure economic growth, adaptation to the market and obtain a synergistic effect. The supply chain is integrative by its nature and content structure, based on the voluntary association of enterprises and organizations in the value chain. As a result of this integration structure, the environment for the functioning of enterprises is formed or modified. So, the supply chain strategy at the level of the integrator leader can be called integration.

Let's use a generalized scheme of internal elements of the integration strategy [16], which is simultaneously devoid of practical value due to the lack of interconnection of these elements with each other. It is expedient to improve it by establishing the ties between the components in the scheme and their details (Fig. 5). The basis for the construction of this scheme is the project approach (Project Management), which, according to leading experts in the development and implementation of strategies [17] is of the greatest value. Using this approach, it is necessary to take into account the uncertainty of the market environment and the constantly growing corresponding risks, the uniqueness of a particular market environment, the ability to take into account all internal constraints, clearly fixing the timing and expected results at the beginning of the project, the need to create an effective team from the beginning, taking into account the priorities of other important projects.

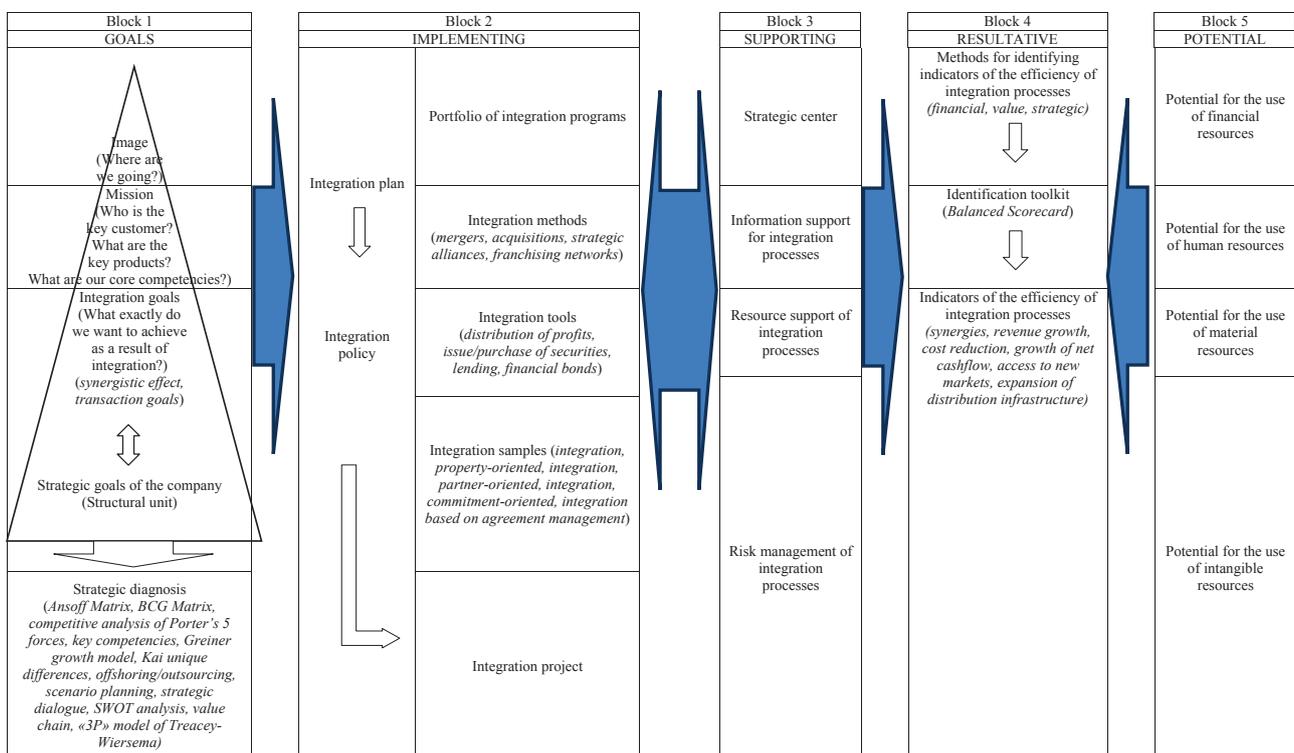


Fig. 5. Internal elements of integrated supply chain integration strategy (improved based on [16])

And also to look back at the traditional preservation of the complete independence and independence of all participants in the supply chain, each of which can operate in other industries, in another place and in another country. This exacerbates the conflict nature of their interests and makes the assumption that there is a full correspondence between the long-term goals of all companies participating in the chain is very risky.

In accordance with this approach, not only an understanding of «where» and «how best» to move is achieved, which is clearly the first «target» block of internal elements of the integration strategy. But thanks to the formation of absolutely concrete, well-reasoned and integrated portfolios of programs and projects that are evident in the second «implementation», «block, with the corresponding resources», the responsible managers, the third «supporting» block of elements is reflected, the strategic initiative is brought to logical implementation. And the control over the achieved results reflects the elements of the fourth «resultative» block. At the same time, the elements of the fifth «potential» block are sources of potential opportunities for growth and achievement of new goals in accordance with changes in the market environment. Summarizing, one can cite the statement of one of the experts in the field of strategic decisions [17]: «...Without the project approach, the strategy of most organizations remains on paper or, at best, the implementation rate does not exceed the mentioned 10 %». For the basis of the supply chain functioning as a sequence of joint projects implemented in time, let's choose the specific parameters of each project, which are determined in accordance with each specific case in accordance with the principles of project management. Then, the so-called «parallel engineering» or parallel design becomes possible. It is usually used in the design of new products, when the actions that occur at different stages, overlap partially, which leads to a reduction in the total development time of the product (Fig. 6).

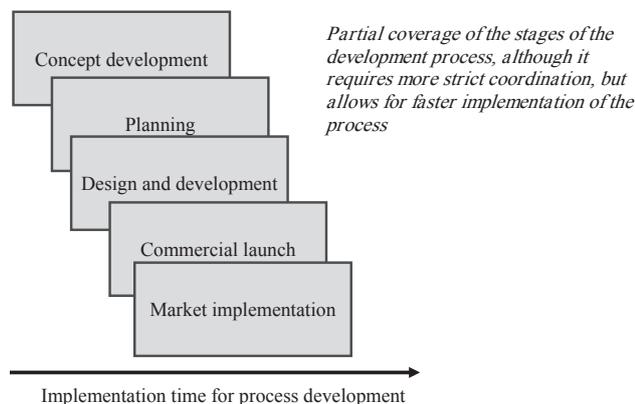


Fig. 6. «Parallel engineering» action [6]

Parallel engineering helps to reduce development time, forcing project teams to negotiate the most important characteristics of a product or service in the early stages of development, usually at the concept, design and development stages. Such characteristics are: cost, size, materials, target markets, etc. They set clear guidelines and a framework for further action. For example, engineers can begin to create a prototype before the final comple-

tion of the formation of the general characteristics of the product, only if an agreement is reached on the most important general characteristics of the product (size, basic functions, etc.).

Starting from the basic principles of integrated supply chain management using the example of CTS supply chains, it is possible to form a portfolio of the manufacturer's strategies in the security market. But it is necessary to take into account the most important types of strategies of manufacturing enterprises from the point of view of implementing the integration strategy of the supply chain. The portfolio of strategies should be shaped through the prism of five interrelated blocks in the context of consideration of such strategic benchmarks as «efficiency» and «elasticity». In accordance with the objectives and goals of a particular project, to which a manufacturing enterprise is involved as a supply chain participant, it will choose from a portfolio of a specific strategy. Goals and objectives in accordance are tied to a priority strategic benchmark: «efficiency», «elasticity» or «efficiency with simultaneous elasticity». A strategy determines the criteria by which all the further important of its functional strategies (production, marketing, financial, personnel, information, innovation) will be implemented (Fig. 7).

Let's illustrate the influence of the integration strategy of the chain of CTS creation on the business strategy of a manufacturing enterprise using the example of the production strategy of the enterprise participating in the CTS supply chain in the security market, traditionally covering the spheres of direct production management, supplies and quality. Within the two polar strategic goals – «efficiency» and «elasticity» – it is possible to form a set of characteristic benchmarks of the enterprise's production strategy (Table 1).

The use of such set of characteristic benchmarks for each type of functional strategy of the enterprise participating in the supply chain in the context of the strategic goal given by the project will be of high practical value. First of all, for managers of the operational and operational levels in making numerous decisions related to the need to harmonize them with decisions of a higher level. And also, directly in situations of choosing several alternative options for filtering out those that contradict the main objective of the supply chain.

Thus, the formation of the integration strategy of the supply chain on the basis of the project approach allows:

- 1) to carry out strategic coordination of the conceptual guidelines for development of both the chain and the individual enterprise;
- 2) to formulate a portfolio of strategies for the production enterprise in accordance with the specified strategic objectives of a particular project;
- 3) by choosing a specific strategy portfolio in accordance with the specified strategic goal of a particular project, makes adjustments to key parameters of further operational decisions within each of the company's functional strategies.

With the formation of appropriate sets of characteristic benchmarks for each type of functional strategy of the enterprise participating in the supply chain in the context of the strategic goal set by the project, the expected effect is the formalization of the process of strategic adaptation of a separate production enterprise of CTS integration into the supply chain.

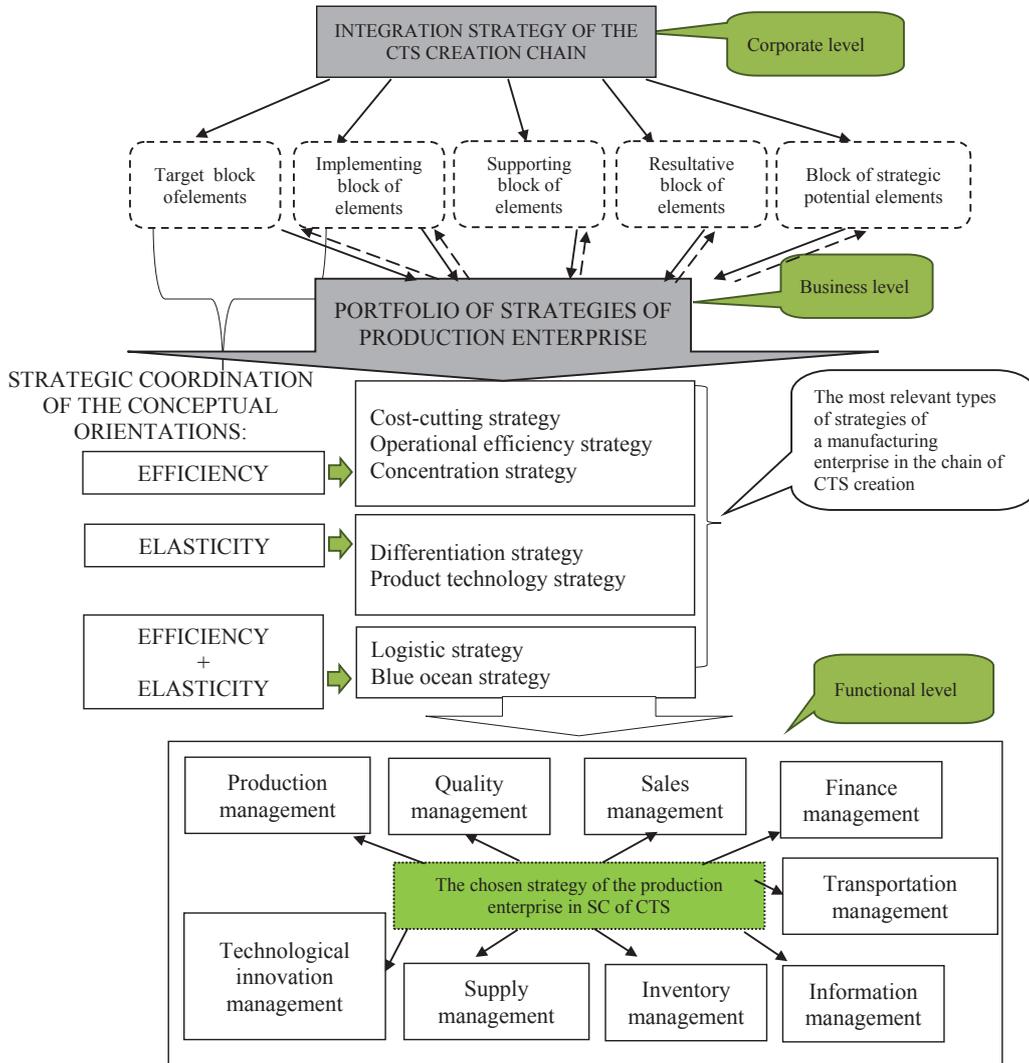


Fig. 7. Influence of the integration strategy of the creation chain of complex technical systems on the business strategy of the production enterprise

Table 1

The characteristic orientation of the production strategy in the context of the strategic goal of the chain of creation of complex technical systems

Production strategy	The characteristic orientation of the production strategy in the context of the strategic goal of the chain	
	Efficiency	Elasticity
Production Management	<ul style="list-style-type: none"> – Insufficient supply of production capacity. – Narrow specialization. – Production/subject cooperation is aimed at reducing costs and increasing productivity 	<ul style="list-style-type: none"> – Significant reserve of production capacity. – Elastic production process. – Production/subject cooperation is aimed at a high level of differentiation of products according to the accepted level of costs and productivity
Inventory Management	<ul style="list-style-type: none"> – Low inventory level. – Narrow product range 	<ul style="list-style-type: none"> – High inventory level. – Wide product range
Supply management	<ul style="list-style-type: none"> – Cooperation with a small number of suppliers or a «single supplier» strategy. – Large quantities of orders. – Establishment of strategic procurement centers. – Strengthening strategic alliances and alliances with suppliers 	<ul style="list-style-type: none"> – Cooperation with a large number of suppliers («purchasing from many suppliers» strategy). – Small lots of orders. – Development of electronic procurement/procurement (E-procurement)
	<ul style="list-style-type: none"> – Cross-delivery strategy. – Two-source supply strategy 	
Quality control	<ul style="list-style-type: none"> – Quality assurance due to means of control, quality monitoring, development of quality management systems. – Focus on consumer product parameters 	<ul style="list-style-type: none"> – Quality assurance due to management, not control means. – Focus on product availability and diversity

7. SWOT analysis of research

Strengths. The strength of research is a generalized reflection of the vision of the potential of integrating a manufacturing enterprise into the chain of CTS creation. Let's look at the angle of domestic uses, which are usually generated in supply chains and are the strengths of such integration and also take into account external opportunities that can be achieved in case of successful implementation of the manufacturer's business strategy in the corporate strategy of the supply chain. Let's take into account the set of limitations on the part of the external and internal environment that, acting in a complex or fragmented manner, can substantially prevent the company from receiving positive effects from integration. Thus, the enterprise identifies the motives, weighs their importance and riskiness, and ultimately makes a decision about the timeliness or, conversely, the relevance of integration into the supply chain.

Another strength of research is the identification of the influence of the integration strategy of CTS creation chain on the business strategy of the production enterprise. Built on the basis of the project approach, the integration strategy makes formalization of the process of strategic adaptation of a separate production enterprise of CTS integration into the supply chain.

Weaknesses. The weak side is that the proposed method of formalizing the process of strategic adaptation of a manufacturing enterprise to integration into the CTS supply chain in the security market is a theoretical construction. This requires testing its practical value on the example of a particular enterprise.

Opportunities. Opportunities for further research are borrowing the experience of foreign companies and supply chains to improve the processes of developing and implementing strategies in the activities of Ukrainian enterprises in the security market. As well as processing a large number of statistical data that clarify the comparison of the benefits and risks of the approach to management under study on the basis of the supply chain concept.

Threats. Threats to the results of the conducted research are the instability of economic conditions, the emergence of new concepts, tools and benchmarks that meet new challenges and new consumer needs that need to be taken into account and make appropriate adjustments to the given recommendations.

8. Conclusions

1. Using the tools of strategic analysis (SCOC analysis matrix), the main motives for integrating a manufacturing enterprise into the supply chain of complex technical systems have been identified. These motivations include the potential of strengths and opportunities that are inherent in the processes of integrating enterprises in the supply chain. By taking into account the riskiness of their achievement and comparing them with the results of the parallel analysis of alternative strategic instruments and the classic SWOT analysis of the strengths and weaknesses of the enterprise, which intends to integrate, it becomes possible to assess possible conflicts that may arise during integration.

2. Due to the investigation of the integration strategy influence of the CTS creation chain on the business strategy

of a production enterprise, it is possible to consider strategic guidelines such as «efficiency» and «elasticity»: first, strategic alignment of conceptual development guidelines for both the chain and the individual enterprise; secondly, the formation of a portfolio of strategies of a production enterprise in accordance with the specified strategic objectives of a particular project; thirdly, setting up key parameters for further operational decisions, within each of the company's functional strategies.

3. It becomes possible to formalize the strategic adaptation of the manufacturer of complex technical systems of the Ukrainian security market to integration into the supply chain. This makes it possible to significantly simplify the process of developing and implementing business and functional strategies by an individual enterprise in accordance with a specified integration project of a strategic goal.

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**ФОРМАЛИЗАЦІЯ ПРОЦЕСА СТРАТЕГІЧЕСЬКОЇ АДАПТАЦІЇ
ПРОИЗВОДСТВЕННОГО ПРІДПРИЯТТЯ К ІНТЕГРАЦІЇ В ЦЕПЬ
СКОЗАННЯ СЛОЖНО-ТЕХНІЧЕСКИХ СИСТЕМ**

Идентифіковані мотиви інтеграції виробничого підприємства в ланцюг поставок складно-технічних систем з використанням інструментів стратегічного аналізу. Исследовано вплив інтеграційної стратегії ланцюга створення складно-технічних систем на бізнес-стратегію виробничого підприємства. Формалізовано процес стратегічної адаптації виробничого підприємства до інтеграції в ланцюг поставок створення складно-технічних систем ринку безпеки України.

Ключевые слова: ланцюг поставок складно-технічних систем, інтеграційна стратегія, SCOC-аналіз, проєктний підхід.

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**RESEARCH OF THE ASPECTS
OF MODELING OF THE PROJECT
MANAGEMENT OF RISK OF
IMPLEMENTATION SYSTEM
INFORMATION SUPPORT**

Проведено аналіз сучасного стану ринку програмного забезпечення управління підприємствами. Досліджено проблеми впровадження систем інформаційного забезпечення управління підприємством. Визначено основні підходи до управління ризиками впровадження проєктів в області інформаційних технологій. Проведено огляд теоретичних аспектів та визначено етапи моделювання процесу управління ризиками проєкту впровадження системи інформаційного забезпечення.

Ключові слова: моделювання управління ризиками, проєкти інформаційних технологій, впровадження системи інформаційного забезпечення.

1. Introduction

In modern economic conditions, the use of the information support system (ISS) is a key resource for increasing the efficiency of any enterprise. At the same time, investments in the processing systems of relevant information and the implementation of modern information technologies make it possible to automate the activities of enterprises, but directly contribute to increasing their profitability. Operational control of production activities, analysis of the current production situation, management decisions – all these functions are reduced, ultimately, to the processing of information. And from the fact that this information is operational, reliable and complete, the success of the whole enterprise depends.

Reliable and timely information about the state of the enterprise is needed at all levels of management. It should be noted that profitability of production, reduction of costs, increase in labor productivity are primarily ensured by timely management decisions based on prompt and reliable information. In this case, it is necessary to implement a qualitative implementation of the system for supporting such decisions by developing and implementing modern information technologies.

When implementing the ISS project, there are some difficulties and problems associated with the impact of various kinds of risks. It is possible to increase business

efficiency by controlling the risk management of the project for implementing automated information systems. Thus, the study and modeling of the management process of any risk management project of the ISS implementation project is an urgent problem and requires further solutions.

**2. The object of research
and its technological audit**

The object of research is the risk management of the ISS implementation project.

ISS does not just keep data on what is going on in the enterprise, but also includes modules for planning and optimizing all types of resources (financial, material, human, time, etc.). Most of the functions implemented in the system are aimed at maintaining the functioning of these modules. The process hinders the aggregate of components associated with the ISS design, its implementation in the enterprise, as well as the impact of risks on the implementation project. The process of risk management should not be viewed as a separate problem that needs to be addressed, but as part of the overall corporate management system.

So, one of the most problematic areas is the study of the modeling aspects of a rather complex process of risk management in the ISS implementation at the enterprise, economic efficiency, taking into account the specifics of