Kyiv National University of Trade and Economics

Department of Management

FINAL QUALIFYING PAPER

on the topic:
«Management of business processes in trade»
(on the materials of Agroprosperis, LLC, Kyiv)

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INTRODUCTION

Relevance of research. In modern conditions of widespread innovation and network production and concepts of business processes formation, national enterprises should be in accordance with the requirements of the 21st century. Today, to ensure effective operation, each company must constantly develop its competitive advantages, which can be associated with the goods and/or services of this company, as well as with a unique management system. In second case, company's managers have a task to study best management practices, as well as find and develop their own effective approaches to management (in particular, to business processes) and make changes to the management system that will allow the company not only to achieve its strategic goals, but also strengthen its competitive position in a market that has transformed significantly with the advent and spread of digital technologies. Such approach could combine the modern concept of SCM (Supply Chain Management – supply chain management) and blockchain technology in the business process management system of the enterprise. Thus, the feasibility of further digitalization of enterprise management, including supply chains, determine the relevance of research on the development of theory and practice of their management using blockchain technology.

Among the foreign scientists involved in the study of business processes and blockchain management should be noted August-Wilhelm Scheer, Henrik von Scheel, Mark von Rosing, M. Cooper, Mathias Kirchmer, H. Ding, M. Hammer, B. Guo, J. Champi, Z. Liu, Paul Harmon, J. Mentzer, D. Bowersox, D. Waters, R. Handfield, J. Shutt. The theoretical aspects of business processes and blockchain management in the current conditions of the Ukrainian economy were considered by the following scientists: S. Dubovik, N. Ilchenko, T. Kolodizieva, E. Krykavsky, N. Medzhibovskaya, L. Sigida, K. Tankov, M. Cherna, N. Chukhray. However, the dynamic environment of enterprises, the intensification of global competition, the deepening of interaction between the participants in the business process management requires the search for new theoretical approaches and the development of practical

recommendations for blockchain management, so the topic of the study is quite relevant.

The purpose of the final qualifying paper is to justify theoretical positions of enterprise business process management and to develop practical recommendations for its improvement in the current economic conditions.

According to the stated purpose, it is necessary to solve the following problems:

- to determine essence, concept, goals of business processes management;
- to characterize types of business processes on the enterprise;
- to analyze of business processes management of the enterprise;
- to estimate the efficiency of business processes management provided by the enterprise;
- to determine ways of development for business processes management on the enterprise;
- to estimate the proposed measures on the enterprise.

The scientific novelty is that blockchain technology is completely new phenomenon to the Ukrainian market. Very few authors write about the possibilities and risks of its use. We reveal the essence and plan for the implementation of new technology that will help minimize time and money of the company.

The practical significance of the final qualifying paper. The primary information technologies to implement in agriculture are information and communication technologies, that allow to join databases, geoinformation, CALS and expert system technologies as well as users residing far from one another. The designed variants of information exchange allow to join agricultural manufacturers within one cooperative society; eliminate intermediaries and increase in price for the purchased from manufacturers products by 25-32 %.

The object of the study is the process of business processes management at LLC «Agroprosperis».

The subject of the study is a set of theoretical, methodical and practical aspects of improving the business processes management of LLC «Agroprosperis».

Research methods. The theoretical and methodological basis of the study is the dialectical method of cognition, a systematic approach to the study of economic phenomena and processes, scientific works of leading domestic and foreign scientists, devoted to the problem of business processes management, blockchain technology and logistics.

In the process, the following research methods were used: analysis and synthesis – to study the features and patterns of business processes management development; inductions and deductions – to reveal the essence and content of business processes management, to formulate a general concept of the research object based on the combination of its components; analogies – to study the essence of business processes management; comparison – for comparison of actual indicators with indicators of previous periods; graphical – to visualize statistics and their ratios.

The information and regulatory base of the research is scientific works of domestic and foreign scientists, materials of periodicals, statistics, materials of financial and economic activity of LLC «Agroprosperis», Internet resources.

Approbation the results of the study is represented in the scientific article on the topic: «Scientific approaches to modeling business processes in trade» which published in the KNUTE collection of scientific papers (Appendix A).

Structure and scope of final qualifying paper. The FQP consists of an introduction, three sections, conclusions, a list of sources used. The FQP contains 13 tables, 13 figures. The list of used sources includes 54 items.

PART 1
THEORETICAL AND METHODOLOGICAL BASIS OF THE ENTERPRISE BUSINESS PROCESS MANAGEMENT

1.1. The essence, components and goals of business process management

The concepts of business processes and process management were most actively developed by scientists M. Hammer and J. Champi in the 90s of the last century. Process-oriented enterprises are based on the principle of regulating the sequence of operations. In our country, the term «reengineering of business processes», proposed by these scientists, is widely known.

According to M. Hammer and J. Champi, business process reengineering is a fundamental rethinking and radical redesign of the organization's business processes in order to achieve improvements in the relevant key performance indicators: cost, quality, services and pace.

Under process management, the focus of the company is on business processes, and enterprise management systems are concentrated on the management of each business process in particular and all business processes as a whole. That is why business success depends on how effective business processes are.

A management system in the organization, which involves the identification (definition) of processes, their interaction, as well as their management, is called process management (ISO-9004: 2000). Process management is a management approach that obtains the craved result considering its activities and relevant resources as processes.

Process management carries out the following activities at the enterprise:

- considers its activities from the consumer angle;
- transforms consumer requirements into specific requirements for goods and services;
- identifies key processes that affect the quality of goods and services;
- identifies the interaction between key processes;

- describes processes through a system of criteria and indicators;
- allocates resources for the implementation of processes;
- identifies those responsible for the processes;
- develops methods for measuring process indicators;
- monitors processes (their indicators);
- analyzes discrepancies of the processes and the established requirements;
- implements corrective and preventive measures;
- carries out a consistent improvement of processes;
- registers outcomes of the monitoring and improvement of the processes.

There are many internal and external reasons, that have made it necessary to improve business processes in modern enterprises. The level of performance of the company tends to decrease over time. Even if the company is not actively developing, there is no doubt that its competitors are actively engaged in this. If we even imagine an unreal situation where neither particular enterprise nor its competitors are engaged in improvement, then there will always be third parties who want to occupy their market segment. Moreover, modern consumers are becoming more and more demanding. [17, p. 8]

Thus, the feasibility of improving approaches to organizing a business is beyond doubt. The advantages of applying process management approach to business management over the organizational and functional structure are the following [22]:

- defining clear process boundaries gives a better understanding of the supplier and consumer requirements that must be met;
- while managing a holistic process that passes through many departments, a synergistic effect is achieved from the activities of departments within the same process;
- when appointing a specific person responsible for the process, it is possible to move from dispersing responsibility in fragments to responsibility for the entire business process;
- process management allows you to establish effective control over the time of work and resource allocation.

There are many approaches to defining the term «business process», but we consider it necessary to conduct a study of the business process management system at a trade enterprise. In order to finally clarify the economic essence of the concept «business process», we systematize modern approaches to its definition (table 1.1).

Table 1.1

Modern approaches to the concept «business process»

Author(s) / Source	«Business process» is
August-Wilhelm Scheer, Henrik von Scheel, Mark von Rosing [1]	a collection of tasks and activities (business operations and actions) consisting of employees, materials, machines, systems, and methods that are being structured in such as way as to design, create, and deliver a product or a service to the consumer.
Mathias Kirchmer [4]	a set of functions in a specific sequence that finally delivers value for an external or internal customer
Hammer & Champy [5]	a structured, measured set of activities designed to produce a specified output for a particular customer or market
Paul Harmon [5]	a network of connected activities and buffers with well–defined boundaries and precedence relationships, which utilize resources to transform inputs into outputs for the purpose of satisfying customer requirements
Ilchenko N.B. [6]	a stable set of interrelated actions, which has an independent purpose, is characterized by a multiplicity of inputs, quantitative and qualitative effect obtained as a result of their performance and is determined by the specificity of trading activities.
ICEIS [2]	a set of partially ordered activities intended to reach a goal
WCO-UNESCAP [3]	a collection of related, structured activities or tasks that produce a specific service or product

Source: Developed by the author.

Therefore, based on the data of table 1.1, we conclude that the concept of «business process» must be approached systematically. In the general sense, the business process means a structured sequence of actions to perform the appropriate type of activity at all stages of the life cycle of the enterprise. A business process is an aggregate of different activities within which one or more resources are used in an input. The term «business process» that broken down into components is represented at fig. 1.1.

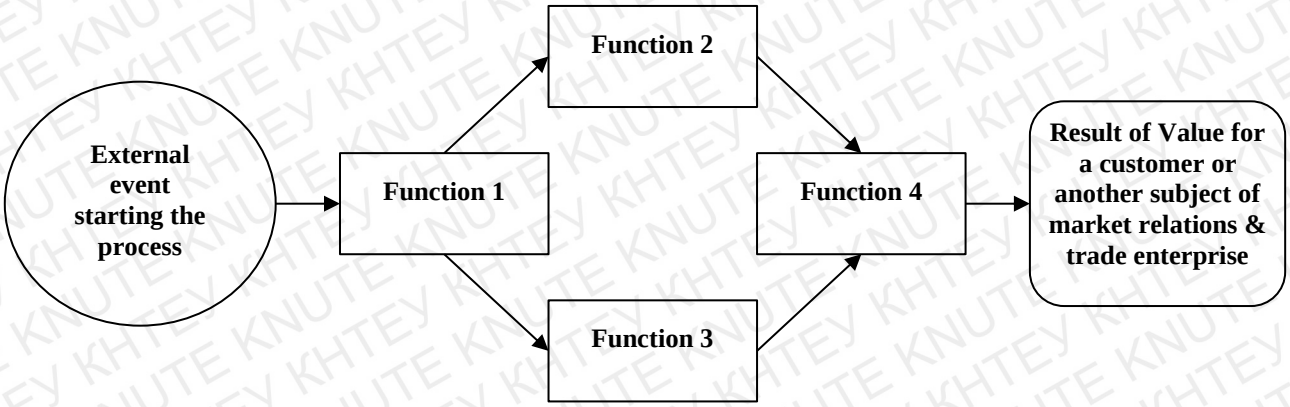

Fig. 1.1 Components of the definition of business process

Source: Developed by the author.

Many scientists and economists have considered the classification of business processes of an enterprise. There are two main approaches to classification, developed by APQC PCF and the ENAPS program. APQC PCF is a cross-industry classification of business processes (PCF – Process Classification Framework). It was developed by the American Productivity & Quality Center (APQC). The classification contains 13 groups and five levels of business processes with detail. At the top level of classification, business processes are divided into 3 types, which are presented in table 1.2.

Table 1.2

Classification of business processes by APQC PCF (Cross Industry Process Classification Framework)

Name of the group	Characteristics
Management processes	associated with the development of strategic goals of the company and the management of business opportunities. For example, assessing the external environment or formulating strategies for business units.
Major business processes	determine the creation and provision of goods or services to customers, generate profit for the organization. For example, procurement processes or production management.
Service business processes	ensure stable operation of the main ones; they themselves do not generate profits. An example of such a group of processes is recruiting or managing financial resources.

Source: based on Classification of business processes by APQC PCF [7]

As a result of the Norwegian TOPP project to create a database for the European comparative benchmarking system, which was developed under the ENAPS program (European Network of Advanced Performance Studies), another approach to classifying business processes was proposed [10]. It is represented in the table 1.3.

Table 1.3

Classification of business processes by The ENAPS program (European Network of Advanced Performance Studies)

Name of the group	Characteristics
Primary processes	are the core and value-creating processes of an enterprise. These processes permeate the entire company, from the consumer to the suppliers.
Supporting (auxiliary) processes	do not create directly added value, but are necessary to ensure the basic processes. Such auxiliary processes can be, for example, current repair and maintenance of equipment, financial and personnel management, IT support.
Developing processes	are those processes that allow you to create a value chain in the main and auxiliary processes. Examples: strategic planning, development of new technology and products, market research, staff development, etc.

Source: Developed by the author based on The ENAPS program classification [8].

The main business processes at trade enterprises are: 1. Analysis of the market and consumer needs; 2. Development of assortment policy and assortment management; 3. Procurement Management and Logistics; 4. Warehousing and Storage Management; 5. Production operations management; 6. Managing the process of sales of goods and customer service; 7. Management of after-sales and warranty service of consumers. [21, p. 157]

Scientist Mathias Weske believes that business process lifecycle consists of 4 elements [9, p. 12-17]: 1) Configuration – system selection, implementation, test and deployment; 2) Enactment – operation, monitoring, maintenance; 3) Evaluation – process mining, business activity monitoring; 4) Design & analysis – business process identification and modeling, and validation, simulation, verification. The lifecycle of business process is shown in Figure 1.2.

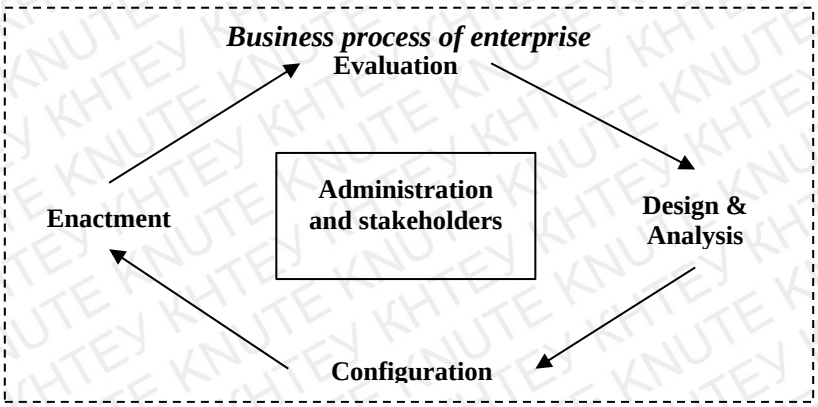

Fig. 1.2. Business process lifecycle

Source: Developed by the author.

In addition to certain resources, the business process system also requires participants – organizers and executors, because without human resources the proper functioning of the business process system is impossible.

Usually, there are six key roles: process owner, team leader, facilitator, team member, external consultant, coordinator. [23, p. 67]

The distinctiveness of fulfilling the duties of participants in business processes is that these is not a profession, not a specialty, and not even a position. In the staff list, there usually does not exist such a unit as a participant in a business process; no people are hired separately to carry out this work. Typically, existing personnel are used to perform these duties. These functions, of course, are paid for, included in the job description.

1.2. Scientific approaches to modeling business processes and evaluating the results of their management in trade

Business process modeling is a visual representation of the particular vision of operations in the organization using graphical, tabular, and textual means. The concept of «business process modeling» appeared when software products came into the life of enterprise management. [52, p. 12] Before-mentioned systems always involve conducting an in-depth pre-project review of the company's operations. The outcome of this review is an expert opinion, which formulates recommendations for eliminating weaknesses of the management of activities. Based on this conclusion, immediately before the automation system implementation, the so-called reorganization of business processes is

performed, sometimes quite complex and painful for the company. A long-formed team is always difficult to make «think new». Such comprehensive reviews of enterprises, as a rule, are complex, with significantly different tasks. There are proven methodologies and standards for solving problems of modeling complex systems.

Business process methodology is an assemblage of ways that represent present objects and the relationships between them as a model. With their help, executives can effectively display and examine models of a wide range of complicated systems. In this case, the degree of detail of the processes review in the system is determined by the developer, which allows you to not overload the created model with unnecessary data. [20, p. 145-147]

Many literature sources are devoted to the description of business process modeling notations, the definition of their advantages and disadvantages, as well as their comparative characteristics. The most widespread business process notations are as follows: Business process modeling is a visual representation of the particular vision of operations in the organization using graphical, tabular, and textual means. Before-mentioned systems always involve conducting an in-depth pre-project review of the company's operations. The outcome of this review is an expert opinion, which formulates recommendations for eliminating weaknesses of the management of activities. Based on this conclusion, immediately before the automation system implementation, the so-called reorganization of business processes is performed, sometimes quite complex and painful for the company. A long-formed team is always difficult to make "think new." Such comprehensive reviews of enterprises, as a rule, are complex, with significantly different tasks. There are proven methodologies and standards for solving problems of modeling complex systems. [36, p. 356-360]

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1) *SADT (Structured Analysis and Design Technique)* – a methodology of structural analysis and design, which provides functional modeling of logistics systems based on their structural analysis, decomposition into subsystems, from which you can select sub-functions and tasks. SADT involves the use of various tools, the most common of which is the IDEF-methodology (varieties: IDEF0 – process description in the form of a hierarchical system of interconnected functions; IDEF2 – modeling of information flows within the system, IDEF3 – documentation of emerging processes in the system). The most important disadvantage of notation is the impossibility of its use for modeling end-to-end processes. [38-40]

2) *EPC notation (Extended event-driven process chain)* is used to describe lower-level processes and is an ordered sequence of processes and functions (workflow class notation). For each function can be defined as initial and final events, participants, performers, material and documentary flows that accompany it. [11, 31]

3) *The description of business processes in UML-notation (Unified Modeling Language)* is based on the construction of diagrams that make up the static structure of processes, as well as diagrams that characterize the physical aspects of the system (implementation diagrams). [44-45]

4) *BPMN notation* contains a description of symbols to reflect business processes and is aimed at both technicians and business users. The language uses a basic set of intuitive elements that helps understand complex semantic constructions [12-14, 28].

BPMN model is now the most popular in business area. In order to show an example of the use of the BMPN scheme, Figure 1.3 is further presented. We have chosen a process of creating new server for the enterprise to expand the information storage. There are business process executives here: director, project manager 1, project manager 2, accountant and provider.

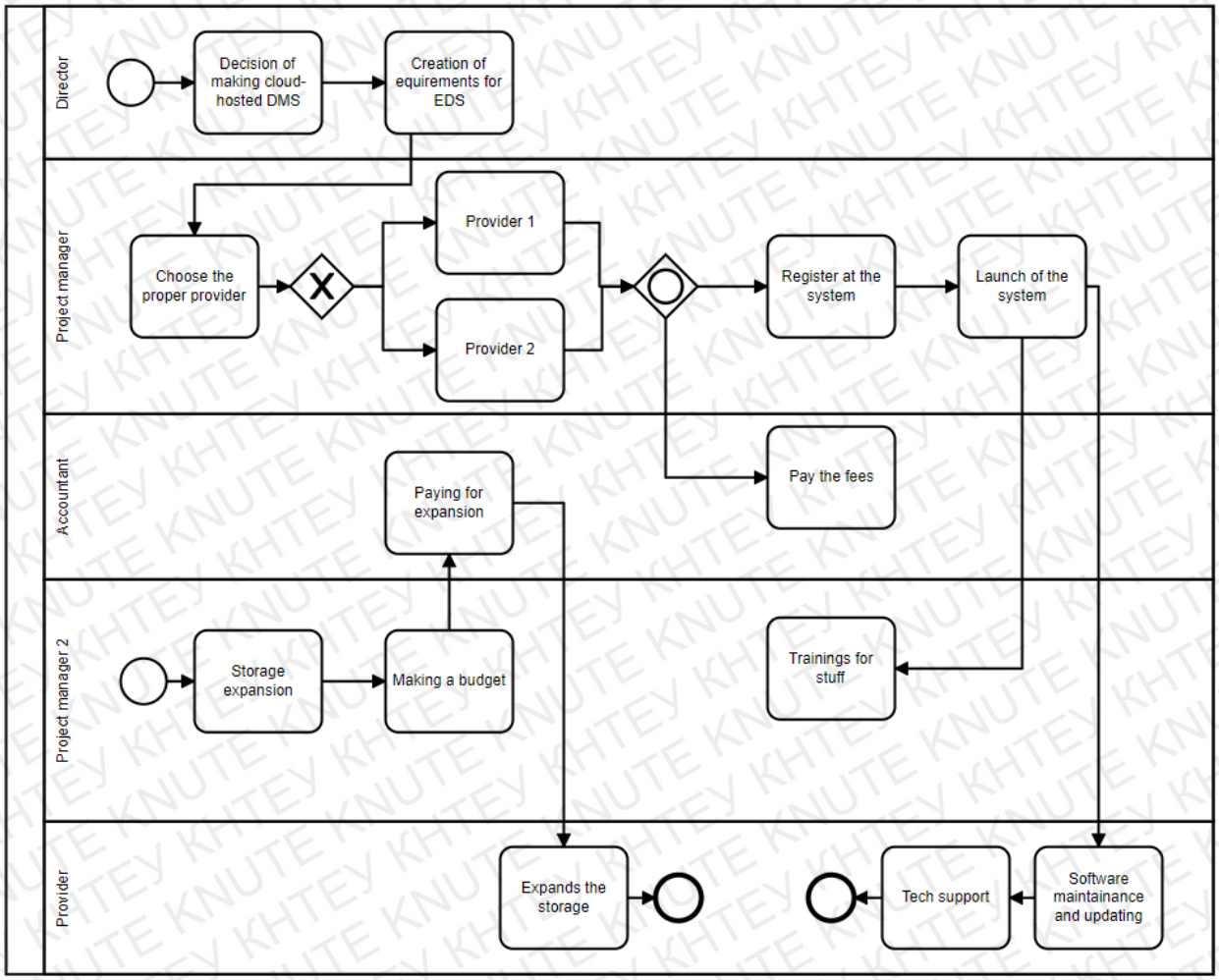

Fig. 1.3. BPMN scheme of business process

Source: Developed by the author using demo.bpmn.io.

Methods for assessing the effectiveness of business processes are to obtain results from calculations that may include various indicators: financial (gross profit, income, profitability, etc.), criteria for providing consumer value and indicators of customer satisfaction, flexibility indicators, duration of the operating cycle and service cycle, terms of operations etc.), quality, importance, process costs, etc. [15-16].

The inclusion of certain indicators in the methods of assessing the effectiveness of business processes and justifying the need for their optimization is explained by considering business processes at different levels of detail, using different methods of calculating partial and summary indicators.

Classification of business process analysis methods and their list is shown in Fig. 1.4. Methods of business process analysis can be divided into two types: qualitative and quantitative. [33-36]

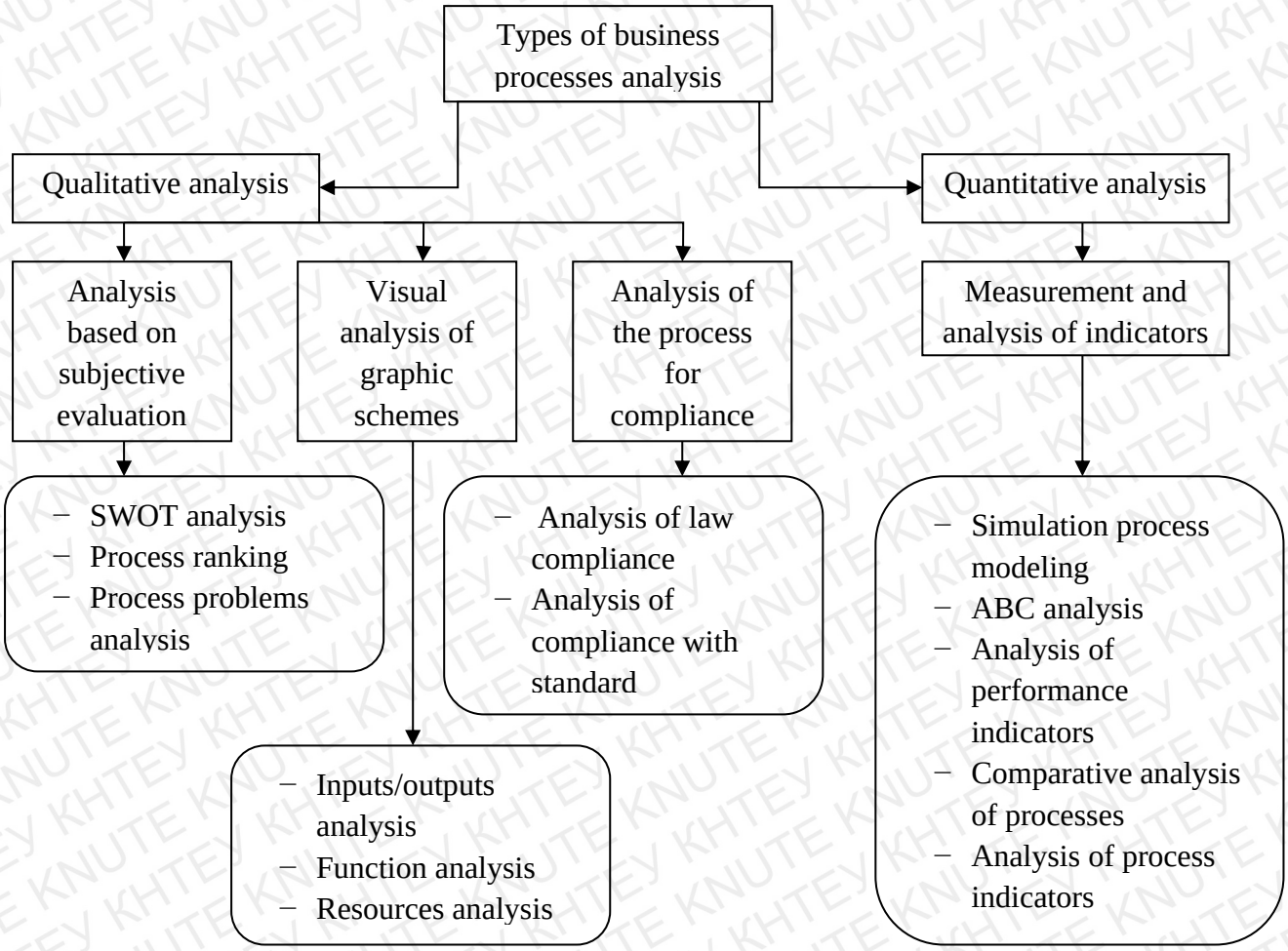

Fig. 1.4. Classification of business process analysis methods

Source: Developed by the author.

Methods of qualitative process analysis are based on:

- analysis of subjective assessments of the state of the process by staff and experts;
- visual analysis of graphic schemes of processes;
- comparison of the process with individual standard requirements.

Among the methods of subjective assessment of processes, the most common are the methods of the founders and followers of the reengineering business processes methodology – Hammer, Champa, Robson, Ullah and others. Besides, well-known methods of analysis are used for qualitative analysis: SWOT-analysis, the Boston matrix, etc. In addition, we can analyze the compliance of the process with laws and regulations.

PART 2

INVESTIGATION OF THE BUSINESS PROCESS MANAGEMEN PRACTICE AT THE ENTERPRISE AGROPROSPERIS LLC, KYIV

2.1. Analysis of business processes and factors of influence on their management at the enterprise

To analyze business processes of LLC Agroprosperis, it is necessary to start with company's history, establishment, main players and investors. From 2006 to 2007, the NCH Capital investment fund (USA) established a number of holdings in Ukraine engaged in agricultural production. Since December 2017, there are six holdings: Bio Agro, Golden Dawn, Latagro, Ray Agro and New Agro Management. In 2014, all NCH Capital assets in Ukraine were merged into a single group called Agroprosperis. [53]

Agroprosperis Group (AP Group) has been financing the production and export of agricultural products in Ukraine since 2006. It is one of the three leaders among producers and exporters of agricultural crops in Ukraine. Specialization – cereals (wheat, corn) and oilseeds (sunflower, rapeseed, soybeans). In 2019, the volume of AP Group exports exceeded 3.2 million tons of grain. The largest buyers of agricultural products are countries in Asia, the Middle East, Europe and North Africa. By 2017, more than 70 industrial producers of agricultural products in Ukraine (medium and small farms) used the services of Agroprosperis.

The Group consists of 45 agricultural companies, 6 service companies, 11 elevators with a turnover of over 1 million tons. and Agroprosperis Bank. The total number of employees is 3547. [54]

The NCH fund harvested fields in the most fertile agricultural regions: Khmelnytsky, Vinnytsia, Poltava and Kharkiv regions, where the yield of major cereals is 30-35% higher than the national average. At first, the fund acted as a classic investor – intensively growing the land bank in order to sell as profitably as possible. But still NCH decided to plunge into agribusiness: in 2006-2007, the fund created 6 agricultural companies: Bio Agro, Golden Dawn, Latagro, Ray Agro, Krayevid Invest, Promin Agro. Each cultivates between 50,000 and 100,000 hectares and unites up to 20 small

farms. NCH owns holdings not directly, but through the Cypriot offshore companies NAP Holdings (Ukraine) Limited and ATS Agribusiness Investments Limited. Most holdings, with the exception of Promin Agro, are joint ventures in which NCH is the majority shareholder. Minority stakes – from 20% to 40% of the shares – belong to Latvian investors.

Table 2.1

General profile about Agroprosperis LLC

Legal entity's full name	Limited liability company Agroprosperis
Ukrainian name	Товариство з обмеженою відповідальністю "Агропросперіс"
Short name	LLC "AGROPROSPERIS"
Registration date	02.12.2013 (7 years)
USREOU code	39003716
Contacts	04119, Kyiv, DEHTIARIVSKA str., 27-T, LITERA A
Information about legal entity's governing body	General shareholder meeting, director, audit committee (auditor)
Activities	46.11 Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods 46.21 Wholesale of grain, unmanufactured tobacco, seeds and animal feeds 78.30 Other human resources provision 62.01 Computer programming activities 62.02 Computer consultancy activities 62.03 Computer facilities management activities 62.09 Other information technology and computer service activities 69.10 Legal activities 69.20 Accounting, bookkeeping and auditing activities; tax consultancy **70.22 Business and other management consultancy activities (main)**
The size of the authorized capital	786 928,00 UAH

Source: Developed by the author.

All companies have their own elevators. Some buy products from other plant enterprises and sell them to exporters. For example, the company Golden Dawn, which cultivates about 90,000 hectares in Kharkiv, Poltava, Vinnytsia and Cherkasy regions, has the status of a trader of the highest category and is a member of the international

grain association GAFTA. The company has a pig farm with 10,000 heads and 500 cows.

The founder of the holding is a group of direct investment funds New Century Holdings (NCH). As of 2017, NCH's total assets invested in various countries around the world are estimated at $ 3.5 billion.

The Ukrainian representative office of NCH Capital is headed by Michael Bertram. Director of Agrarian Investments of NCH Capital in Ukraine – Maria Osyka. General and Commercial Director of Agroprosperis – Igor Osmachko, Chief financial director – Olga Makara.

Activity. The business group of Agroprosperis companies is represented by two main areas:

- Industrial agricultural production.
- Providing small and medium farmers with a range of services for stable and profitable agricultural production.

The main directions of business are following:

1) Industrial agricultural production (profile crops – wheat, corn, rapeseed, sunflower, soybeans). Agroprosperis manufactures agricultural products in 14 regions of Ukraine, and the land bank produces more than 430,000 hectares. According to the company’s strategy, the Group's management instead of increasing the land bank plans to increase the partnership with Ukrainian farmers.

2) Supply chain from the field to the table (distribution of goods, financing, logistics and exports).

Agroprosperis supplies farmers with seeds, plant protection products, and mineral fertilizers from the world's leading producers.

In 2015, the investment fund NCH Capital bought 100% of the shares of the bankrupt Ukrainian bank Astra Bank. After that, the financial institution was renamed "Agroprosperis Bank" (abbreviated – "AP Bank") and industry specialization – financing of small and medium-sized producers of grain and oilseeds in Ukraine. In 2017, Agroprosperis Bank serviced over 40% of all agricultural receipts in Ukraine. The authorized capital of PJSC AP BANK is 310 million UAH (end of 2017).

In 2017-2018, the Agroprosperis Group of Companies significantly increased the efficiency of agricultural logistics due to its own fleet of railway cars, which by October this year will amount to 400 units. From July 1, 2017 to September 1, 2018, 300 Agroprosperis cars ensured the timely export of 580 thousand tons of products produced by the Group's companies, as well as small and medium farmers of Ukraine to ports for further export to markets in more than 30 countries and leading national processors.

Agroprosperis among 52 Group and partner elevators, as a result of which the granaries used their capacities as efficiently as possible, and the production companies conducted the harvesting and sowing campaign in the optimal time. The high turnover of cars was facilitated by the active work of 8 own and leased locomotives with the right to leave the station tracks.

In the near future, the Agroprosperis Group of Companies plans to strengthen its own logistics with another 100 new cars manufactured by the Kryukovsky Car-Building Plant. This will increase the volume of rail transportation of agricultural products to 800 thousand tons per year, as well as provide logistics services to partners, small and medium farmers in Ukraine. To operate with such large logistics capacity, companies need to develop supply chain management.

It is also necessary to consider the fundamental components of the logistics infrastructure (Fig. 2.1), which consists of the following components [24]:

- Suppliers;
- Customers;
- Supply logistics;
- Production logistics;
- Distribution logistics.

In the system of transport and logistics infrastructure, in addition to the main elements, there are also connected components that help to implement the work of the company more efficiently [19]:

- Transport;
- Warehouse;

– Logistics of recycling (disposal).

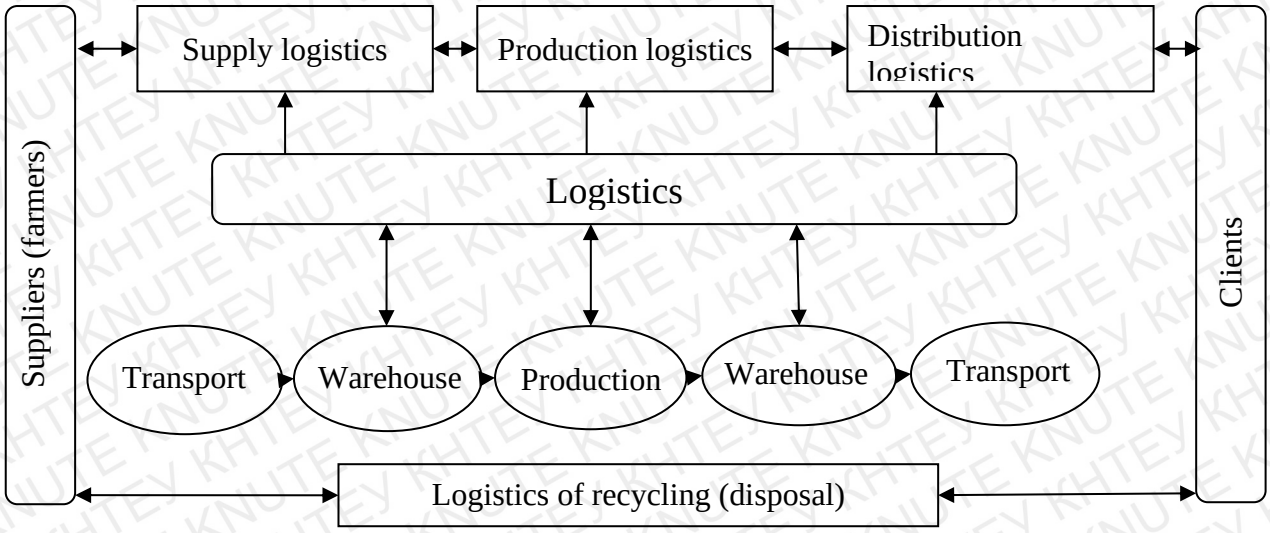

Fig. 2.1. Elements of transport and logistics infrastructure and their interconnection

Source: Developed by the author.

As supply chain management is one of the main activities of the enterprise, we have to consider the strengths and weaknesses of the logistics component of the company (Table 2.2).

Table 2.2

Strengths and weaknesses of the LLC «Agroprosperis» supply chain infrastructure

Component	Strengths	Weaknesses
Suppliers (farmers)	– Availability of stable relations with manufacturers – Long-term partnership – Transparency of actions	– Dependence on a small number of suppliers – Low-level of education
Clients	– Large enterprises of the agricultural industry – Financially stable companies – Differentiated list of clients, from different countries – There is no strong dependence on one customer, many buyers	– Decreasing demand due to the economic crisis – The location of clients is different
Supply logistics	– High degree of certainty about the subject and volume of purchases – A specific list of suppliers with whom company has a long-term relationship of trust	– A small number of alternative suppliers – Lack of computer systems to optimize distribution

End of the Table 2.2

Component	Strengths	Weaknesses
Distribution logistics	− Many options for the distribution of goods	− Lack of computer systems to optimize distribution
Transportation	− Usage of hired carriers − Usage of own wagons − Ability to transport and deliver goods to any location using various types of transport	− Lack of own transport, the problem of delivering goods over short (within 2000 km) distances − Lack of permanent contractual relations between the company and major carriers
Warehousing	− Availability of warehouses for related products and spare parts	− Lack of adequate storage facilities for storing heavy equipment

Source: Developed by the author.

As you can see from Table 2.2, the main strengths of the company's transport and logistics infrastructure are long-term partnerships and trusting relationships with supplier companies, financially stable clients from the agroindustry and freedom in choosing the delivery routes. However, there are also weaknesses that need to be noted, such as dependence on a limited number of suppliers and suboptimal delivery routes.

In connection with the analysis, it can be seen that the company, having such strengths, is able to successfully enter new markets and compete with existing competitors. Moreover, having such competitive advantages as a relatively low price, prompt delivery times and a high reputation resource, LLC «Agroprosperis» will be able to implement the strategic direction of development. However, for more efficient management of the company, it is necessary to improve its technical approach: study possible IT changes and novelties.

2.2. Identification of strengths, weaknesses and evaluation of the results of business process management at the enterprise

We will study the dynamics of indicators of financial and economic activity of LLC «Agroprosperis» for 2017-2019 (Table 2.3) on the basis of the financial statements of the enterprise (Appendix B).

Table 2.3

Dynamics of indicators of financial and economic activity of LLC «Agroprosperis» for 2017-2019, thousands UAH

Indicators	2017	2018	2019	Absolute deviation, +, –		Relative deviation, %	
				2018/ 2017	2019/ 2018	2018/ 2017	2019/ 2018
Net income (sales) from sales of products (goods, works, services)	23983085	29597405	34273528	5614320	4676123	23,41	15,80
Cost of sales of products (goods, works, services)	20853255	24810029	27629522	3956774	2819493	18,97	11,36
Gross profit (loss)	3129830	4787376	6644006	1657546	1856630	52,96	38,78
Other operating income	1175901	1231000	677444	55099	–553556	4,69	–44,97
Administrative expenses	560355	722034	1024991	161679	302957	28,85	41,96
Selling expenses	1054480	1169086	772838	114606	–396248	10,87	–33,89
Other operating expenses	37382	86871	270695	49489	183824	132,39	211,61
Financial results from operating activities	2653514	4040385	5064960	1386871	1024575	52,27	25,36
Other financial income	20153	249556	45542	229403	–204014	1138,31	–81,75
Other income	900	12310	4664	11410	–7646	1267,78	–62,11
Capital losses	2135532	2520045	2645470	384513	125425	18,01	4,98
Other expenses	7025418	3069716	1019489	–3955702	–2050227	–56,31	–66,79
Income tax on ordinary activities	907622	287544	421707	–620078	134163	–68,32	46,66
Financial results before tax	–6486383	–1287510	1450207	5198873	2737717	–80,15	–212,64
Net financial result	–5578761	–999966	3324384	4578795	4324350	–82,08	–432,45

Calculated by the author based on the financial statements of LLC «Agroprosperis»

In 2017 the total net income of LLC «Agroprosperis» was UAH 23983085. In 2018 this indicator was 23,41% higher comparatively to the previous year. In 2019 the total net income increased by 15,8% as compared to 2018, resulting UAH 34273528 of the total net income of LLC «Agroprosperis» at the end of 2019. The increase of the

provided goods and services has a positive effect on the financial position of the enterprise, increasing its market share.

In 2018 the increase of the cost of sales exceeds the increase of the revenue reaching 18,97%. This is a clearly negative trend, which indicates that LLC «Agroprosperis» had less finances to spend on other expenses. In 2019 the situation is improving as the cost increases at a slower pace as compared to the amount of revenue: 11,36% – increase of the cost of sales, while 15,80% – increase of the sales revenue.

In the period of 2017-2019, the gross profit of LLC «Agroprosperis» increased from UAH 3129830 to UAH 6644006, or by 112,28 %.

As we can see from the data of the Table 2.3, in the given period, the sales costs on the market increased significantly. Thus, in 2017 the amount of sales expenses was UAH 1054480, in 2018 they increased by 10,87%, and in 2019 they decreased by 33,89% comparatively to the previous year. Thus, at the end of 2019 the amount of sales expenses was set at UAH 772838. This is mainly due to the new logistics policy: own trains.

In 2017 the amount of administrative expenses summed up to UAH 560355. Opposite to the previous season, in 2018 the increase of those expense items was 28,85%. After that, in 2019 there was an increase of the amount of administrative expenses by 41,96%.

In 2017 the profit from operating activities amounted UAH 2653514, which indicates the effective major activity of the enterprise. In 2018 operating profit increased to UAH 4040385, or 52,27%. In 2019 operating income increased to UAH 5064960, or 25,36% compared to the previous year.

In 2017-2019 there is a negative trend of financial results before taxation of LLC «Agroprosperis». However, we know, that negative financial results mean that company uses offshore zones to derive money.

Overall, we see the same picture in financial result in terms of net profit. It should be noted that at the end of the investigated period, namely in 2019, the amount of net profit of the enterprise was UAH 3324384.

Let us analyze the dynamics of profitability indicators of LLC «Agroprosperis» for 2017-2019 in table 2.4.

Table 2.4

Dynamics of profitability indicators of LLC «Agroprosperis» for 2017-2019, %

Indicators	2017	2018	2019	Absolute deviation, +, –	
				2018/ 2017	2019/ 2018
Return on assets, %	0	0	9,24	0	9,24
Return on equity, %	31,50	30,57	35,26	–0,93	4,69
Return on borrowed capital,%	16,31	16,26	18,61	–0,05	2,35
Profitability of operating costs, %	1,07	1,10	1,15	0,04	0,05
Profitability of sales on sales revenue	18,85	15,23	16,45	–3,62	1,22
Profitability of sales on operating income	13,49	15,66	12,58	2,17	–3,08
Profitability of sales on net profit	5,78	4,65	6,32	–1,13	1,67

Calculated by the author based on the financial statements of LLC «Agroprosperis»

The profitability of the assets of LLC «Agroprosperis» in 2019 amounted 9,24%, that is, for every hryvnia of assets, the company received UAH 0,0924 of net profit. However, we should remember that company uses offshore zones.

Regarding the index of return on equity of LLC «Agroprosperis», in 2017 each owners invested hryvnia brought them UAH 0,315 of net profit. This is a low indicator that shows poor performance of the enterprise. In 2018, each owners invested hryvnia brought UAH 0,3057 of net profit, that is, the efficiency of work decreased as compared to the previous year. In 2019, the return on equity was 35,26 %, slightly higher than the previous year.

The profitability of operating costs of LLC «Agroprosperis» in 2017 amounted 1,07 %, that is, for every hryvnia of cost funds the company received UAH 0,010 of the net profit. In 2018, UAH 0,011 of the net profit was received for each hryvnia funds investment. In 2019, the value of the profitability of operating costs was 1,15 %.

Sales profitability for sales revenue shows how much revenue is earned per unit of revenue. It allows to determine the amount that remains after deducting cost,

business and management expenses to cover the other expenses (other operating expenses, interest on credit, income tax). In 2017, the figure was 18,85 %. That is, LLC «Agroprosperis» had funds left for the other expenses. In 2018, the profitability of sales on profit from sales was 15,23 %. At the end of the reviewed period, each hryvnia of the revenue allowed to receive UAH 0,125 of the profit from the sale.

The profitability of sales on net profit shows how much net profit per unit of the revenue is attributable to. As a rule, high-level enterprises have higher revenues as they have better available to them resources. In 2017, each revenue hryvnia allowed to receive about UAH 0,05 of net profit. In 2018, the profitability of sales on the profit from sales amounted 4,65%. At the end of 2019, this indicator was set at 6,32 %.

Let's analyze LLC «Agroprosperis» with the help of SNW-analysis – strategic analysis of the internal environment from the standpoint of strengths, weaknesses and neutrals of the organization. SNW–analysis for LLC «Agroprosperis» is shown in Table 2.5. The weightiness degree of the parameters of the internal environment of LLC «Agroprosperis» was estimated on a 10-point scale. [25, p. 324]

The data of the table 2.5 indicate that the strongest points of LLC «Agroposperis» are working conditions, motivation and stimulation of the staff, information support, quality of services provided, organization of marketing at the enterprise, pricing policy, and consumer orientation. The weaknesses are high staff turnover, planning organization, staffing, and enterprise development strategy.

Table 2.5

SNW – Analysis for LLC «Agroprosperis»

№	Key parameters of enterprise activity	S	N	W
1.	Salary	8		
2.	Working conditions	9		
3.	Motivation and stimulation of the staff	9		
4.	Staff turnover			1
5.	Staff qualification	8		
6.	Assessment of quality of work of personnel	8		
7.	Social package	8		
8.	Planning organization		7	
9.	The level of technical equipment		7	

End of the Table 2.5

№	Key parameters of enterprise activity	S	N	W
10.	Information support	9		
11.	Quality of services provided	10		
12.	Organization of marketing at the enterprise		6	
13.	Volume of sales	9		
14.	The range of products		6	
15.	Staffing		5	
16.	Image (business reputation) of the company	8		
17.	Psychological climate in the team		7	
18.	Financial stability of the enterprise	8		
19.	Territorial location			4
20.	Pricing policy		7	
21.	Consumer oriented	8		
22.	Enterprise development strategy	9		

Developed by the author

Competitors. The largest competitors of LLC «Agropropsperis» in the Ukrainian grain market are Ukrlandfarming, Kernel, Myronivsky Hliboproduct, Astarta-Kyiv, Mriya.[18] Their land banks, specialties, revenues and EBITDA are shown in the figure 2.2.

As of October 2019, the total capitalization of 14 agricultural enterprises listed on world stock exchanges for the year decreased by 22% or $ 674 million. The total capitalization of Ukrainian agricultural companies amounted to $ 2.3 billion against $ 3 billion in October last year. Among the 14 agricultural enterprises currently listed on the stock exchanges, the five largest were singled out. These include «Kernel», «MHP», «Astarta-Kiev», «Ovostar Union» and «Industrial Dairy Company (IMC)». Most companies went public with their shares on the Warsaw Stock Exchange. Only «MHP» and «AVANGARDCO IPL» traded on the London Stock Exchange.

In four of the five companies during the year there was a decrease in capitalization: «MHP» – by 24% to $ 940.4 million, «Kernel» – by 17% to $ 906.5 million, «Astarta-Kiev» – by 31% to 105.2 million and «Ovostar» – by 31% to $ 121.5 million. Positive changes occurred only in the company «IMC», whose capitalization increased by 10% – from $ 105 million to $ 115.4 million.

The TOP-100 latifundists of Ukraine change annually. Thus, over the past 5 years, the land bank of the top five of the rating has decreased by 2% – from 2.08 million hectares to 2.05 million hectares. The list of the participants did not change – «Kernel», «UkrLandFarming», «Agroprosperis», «MHP», «Astarta-Kiev». «UkrLandFarming» and «Agroprosperis» continue to reduce/optimize their land bank, while other companies are investing in expanding their land fund: HarvEast (+ 25%), Continental Farmers Group (+ 18%), Agroholding 2012 (+ 9%).

Company	Land bank, thousand ha	Specialty	Revenue, USD	EBITDA
UkrLandFarming	605	Crops production Milk and milk products Meat production and processing Eggs and egg products Sugar	Publicly not disclosed	Publicly not disclosed
KERNEL	603	Largest producer and exporter of sunflower oil in the world Grain storage and trading Export sea port infrastructure	FY2017[12]: USD 2,169 m (+9% y-o-y)	FY2017: USD 319 m (8% y-o-y)
AP Group AgroProsperis Group (NCH)	430	Crops production (grains and oilseeds)	Publicly not disclosed	Publicly not disclosed
mhp	370	Poultry production and processing Grain and fodder production Meat processing	2017: USD 1 228 m (+13% y-o-y) 2016: USD 1,135 m (+7% y-o-y)	2017: USD 459 m (+11%), margin – 36% 2016: USD 415 m (-5%), margin – 37%
ASTARTA-KYIV agri-industrial holding	250	Sugar production Crops production (grains, oilseeds) Soybean processing Milk and milk products Biogas	2017: EUR 459 m (+24% y-o-y) 2016: EUR 369 m (+17% y-o-y)	2017: EUR 120 m (-21% y-o-y), margin – 32% 2016: EUR 152 m (+16% y-o-y), margin – 41%

Fig. 2.2 Competitors of LLC «Agroprosperis»

Source: The largest agroholdings. Rating of 45 largest agricultural holdings in Ukraine [27]

To increase the competitiveness of agricultural enterprises in the foreign market, the following elements can be used [26]:

– create goods with unique consumer characteristics due to the natural and geographical potential;

- introduce modern resource-saving technologies, thanks to which Ukrainian agricultural enterprises will be able to reduce the cost of production on the foreign market;
- reduce the cost of creating and transporting goods for scale effect account;
- invest in updating the technical base of enterprises;
- increase the image of the enterprise through PR-events;
- establish infrastructure, in particular due to the efforts of several agribusinesses;
- use consulting to improve staff skills, establish a technical base enterprise;
- expand the sales system, sign long-term foreign economic contracts;
- use state support in the form of preferential taxation and lending;
- create an effective competitive strategy, choose the most appropriate management concept.

Supply chain management of LLC «Agroprosperis» – is a complex of logistic network and administration system which is formed on the enterprise for the implementation of its logistic and supply strategy. It is based on the logistic operations through the own distribution centers of LLC «Agroprosperis».

Table 2.6

Dynamics of the results of the main (trade) activities of LLC «Agroprosperis», thousands UAH

Indicators	2017	2018	2019	Absolute deviation, +,–		Relative deviation, %	
				2018/ 2017	2019/ 2018	2018/ 2017	2019/ 2018
Commercial income	44836340	54407434	61903050	9571094	7495616	21,35	13,78
Turnover costs	1022610	500870	956330	–521740	455460	–51,02	90,93
Level of commercial income, %	13,05	16,17	19,39	3,12	3,21	x	x
Level of turnover cost, %	4,26	1,69	2,79	–2,57	1,10	x	x
Profitability of turnover, %	1,15	1,19	1,24	0,04	0,05	x	x

Calculated by the author based on the financial statements of LLC «Agroprosperis»

Commercial income in 2017 was UAH 44836340 and in the end of 2019 the indicator increased by UAH 17066710. Turnover costs in 2019 were UAH 956330, which is higher than in previous period. Level of profitability turnover has not change much since 2017 and has 1,24%. Level of commercia income has positive dynamic and increases every year by 3%.

We will analyze the efficiency of asset management related to supply chain management, LLC «Agroprosperis» for 2017-2019 (Table 2.7). Typical asset management performance indicators related to supply chain management are: total asset turnover, inventory turnover, working capital turnover, and operating cycle duration.

Table 2.7

Dynamics of Performance Management Indicators Related to Supply Chain Management, LLC «Agroprosperis», 2017-2019

Indicators	2017	2018	2019	Absolute deviation, +, –		Relative deviation, %	
				2017/ 2016	2018/ 2017	2017/ 2016	2018/ 2017
Asset turnover, (turnover)	163,171	209,369	180,072	46,197	-29,29	28,31	-13,99
Working capital turnover ratio, (revolutions)	1,538	1,479	1,614	-0,059	0,135	-3,821	9,100
Period of one turnover of working capital, (days)	81,864	87,545	68,753	5,681	-18,79	-24,47	18,792
Inventory turnover ratio, (revolutions)	3,210	2,975	3,852	-0,235	0,877	-7,309	29,462
Inventory turnover, (days)	78,191	84,357	65,159	6,165	-19,19	7,885	-22,75

Calculated by the author based on the financial statements of LLC «Agroprosperis»

At the beginning of 2017, the value of the asset turnover was 163,17. With the use of each hryvnia, assets were manufactured and services provided to LLC «Agroprosperis» in the amount of UAH 163,17. In 2018, the value of the indicator is reduced and each invested hryvnia to the assets allowed to receive UAH 209,37 revenue. That is, the efficiency of the use of assets of LLC «Agroprosperis» as a whole decrease. In 2019, the indicator continues to decline and for each invested hryvnia the

enterprise received net income of UAH 180,07. The data in Table 2.7 indicates a steady decline of the asset utilization of LLC «Agroprosperis» throughout the period.

In 2017, working capital made 81,86 turnovers. In 2018, it increases to 87,54 turnovers. The decrease in the intensity of use of working capital is observed in 2019, in which they made 68,75 turns, so 18,79 less than the previous year.

In 2017, inventories made 78,2 turnovers. If the ratio is much higher than the industry average, it creates a risk associated with insufficient inventory, which will result in a decrease of sales revenue. Too high ratio may be a sign of a lack of available funds and a signal of a potential insolvency of the enterprise. In 2018, the value of the indicator increases by 6,165 compared to 2017. This indicates a decrease in inventory management efficiency and may be a sign of a decline in sales activity. In 2019, the trend remains unchanged and there is a decrease in the utilization of stocks of LLC «Agroprosperis». In 2019, the stock made 65,16 turnovers.

We will analyze the volume and structure of cost management related to supply chain management, LLC «Agroprosperis» for 2017-2019 (Table 2.8).

Table 2.8

Dynamics and structure of costs related to supply chain management of LLC «Agroprosperis» for 2017-2019, thousand UAH

Cost Articles	2017 year		2018 year		2019 year	
	thousand UAH	%	thousand UAH	%	thousand UAH	%
Purchasing costs	634625,8	60,40	684625,8	62,09	703245,1	60,01
Production logistics costs	123144,3	11,72	145156,7	13,17	138957,2	11,86
Selling expenses	79472,2	7,56	65433,1	5,93	100273	8,56
Warehouse costs	68347,1	6,50	56746,5	5,15	60119,4	5,13
Transportation costs	68799,1	6,55	70335,4	6,38	75165,8	6,41
Costs of material flow management	34749,8	3,31	40678,6	3,69	45980,2	3,92
Costs of logistics administration	30999,8	2,95	25679,8	2,33	30729,1	2,62
Cost of service	10599,7	1,01	13895,4	1,26	17347,8	1,48
Total cost	1050737,8	100	1102551,3	100	1171817,6	100

Calculated by the author on the basis of the financial statements of LLC "Agroprosperis" and the data of the logistics departments of the enterprise

According to the provided data, it can be concluded that the costs of LLC «Agroprosperis» related to supply chain management tend to increase every year. In 2017, the costs of LLC «Agroprosperis» related to supply chain management amounted to UAH 1050737800, in 2018 they increased to UAH 1102551300, which is 4,93 % more than in 2017. In 2019, these costs increased by 11,52% and were UAH 1171817600, as shown in Figure 2.5.

Fig. 2.3 The costs of LLC «Agroprosperis» related to supply chain management

Developed by the author

Therefore, we can make a conclusion that the efficiency of business process and supply chain management at LLC «Agroprosperis» is at a rather high level. Among the general shortcomings in the logistics management system of LLC «Agroprosperis» there are the following: low efficiency of use of information technologies; lack of an established system of interpersonal communications.

Among the general advantages in the business process and supply chain management system of LLC «Agroprosperis» there are the following: existence of the unified methodological approach to the concept of supply chain management of the company; orientation of the company management on the latest concepts; an effective supply chain management service at the enterprise and purposeful activity in the field

of supply chain management; the existence of clear strategic goals and plans for the company and line units.

The analysis of the efficiency of the business process and supply chain management system LLC «Agroprosperis» allowed to establish that the company has a sufficiently effective system, and there are a number of shortcomings that need to be corrected in the future to ensure the effective operation of the investigated enterprise as a whole, and to increase its level of competitiveness in the agroindustry market of Ukraine.

PART 3
IMPROVEMENT OF BUSINESS PROCESS MANAGEMENT OF THE ENTERPRISE AGROPROSPERIS LLC, KYIV

3.1. Planning measures to improve the enterprise business process management based on international practices of implementing agricultural trade strategies and using blockchain technology

The current state of enterprises and the conditions for forming a strategy for their development are characterized by radical changes in the management system. An important management problem is its strategic focus. In this regard, the application of advanced supply chain concepts and technologies by Ukrainian companies should play an important role.

In a market economy, a rapid change in the market situation and high competition requires the management of LLC «Agroprosperis» to constantly monitor the activity of the enterprise and all the processes that take place. The effectiveness of the management process is directly dependent on the level of awareness of the manager about the real state of affairs, which, in turn, makes it possible to make informed strategic and operational management decisions.

The practice of logistics shows that the highest results in business are achieved by those enterprises that use the concept of integration in supply chain management, which allows to combine efforts of management personnel of the enterprise and logistics intermediaries in the through-line management of commodity and information flows in the integrated business structure: «production – distribution – sale – service». [37] Therefore, there is a question implementation of an adaptive control system with a focus on supply chain management, which will significantly increase the efficiency of supply chain management LLC «Agroprosperis» and ensure the legitimate interests of owners and management of the enterprise in the results of activities.

Usage of blockchain in modern companies is very important, as it helps to solve the main problems: from the optimization of procurement processes, inventory management to the processes of distribution and even packaging of goods. Logistics

plays the most major role in companies that organize supplies. So, development and effective management of transport and logistics infrastructure for such companies is a key parameter of their success in the market. [51, p. 97]

The Agroprosperis company is engaged in the supply of grain to consumers who are located in different geographical locations (including abroad) and have different requirements for the product and delivery, so that the logistics chain of the company in which they operate has the following structure:

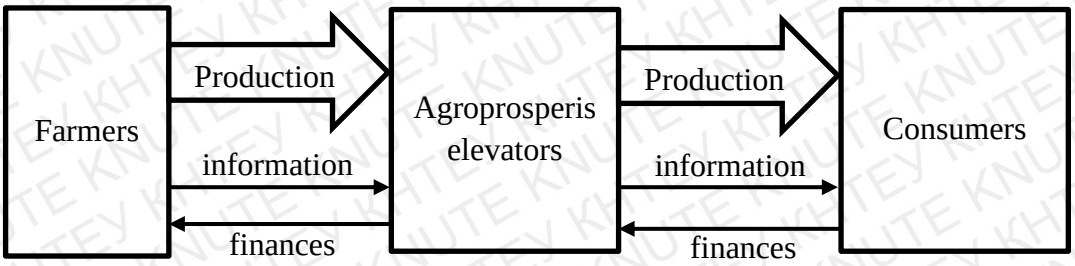

Fig. 3.1. Agroprosperis supply chain scheme

Developed by the author

As can be seen from Figure 3.1, Agroprosperis is the direct link between the producer and the consumer. Financial and information flows pass between the elements of the chain, which connect the company with the farmer and the client.

At the first stage of the chain, the manufacturer sends grain to the company using a hired carrier, which was jointly selected with Agroprosperis LLC. Also at this stage, information and documentation from the manufacturer is transferred, and in the opposite direction there is a financial flow, which is either a partial advance payment or the full amount payment, depending on the terms of the contract. [49]

Upon delivery of the goods to the destination, the company contacts the client and directly organizes the final delivery of the goods to the end consumer, also exchanging information and financial resources with him. After the end consumer receives the product, he has the opportunity to exchange the necessary information with the manufacturer on all issues of interest regarding the contract, equipment and grain through Agroprosperis LLC. From the logistics chain, we can conclude that it is standard and is massively used in similar activities with similar transactions. BPMN scheme of such process is represented in Figure 3.2.

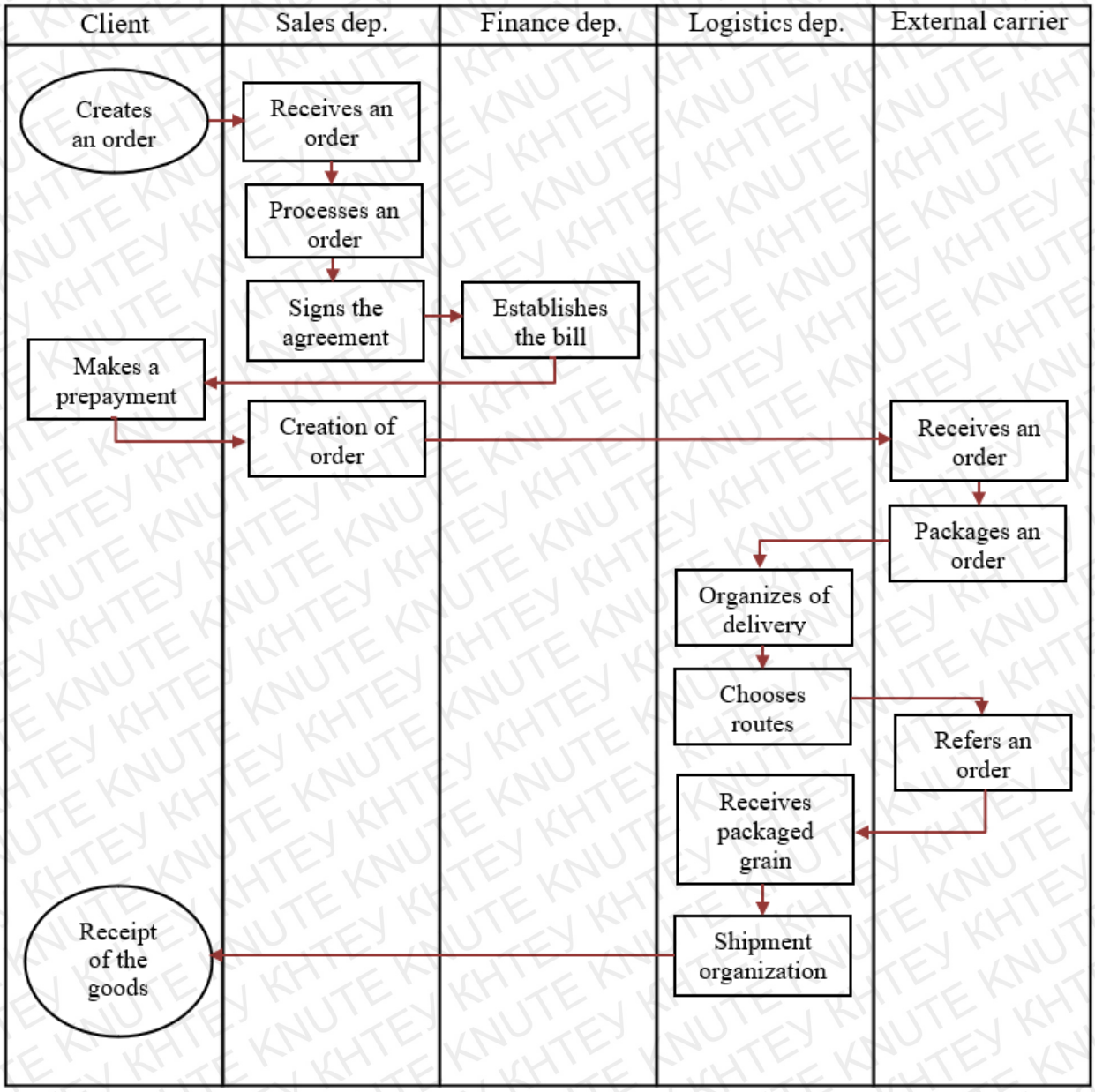

Fig. 3.2. BPMN scheme of Agroprosperis LLC current business process

Source: Developed by the author using demo.bpmn.io.

Studying company's supply chain, it is necessary to consider the general order fulfillment scheme, according to which it passes from the manufacturer directly to the consumer companies.

After analyzing the order fulfillment scheme and the company's business process, we can conclude that the company has a well-built system for the delivery of goods and the performance of operations, however, this logistics approach has its own strengths and weaknesses, which affect the general work of the company.

For example, we can conclude that implementation of one particular order takes a lot of time. This is because so many different departments have to re-process all the information. Moreover, the logistics department takes on a lot of tasks instead of an external carrier. We propose to simplify the supply chain system using blockchain technology. Then information about the order will be transmitted faster and less dependent on the human factor. The option of order fulfillment using new technology is presented in Figure 3.3. Confirmation of the order is carried out literally with one click in the system, without stamps and signatures. This is how the information passes through all responsible managers (sales, logistics, finance). Also, all the necessary information is stored in one cloud and each manager can check the degree of order fulfillment at any time.

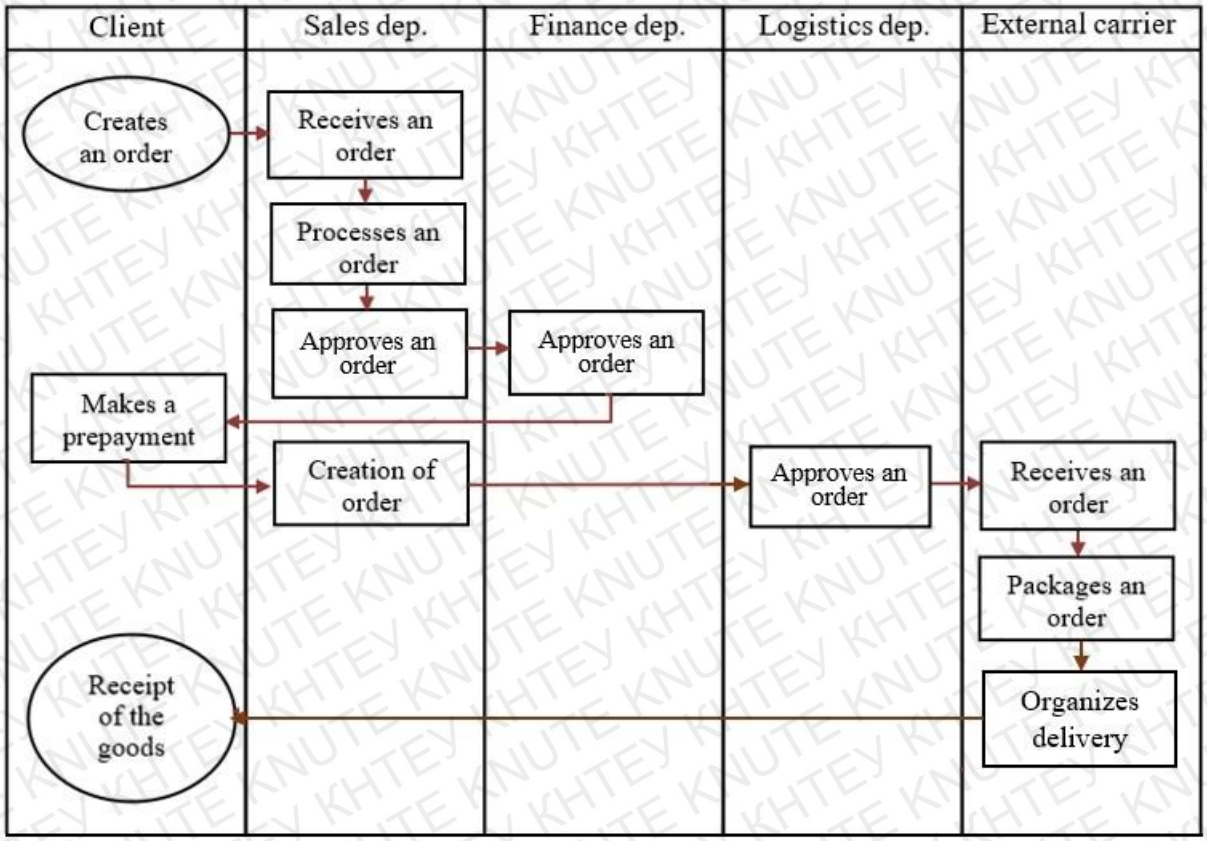

Fig. 3.3. BPMN scheme of Agroprosperis LLC business process using Blockchain technology

Source: Developed by the author using demo.bpmn.io.

In the course of our research, we found that certain unnecessary losses incurred by the company in the process of supply chain management are caused by insufficiently

well-organized control and information support of this control. Thus, the company's managers faced the problem of the need to improve control in the supply chain management process, which will allow the best possible coordination of tangible and intangible flows to achieve the strategic goal of Agroprosperis LLC. Note that well-established control is very important to provide management with information necessary for decision-making in the supply chain management process, as well as to optimize and coordinate material flows with other processes occurring in the enterprise. [47, p. 231]. And although the researched enterprise distinguishes three main flows: real (material), nominal (financial) and information, but when it comes to control in the management of supply chains of the network, then, above all, it is worth focusing on the information flow. Its importance for the coordination of material and financial flows both inside and outside the company is constantly growing, as information flows contribute to the formation of the logistics infrastructure of LLC Agroprosperis.

At the present stage of the open Ukrainian economy, economic agents are strongly influenced by external and internal factors. The problem of creating a favorable climate in the entrepreneurial environment in terms of the supply chain management of the enterprise is of particular importance, becomes a decisive factor in determining the prospects for the development of entrepreneurship. That is why controlling activity using blockchain technology should be aimed at ensuring of effective supply chain management of the enterprise. The overall mechanism of controlling-oriented supply chain management is to produce the desired result for the enterprise. [46]

Therefore, in order to overcome a number of negative trends in the process of supply chain management at LLC «Agroprosperis», we propose the introduction of a supply chain management controlling system at the enterprise using blockchain technology, which will enable [48, p.167]:

− coordinate management activities related to the achievement of goals of supply chain management at LLC «Agroprosperis»;

− to provide information and advisory support for decision-making process related to supply chain management at LLC «Agroprosperis»;

– to create and ensure the functioning of the general information system of supply chain management LLC «Agroprosperis»;

– ensure the rationality of the management process;

– ensure effective supply chain management at the enterprise.

The main task of controlling the supply chain management using blockchain technology is the operational control over the cost effectiveness of the processes of storage and transportation of material resources. Controlling should provide management of LLC «Agroprosperis» with the information necessary for rational decision-making in the supply system, as well as coordinate and make best use of material flows with other processes occurring in the organization.

The necessity of controlling the supply chain management using blockchain technology in LLC «Agroprosperis» is explained by the following reasons [42]:

– increasing environmental instability puts additional demands on the supply chain management system;

– shift of emphasis from the control of the past to the analysis of the future;

– increasing the speed of reaction to changes in the environment, increasing the flexibility of the enterprise;

– the need for continuous monitoring of changes occurring in the external and internal environments of the enterprise;

– the need for a thought-out system of actions to ensure the viability of the enterprise and prevent crisis situations;

– the complexity of enterprise management systems requires a mechanism of coordination within the management system;

– the availability of a large amount of information, but the lack of relevant information requires the construction of a special system of information support supply chain management;

– desire for synthesis of activity.

In order to establish the above control system at the enterprise provides for the formation of a special computer network, the exchange of data in which in the process of supply management will be carried out using blockchain technology (Fig. 3.4).

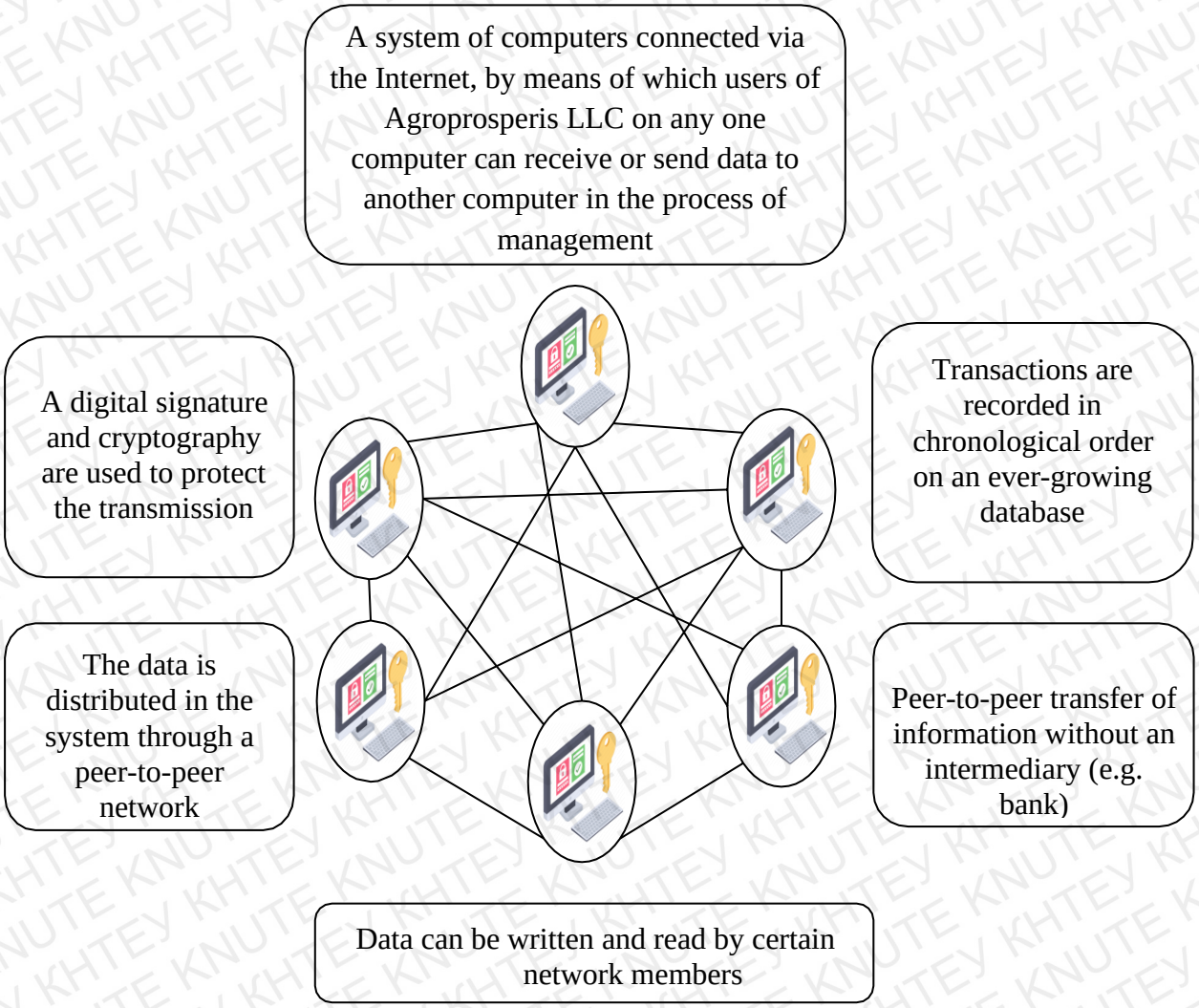

Fig. 3.4. The scheme of organization of the supply chain management network in LLC «Agroprosperis» using blockchain technology

Source: Developed by the author.

The proposed scheme of supply chain management using blockchain technology will allow the management of «Agroprosperis» LLC to promptly obtain accurate (without any distortions) information that will improve the results of management decisions and implementation in the process of communication and interaction between supply chain participants.

Of course, since the researched enterprise has an extensive network of farms, the introduction of new technology and an innovative approach to supply chain management requires some organizational adjustment. Thus, in our opinion, it makes sense to create a special blockchain management department unit in «Agroprosperis» LLC, which would centrally exercise clear control over the organization and

implementation of supplies (Fig. 3.5), which due to the specifics of economic activity at the studied enterprise very much both by the names of the goods supplied and by the variability of their suppliers.

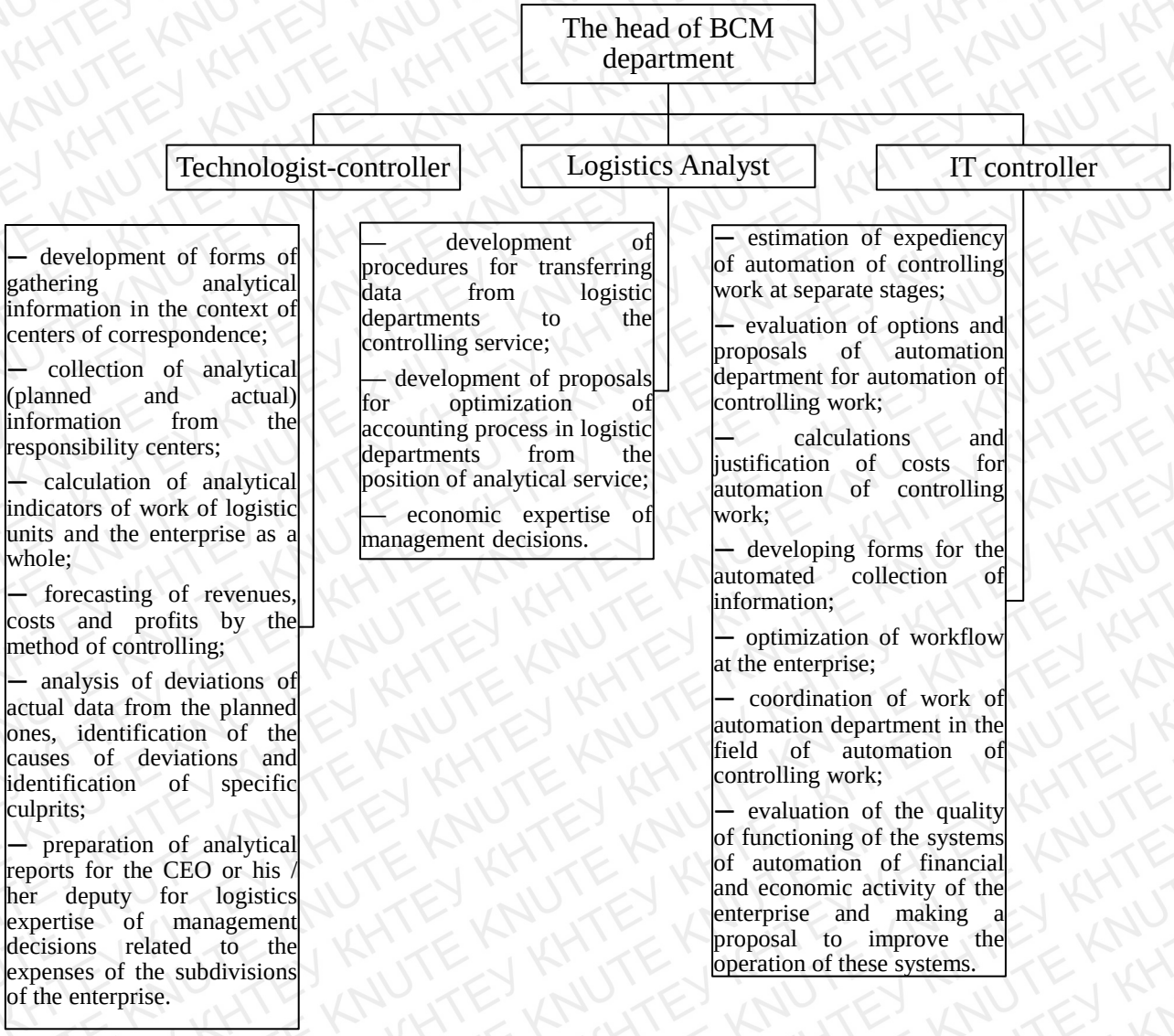

Fig. 3.5 Proposed composition of the Blockchain Management Unit at Logistics department of LLC «Agroprosperis»

Source: Developed by the author.

The work of the new department unit will improve, first of all, the communication links between all participants in the supply chain in «Agroprosperis» LLC (Fig. 3.6). In turn, the introduction of blockchain technology will allow the company to reduce the cost of supply chain management, which has so far been quite high, as well as create conditions for further formation of a stable and secure management system in the enterprise.

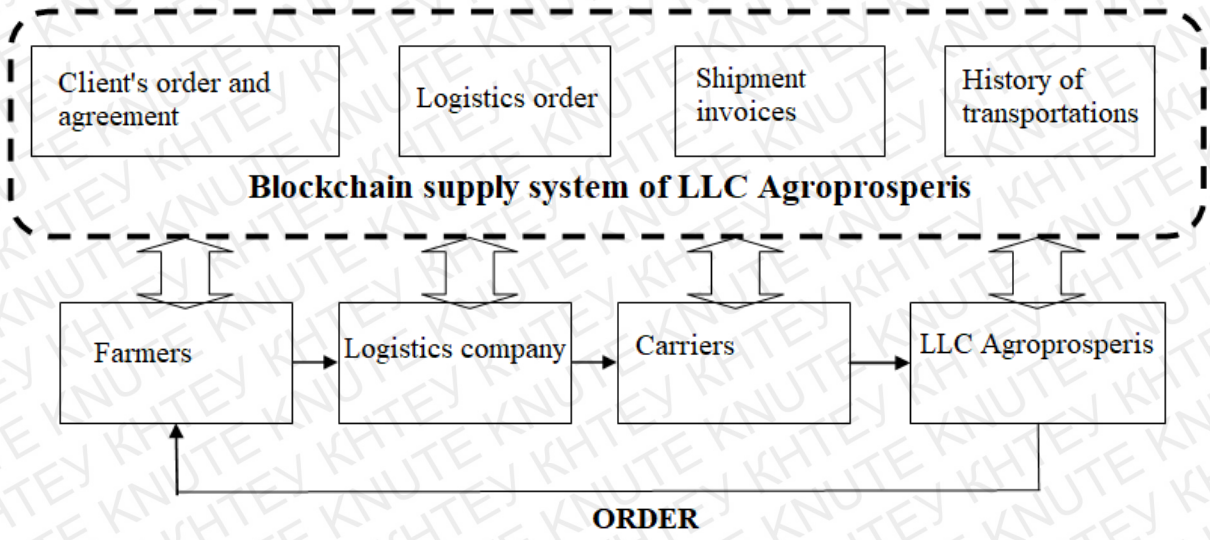

Fig. 3.6 Simulation model of supply chain management organization in «Agroprosperis» LLC using blockchain technology

Source: Developed by the author.

Therefore, the main functions of the Blockchain Management System of LLC «Agroprosperis» should be aimed at:

– making qualifying decisions to overcome possible problems in managing the supply chain of LLC «Agroprosperis»;

– support and assistance to the Head of Blockchain Management Department Unit, together with management, forms the basis of enterprise management and thus is integrated into the overall enterprise management system;

– ensuring the interconnection of supply chain management control with virtually all management functions;

– control of costs of the enterprise, connected with management of supply chains, as the main object of management in the controlling system;

– organization of operating centers of cost, profit, revenue and investment centers;

– constant analysis of the costs of the company related to supply chain management;

– development of measures and preparation of management decisions aimed at improving the supply chain management of LLC «Agroprosperis».

Also, the Blockchain Management Department Unit of LLC «Agroprosperis» will act as an analytical service and provide managers with prompt information on the cost of the enterprise related to supply chain management, periodically prepare detailed analytical reports, forecast supply chain management indicators. [41]

In addition, the Blockchain Management Department Unit conducts an economic examination of management decisions related to cost and profit, defines the methodology for planning the supply chain management of the enterprise.

3.2. Predictive estimation of the results of improving the enterprise business process management

To determine the real practical significance of the results of our scientific developments and proposals, justified specifically for our enterprise – LLC «Agroprosperis» – it is necessary to conduct a cost-benefit assessment of our project to improve business process and supply chain management using blockchain technology.

We believe that in order to implement the new management technology, the researched enterprise will need to purchase some additional equipment. In general, the total costs for the organization of the blockchain management department unit and the introduction of blockchain technology in supply chain management in LLC «Agroprosperis» are summarized in table. 3.1.

Table 3.1

Costs (equipment) for the opening of the Blockchain Management Department Unit of LLC «Agroprosperis»

Object of expenditure	**Cost, UAH**
Costs for the purchase and installation of equipment, communications	35000
The cost of implementing blockchain technology in the supply chain management process (installation, etc.)	30000
BPM-system Creatio from Terrasoft (12 months)	15120
Object of expenditure	**Cost, UAH**
Total costs for technical and technological support for the organization of work supply chain management department (total)	**80120**

End of the Table 3.1

Personnel wage costs (3 people) in the department unit: 1 month = 1*18000 + 2*13000 = 44000 UAH. For the year 44000*12	528000
Single social contribution (22%) «ESV» payroll (: 1 month. = 9680 UAH. For the year 9680*12	116160
Total staff costs and social benefits (total)	**644160**
Total costs for the implementation of the project to improve business process management in LLC «Agroprosperis»	**724280**

Developed by the author

As can be seen from Table 3.1, the investment costs for the opening of the Blockchain Management Department Unit of LLC «Agroprosperis» are UAH 724280.

Let us analyze the economic efficiency from the implementation of the project of implementation of the Blockchain Management Department Unit of LLC «Agroprosperis». Analysis of project development scenarios allows us to evaluate the impact on the project of a possible simultaneous change of several variables due to the likelihood of each scenario. For the sake of simplicity, there are a limited number of scenarios up to two: realistic, pessimistic.

Experience in the use of controlling indicates that the implementation of its mechanism contributes to the growth of basic economic and social performance indicators, optimization of profit (controlling in some aspect is a system of profit management of the enterprise), increase innovation activity.

Of the main positive results of the functioning of the controlling mechanism of supply chain management should be noted the following [30, p. 69].

− increase in sales of products from 0,2 to 0,8 %;

− increase of profit from 1,0 to 1,2 %;

− profitability growth from 0,8 to 1,1 %;

− increase of labor productivity to 2,0 %;

− optimization of receivables and payables;

− increase in payments to the state budget in line with the increase in the volume of activity, etc.

Consider the realistic forecast of growth of net income from the sale of services of LLC «Agroprosperis» – 0,8 %, for the pessimistic forecast – 0,2 % (Table 3.3).

Table 3.2

Calculation of the annual effect of the opening of the Supply Chain Management Department Unit of LLC «Agroprosperis»

Indicator	The effect of the opening of the Blockchain Management Department Unit of LLC «Agroprosperis»	
	Realistic forecast	Pessimistic forecast
% of the absolute value of net sales revenue	0,8	0,2
Total, thousand UAH.	(34273528*0,008) = 274188,22	(34273528*0,002) = 68547,05

Calculated by the author based on the financial statements of LLC «Agroprosperis»

As can be seen from Table 3.2, the general economic effect of the opening of the Blockchain Management Department Unit of LLC «Agroprosperis» is to increase the forecasted net income from sales by 0,8% or UAH 9373,86 thousand in the pessimistic scenario – by 0,2 % or UAH 2343,46 thousand.

We note that for the introduction of new management technology the researched enterprise will need to purchase some additional equipment. The work of the new department will improve, first of all, the communication between all participants in the supply chain in «Agroprosperis» LLC. In turn, the implementation of blockchain technology will allow the company to reduce the cost of supply chain management, which has so far been quite high, as well as create conditions for further formation of a stable and secure management system in the enterprise. [43, p. 335]

The financial results of the project of opening the Blockchain Management Department Unit of LLC «Agroprosperis» under the realistic development scenario are given in Table 3.3.

According to the table 3.3, sales revenue after the opening of the Supply Chain Management Department Unit of LLC «Agroprosperis» will increase by 0.8% annually. In general, net income from sales of LLC «Agroprosperis» after the opening of the Blockchain Management Department Unit of LLC «Agroprosperis» for the first 5 years will increase by UAH 373002,49thousand.

The financial results of the project of opening the Blockchain Department Unit of LLC «Agroprosperis» under the pessimistic development scenario are given in Table 3.4.

Table 3.3

Financial results of the project of opening the Blockchain Management Department Unit of LLC «Agroprosperis» under the Realistic Development Scenario

Index	Years					Total
	2020	2021	2022	2023	2024	
Net income from the sale of services, thousand UAH.	73416,400	74003,7	74595,8	75192,5	75794,1	373002,49
Cost of technical support, thousand UAH.	80,1	0,0	0,0	0,0	0,0	80,12
Gross profit, thousand UAH	73416,400	74003,7	74595,8	75192,5	75794,1	373002,49
Costs of the employees of new department unit thousand UAH	644,2	649,3	650,6	651,9	653,2	3249,22
Profit from the sale of services rendered, thousand UAH	69843,6	70402,4	70965,6	71533,3	72105,6	354850,52
Corporate income tax (18%), thousand UAH.	12571,9	12672,5	12773,8	12876,0	12979,0	63873,23
Net profit, thousand UAH.	57271,750	57729,924	58191,763	58657,297	59126,556	290977,29
Profitability,%	78,01	78,01	78,01	78,01	78,01	

Developed by the author

According to the table 3.4, sales revenue after opening the Agroprosperis Blockchain Management Department Unit will increase by 0,2% annually. In general, the net income from the sale of the enterprise products after the opening of the Blockchain Management Department Unit of LLC «Agroprosperis» for the first 5 years will increase by UAH 344108,94 thousand.

Therefore, based on the analysis of the effectiveness of the proposed project of opening the Blockchain Management Department Unit of LLC «Agroprosperis», we can conclude that this project is profitable in both realistic and pessimistic development scenarios.

Table 3.4

Financial results of the project of opening the Blockchain Management Department Unit of LLC «Agroprosperis» under the Pessimistic Development Scenario

Index	Years					Total
	2020	2021	2022	2023	2024	
Net income from the sale of services, thousand UAH.	68547,05	68684,1	68821,5	68959,2	69097,1	344108,94
Cost of technical support, thousand UAH.	80,1	0,0	0,0	0,0	0,0	80,12
Gross profit, thousand UAH	68547,05	68684,1	68821,5	68959,2	69097,1	344108,94
Costs of the employees of new department unit thousand UAH	644,2	645,4	646,7	648,0	649,3	3233,71
Profit from the sale of services rendered, thousand UAH	63432,1	63559,0	63686,1	63813,5	63941,1	318431,68
Corporate income tax (18%), thousand UAH.	19260,3	19298,8	19337,4	19376,0	19414,8	96687,24
Net profit, thousand UAH.	44171,847	44260,191	44348,711	44437,409	44526,283	221744,44
Profitability,%	64,44	64,44	64,44	64,44	64,44	

Developed by the author

Assessing investment performance is the most responsible step in the investment decision-making process. How objective and detailed this assessment is, depends on the timing of return on investment and the pace of development of the enterprise [29, p. 30].

When calculating the investment efficiency in the opening of the Blockchain Management Department Unit of LLC «Agroprosperis», we will use the following indicators of real investment performance evaluation, such as: Net Return on Income (NPV); profitability index (ARR); payback period (PP); profitability index (PI); Internal Rate of Return (IRR) (Table 3.5-3.6).

Scheme of cash flows from the opening of the Blockchain Department Unit of LLC «Agroprosperis» under the realistic scenario of development is given in Table. 3.5. Factors of influence: attraction of new technologies, expansion of the range of services and products, motivation of work activity in society.

Table. 3.5

Cash Flow Scheme from the Opening of the Supply Chain Management Department Unit of LLC «Agroprosperis» under the Realistic Development Scenario

Indicator	Years					Total
	2020	2021	2022	2023	2024	
Net profit, thousand UAH.	57271,750	57729,924	58191,763	58657,297	59126,556	290977,29
Depreciation, thousand UAH.	16,02	16,02	16,02	16,02	16,02	80,10
Project cash flow, thousand UAH	11248,21	11338,2	11428,9	11520,33	11612,5	57148,14
Total investment expenses, thousand UAH	724,28	–	–	–	–	724,28
Discount rate d = 25%	0,8	0,64	0,51	0,41	0,33	2,69
Discounted cash flows, thousand UAH	8998,56	7295,59	5860,06	4748,68	3852,64	30755,53
Discounted investments thousand UAH	724,28	–	–	–	–	–
Net present value of the project (NPVt), thousand UAH	290253,01	–	–	–	–	–
Profitability Index (PI)	29,4	–	–	–	–	–
Payback period (PBP), years	0,012	–	–	–	–	–
Internal Rate of Return (IRR),%	9,9	–	–	–	–	–

Developed by the author

According to the data in Table 3.5, the profitability index of the project of opening the Blockchain Management Department Unit of LLC «Agroprosperis» is 29,4 under the realistic scenario – the project is effective.

The payback period of the project is 0,012 years.

Internal rate of return is 9,9%.

Scheme of cash flows from the opening of the Blockchain Department Unit of LLC «Agroprosperis» under the pessimistic scenario of development is given in Table

3.6. Impact factors: economic (inflation, in particular, rising dollar), political (increasing uncertainty in doing business).

Table. 3.6

Cash Flow Scheme from the Opening of the Supply Chain Management Department of LLC «Agroprosperis» under the Pessimistic Development Scenario

Indicator	Years					Total
	2020	2021	2022	2023	2024	
Net profit, thousand UAH.	68547,05	68684,14	68821,51	68959,16	69097,07	344108,94
Depreciation, thousand UAH.	16,02	16,02	16,02	16,02	16,02	80,10
Project cash flow, thousand UAH	11248,21	11338,20	11428,90	11520,33	11612,50	57148,14
Total investment expenses, thousand UAH	724,28	–	–	–	–	724,28
Discount rate d = 25%	0,80	0,64	0,51	0,41	0,33	2,69
Discounted cash flows, thousand UAH	8436,16	8453,03	8469,94	8486,88	8503,85	42349,85
Discounted investments thousand UAH	724,28	–	–	–	–	–
Net present value of the project (NPVt), thousand UAH	343384,66	–	–	–	–	–
Profitability Index (PI)	16,1	–	–	–	–	–
Payback period (PBP), years	0,01	–	–	–	–	–
Internal Rate of Return (IRR),%	1,65	–	–	–	–	–

Source: Developed by the author.

According to Table 3.6, the profitability index of the project of opening the Blockchain Management Department Unit of LLC «Agroprosperis» under the pessimistic development scenario is 24,6 – the project is effective.

The payback period of the project is 0,01 years.

Internal rate of return is 1,65%.

Thus, the blockchain technology platform, due to the replacement of the manager and constant monitoring of the status of orders in real time, etc. will provide powerful logistics capabilities in supply chain management at LLC «Agroprosperis». It will not only help reduce the cost of managing supply chains in the strategic perspective, but

also effectively avoid fraud and errors in the delivery process, because one of the most important advantages of this technology is the rapid simultaneous updating of information for all participants in the supply chain. At the same time, this technology will help to measure not only the location of a product, but also the temperature, humidity and state of power supply in the supply chain in real time. In addition, the transparency of the supply chain will benefit end users, who will be able to ensure the safety of products, their freshness, the absence of GMOs and unwanted additives.

The introduction of the Blockchain Management Department Unit and blockchain technology of LLC «Agroprosperis» will help stabilize and strengthen the strategic position of Agroprosperis LLC in the national market, which will lead to the flexibility of the enterprise's response to the influence of external factors.

CONCLUSIONS AND RECOMMENDATIONS

In the final qualifying paper, we have made the theoretical generalization and offered the ways for solving the set task. We have developed the practical recommendations for improving the business process management of LLC «Agroprosperis» in the present conditions of management and market. The achieved results give us grounds to form the following conclusions:

1. The concept of «business process» must be approached systematically. In the general sense, the business process means a structured sequence of actions to perform the appropriate type of activity at all stages of the life cycle of the enterprise. A business process is an aggregate of different activities within which one or more resources are used in an input, and as a result. Based on the results of critical analysis of various definitions of the concept of «blockchain», it is proposed to systematize scientific approaches to defining the essence of this concept, dividing them into object and process. At the same time, based on the principles of blockchain technology, scientific approaches have been developed to determine the benefits of implementing this technology in the management process (including supply chain management) with the identification of these benefits.

2. Many scientists and economists have considered the classification of business processes of an enterprise. There are two main approaches to classification, developed by APQC PCF and the ENAPS program. APQC PCF is a cross-industry classification of business processes (PCF – Process Classification Framework). It was developed by the American Productivity & Quality Center (APQC). The classification contains 13 groups and five levels of business processes with detail. At the top level of classification, business processes are divided into 3 types: management processes, major business processes, service business processes.

3. The main business processes at trade enterprises are: 1. Analysis of the market and consumer needs; 2. Development of assortment policy and assortment management; 3. Procurement Management and Logistics; 4. Warehousing and Storage Management; 5. Production operations management; 6. Managing the process of sales

of goods and customer service; 7. Management of after-sales and warranty service of consumers.

4. Business process modeling is a visual representation of the particular vision of operations in the organization using graphical, tabular, and textual means. The concept of «business process modeling» appeared when software products came into the life of enterprise management. Before-mentioned systems always involve conducting an in-depth pre-project review of the company's operations. The outcome of this review is an expert opinion, which formulates recommendations for eliminating weaknesses of the management of activities. Based on this conclusion, immediately before the automation system implementation, the so-called reorganization of business processes is performed, sometimes quite complex and painful for the company. A long-formed team is always difficult to make «think new». Such comprehensive reviews of enterprises, as a rule, are complex, with significantly different tasks. There are proven methodologies and standards for solving problems of modeling complex systems.

5. According to the provided data, it can be concluded that the costs of LLC «Agroprosperis» related to supply chain management tend to increase every year. In 2017, the costs of LLC «Agroprosperis» related to supply chain management amounted to UAH 1050737800, in 2018 they increased to UAH 1102551300, which is 4,93 % more than in 2017. In 2019, these costs increased by 11,52% and were UAH 1171817600. It means that the efficiency of supply chain management at LLC «Agroprosperis» is at a rather high level. Among the general shortcomings in the logistics management system of LLC «Agroprosperis» there are the following: insufficient activity of the company in the field of market segmentation and product positioning; low efficiency of use of information technologies; lack of an established system of interpersonal communications. Among the general advantages in the supply chain management system of LLC «Agroprosperis» there are the following: existence of the unified methodological approach to the concept of supply chain management of the company; orientation of the company management on the latest concepts; an effective supply chain management service at the enterprise and purposeful activity in

the field of supply chain management; the existence of clear strategic goals and plans for the company and line units.

6. Supply chain management of LLC «Agroprosperis» – is a complex of logistic network and administration system which is formed on the enterprise for the implementation of its logistic and supply strategy. It is based on the logistic operations through the own distribution centers of LLC «Agroprosperis». That is why the enterprise was able to establish timely provision of goods to the clients all over the world. Except that, LLC "Agroprosperis" has its own quality control system which ensures complying with high standards of storage, transportation and sale of goods.

7. Given the complexity of supply chain management at LLC «Agroprosperis», it is necessary to implement new technology – blockchain and set up a special structural unit, the Blockchain Management Department Unit, for effective activity and a clear definition of responsibility at LLC «Agroprosperis». At the studied enterprise, the most appropriate is seen in the implementation of controlling the supply chain management headquarters management organization, that is, direct reporting to the management of the enterprise. Controlling within the problems established as a result of the analysis of supply chain management of LLC «Agroprosperis» will solve the following tasks:

− plan costs for processes associated with managing the enterprise supply chain;

− determine the scheme of involvement of financial resources in the processes of supply chain management with minimal losses for the enterprise.

The Blockchain Management Department Unit conducts an economic examination of management decisions related to cost and profit, defines the methodology for planning the supply chain management of the enterprise, operates and supports blockchain in the enterprise.

Blockchain department will help enterprise effectively avoid fraud and errors in the delivery process, because one of the most important advantages of this technology is the rapid simultaneous updating of information for all participants in the supply chain. At the same time, this technology will help to measure not only the location of

a product, but also the temperature, humidity and state of power supply in the supply chain in real time. In addition, the transparency of the supply chain will benefit end users, who will be able to ensure the safety of products, their freshness, the absence of GMOs and unwanted additives.

8. The profitability index of the project of opening the Blockchain Management Department Unit of LLC «Agroprosperis» is 29,4 under the realistic scenario – the project is effective. The payback period of the project is 0,01 years. Internal rate of return is 9,9 %. the profitability index of the project of opening the Supply Chain Management Department Unit of LLC «Agroprosperis» under the pessimistic development scenario is 16,1 – the project is effective. The payback period of the project is 0,01 years. Internal rate of return is 1,65%.

Ukraine is a fast-growing agricultural producer and exporter; its eyes will be kept on global trends to spot opportunities and minimize risks. Expected slow-down in demand growth and a slightly declining trend in prices would increase competition among key agricultural exporters. To maintain and improve positions on global agricultural markets, LLC «Agroprosperis» would be required to increase investment in order to decrease production costs, improve products quality, enter higher value-added and niche segments and improve marketing of their products.

These would include:

- Increasing crop yields by catching up on use of fertilizers, irrigation and machinery;
- Decreasing costs by applying precision agriculture technics;
- Investing in additional storage capacity;
- Increasing depth of processing, shifting from export of agricultural commodities to export of food products;
- Entering high-margin niches including fresh and organic products;
- Passing required certification procedures to enter new markets;
- Improving marketing of Ukrainian products to strengthen brand recognition and customer loyalty in key markets;
- Developing and promoting of SME farming.

Thus, the opening of the Blockchain Management Unit at Logistics department of LLC «Agroprosperis» will give the opportunity to: coordinate logistical activities to achieve the goals of LLC «Agroprosperis»; to provide information and advisory support for management decisions on supply chain management; to effectively plan the activity of the enterprise. The introduction of the Blockchain Management Unit at Logistics department of LLC «Agroprosperis» will help stabilize and strengthen the strategic position of LLC «Agroprosperis» in the national market, which will lead to the flexibility of the enterprise's response to the influence of external factors.

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APPENDICES

Appendix A