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MASTER THESIS

(EXPLANATORY NOTES)

OF GRADUATE OF ACADEMIC DEGREE

«MASTER»

THEME: **«Adaptation of a logistics company's business model in the context of digitalization»**

Speciality 073 «Management»

Educational and Professional Program «Logistics»

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I certify that in this master thesis there are no borrowings from the works of other authors without appropriate references *Yurchenko K.M.*
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Kyiv 2023

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
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Засвідчую, що у цій кваліфікаційній роботі немає запозичень з праць інших авторів без відповідних посилань *Юрченко К.М.*
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Faculty of Transport, Management and Logistics
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Educational and Professional Program « Logistics »

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TASK

FOR COMPLETION THE MASTER THESIS OF GRADUATE

Yurchenko Kateryna
(surname and name)

1. Theme of the master thesis: «Adaptation of a logistics company's business model in the context of digitalization» was approved by the Rector Directive №1952/ст. of September 27, 2023.
2. Term performance of thesis: from October 02, 2023 to December 31, 2023.
3. Date of submission work to graduation department: December 11, 2023.
4. Initial data required for writing the thesis: general and statistical information of the company "FTP", economic and financial indicators of the company's activity, literary sources on digitalization and adaptive management
5. Content of the explanatory notes: introduction; theoretical basis of adaptive management; digital transformation of business; analysis of the international experience of the impact of digitalization on the development of business models at a logistics company; general characteristics of the logistics company "FTP"; analysis of the activities of the logistics company "FTP" in the conditions of the existing business model; analysis of modern challenges that set requirements for adapting the existing business model of a logistics company in conditions of digitalization; conceptual model of business model adaptation logistics company in the conditions of digitalization; development of a system for assessing the effectiveness of adaptive management of business processes of a logistics company; calculation of the economic efficiency of the project; conclusions and appendix.
6. List of obligatory graphic matters: tables, charts, graphs, diagrams illustrating the current state of problems and methods of their solution.

7. Calendar schedule:

№	Assignment	Deadline for completion	Mark on completion
1	2	3	4
1.	Study and analysis of scientific articles, literary sources, normative legal documents, preparation of the first version of the introduction and the theoretical chapter	02.10.23-18.10.23	Done
2.	Collection of statistical data, timing, detection of weaknesses, preparation of the first version of the analytical chapter	19.10.23-09.11.23	Done
3.	Development of project proposals and their organizational and economic substantiation, preparation of the first version of the project chapter and conclusions. Editing the first versions of maser thesis	10.11.23-30.11.23	Done
4.	Preparing the final version of the master thesis, checking by standards inspector	01.12.23-08.12.23	Done
5.	Approval for a work with supervisor, getting of the report of the supervisor, getting internal and external reviews, transcript of academic record	05.12.23-09.12.223	Done
6.	Submission work to Logistics Department	11.12.23	Done

Graduate_____
(signature)

Supervisor of the master thesis _____
(signature)

8. Consultants of difference chapters of work:

Chapter	Consultant (position, surname and name)	Date, signature	
		The task was given	The task was accepted
Chapter 1	Associate Professor, Pozniak O.V.	02.10.23	02.10.23
Chapter 2	Associate Professor, Pozniak O.V.	19.10.23	19.10.23
Chapter 3	Associate Professor, Pozniak O.V.	10.11.23	10.11.23

9. Given date of the task October 02, 2023.

Supervisor of the master thesis: _____ Pozniak O.V.
(signature of supervisor) (surname and name)

Task accepted for completion: _____ Yurchenko K.M.
(signature of graduate) (surname and name)

ABSTRACT

The explanatory notes to the master thesis «Adaptation of a logistics company's business model in the context of digitalization» comprises of 108 pages, 31 figures, 16 tables, 11 appendices, 79 references.

KEY WORDS: DIGITALIZATION, BUSINESS MODEL, ADAPTIVE MANAGEMENT, TREND RADAR, DIGITAL TOOLS, CONCEPTUAL MODEL OF ADAPTATION OF A LOGISTICS COMPANY

The purpose of the thesis is the further development of theoretical and practical approaches to the adaptive management of the business model in the conditions of digitalization to optimize the strategic and operational activities of the logistics company.

The subject of the study is a set of theoretical aspects and methodological approaches related to the adaptation of the business model of a logistics company in conditions of digitalization.

The object of the study is the activity of the logistics company "FTP" in the context of its business model and adaptation to digitalization.

Methods of research are analysis, synthesis, induction, deduction, modeling, generalization.

Materials of the thesis are recommended for use during scientific research, in the educational process and in the practical work of specialists of logistics departments.

CONTENTS

NOTATION

B2B – Business to Business

B2C – Business to Customer

C2B – Customer to Business

C2C – Customer to Customer

P2P – People to People

APIs – Application Programming Interfaces

O2O – Online to Offline or Offline to Online

ROPO – Research Online Purchase Offline or Research Offline Purchase Online

GDP – Gross domestic product

LTL – Less than Truckload

GCI – Global Connectivity Index

ICT – Information and communications technology

IoT – Internet of Things

DI – Digitalization Index

IID – Infrastructure Development subindex

IOE – Online Expenses subindex

IUA – User Activity subindex

FEA – Foreign Economic Activity

CRM – Customer Relationship Management

ROA – Return on Assets

ROE – Return on Equity

KPI – Key Performance Indicator

INTRODUCTION

At the present stage of economic development, taking into account socio-economic and geopolitical changes, one of the main problems of logistics companies is their successful adaptation to the requirements of digitalization of the economy, since digitalization is the most modern trend in the global environment. Digitalization requires logistics companies to adapt to the influence of this factor, but this influence is positive since it helps to optimize the business processes, strategic and operational activities of the logistics company. In contrast to digitalization, for logistics companies operating in the Ukrainian market or cooperating with Ukrainian logistics companies, the most negative factor determining adaptation is martial law. Therefore, when considering the concept of adapting the business model of a logistics company in the context of digitalization, it should not only define the creation of a reflexive-active environment for interaction and coordination of business processes to effectively implement development strategies for a logistics company in the context of digitalization but also take into account the negative impact of the martial law, which determines the relevance of the master thesis.

Such Ukrainian scientists as: V.V. Apalkova, B.V., Burkynskyi, O.S. Vyshnevskyi, V.M. Geets, A.A. Hrytsenko, S.I. Knyazev, N.M. Kraus, O.I. Laiko, I.H. Mantsurov, M.I. Melnyk, V.I. Mishchenko, V.M. Tarasevich, T.V. Umanets, L.I. Fedulova, S.V. Filippova, N.L. Shlafman, I.H. Yanenko and others. The development of digital technologies and their impact on business processes is considered in his writings by V.G. Budanov, O.Yu. Guseva, A.V. Keshelava, N.M. Kraus, A.O. Natorina Some aspects of the adaptation of the organizational and management system of the enterprise to the changing conditions of the external environment are studied in the works of Patel Ch., Silva M.A., Serra F.R., Reis N.R., Y., Kiss A., Barr. P.S., Wernerfelt B., Bilovol R.I., O.I. Zaitseva, G.V. Zhosan, V.O. Betynoi, K.V. Kryvobok, L.L. Kalinichenko, L.V. Sokolova, A.P. Nalyvaika. The

study of the scientists' data confirms the relevance of the chosen topic for the master's thesis.

Adaptive management is defined as a system with incomplete a priori information in a controlled process that changes as information accumulates and is adopted to improve the quality of the system. This definition is related to the fact that knowledge about the object (in our case, the business model) and the environment in which it functions are uncertain, given the conditions of digitalization.

Therefore, the main task of adaptive management of the business model of a logistics company is to find such a sequence of management actions that would ensure the achievement of the business model's goal in the short and long term, taking into account digital trends in the global logistics environment.

With this in mind, the study of the opportunities provided by the digital technologies used by the company and which directly affect the efficiency of the logistics systems, their functionality and the company's capabilities leads to the identification of the problems they can solve, the benefits of their implementation and the effect they can have logistics company.

So, the implementation of digitalization tools in a logistics company provides it with a wide range of opportunities, such as:

– implementation of new logistics solutions;

– introduction of new technologies;

– production optimization;

– improvement of existing indicators;

– implementation of new aspects of activity.

Digitization of logistics processes, in turn, can solve such problems as:

– reduction of operational costs;

- improve the quality of services provided;

– cost reduction in the supply chain management cycle;

– optimization of logistics processes;

- effective use of human resources.

Thus, combining the problems of forming the optimal business model with the problems of adapting the business model and the problems of digitalization of the activities of the logistics company, the context of scientific research on the management of the business model of the logistics company is expanded.

The purpose of the thesis is the further development of theoretical and practical approaches to the adaptive management of the business model in the conditions of digitalization to optimize the strategic and operational activities of the logistics company.

In order to achieve the purpose of the thesis, the following tasks were performed:

– characterize the theoretical basis of adaptive management of a logistics company under conditions of digitalization;

– research the impact of digitalization on the business model of a logistics company;

– analyze the international experience of logistics companies in introducing digitalization into their structure;

– conduct a detailed analysis of the FTP logistics company (includes financial, economic analysis, analysis of the competitive environment, clients);

– analyze modern challenges that set requirements for business model adaptation and the current level of development of adaptive management in the market;

– develop the conceptual model of adaptation of the logistics system in the context of digitalization;

– evaluate the capabilities of a system for assessing the effectiveness of adaptive management of a logistics company in the context of digitalization;

– analyze the effectiveness of adaptive management of FTP in the context of digitalization.

The subject of the study is a set of theoretical aspects and methodological approaches related to the adaptation of the business model of a logistics company in conditions of digitalization.

The object of the study is the activity of the logistics company "FTP" in the context of its business model and adaptation to digitalization.

The scientific novelty of the obtained results of the diploma research consists in the deepening and development of theoretical provisions regarding the adaptation of the business model of the logistics company in the conditions of digitalization.

In the process of research, the author obtained the following scientific results:

improved:

- conceptual model of adaptation of the logistics system in conditions of digitalization, which combines the tools of adaptive management of the business model, taking into account the impact of digitalization and sustainable development of the logistics company. In addition, the developed model provides for the development of an assessment of the effectiveness of adaptive management in the conditions of digitalization;
- the evaluation system of adaptation of the logistics system in conditions of digitalization consists of seven subsystems, each of which evaluates the impact of the adaptation reaction on certain areas of the company's activity, and the complex integral indicator summarizes the impact of all factors and determines the degree of adaptability of the logistics company's business model.

The topic of the thesis was a continuation of the author's scientific work on the topic "Formation of the optimal business model of a logistics company", which she began to research in the 4th year of the bachelor's degree, which became the basis for the graduation thesis. In the master's thesis, the topic was expanded by other directions for research, namely the problems of business model adaptation and the impact of digitalization on the business model of a logistics company.

CHAPTER 1
THEORETICAL BASICS OF ADAPTIVE MANAGEMENT OF A LOGISTICS COMPANY UNDER THE CONDITIONS OF DIGITALIZATION

1.1 Conceptual and categorical apparatus of the theory of adaptive management in the conditions of digitalization of the economy

At the current stage of economic development, taking into account socio-economic and geopolitical changes, one of the main problems of modern business entities is their successful adaptation to the requirements of digitalization of the economy. In this case, it is considered not only about the need for the formation of digital capital at enterprises, but, first of all, about the ability to identify and use new opportunities for the workforce, on the one hand, and means of production, on the other hand, offered by digital and information and communication technologies.

In the future, this will contribute to the creation of a reflexive and active environment of interaction and coordination of business processes with the aim of effective implementation of strategies for the development of business structures in the conditions of digitalization of the economy of Ukraine.

Today, the leading role of productive forces is determined by the technological factor, which can be defined as one of the possible deterministic principles along with geographical, civilizational, etc. The changing world is turning into “a world of subtle technologies that are beginning to rule the world of machines”.

Such a change brings to life a significant number of transformations in such areas as:

– dominant technological solutions;

– new organizational practice of entrepreneurship;

– management of economic activity;

– social institutions;

– the behavior of people [50, 72].

Therefore, the corresponding organizational practice of business is formed: the relative cost structure changes under the influence of the new technology of a certain factor of production, which becomes relatively cheap and will not be exhausted in the foreseeable future; able to increase profits by reducing the cost of capital and labor. All this leads to the transformation of not only industrial relations and elements of social production, but also the dependence of the reflexive-active environment of interaction and coordination of business processes on their management competence potential.

The above explains the essence of the main hypothesis of this study, which consists in the fact that there is an interdependence between the competence potential of business process management and the reflexive and active environment of their interaction and coordination, which determines the effectiveness of the implementation of strategies for the development of business structures in the conditions of digitalization of the economy of Ukraine.

Therefore, adaptive management of business processes in the conditions of the impact of digitalization on economic processes contains a complex of qualitatively new methods of activity management, aimed at eliminating the internal limitations of business processes of entrepreneurial structures as a socio-economic system and expanding the capabilities of such a system to realize its purpose in the conditions of digitalization of the economy.

The concept of “adaptation” from the point of view of such approaches as:

– systemic: this is the property of the elements of the control system to quickly adapt to emerging external stimuli;

– process: this is a continuous process of matching individual components of the management system with the requirements of the external environment relative

to the business entity in order to increase the efficiency of activities based on adaptive measures, or it is the process of adapting the enterprise to the uncertain conditions of the external environment;

– reflexive: this is the ability to quickly make changes and quickly respond to consumer requests.

Depending on the classification feature, different types of adaptation are distinguished, the essence of each of which is given Appendix A.

Based on Appendix A, it is possible to note the main types of adaptation to digitalization:

– Parametric – denotes the adaptation of the system to changes due to the correction of parameters.

– Algorithmic – means the transition from one system control algorithm to another.

– Structural – the internal structure of the management system itself changes.

– Resource-based – aimed at more efficient use of system resources.

– Adaptation to changes in the market situation – aimed at changing the assortment policy of the business entity, finding new sales channels, developing and implementing a marketing strategy, conducting an effective pricing policy.

– Adaptation to innovations – ensures compliance of the technical level of the subject of entrepreneurial activity with the achievements of science and technology and forms the basis of the company's innovative development strategy.

– Adaptation to social and cultural conditions – involves providing assistance in the development of abilities, skills, and qualifications of employees in accordance with the need to ensure the competitiveness of the subject of entrepreneurial activity on the market.

– Adaptation to political and legal conditions – involves the creation of information systems necessary for monitoring all possible changes in the specified field of activity, the use of qualified lawyers, insurance against the risks of changes in the political and legal environment [72].

Since the changes in the functioning of business entities to the requirements of digitalization of the economy are of a large-scale, systemic nature, it is advisable to consider the study of the adaptation of its management at the level of the business process, taking into account the vertical level of territorial subordination, and to improve the theory of adaptive management of business processes by such categories as:

– a business process at the micro level in the era of digitalization of the economy of Ukraine is any reproductive activity within the scope of a business entity, as a result of which the requirements of its activity and the business environment are harmonized in accordance with the capabilities of digital and information and communication technologies;

– the business process at the meso-level in the era of digitization of the economy of Ukraine is a system of consistent and regulated types of economic activity, where, thanks to the competence potential and with the help of the resources of the administrative-territorial system and with the participation of its various business entities, a reflexive and active environment is created in the era of digital transformation;

– competence potential in the conditions of digitization of the economy of Ukraine are new opportunities for the workforce, on the one hand, and means of production, on the other, that meet the requirements of digital and information and communication technologies;

– adaptive management of the business process in the conditions of the impact of digitalization on economic processes is a reflexive and creative mechanism for managing the process of changing the competencies of embodied and living labor, which contributes to the creation of a reflexive and active environment of interaction and coordination of business processes in order to effectively implement strategies for the development of business structures in the conditions of digitalization economy of Ukraine;

– a reflexive and active environment of interaction and coordination of business processes in the era of digital transformation is an environment where, thanks to the competence potential and with the help of the resources of the administrative-territorial system and with the participation of its various business structures, a relationship is established between dominants, imperatives of adaptive business management processes and their effectiveness at the micro and meso-levels [37].

The main principles of adaptive management of business processes in the conditions of digitalization of the economy of Ukraine is the principle of reflection. This principle of the organization of any activity assumes the exit of its subject to a reflexive position in order to increase the degree of objectivity of the reflexive info logical model.

Methodological understanding of the historical development of economic science made it possible to identify the following main methodological platforms, which form the basis for the adaptive behavior of subjects of the consumer market:

– institutional theory;
– theory of organizational behavior;
– dynamic capabilities theory;
– theories of behavioral economics and marketing management.

On this basis, a theoretical and methodological basis for the adaptive behavior of subjects of the consumer market was compiled based on an interdisciplinary approach and a combination of these methodological platforms, based on the methodological principles of economic behavior: motivation, singularity, adaptive task, adaptive rationality, principles of adaptability (self-organization; multifunctionality; cyclicality; emergence; social legitimacy; determination; synchronization; adaptation; creation of new experience), components of the adaptation mechanism and the model of adaptation syndrome. Such basis is represented in Appendix B [56].

In addition, it is necessary to consider the weaknesses of adaptive management, namely, what problems may arise in the company during adaptation. Problematic issues of adaptive management of business processes in the conditions of digitalization of the economy based on the system-activity approach may include:

1. Determination of the signs and features of the transformation of industrial relations.

2. Development of scientific approaches to the identification of the "adaptability" category.

3. Justification of the theoretical and conceptual foundations of adaptive management of business processes.

4. Development of methodological principles for assessing the dependence of the reflexive-active environment of interaction and coordination of business processes on their competent management potential.

5. Determination of the patterns of relationship between dominants, imperatives of adaptive management of business processes and their effectiveness at the micro- and meso-levels.

6. Justification of the theoretical and methodological support for the formation of the organizational and economic mechanism of adaptive management of business processes on the basis of modern management concepts.

7. Development of methodical approach to the definition of strategies for the development of the competence potential of business process management.

8. Improvement of the institutional support for the formation of the management model of the digital platform for preparing and making strategic decisions in the conditions of a reflexive and active environment [3].

The principle of adaptation, which consists in changing the internal environment in accordance with changes in the external environment, provides for the possibility of both quantitative and qualitative changes. If the complex of these changes affects the organizational structure of the enterprise, a structural adaptation transformation takes place. Adaptation transformation, similar to any other process that takes place in the economic system, requires the expenditure of certain

resources. Any transformation takes time. If the company has a more flexible and adaptive structure, the less time it takes to adapt. Naturally, any enterprise will strive to carry out an adaptive transformation as quickly as possible and as cheaply as possible, if this transformation is paid for from the company's own funds or from borrowed funds.

A possible option is when adaptive structures are created at individual enterprises on the basis of innovative projects financed from budgets of different levels. Therefore, there is a task of finding ways to optimize time and financial resources for the creation and functioning of an adaptive structure that allows for a quick response to changes in exogenous factors. Timely adaptation of the management system of an industrial enterprise determines the possibility of maintaining the dynamic balance between the internal potential and the external environment. The key tasks of achieving such a balance in the conditions of digital transformation are ensuring the mobility of the management system and the speed of response to changes in the market situation. The essence of approaches to the adaptive development of the management system from the standpoint of existing approaches to management is represented in Appendix C [55].

In general, it is worth noting that the process of adapting a business is painstaking and requires a lot of resources and time. In the classical sense, several aspects of managerial adaptation can be noted, each of them contributes to the operation of a certain structure and system of the company. Digitalization directly affects the entire management system, allowing you to open up new opportunities and improve existing processes. The management system of an industrial enterprise in the conditions of the volatility of the digital environment determines the order of interaction of many elements of the system, which allows making management decisions and coordinating the interaction of all elements to achieve the strategic goal of the enterprise, which functions in a digital volatile environment. This system should be considered as a complex of methodical, technical, software, and informational tools that ensure the effective functioning of subsystems of the control system. The management system includes a number of subsystems that provide:

coordination support, information, resource support, deadline management, regulatory support.

1.2 Digital transformation of business: changing strategies and development models

In the classical sense, the term “digital economy” means activity in which the main means (factors) of production are digital (electronic, virtual) data - both numerical and textual. The digital economy is based on information and communication and digital technologies, the rapid development and spread of which already today affect the traditional (physical-analog) economy, transforming it from one that consumes resources to one that creates resources [42].

The main components of the digital economy are considered to be:

– widespread use of digital technologies and digital infrastructures (hardware, software, telecommunications, networks, etc.);

– electronic business (conducted through computer networks), i.e., production of electronic goods and services;

– electronic commerce (transfer of goods online).

Such components are depicted in Figure 1.1.

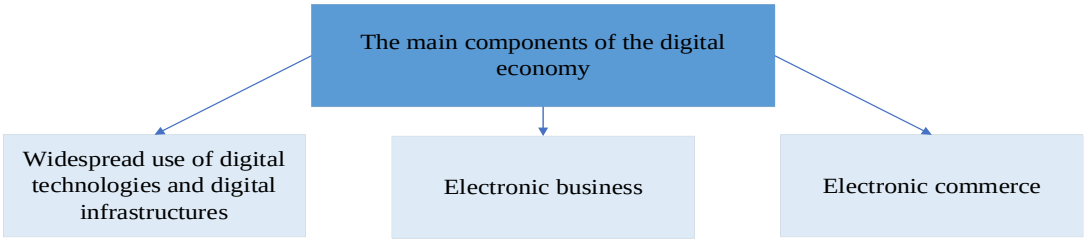

Figure 1.1– The main components of the digital economy [42]

The digital economy can also be characterized in a narrow and a broader sense.

In a narrow sense, it is:

– information economy: the production of software products, the main resource and factor of which is information;

– Internet economy: information technologies provide certain types of activities (trade, banking, etc.) via the Internet;

– “cloud economy”: computer equipment provides ubiquitous, networked access to the total amount of information resources that are based and accumulated remotely. Cloud solutions allow unlimited and lightning-fast scaling, as well as remote work;

– virtual economy: the main space of functioning of the digital economy makes it so; smart economy: the latest computer programs provide the possibility of intellectual reality (“smart home”, “smart city”, electronic government, direct democracy, etc.).

In a broader sense, the digital economy is an activity carried out in any real field (industry, construction, agriculture, education, medicine, etc.) using new technological products. The concept of “information-network economy” is the most adequate for economic theory, where attention is focused on the nature of the resource and the mechanism of organizational-economic relations. The latter are carried out thanks to decentralized protocols and a social network. The technological basis of the network is platforms – a digital environment in which a special software and hardware complex with a set of certain services and functions provides opportunities for direct communication between consumers and producers. Personal communication and economic connections are made through a network that already has not only centralized ordering, but also decentralized ways of interacting. The most characteristic feature of network interconnection is digital platforms as a fundamental element of the information economy [60].

Currently, the development of the digital economy is taking place all over the world and in all areas of society thanks to the innovative growth and transformation of processes as a result of the emergence of new technologies. However, the digital economy is developing unevenly in different countries and regions, creating both new opportunities and barriers that must be overcome to successfully conduct business on digital platforms.

Data is transformed in the modern environment into a new factor of production, which allows creating value for the consumer and building business activity on a different technological level. In this regard, the digital economy and the problems of its construction in the system of entrepreneurial activity are becoming one of the most important topics studied by various foreign and domestic scientists [42].

The technological advancements of the fourth industrial revolution have had a significant impact on the business environment and its participants, which have completely shifted to the use of digital technologies, combining industrial and digital technologies. Digitalization affected:

– ways of organizing and conducting business, its marketing strategies;

– providing business with resources;

– production and transaction costs (organizational, management, communication, costs of obtaining, processing and storing information), which in the digital sphere are sharply reduced or disappear altogether;

– network effects and economies of scale that become global.

It is worth noting that the main signs and properties of digital transformation of business processes of companies are:

– changes in the company's management philosophy in accordance with objective technological changes in the economy;

– complex multidimensional and multistage process that changes the socio-economic paradigm;

– changes in the structure of the economy due to the transfer of the center of creation of added value to the sphere of digital resources;

– wide implementation of technological innovations using flexible adaptation mechanisms;

– ensuring compliance of the company's work processes with technologies;

– fundamental changes in the operational activities of companies;

– availability of company`s strategy, deep analytics, smart systems and cloud architecture.

New business models are emerging in the digital economy thanks to the creation and development of innovative technologies. Quite often, extensive use of the Internet becomes a key element of new business models. Many new business models seek to provide access to the end consumer or user.

Schematically, the transformation of the company's business process is represented in Appendix D [78].

In the process of studying the influence of the digital economy on the development of entrepreneurship, it is necessary to determine the main changes that have taken place in the business environment under the influence of “digitalization”. Changes are happening in the customer relations strategy. The use of digital technologies, including artificial intelligence, and increased competition give rise to such trends as deepening the relationship with the buyer, communicating with him in the digital environment and responding to changes in his requests. The client's problems, their solution, become a source of profit. In the digital economy, work with the client is individualized, engagement and co-experience are practiced.

The value of the customer experience is increasing, which is also becoming a source of profit and at the same time an acquired benefit in the business-to-business (B2B) segment. Based on the individualization of demand satisfaction and the deepening of relations with the buyer, the probability of price discrimination increases, which, on the one hand, is also an additional source of profit, and on the other, an additional opportunity for the buyer. Digital technologies, saving

transaction costs, and sometimes reducing them to zero, generating new potential, and at the same time new demands and market requirements, accelerate business and production. As a result, the service life of not only the product, but also the company is shortened.

Competition is moving from the realm of cost reduction to the realm of creativity. Opportunities expand and project funding is accelerated, for example, by collecting tokens for a creative and well-thought-out project with transparent efficiency and profitability through the blockchain system. Disruptiveness has a multidirectional impact on entrepreneurship. Many industries are embracing technologies that are creating entirely new ways to meet consumer needs and disrupting old value chains. Real-time and unique customer insights enable high-efficiency use of assets to drive technological progress.

There are also new conditions in working with clients. Breakthroughs in science and economics are driven by the widespread use of artificial intelligence, from software to discover new drugs to algorithms that determine our cultural interests and predict our behavior. Many such schemes are built on the basis of information traces that customers leave in the digital field, for example, when they are on social networks, browsing company websites or other information. In particular, such programs as, for example, Siri (from Apple) to a powerful subsystem of artificial intelligence (AI Field) are currently used. By processing individual information about site users, they play the role of intellectual consultants, forming the “surrounding mind”. It is an intelligent digital interactive environment that surrounds the user with automated personal advisors. Electronic devices learn and anticipate needs, help make choices and implement them, forming a person's personal ecosystem [42].

The transition to a digital economy is changing in terms of competition. For example, competitors can become partners by connecting with each other with the help of digital platforms and sharing. At the same time, the opposite phenomenon appears – the violation of competition. It is the sudden appearance of a competitive advantage by an entrant, for example through a start-up or access to global digital

platforms for research, development, marketing, rapid sales and distribution. Such companies are ahead of reputable old-timers in terms of speed, cost and quality of delivery of goods or services. Another source of digital disruption is the ability to cross industry boundaries. This allows the use of customer bases, infrastructure and technologies at a cross-industry level. Thus, one can imagine how the efficiency of the company's work increases, how costs are sharply reduced.

In the digital economy, new sources of income are products that improve data exchange. Businesses can have a big impact on product quality, value and service by applying digital enhancements to their products. By receiving complete information on working hours and wear and tear, the company can monitor continuous quality improvement without replacing goods. Technological innovations are transforming the perception and management of companies' assets. For example, remote software updates and connectivity add value to an existing vehicle instead of depreciating it [78].

A new form of business cooperation in the digital economy is joint innovation. Its appearance is connected with the rapid emergence of innovations and their destructive impact. For example, a company lacks capital, business know-how, and a customer base in a certain industry. A sophisticated company has all these, but lacks the digital skills to work with customers and respond to changes in their requests. Then the enterprises combine their resources, jointly implementing innovative projects. The integration of capabilities contributes to the creation of new value. New forms of entrepreneurship based on shared use, shared storage, etc., originate from such cooperation. For example, associations for sharing urban vehicles. Enterprises of different industries are united for joint customer service (integrated service). Such associations, thanks to multilateral cooperation, integrate the world of the office and the world of Internet business. In order to profit from the use of digital technologies, companies have to radically change their operating models and be highly mobile. A new operating model for collaborative sharing is the platform method, which began to be applied during the third industrial revolution. It is based on the network effect of the digital transition [40].

In the digital economy, a new organizational structure of entrepreneurship is developing – a system of block chains (blockchain). Its strength is decentralization, thanks to which payments move in the global space instantly and transparently. Therefore, there is no need to open many offices and create legal entities with all their inherent administrative costs. Blockchain allows any company to build a cheap business structure with a small number of internal specialists. The rest may be tens of thousands scattered around the world. The principle of global decentralization accelerates the blurring of borders between countries, and with the spread of blockchain, the emergence of a large number of multinational companies is predicted. This is a new organizational structure of business, characteristic of the digital economy [60].

In addition to replacing the functions of banks and traditional financial organizations, freeing projects from being tied to the refinancing rate, blockchain will be able to replace courts and lawyers in the future, implementing labor legislation instead of contracts. Consequently, the business environment will improve as companies move to digital business technologies and link them to production. Their use and distribution facilitate work, primarily by reducing transaction costs. This means that additional sources of income and competitive advantages are created in the business environment [78].

New business models are emerging in the digital economy thanks to the creation and development of innovative technologies. Quite often, extensive use of the Internet becomes a key element of new business models. Many new business models seek to provide access to the end consumer or user.

Based on the analysis of the works, the following business models can be identified, which can be used by both new and existing business structures in the digital economy:

– e-commerce – sale of manufactured products using digital e-commerce platforms Amazon, Alibaba, eBay, etc.;

– crowdsourcing – the model involves the creation of a digital platform that provides a solution to any problem by an indefinite number of people (advantages for users include cost savings, the involvement of various experts in the consideration of the problem, and the expansion of partnership relations. Examples of such projects are the crowd space and ResearchGate platforms);

– free of charge services – the model is based on offering the company's services for free and charging for additional services (for example, placing an ad on the website for free and charging a fee for its promotion);

– partnership – creation of a digital platform for the promotion of partners' products (for example, the business model of the German company Idealo provides an overview and price comparison of goods from different manufacturers, financed by advertisers. Companies that advertise their products on Idealo track the actions of users and their reaction to certain content);

– additional offers – cloud storage with the possibility of space expansion;

– personalized mass goods – individually developed products, customized products;

– services for renting cars, bicycles, electric scooters, scooters, etc. using digital technologies (for example, free-floating carsharing - the possibility of short-term car rental with the end of the trip in places convenient for the client, with minute or hourly payment) [26, 42].

The above business models involve conducting business in the digital space and are able to provide companies with certain advantages: a narrow market segment, low costs, constant interaction with the consumer, etc.

The digital transformation of logistics companies is determined by the general trends of the digital transformation of logistics, namely, the coordinated development of intellectual logistics and the social sphere based on the principles of collaboration, which ensures the most effective interaction between independent players, which is shown in Figure 1.2.

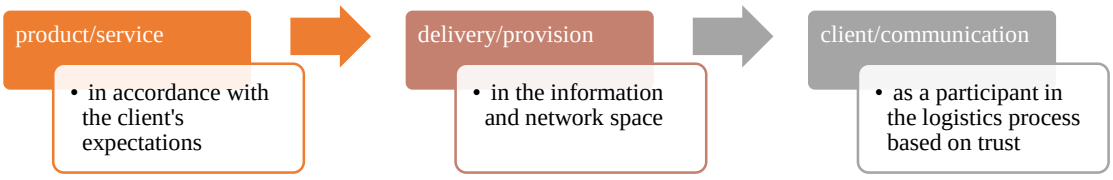

Figure 1.2 – Block diagram of the digital transformation of a logistics company [78]

Taking into account the above understanding of the essence and content of changes in the economy and society under the influence of digital technologies, which are constantly spreading, it can be noted that the digital transformation of business models of logistics companies:

– must correspond to the modern interpretation of the concepts of “digital logistics”, “Logistics 4.0”, “digital marketing”;

– should be aimed at maximum involvement of smart systems in its activities;

– should move in the direction of harmonizing intellectual logistics and the social sphere;

– possible within the ecosystem approach;

– should consider integration within the ecosystem as a collaboration;

– tends to strengthen the role of the client in ensuring the efficiency of the company;

– in working with the client, it should be based on the trends of the principles of communication, defined by communicative practical philosophy at the present time.

Taking into account the above, Appendix E represent a block diagram of the digital transformation of the logistics company's business process [78].

In addition, it is worth considering changes in the business model itself, taking into account the different areas of the company’s work. Such as the client sphere, the value proposition and the sphere of competitive advantages, interaction with consumers, and the financial and economic sphere.

The client sphere was chosen as the starting point for the transformation of the business model in accordance with the common client-oriented paradigm of modern companies. First of all, it covers aspects of segmentation, as well as relationships between segments, forming various configurations of mutual interactions both in standard production and services, and in transactions. Separate elements can be selected for each ontological group. Such transformation is represented in Figure 1.3.

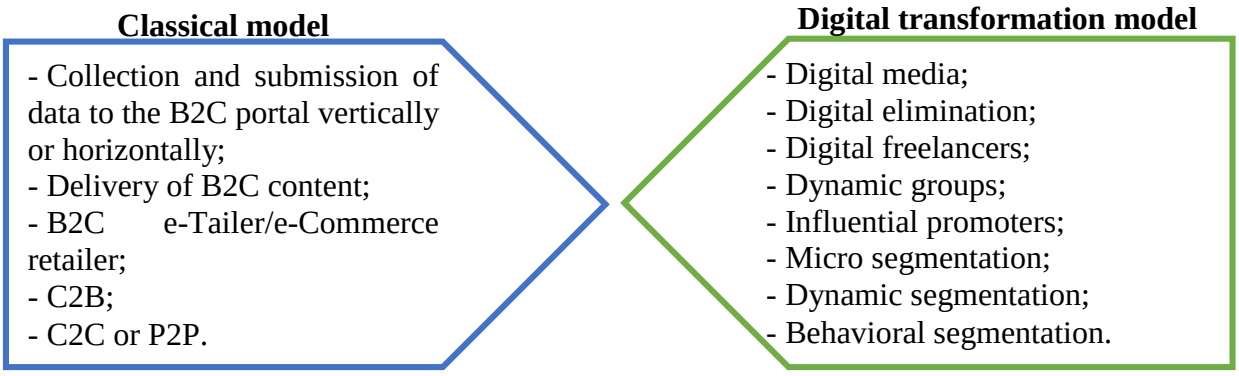

Figure 1.3 – The client sphere after the digital transformation of the business model of the enterprise [40]

The value proposition and the field of competitive advantages are aimed at describing the main elements that determine the main goal for consumers and relations with them, and also distinguish this organization from competitors. One of the main areas of development of the value proposition is related to multi-service platforms created to attract not only direct customers, but also other service providers. To achieve this effect, the platform must provide a development environment or a set of open application programming interfaces (APIs) that allow remote transactions. Such transformation is represented in Figure 1.4.

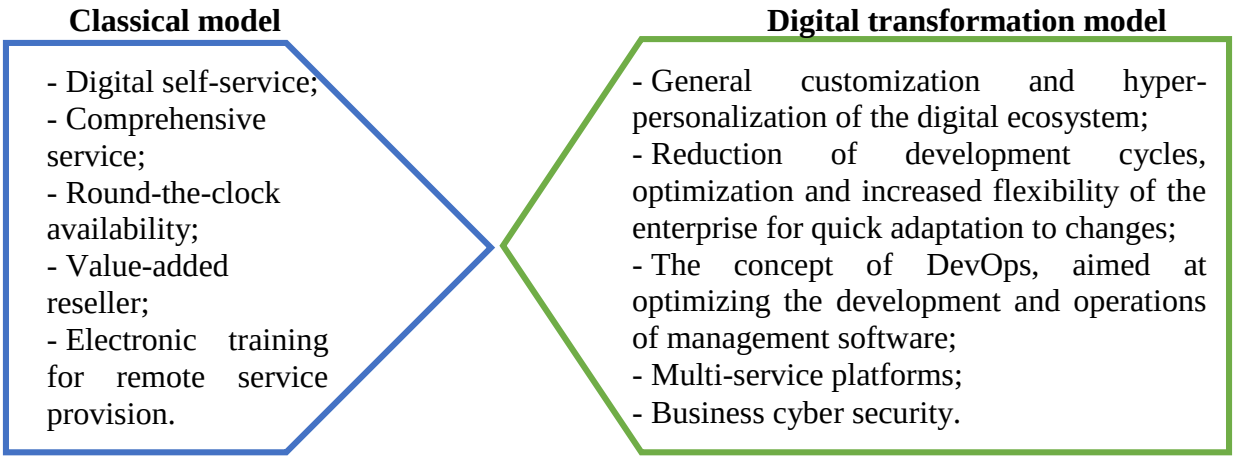

Figure 1.4 – The value proposition field in result of digital transformation of the business model of the enterprise [40]

The sphere of interaction with customers in the business model reflect the methods of communication and exchange of values (products and services) with consumers. The block of channels in the process of digital transformation is characterized by destructive changes that open many new opportunities for building client interactions and relationships. Such transformation is represented in Figure 1.5.

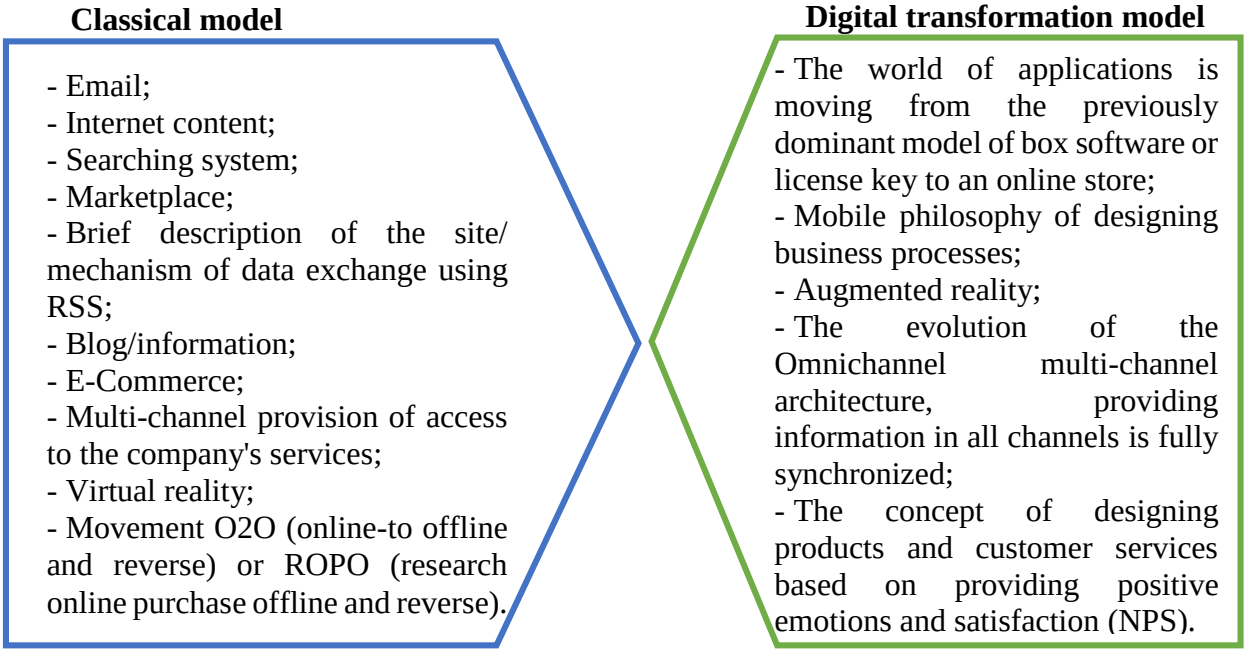

Figure 1.5 – Digital transformation of business model channels for interaction with consumers` sphere [40]

The financial and economic sphere covers aspects of the effectiveness of the business model, expressed mainly in the financial sense, as well as in the form of efficiency indicators and indicator systems. The financial and economic sphere demonstrates a strong destabilizing movement in the direction of income generation. In the first wave, the industry first encountered business models that built their cash flows from sources unrelated to their original value proposition. In wave 2, this trend is further reinforced by exploring economies of scale (charging small fees to large numbers of users or identifying the community interested in the service before it is funded). Another very important phenomenon is the growth of concepts that reject the classic form of ownership and encourage the use of products (services) only during the time or application needed by the client. Such transformation is represented in Figure 1.6.

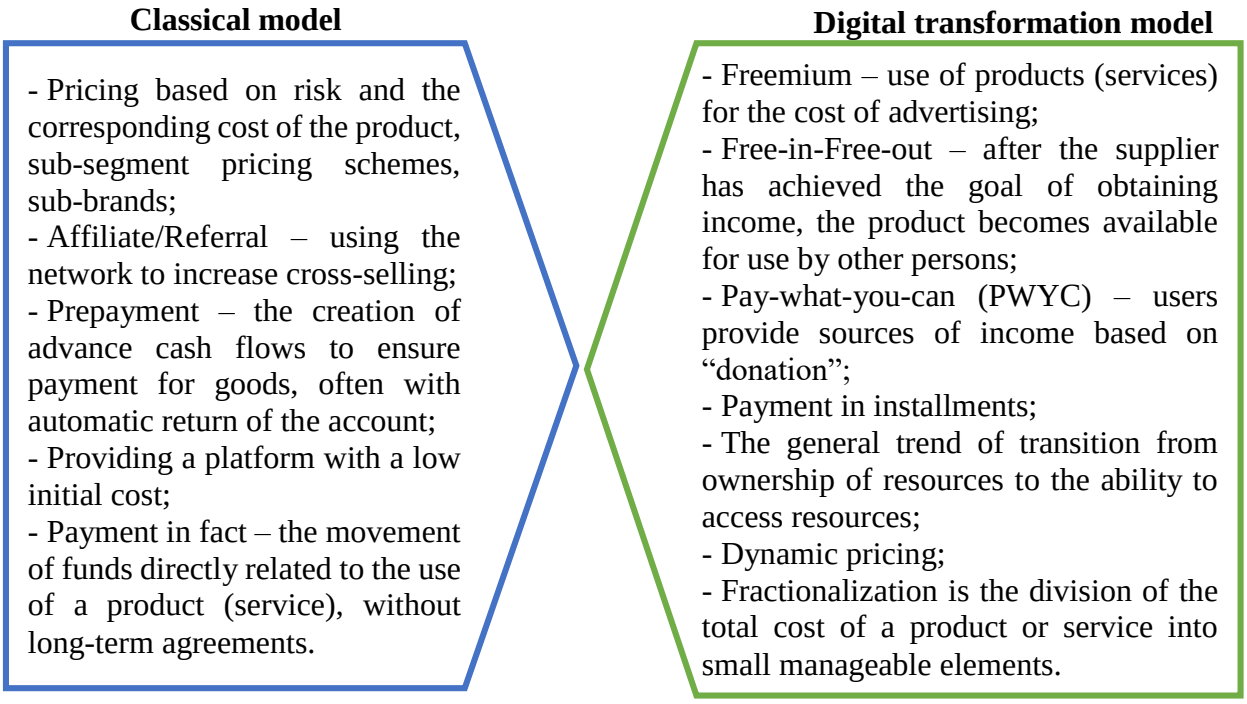

Figure 1.6 – The financial and economic sphere after digital transformation of the business model of the enterprise [40]

Thus, the digital transformation of the business model can be considered as:

– formation of a modern model of rational use of resources;

– a system of socio-economic and organizational-technical relations based on the use of digital information and telecommunication technologies and the implementation of the “Industry 4.0” concept of the company's activities;

– a form of doing business that involves the active implementation of digital technologies in the process of forming the value chain;

– a complex innovative and technical system, focused on the formation of the necessary conditions for the emergence of disruptive digital innovations, the use of advanced digital tools in trade, logistics, production in order to increase the level of competitiveness in the conditions of digital business development.

Digital data from a supporting element of the value chain is transformed into a primary source, new business models are emerging based on the transformation of data into a profitable asset. Under the existing conditions, in order to ensure further development, it is largely necessary to develop an appropriate regulatory framework and ensure access of small and medium-sized businesses to venture capital for the implementation of innovative projects. The transition to a digital environment will help to overcome a number of gaps and limitations inherent in traditional entrepreneurship and will stimulate the innovative development of organizations. Mapping the drivers of digital transformation on the business model canvas allows us to argue that the change in business models has already begun and is inevitable, as the drivers will continue to influence how companies will strategically structure their activities in the future.

1.3 Analysis of the international experience of the impact of digitalization on the development of business models at a logistics company

Digitalization of business is a rather evolutionary and organic process, as more transparent rules of the game of business participants appear on the market, and

participants, understanding the complexity of changes, adapt to them and develop. Stronger and more developed companies act as generators of change, while weaker companies follow this experience and also improve. Those enterprises that are ready for digital transformation and adaptation to more flexible models have quite a good potential for development.

The system of digitalization in the field of logistics can be presented in the form of a community formed on the basis of information platforms and their applications, developers, suppliers and users of logistics services, agents with experience in logistics and acquired competences thanks to the use of digital information technologies [36, 73].

According to the results of 2019, the word “digitalization” became the most popular in Ukraine, and this is not surprising, since the pace of technology development is gaining more and more momentum and penetrating more and more deeply into our everyday life. Today, the state of digital transformations at enterprises can be characterized as follows:

– more than 60% of companies already use digital technologies for client needs;

– up to 20% are just getting to know digital and are taking the first steps towards implementation;

– about 15% of companies attract and serve customers with the help of digital technologies;

– only 3–4% of companies are fully digitized.

According to the estimates of the Ukrainian Institute for the Future, 60% of added value in Ukraine in 2030 will be created in new high-tech sectors of the economy, such as artificial intelligence, robotics, bioengineering, 3D printing, nanomedicine and others. The share of the digital economy in the GDP of the world's largest countries will reach 50–60% in 2030.

In Ukraine, this indicator can be even higher – 65% of GDP (under the implementation of a forced scenario of the development of the digital economy in

Ukraine). Digitization will be the main tool for achieving Ukraine's strategic goal of increasing GDP by 8 times, up to $1 trillion. in 2030, and ensuring the well-being, comfort and quality of life of Ukrainians at a level higher than the average in Europe.

In recent years, the transport sector in Ukraine has been operating in conditions of an economic crisis, which was also reflected in the logistics automation market. Carriers, transport and forwarding companies, terminal warehouse complexes and other logistics operators are primarily interested in solutions that contribute to attracting new customers and providing additional profit from the provision of logistics services.

At the same time, such services as digital information outsourcing, rental of capacity calculation systems, and network and cloud storage systems are currently in demand. Benchmarking and market experience of system integrators enables logistics enterprises to increase the productivity and reliability of their own information systems, and to use network and cloud services to transfer capital costs to operations [11].

The digitization of business processes of companies is determined by the adopted concept of digitization of the economy of the respective country and the pace of its development. For example, in China, thanks to the adopted concept of “Internet +”, over the past 10 years, the volume of the digital economy has increased by 29.7 trillion yuan and by 2020 will make up almost 40% of GDP.

According to the Digital Evolution Scorecard:

– South Korea, Singapore, and Hong Kong are recognized as leading countries in digitalization of the economy in 2020;

– promising countries include Indonesia and India, as well as Kenya, Vietnam, and Bangladesh;

– the countries of the European Union were among the slow countries; the countries of Asia, Africa, Latin America and Southern Europe are considered problematic because they do not have the appropriate infrastructure [24].

Having analyzed the foreign practice of digital development of economies, it is possible to trace how the business models of enterprises will change in the future. Thus, the strategy of digital development in Great Britain was formed in 2017 and defined 7 main areas, namely: digital infrastructure, cyberspace security, access to digital data of every consumer, business assistance in digitalization, online government service. In addition, the state supports the education of the population in digital skills, invests in smart systems (17,3 million pounds) and by 2035 expects to return the investment in the amount of 654 billion pounds.

The digital transformation of the business processes of Norwegian companies is based on the development of research and innovation infrastructure, support and involvement of scientists from all over the world. Denmark's business strategies are based on the country's unified state strategy for digital development, which is based on the principles of “digital self-service”. Singapore's efforts are aimed at reaching the population (3,3 million people) and providing access to government services online.

Both in Ukraine and in other countries, logistics companies are increasingly paying attention to digitalization. So, for example, back in the 1990s, UPS, in order not to lose its customer market, rebuilt its business process by improving the global supply chain, which made it possible to fulfill 95% of orders within a day. Nowadays, the company has executed a following framework that gives clients with real-time upgrades on the status of their shipment, counting area and evaluated conveyance time. Moreover, UPS has executed a chatbot that can help clients with their shipping needs.

Another company that has already provided digitalization is DHL. DHL, one of the biggest logistics companies within the world, has executed different digitalization activities to make strides its operations. This incorporates the utilize of mechanical autonomy in its distribution centers to robotize forms and diminish preparing times. Moreover, DHL has executed a transportation administration framework that employments AI to optimize conveyance courses and decrease conveyance times.

Amazon, the world's biggest online retailer, has executed different digitalization methodologies to optimize its supply chain. This incorporates the utilize of mechanical technology in its distribution centers to progress stock administration and diminish preparing times. Moreover, Amazon has executed a transportation administration framework that employments information analytics to optimize conveyance courses and diminish shipping costs.

XPO Logistics implemented various improvements robotic solutions. In its LTL network – XPO Logistics uses machine learning and predictive analytics to improve pricing algorithms and network performance. XPO develops VR and AR applications for internal staff, clients and residential customers [40].

As for Ukrainian companies, it is possible to say that nowadays logistics companies only tend to digitalization, as was said previously. However, Ukrposhta develops the digitalization process in its workforce. The company actively implements modern technologies and electronic systems in its activities, which contributes to improving the efficiency and quality of customer service. Ukrposhta is a reliable partner for individual users, businesses and government organizations, providing their needs in postal services.

It is possible to analyze the level of digitalization of any company with usage of indexes. The Global Connectivity Index (GCI), developed by Huawei, was created to analyze a wide range of indicators for ICT infrastructure and digital transformation. The GCI assesses the development of the digital economy in 79 countries, using 40 indicators that track the impact of ICT on the country's economy, digital competitiveness and future growth. The GCI index contains four sub-indices: supply, demand, experience and potential; and five technology drivers: broadband, cloud, data center, big data, and Internet of Things (IoT). According to this methodological approach, countries are assigned to one of the clusters: Starters (GCI Score 20-34), Adopters (35-55) and Frontrunners (56-85). Together, these countries account for 95% of world GDP. In 2018, Ukraine took 50th place in the GCI rating.

The digital transformation index, developed by the independent British firm Vanson Bourne, is calculated as follows: the firm surveys business leaders -

managers who have the right to make strategically important decisions for the business organization. According to the McKinsey Global Institute's Industry Digitization Index, Europe is currently operating at 12% of its digital potential, Germany at 10% of its digital potential, the UK at 17% and the US at 18%. That is, even developed countries do not fully use their digitization potential.

Digitization index (IDI), developed by Ukrainian scientists, allows to assess the real level of implementation of digital technologies and competencies at enterprises. The index makes it possible to assess the changes taking place and to see in which direction digitization is moving. IDI is proposed to be calculated as a weighted average sum of three sub-indices:

– "Infrastructure development" subindex (IID) – reflects the degree of infrastructure development, availability of Internet access and Internet access quality;

– "Online expenses" subindex (IOE) – includes online trading and online advertising;

– "User activity" subindex (IUA) – calculated as a weighted average value of lower-level subindexes: activity of enterprises, activity of consumers and activity of state institutions [60].

All subindices are formed from weighted average values of several parameters underlying them. The scheme of Indexes of digitalization is provided in Appendix F.

An important aspect for both companies and countries in principle is the level of digitalization. It is important to be able to determine the level of digitalization not only within your company, but also to be able to analyze the market in order to compare the degree of digital potential. Digitalization indices are well suited for this analysis. Analysis of best practices and identification of digitalization leaders will allow market participants to analyze their experience in digital innovations, assess the level of development of digital technologies and competencies at the enterprise,

compare their practice with other market participants, and determine general trends of digitalization.

1.4 Chapter summary

Based on the theoretical aspects of the adaptive management process in the context of digitalization, it is worth noting the importance of this process in the work of any company. In the modern world, it is necessary to analyze the market, competitors, their level of digitalization, change your business processes to new realities, and be able to adapt. Adaptation is a long process that can both improve the company's performance and cause severe losses. Without effective adaptive management there will be no positive result. Digitalization is now the issue number one in the development of an enterprise of any size. It is worth noting that thanks to digitalization, the company implementing it opens up many opportunities to improve existing processes, as well as opportunities to introduce new aspects of the business.

The adaptation process affects most of the company's business processes, affecting both financial and economic areas, as well as the client one. In addition, the adaptation process in the context of digitalization affects the structure of the company's business model. This process must be carried out effectively so as not to incur losses, since changing the business model directly affects the activities of the entire company.

In addition, it is worth noting that not all companies come to digitalization, which may be caused by such aspects as: lack of awareness of business owners about the importance of digitalization, as well as the positive benefits that it brings to the company, misconceptions about the insignificance of digitalization, incorrect judgments about the high cost of switching to digital business, unsuccessful attempts to adapt during digitalization to an incomplete extent. These questions can directly

influence the choice of a company or can push you away when deciding to try to move to the digital sphere of business.

However, digitalization has many advantages, such as: increasing the customer base, expanding the target audience, by means of digitalization the company has much more opportunities to express itself, automation of business processes, and therefore reducing the time for processing an order, obtaining information, etc., improving the quality of service, reducing delivery time, financial benefits, robotization, increasing sales by processing offline and online orders, personalization in working with clients, an increased database for each client. These aspects can improve the company's performance in many areas, open up new opportunities, which in turn will increase not only the company's image in the modern market, but will also attract more customers, improve existing aspects of company`s performance.

CHAPTER 2
ANALYSIS OF THE ACTIVITIES OF THE "FTP" LOGISTICS COMPANY IN THE CONDITIONS OF DIGITALIZATION

2.1 General characteristics of the logistics company

The FTP (Freight Transport Partner) company was founded in 2010 by three founders: Vasilenko I.V., Evtushenko K.V. and Okulov E.V. At that time, the company had serious ambitions, a desire to develop and expand its territories. In 2010, the FTP had only 2 offices: in Kyiv and Odessa. However, in 2016 the company decided to expand and opened its third office in Poland. This decision helped the company further develop international delivery and cover many territories not only in Ukraine, but in Europe, China, etc. with its services. In 2022, at the beginning of the war, this office in Poland helped maintain part of the international deliveries, and the company quickly returned to work [26].

As mentioned earlier, FTP had high ambitions and plans for the development of the company not only through the opening of another office, but also through participation in competitions and associations. So, in 2014 FTP has achieved the Industry Leader 2014 award (twenty-eighth place (silver) rating in Ukraine. The company does not stop at the achieved result; the latest achievement was obtaining membership in the world's largest association of independent freight forwarders - WCA (The World Cargo Alliance) in 2020. It should be noted that such membership is an indicator of the company's high level of service within the framework of international logistics.

According to the data of the Ministry of Justice of Ukraine, among the types of activities according to KVED-2010, the logistics company FTP declared:

– The main direction of activity:

52.29 Other auxiliary activities in the field of transport.

– Additional areas of activity:

46.74 Wholesale of hardware, plumbing and heating equipment and accessories.

47.52 Retail sale of hardware, building materials and sanitary-technical products in specialized stores.

52.10 Warehousing.

52.24 Transport handling of goods.

70.22 Business and management consulting.

69.10 Activities in the field of law [51, 53].

In general, the top management of FTP divides its company's services into four large logistics blocks that are represented in Figure 2.1 [25, 57].

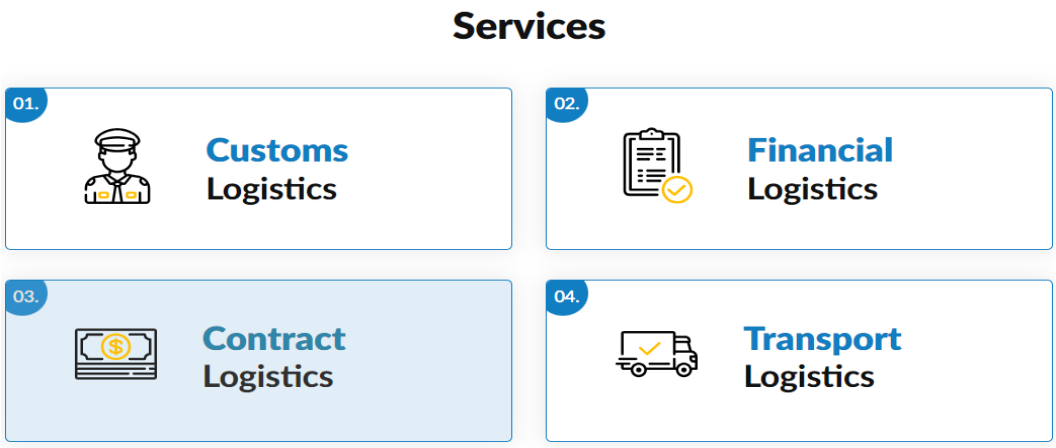

Figure 2.1 – Services provided by FTP [25]

Company provides a wide range of activities for each service. As for Customs Logistics, such activities are:

– Ensuring of the passage of all customs formalities in the export, import or transit regimes;

– Optimization of the passage of all necessary control during customs clearance (rates, nomenclature, inspections, payments);

– Protection of clients` interests at customs;

– Minimization of clients` engagement into the customs processes;

– Carrying out of taking samples and get lab findings;

– Company gets veterinary certificates for the realization in Ukraine;

– Company gets certificates of origin and certificates EUR 1;

– Company gets the price examination;

– Accreditation of the enterprise at customs.

FTP also focuses on Financial Logistics, main activities of which are:

– Management of the movement of finances during the realization of foreign economic activity, which is an important part of logistics process and can significantly impact the final financial result;

– Participation in all the stages of the financial route, making it optimal and correct;

– Management of the payments to the suppliers;

– Operation of expenses and income for foreign economic transactions;

– Provision of financial consulting.

Another main focus of FTP is Contract Logistics, which supports such activities as:

– Realization of the outsourcing of FEA department;

– Company takes charge of work with suppliers;

– Company makes and checks foreign economic contracts;

– Agreement with suppliers on all the controversies connected to the documents and processes;

– Provision of “turnkey” delivery;

– Offering of the commission agent services.

As for Transport Logistics, FTP provides such activities as:

– Organization of from-door-to-door cargo delivery with any type of transport or combination of different types of transport in the supply chain, obtaining all main logistics criteria;

– Working out an optimal route and offering suitable terms and price based on the given conditions;

– Offering of full truck load or less than truck load;

– Controlling the temperature regime during the transportation;

– Arrangement of the cargo insurance;

– Dispatching cargoes in the ports and airports;

– Tracking of loads on all the stages of delivery [25].

The company is engaged in both delivery and brokerage services, which allows it to provide a wider range of logistics services. In addition, FTP provides delivery by almost all modes of transport, except for rail transportation. The main types of services include: air transportation, car transportation, transportation by sea, brokerage services. In each category, the company performs a number of logistics services, such as insurance, client consultation, delivery, cargo unloading, forwarding services, etc. It is worth noting that the company is focused both on international transportation and specifically on cooperation with China. Thus, the main structure of FTP services can be presented in Figure 2.2 [25].

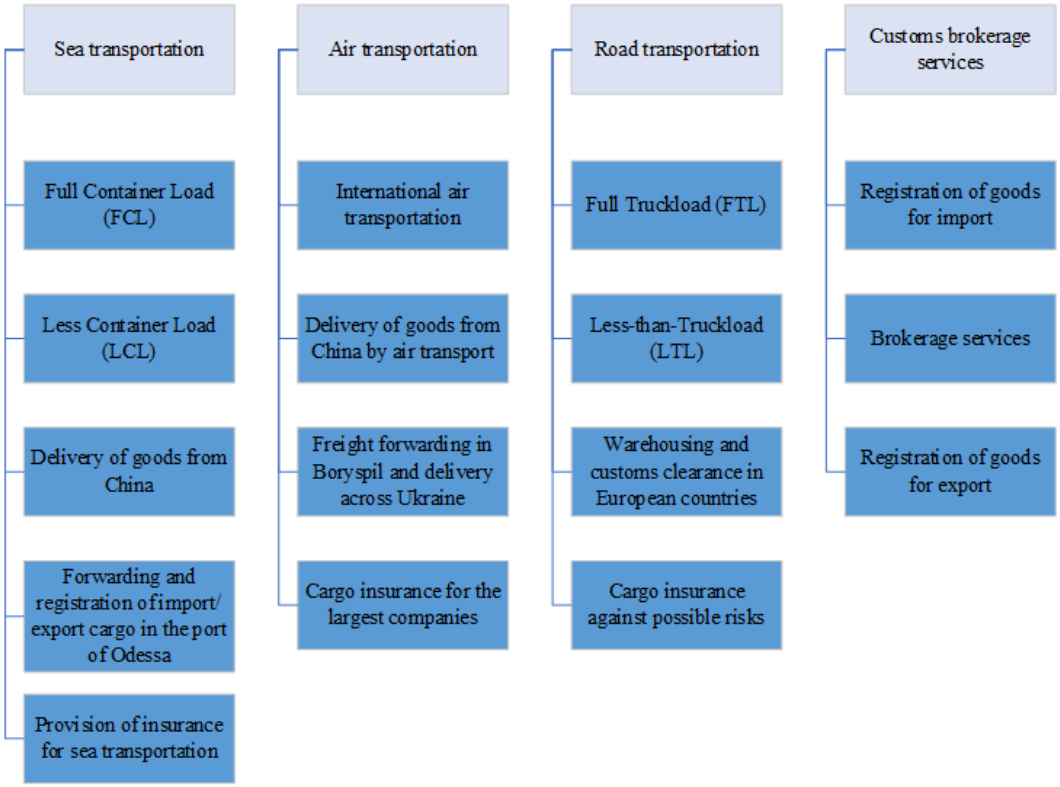

Figure 2.2 – Structure of services of FTP [25]

Due to the fact that FTP provides freight forwarding services along with brokerage services, it may be possible to analyze such aspects of business processes in them and find some “bottlenecks”. Along with that, some “bottlenecks” may occur in the managing processes in the company. In these processes FTP is facing its bottleneck in the capacity constraints. The company may face bottlenecks if it does not have sufficient resources, such as vehicles, vessels, or aircraft, to meet the demand for transportation services. Limited capacity can lead to delays and difficulties in fulfilling customer orders.

Cargo delivery by road is one of the most popular delivery methods. It is characterized by a higher delivery speed compared to other methods. Another advantage is the extensive network of routes and the optimal cost of delivering goods from both Europe and the CIS countries. According to FTP clients, an important factor when choosing this delivery method is door-to-door delivery with delivery times from three to seven days.

Transportation by road allows you to organize the delivery of any type of cargo - bulk, bulk, hazardous, temperature-sensitive, allows you to organize loading by pallet norms or groupage cargo. Also, for the convenience of customers, it is possible to use consolidated warehouses with the ability to predict delivery times with the choice of optimal routes, effectively manage product and financial flows, and control transportation costs. In this way, the main transport corridors are created (Germany, Italy, Hungary, Poland, Lithuania).

Road transport allows for popular delivery by containers. 20-foot and 40-foot containers are used for work on intermodal routes. In this case, the company provides door-to-door delivery of containers.

A specially developed FTP Tracker application allows you to serve clients in real time. Customers have the opportunity to track the real status of the passage of goods, this makes tracking parcels and cargo much more convenient and makes waiting easier. FTP Tracker allows you to synchronize work with various delivery services (for example, Nova Poshta, Ukrposhta, Deliveri, Meest Express, etc.), support work with more than 100 different carriers. In addition, the application

supports Air Cargo, such as: LOT Cargo, Belavia, Emirates, Turkish Airlines, Lufthansa Cargo, China Airlines and others. FTP Tracker - Supports MRN, Bill of Lading and container tracking such as ZIM, Maersk Line, Emirates Shipping Line, Matson, etc. [57].

During its work on the logistics services market, the company has experience in organizing logistics chains of various types of goods that are represented in the Figure 2.3 [25].

Figure 2.3 – List of goods that FTP delivers on daily basis [25]

In general, we can conclude that the logistics company FTP meets the highest criteria of a logistics partner in the field of foreign economic activity and combines the services of the entire range of logistics services. However, there are a large number of logistics companies and companies providing foreign exchange services in the logistics services market, which affects the position of the Federal Target Program in the logistics market. Its position is shown in Figure 2.4.

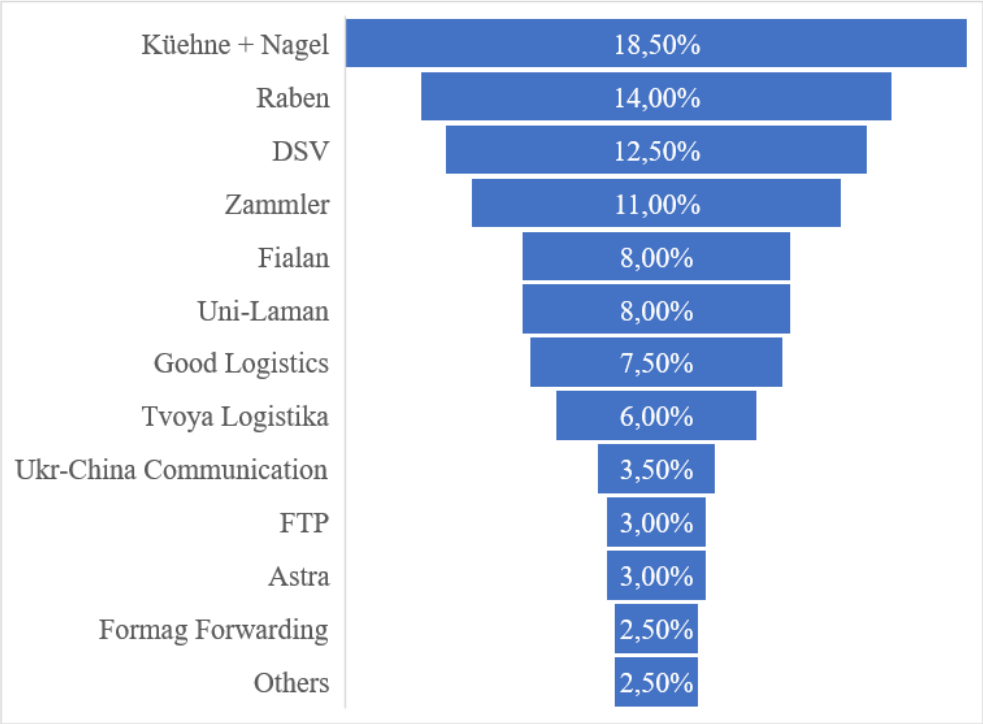

Figure 2.4 – Competitive analysis of logistics market in Ukraine

Source: estimate based on the survey of FTP employees

Of course, it should be noted that the FTP logistics company belongs to small enterprises according to the classic classification of companies by size, and it has strong competition in the logistics services market from such global logistics players as:

– Kuehne+Nagel;
– DSV;
– Raben;
– Zammler;
– Formag Forwarding;
– Good Logistics.

These companies have strong connections in different countries in the main directions of providing logistics services of the FTP.

It should be emphasized that in Ukraine there are quite a large number of global logistics companies that have warehouse complexes in Ukraine and other countries of the world, in contrast to FTP, which rents pallet space at the warehouses

of its business partners. This rental is carried out both in Ukraine and in China and EU countries. If we compare with companies such as Uni-Laman, Tvoya Logistika, then FTP significantly outperforms similar logistics companies of the same size due to the organization of a full chain of services, including currency exchange services and full logistics support [20].

FTP can be defined as a company with a linear-functional structure. It provides for separation of control. At the same time, linear management is intended to give orders, and functional management is intended to advise and provide assistance in developing specific issues with the preparation of decisions and plans. The company's organizational structure is presented in Appendix G.

FTP has a business model based on asset limitation. Asset-light is a business model based on the use of “light assets”. This allows the logistics company to scale its activities. An important fact of this model is the flexible response to changes in market demand, the selection of the most suitable offers among service providers and resources. This model also includes the possibility of outsourcing some of the staff.

SWOT analysis (or SWOT matrix) is a strategic planning technique which operates to improve a personal or company identify strengths, weaknesses, opportunities, and threats related to business competition or project planning. It is designed for use in the preliminary stages of decision-making processes [20].

According to the company, their strengths are the speed and security of the services provided [25].

Some strength that are corresponding to fast services:

– Quick answer within 20 minutes;

– Process of the transportation documentation within 24 hours from the moment of submission;

– Delivery of containers from any port of Ukraine within 1-2 days;

– Promptly informing the clients about any changes;

– Provision of the possibility of cargo tracking with our FTP Tracker app.

Some strength that are corresponding to services` safety:

– Full compensation for the loss caused by company`s side;

– Elimination of the risk of cargo check;

– Preparation of a set of documents for every load;

– If needed company gets all the permits;

– The price is discussed in advance and there are no hidden charges.

Main challenges that logistics companies may face on the market in Ukraine are:

– Increasing costs on fuel;

– Changes on the market due to war in Ukraine;

– Inconsistence in tracking;

– Inconvenient roots due to the war;

– Possibility of destruction of offices, warehouses, trucks.

Based on that, it is possible to conduct SWOT analysis of the FTP company. Such analysis is provided in Table 2.1.

Table 2.1– SWOT analysis of FTP

Strengths	**Weaknesses**
1. Speed and security of the provided servers. 2. Large customer base. 3. International shipping. 4. High quality of services provided along with high range of services. 5. 24/7 support. 6. App FTP Tracker.	1. Lack of own vehicle fleet. 2. Warehouse rental. 3. Lack of client`s account on the site. 4. Lack of sufficient personal assets.
Opportunities	**Threats**
1. Creation a client account on the website. 2. App FTP Tracker development. 3. Creation of own vehicle fleet. 4. Improving the quality and quantity of services provided.	1. High operating costs. 2. War in Ukraine. 3. Increased competition in the market. 4. Increasing prices within the country. 5. Closed transport corridors.

Based on the analysis, it can be noted that the company has much more strengths than weaknesses. This allows the company to develop, improve its work, and concentrate on new opportunities. Thus, based on the company's weaknesses, all of them can be converted into new opportunities for FTP. For example, the company should improve the acceptance of orders online, since at the moment there is no customer account on the company's website, thanks to which it would be possible to place an order conveniently and efficiently.

On the other hand, FTP has an FTP Tracker app that allows you to track your order. However, the company should pay attention to the ability to place an order online, instead of the current system of leaving only a phone number for future communication with the client. The development and implementation of a client account would help the company resolve this issue. In addition, the company should continue to develop its app.

As for the vehicle fleet and warehouses, this is only a feature of the company's business model. Since FTP has an assets-light business model and it does not have enough own assets, it is initial to not have its own vehicle fleet. If the company is satisfied with the costs that FTP now incurs due to this feature, and the company is satisfied with the use of rented cars and warehouses, then this aspect can be left only as a possibility. However, if this opportunity is transformed into real development, the company will have a much better chance of investing in the future of its company.

The strength of the company is the quality of the services provided, as well as the difference between these services. The company provides both freight forwarding services and brokerage services, which allows it to cover all aspects of delivery to customer satisfaction.

In addition, FTP has been in the logistics market for a long time, it has a large customer base with loyal customers, which is the strength of the company. FTP has earned such a base due to its speed of order fulfillment and quality of services. However, the company still has room for improvement and the development of the services provided will only improve its already strong side.

Based on the SWOT matrix and the results of such analysis for FTP, it is also possible to conduct a TOWS matrix. TOWS analysis is a variant of the classic business tool - SWOT analysis. TOWS matrix compares internal factors with external factors and based on this determines the appropriate action strategy. By matching the opportunities and threats of the corporate environment with the strengths and weaknesses of the organization, we can identify four basic strategies. This allows companies to capitalize on opportunities, reduce threats, overcome weaknesses and build on strengths. In such case, it is possible to provide a wider range of analysis of FTP with conducting the possible strategies of the company.

Table 2.2 – TOWS analysis of FTP

	Strengths	**Weaknesses**
	1. Speed and security of the provided servers. 2. Large customer base. 3. International shipping. 4. High quality of services provided along with high range of services. 5. 24/7 support App FTP Tracker.	1. Lack of own vehicle fleet. 2. Warehouse rental. 3. Lack of client`s account on the site. 4. Lack of sufficient personal assets.
Opportunities	**S/O Strategies**	**W/O Strategies**
1. Creation a client account on the website. 2. App FTP Tracker development. 3. Creation of own vehicle fleet. 4. Improving the quality and quantity of services provided.	1. Due to a large customer base, you can improve the quality of services provided by conducting surveys and receiving feedback from clients. 2. Development and improvement of App FTP Tracker, which will support the client 24/7.	1. Creation of a user page on the website, which will allow the company to collect more data about clients. 2. Creation and development of a full-fledged own vehicle fleet, which will reduce the company’s costs.

Continuation of Table 2.2

Threats	S/T Strategies	W/T Strategies
1. High operating costs. 2. War in Ukraine. 3. Increased competition in the market. 4. Increasing prices within the country. 5. Closed transport corridors.	1. Due to a large customer base, a company can establish its place in the market and not worry about competitors. 2. Despite rising prices in the country, it is possible to increase the number of existing international deliveries, which will also increase the company's competitiveness in the market.	1. By acquiring its own assets, such as its own vehicles, the company will be in a better position to compete in the market and will also reduce operating costs if the vehicles are leased continuously for the time being.

Based on the obtained results of the analysis, it is possible to conduct that the company`s situation is not stable, but there are a lot of opportunities of future development. Moreover, it is worth noting that it is crucial for FTP to provide digitalization in its business processes. Due to the fact that company does not have any client base online, it is not possible to collect all necessary clients` data, provide daily analysis for FTP about their quality of services, get feedback from customers. All of these aspects influence the performance of the company, so it is necessary for FTP to optimize its site, create the user page. In the modern world, without a company website or without an application, a company has much less opportunity to increase its customer base and the number of customers in general, as more and more customers place orders online.

In addition, it is worth noting that the company has many opportunities for the development of the company not only in the field of digitalization, but also in logistics in general. Thus, FTP has huge potential to occupy a high niche in the market among its competitors, since the company provides a large selection of services and also carries out international transportation. In 2022, international transportation became more difficult, but the company is developing in this

direction. Despite the “Closed transport corridors” threat, the company still has the opportunity to carry out transportation, not stop its activities, bypass closed corridors using accessible routes, which means it has the opportunity to fulfill orders and maintain the company’s image.

If one of the proposed strategies is followed, the FTP will have the opportunity to develop existing business processes, as well as discover new opportunities for digitalization and order processing. Upon receiving proper feedback, the company will be able to work on its mistakes, improve the quality of service, and better understand its customers. In addition, we can advise the company on a strategy related to its own vehicle fleet, which will also develop the company’s existing service and improve the quality and speed of order processing.

In general, based on the analysis of the company, it is worth noting that FTP has both quite strong sides, which the company achieved thanks to its ambition, and weaknesses. So, for example, as mentioned earlier, FTP is not the leading logistics company on the market, but it has great potential, which was brought to a decline due to the situations of recent years. The company provides not only the usual services such as transportation of goods, but also deals with financial logistics, contract and custom logistics. This allows FTP to compete with other companies and maintain an established level in the market.

In addition, the company has a lot of potential for development. Despite the difficulties encountered in logistics, FTP still continues its work both within Ukraine and at the international level, developing routes to other countries, approving agreements on transportation to China, Turkey, Poland, etc. An important aspect of further analysis is the financial and economic analysis of the company's activities. Based on this, you can conduct a detailed analysis of the effective operation of the FTP, highlight indicators that have problems, and also help develop recommendations for the company. It is also important to calculate the financial performance of the company in order to understand what has to be improved and if the company needs digitalization in its business processes furthermore.

2.2 Analysis of the activities of the logistics company in the conditions of the existing business model

First of all, it is initial to analyze the main situation in the company within amount of assets, net profit, sales, etc. in order to understand main changes, reasons for them and how it affects the company [5]. Such analysis is provided in Table 2.3.

Table 2.3 – Initial data for financial analysis of FTP

Indicator	2020	2021	2022	Deviation 2020/2021		Deviation 2021/2022	
				UAH thsd, y-o-y	%, y-o-y	UAH thsd, y-o-y	%, y-o-y
1	2	3	4	5	6	7	8
Current assets	21327,8	22415,4	20974,2	1087,6	5,1	-1441,2	-6,4
Non-current assets	665,9	817,3	602,4	151,4	22,7	-214,9	-26,3
Total assets	21993,7	23232,7	21576,6	1239,0	5,6	-1656,1	-7,1
Sales	13834,3	15348,3	14118,1	1514,0	10,9	-1230,16	-8,0
Operating profit	5864,6	7034,8	5237,1	1170,2	20,0	-1797,7	-25,6
Operating expenses	7228,2	7536,4	8109,2	308,2	4,3	572,8	7,6
Other expenses	38,1	42,3	45,7	4,2	11,0	3,4	8,0
Profit before taxes	703,4	734,8	726,14	31,4	4,5	-8,66	-1,2
Taxes	126,5	131,2	128,9	4,7	3,7	-2,3	-1,8
Net income	576,9	603,6	597,2	26,7	4,6	-6,36	-1,1
Cash and cash equivalent	4414,5	4875,1	3975,0	460,6	10,4	-900,1	-18,5
Current liabilities	20288,0	23186,3	25624,1	2898,3	14,3	2437,8	10,5
Non-current liabilities	0	0	0	0	0,0	0	0,0
Equity	1705,7	1721,8	1846,3	16,1	0,9	124,5	7,2
Debt	11738,3	14582,5	15837,5	2844,2	24,2	1255	8,6

Based on the obtained results it is possible to conduct that the financial situation in the company is not stable. Due to the past-COVID situation in 2021 company got more stable, there are major increases, however in 2022 due to war, situation got more unstable and negative. In 2022 FTP got some negative losses and increases, however due to the fact that company has office in Poland, company was able to overcome them.

In 2021 compared to 2020 there is a positive increase in company`s amount of assets both current and non-current by 5,1% and 22,7%, but in 2022 there is a decrease by 6,4% and 26,3%. In general, in 2021comapred to 2020 the total amount of assets has increased by 5,6% while in 2022 compared to 2021 it decreased by 7,1%. As for sales, in 2021 there is an increase by 10,9% compared to 2020, while in 2022 compared to 2021 there is a decrease by 8%.

As for operating profit, there is the same trend of changes, in 2021 there is an increase by 20% and in 2022 it decreased by 25,6%. Generally speaking, there is a trend of increases in 2021 and high decreases in 2022, which was affected by the situation on the logistics market in Ukraine as a whole. In 2021 companies were able to overcome the COVID situation, gain positive changes, but in 2022 the situation was crucial and company got decreases in sales, profit. Also, in 2021 the net income of FTP increased by 4,6% while in 2022 it decreased by 1,1%. Such decrease is not as high as for other indicators, but still, it is a negative result for the logistics company.

As for expenses of FTP, there is an opposite trend which is also a negative one for the company. All the expenses are increasing within all 3 years, however in 2022 such increases are much higher. In 2021 compared to 202 operating expenses increased only by 4,3%, while in 2022 they increased by 7,6%. Current liabilities also increased – in 2021 by 14,3%, in 2022 by 10,5%. Company does not have any non-current liabilities, so total liabilities increased also by 14,3% and 10,5%.

Also, there is a high increase in equity – in 2021 it increased only by 0,9% while in 2022 by 7,2%. Company`s debt also increased in both years by 24,2% and by 8,6%. As for cash and cash equivalence, there is a positive increase by 10,4% in

2021, which means that company got abler to provide more investments in operation, while in 2022 it decreased by 18,5%.

Generally, it is possible to say that the company tried as much as possible to maintain its stable position on the market in 2022, but still suffered some losses. In 2021, FTP was able to level out in the market and occupy a stable niche in it. During the war, thanks to the office in Poland, the company also remained on the market, however with indicators lower than in 2021.

On the other hand, the situation could have been less positive without this opportunity. The situation in the company is currently more stable, but the question of the company's capabilities in developing and improving processes has not been resolved. The company has a strong decrease in amount of assets, as well as a decrease in cash flow, which does not allow the company to fully develop and invest in the development of logistics and operational processes.

The dynamics of some most important indicators for all three years are represented in the Figure 2.5.

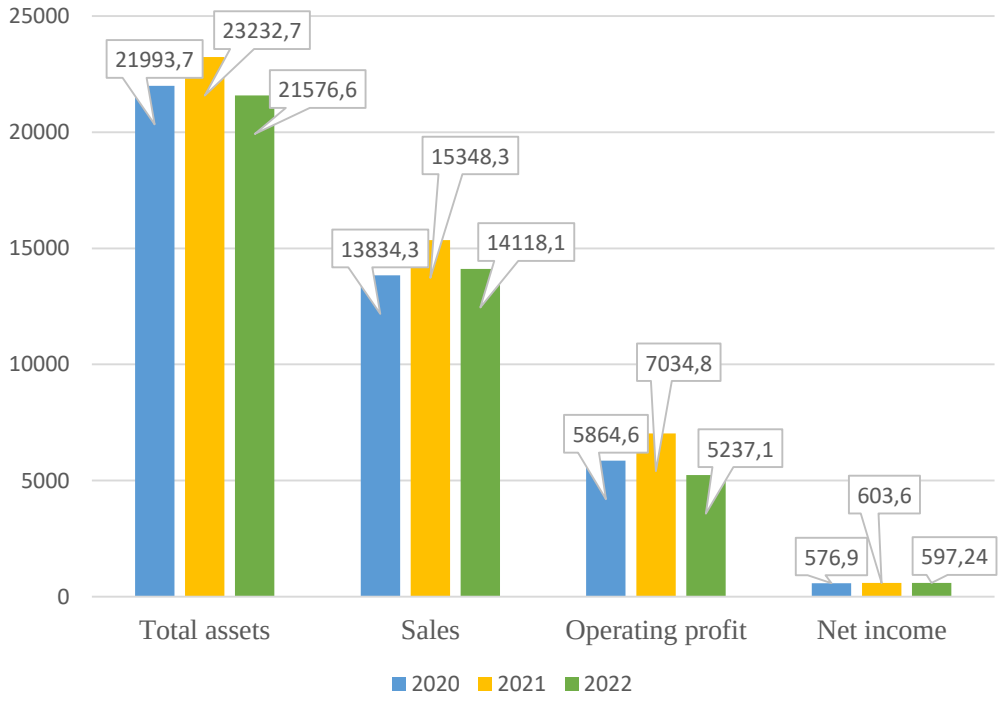

Figure 2.5 – Dynamics of financial indicators of FTP

In addition, an important aspect is the analysis of the number of services provided, which in turn will determine the costs and profits of the company by type of services provided. This analysis is summarized in Table 2.4 and Table 2.5.

Table 2.4 – Volumes of services performed for 2020-2022

№	Types of services	Years			Total
		2020	2021	2022	
	1	2	3	4	5
1	Road transportation	265	286	240	791
2	Air transportation	35	42	7	84
3	Sea transportation	165	174	98	437
4	Brokerage services	576	603	612	1791
5	Total	1059	1105	957	3121

Based on the obtained results, it is possible to say that the situation with the number of services provided is the same as with the main financial indicators of the company. In 2021, the company reached a stable position in the market, there is an increase in the number of all types of services. However, in 2022 the situation became negative for the company, the number of services decreased as many transport corridors were closed. Thus, there are significant declines in all types of transport: road, sea, especially air due to the fact that there was no air transportation in Ukraine in 2022 because of war. However, as regards delivery by air, the company did not reach zero because, thanks to the office in Poland, it was still able to carry out some international deliveries by this type of transport. On the other hand, brokerage services, on the contrary, grew every year and even in 2022 there was an increase, since the company, due to a lack of delivery capabilities, had the opportunity to provide brokerage services.

Figure 2.6 shows the dynamics of the services provided for all 3 years. As can be noted, the highest decline affected air transportation and sea transportation. As for sea delivery, the company had a port in Odessa, which made it difficult to fully fulfill orders due to hostilities. Road transportation was less affected, the decline was not so high, the company was still able to bypass closed corridors both within

Ukraine and travel abroad for international delivery. And as mentioned earlier, brokerage services, on the contrary, have a small increase every year.

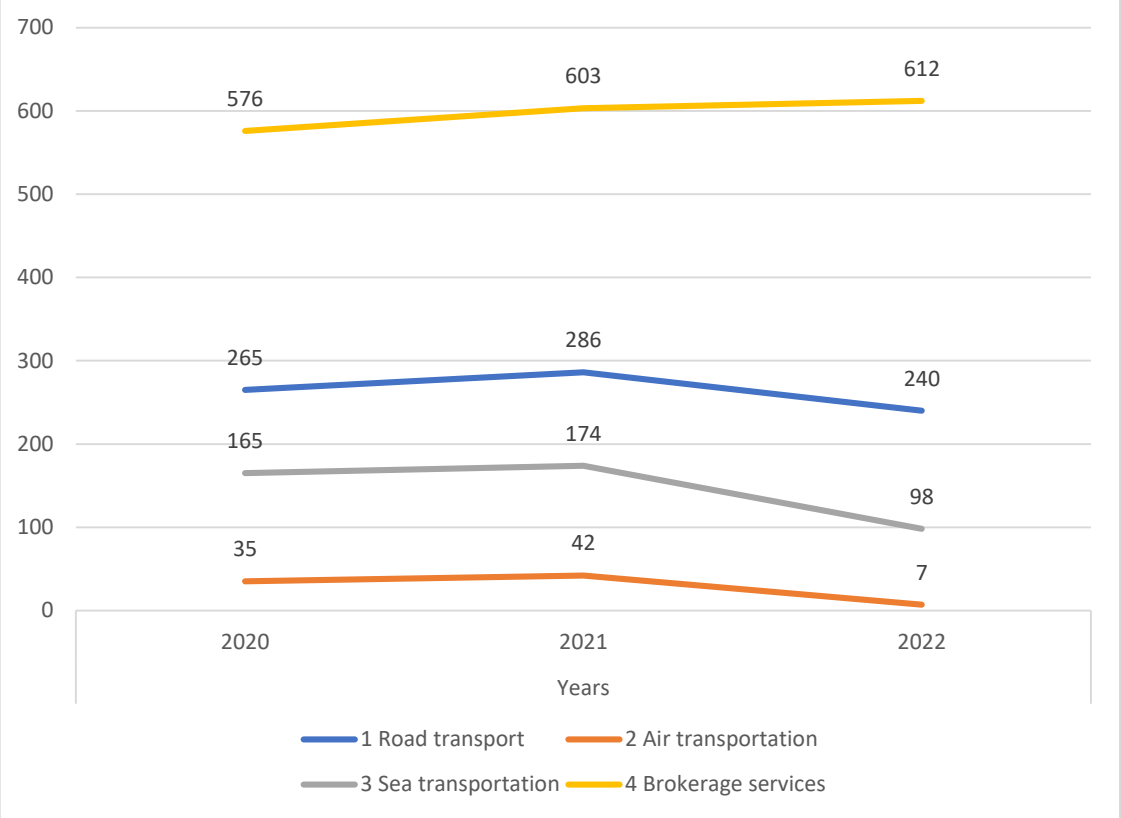

Figure 2.6 – Dynamics of services provided of FTP in 2020-2022

Table 2.5 – The main financial results of FTP for 2020-2022 based on types of services

№	Type of services	Indicators	Years		
			2020	2021	2022
	1	2	3	4	5
1	Freight forwarding services	Revenue	438,4	455,69	313,17
		Operating costs	393,3	408,78	280,94
		Operating profit	45,1	46,905	32,236
2	Brokerage services	Revenue	1051,3	1100,5	1117
		Operating costs	519,5	543,85	551,97
		Operating profit	531,8	556,7	565,01
3	Total	Revenue	1489,7	1556,2	1430,1
		Operating costs	912,8	952,63	832,9
		Operating profit	576,9	603,6	597,24

Based on the results obtained, it can be noted that due to changes in the number of FTP services provided, financial indicators are also unstable. Thus, gross income for freight forwarding services has increased in 2021 compared to 2020, in 2022 it decreased along with net profit. However, gross costs also decreased in 2021 and 2022, as the number of services decreased significantly in 2022. As for brokerage services, the situation is more stable, within each year gross income along with net profit is increasing, while gross costs are also increasing in a low manner. As for total results, gross income of the company has increased in 2021 and decreased in 2022. The same issue goes to gross costs and net profit. Generally, the situation has become less stable in 2022 compared to 2021 due to the previous issues. Dynamics of such financial indicators are represented in the Figure 2.7.

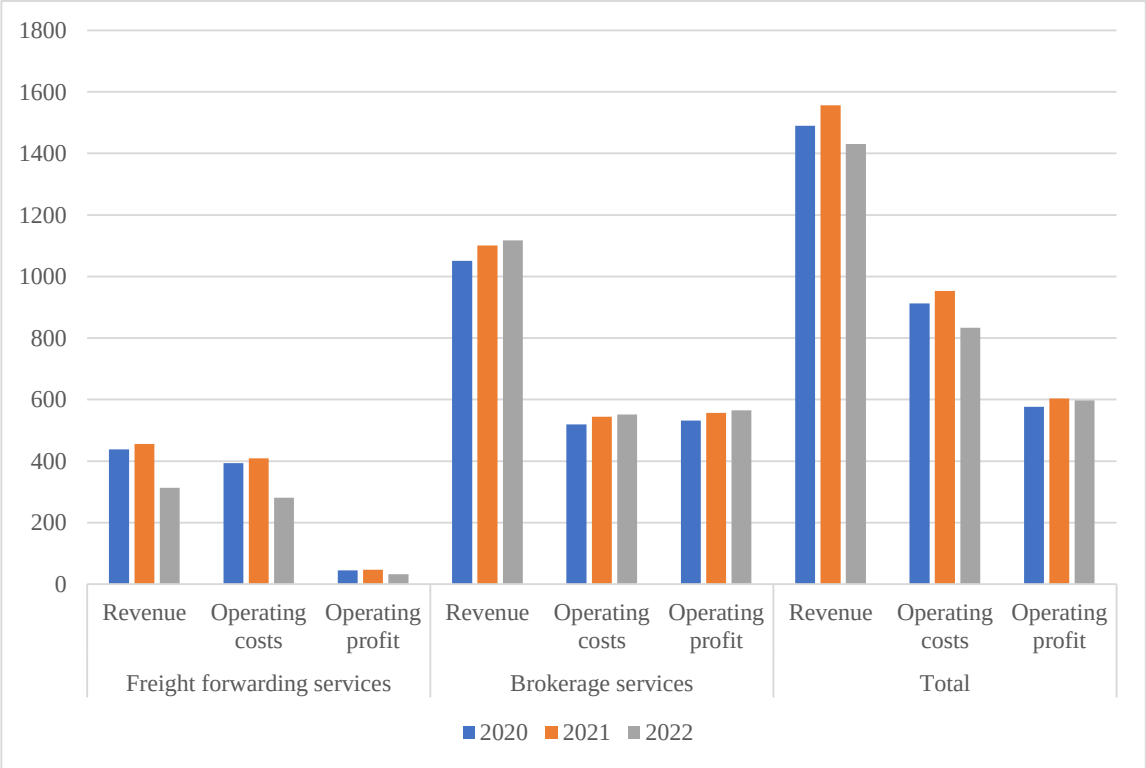

Figure 2.7 – Dynamics of financial indicators of FTP for 2020-2022

In addition, liquidity is an important indicator of a company's performance. Liquidity is the ability to sell an asset at a market price. An asset can be anything:

securities, real estate, a company or business property. Results of such liquidity analysis are provided in the Table 2.6.

Table 2.6 – Liquidity analysis of FTP for 2020-2022

№	Indicator	Nor-mative value	Years			Deviation 2020/2021		Deviation 2021/2022	
			2020	2021	2022	UAH thsd, y-o-y	%, y-o-y	UAH thsd, y-o-y	%, y-o-y
1	2	3	3	4	5	6	7	8	9
1	Current ratio	> 1	1,29	1,38	1,19	0,09	6,98	-0,19	-13,77
2	Rapid liquidity ratio	0.5-1	1,31	1,45	1,22	0,14	10,69	-0,23	-15,86
3	Absolute liquidity ratio	> 0.1	0,53	0,59	0,31	0,06	11,32	-0,28	-47,46
4	Indicator of the ratio of receivables and payables	1	0,75	1,03	0,56	0,28	37,33	-0,47	-45,63

Based on the obtained results, it is possible to conduct that FTP`s liquidity has the same pattern as all other indicators. For the company, in 2021 the situation was more positive and company gained some potential for growth, in 2022 this potential got low due to the situation in the country. For the current ratio of liquidity in 2021 there was an increase by 6,98% compared to 2020, while in 2022 there was a decrease by 13,77% for such indicator. This may cause the negative aspects of performance of FTP due to the decreasing ability to provide a quick purchase of assets for the company. Such results mean that FTP is not possible to cover up the purchase of new assets without major changes in the business model.

Moreover, company`s rapid liquidity ratio is decreasing by almost 16% in 2022 compared to 2021, while in 2021 there was an increase for such indicator. This

means that FTP has become less able to repay its current debt without obligations requiring the raising of external capital.

As for absolute liquidity ratio, it has increased by 11% in 2021, but in 2022 it has decreased by almost 48%, which is also a negative trend for the company. As for indicator of the ratio of receivables and payables, it also decreased in 2022 by 45,63% compared to 2021, which means that FTP is not being able to cover up its payable debts in a fully manner.

Generally, it is possible to say that 2022 was a negative year for the company. There are a lot on decreases of liquidity indicators, company is not fully able to react to changes in its performance without major losses. The dynamics of indicators of liquidity is represented in Figure 2.8.

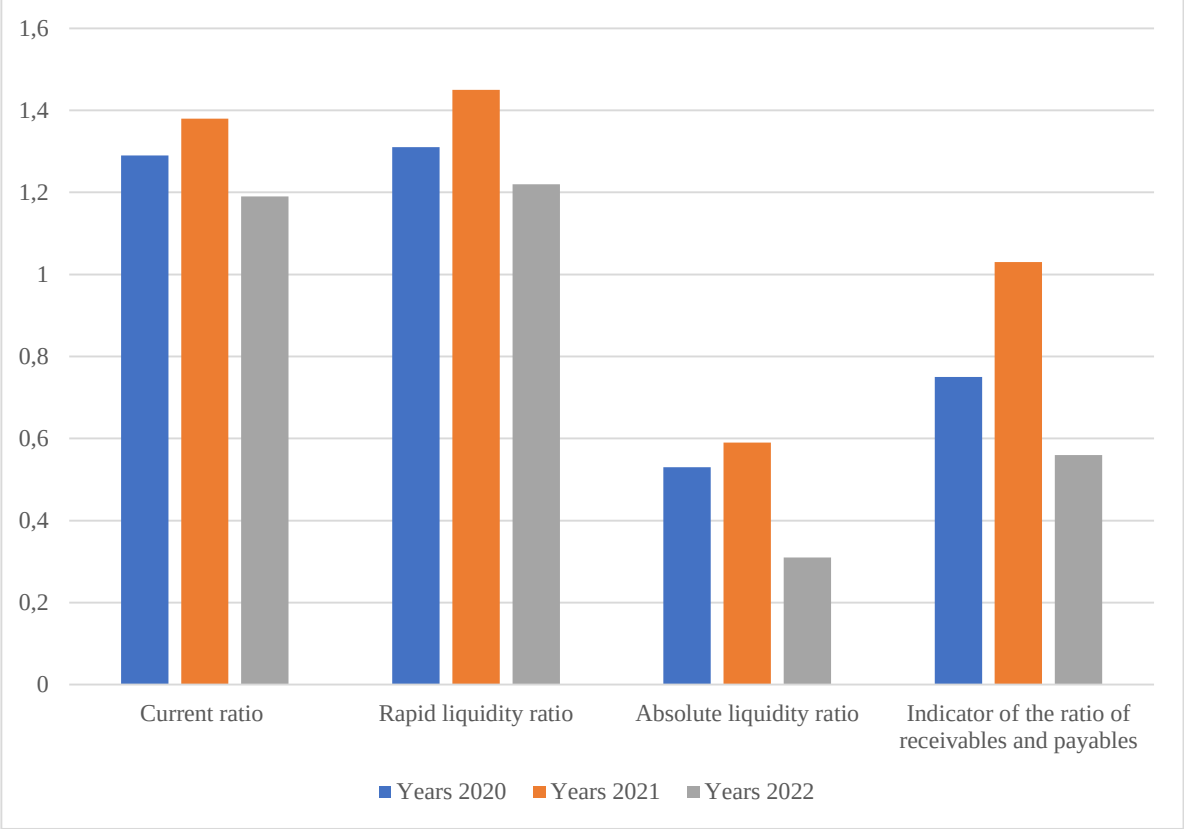

Figure 2.8 – Dynamics of liquidity ratios of FTP

As it possible to conduct, based on the Figure 2.7, the situation for company`s liquidity is not as stable, as it should be, major changes are needed to be performed in order to stabilize the ability of the company to repay its debts.

Another important aspect of financial analysis for the FTP would be financial screening. Financial screening is an express analysis of the activities of a logistics company, which is carried out by groups of indicators to identify problems in the activities of a logistics company. This is a “signal” diagnosis, which identifies problem areas in the activity and, on this basis, the company can take measures to reduce the negative impact of the onset of problems (the consequences of problems) and develop measures to prevent their occurrence. Results of such analysis are represented in Appendix H. In order to provide full analysis, it is initial to provide scaling based on the obtained results in Appendix H, estimate whether the situation in each section is stable or in the risk zone. The results of analysis are provided in Table 2.7.

Table 2.7 – Summary table “diagnostics by signals”

Indicators	2020	2021	2022
Financial stability	Crisis	Crisis	Crisis
Liquidity	Sustainable	Relatively stable	Relatively stable
Business activity	Relatively stable	Relatively stable	Relatively stable
Assessing the balance sheet structure	Crisis	Crisis	Crisis
Profitability	Sustainable	Sustainable	Relatively stable

In general, it can be noted that not all of the company’s processes are stable. As mentioned earlier, due to the events of 2022, the company has lost its stability in the logistics market, as indicated by the indicators of this analysis. FTP has not been financially stable for all 3 years; indicators in this category are all at risk, which is due to the company’s high debts. Company has high liabilities along with high debt and is not being fully able to cover up them within its receivables. In addition, the

company does not have high enough sales to completely cover all debts without major losses. Consequently, financial stability is in crisis for all 3 years.

Another indicator that is in a critical situation is the balance sheet structure. All indicators are again in the critical zone due to the company's debts. This also negatively affects the work of the FTP; it is necessary to reduce the amount of debt so that the indicators can leave the critical zone. Thus, by assessing the balance sheet structure, the situation is critical for all 3 years.

As for liquidity, the indicator is more stable; in 2020, this indicator was in a favorable zone, but in the next two years a decline can be noticed. However, this one was still not in the critical zone, which is already a good indicator for such an unstable company. Thus, when analyzing liquidity, many of the company's indicators were in the well-being zone; it is possible to notice a slight decline in the assessment of indicators in 2021 and 2022 due to a decrease in receivables and an increase in payables. This is due to the same debts that the company has to pay off from payments received from customers.

The company's business activity is quite stable in its results and has been at an average level for all 3 years. This indicator is in a relatively stable zone, which indicates that the company has enough assets for its activities, and the receivables turnover is quite stable and has its own growth. This shows the company's good work in terms of working with assets, which allows FTP to manage third-party assets to the same effective extent as its own.

The last indicator, namely the company's profitability, is in a stable zone and has good performance. For all 3 years, the company remained in the "green" zone of stability, all indicators have the usual trend as in financial analysis. There was an increase in 2021, and a slight decline in 2022, which did not greatly affect the final result of the company's profitability. In general, we can say that FTP is a profitable company, which can attract investors, despite its unstable situation in other indicators.

In general, after analyzing the FTP company, it is worth noting that the situation in the company is not the most positive for a logistics company. In recent

years, the company has been influenced by external factors, such as Covid and war in the country, which does not allow it to develop fully. In 2021, the company could achieve results by adapting to the realities of work during Covid, but in 2022 the company suffered losses again.

However, despite the situation in the country, it can be noted that the FTP quickly leveled out its position and is already working to the same extent as in 2021, adapting to new realities. Now it is important to understand with what challenges may FTP collide and what can be changed in its business model in conditions of digitalization.

2.3 Analysis of modern challenges that set requirements for adapting the existing business model of a logistics company in conditions of digitalization

The FTP company faces a number of problems in the development of its business processes. Along with increasing competition in the logistics market, the company has a growing demand for providing high-quality and fast services. Consequently, the FTC has to analyze the market for new trends. Digitalization is one of the trends in the modern market.

By providing quality services, the company tries to meet customer expectations. Customer expectations are rising with technological advancements that offer faster services and greater convenience. Customers now expect companies to provide seamless service, easy returns or refunds, fast delivery, and more. Since they can get fast and convenient services in other industries and sectors, they will expect logistics companies to take the same approach.

With the growth of the customer base, problems arose with the speed of order processing, which entails an increase in operating costs. As was already discussed earlier, the company already has enough negative aspects in this matter, therefore the company will have to concentrate on the digitalization of this process.

The lack of your own transport increases the time it takes to find a contractor, affects the cost of services, and disrupts the uninterrupted service. In addition, without having its own warehouses, the company faces difficulties in the speed of processing orders, placing products, and quickly completing orders, which in turn affects the entire supply chain.

The number of orders and gaps in the supply chain do not allow us to fully speak about high-quality tracking of delivery routes at all stages. This factor can be solved by increasing the staff, but does not solve this problem in full.

The lack of an accounting base leads to the management of financial flows in a “manual” mode. Control of receivables and payables occurs in a chaotic manner, from case to case. Documents are not received by contractors and clients on time, which leads to financial difficulties in the company.

In addition, it is worth talking about the company’s website. An important “face” of any company is a customer-oriented website. The structure of the FTP website in the form of “leave your phone number, we will contact you” does not allow us to talk about the company’s customer focus. To obtain information about the cargo, you need to work in the application, which is not always convenient for the client. In addition, the company loses the opportunity to fully collect information about its customers, which does not allow it to process the information received and build a pattern of customer behavior.

Another problem is that at the moment the main logistics corridors do not operate in the country – these are sea ports, which have been closed for a long period. And what can now be seen on the market are rare exceptions, when a product group, grain, is exported through ports – essentially by the same ships that docked there. Those. We are not talking about some kind of system. Therefore, the problem with sea corridors was and remains. These were the main logistics routes, which covered approximately 80% of the needs of clients in the logistics industry.

At the moment, the company does not carry out sea transportation, but the site does not block the processing of these orders, which leads to misunderstandings with customers and bad reviews about the company. Therefore, in this matter, the

company should also change the operation of the site in order to fully allow customers to place their orders without such incidents. The same situation applies to air delivery. At the moment it is not possible to provide this service, which is not reflected in the list of services which company may operate with.

In addition, the client does not have the opportunity to take part in the development of the optimal delivery route, there is no offer to consider several delivery options and choose the optimal speed-price ratio. Previously it was faster, which means more expensive. Now there have been changes - faster means cheaper, there is no downtime and increased delivery costs.

Responsive to change. Today's economic and socio-political events around the world create an unstable and rapidly changing environment. To survive in this environment, companies must be able to quickly respond and adapt to these changes.

As digital transformation affects third parties in supply chains, it causes disruption to companies. Therefore, to avoid a situation where digitalization does not lead to improvements, companies need to carefully analyze current processes inside and outside their business.

It is also necessary to determine which business processes can be included in the process of digital adaptation. In the context of digitalization, the process of adaptation of a logistics company's business model involves incorporating digital technologies and strategies into various business processes [16, 38].

Here are some key business processes that can be adapted:

1. Order management. Digitalization can simplify the order management process by implementing digital platforms or systems for receiving, processing and tracking Inventory management. Digitalization can improve inventory management by introducing automated systems that provide real-time visibility into inventory levels, location and movement. This can help optimize inventory levels, reduce stockouts, and improve overall inventory accuracy and efficiency.

2. Transport management. Digitalization can improve transport management through efficient transport management systems (TMS) or fleet management software. These tools enable you to optimize route planning, load and carrier

selection, resulting in increased efficiency, cost savings and improved customer service.

3. Warehouse management. Digitalization can transform warehouse operations through the implementation of warehouse management systems (WMS) or automated technologies such as barcode scanning, RFID tracking and robotics. These technologies can improve inventory accuracy, order picking efficiency, and overall warehouse productivity.

4. Data analytics and reporting. Digitalization allows logistics companies to use data analytics tools and techniques to gain insight into various aspects of their operations. This includes analysis of transportation costs, customer behavior, supply chain efficiency and other key metrics. Data-driven decision making can help streamline processes, identify areas for improvement, and drive business growth.

5. Customer relationship management. Digitalization can improve customer relationship management through the implementation of customer relationship management (CRM) systems. These systems provide better customer engagement, order tracking and personalized communications, resulting in increased customer satisfaction and loyalty [10, 21].

It’s hard to argue that digitalization is a very extensive and complex process. By adapting to digitalization, logistics company business models can navigate close to bottlenecks. Since it can affect all of a company's business processes, the same problems may arise in each of them. However, all these processes affect one large-scale problem – cyber-attacks. Digital data can never be 100% secure, and the more secure a company is in digitalization, the more insecure it is to share the data they store. With increasing digitalization comes the need for robust cybersecurity measures and compliance with data privacy regulations [7, 33].

To address the cybersecurity and data privacy challenges, the company should consider implementing robust security measures, such as encryption, firewalls, intrusion detection systems, and regular security audits. It should also establish clear data protection policies, conduct regular employee training on cybersecurity

awareness, and collaborate with trusted cybersecurity experts to ensure a strong defense against cyber threats.

2.4 Chapter 2 summary

In the analytical part of the diploma work, the activities of the logistics company FPT were analyzed. The company adheres to an asset-light business model, which gives it the opportunity to quickly adapt to negative changes in the economy. The company provides a wide range of services, such as transport logistics, financial logistics, custom logistics, and contract logistics, which gives it the opportunity to have a competitive advantage in the market. In addition, the company is expanding its geographic presence and opening its branches in Poland. This is caused by full-scale Russian aggression, which has led to a reconfiguration of supply chains. Since Poland has become the main transshipment hub for the delivery of goods to or from Ukraine, such a decision was the company's response to the challenges of external environmental factors, which confirms the company's ability to adapt.

Financial condition diagnostics showed that the situation in the company is ambiguous and extremely unstable. Many indicators have a negative effect on the company, which directly affects all business processes. Thus, it is worth noting that the company needs to switch to digitalization in order to correct the current situation, improve results, become a more modern company with a digital approach, and be confident in the process of adapting to changes in the business model. In addition, FTP has quite a lot of unclosed opportunities, such as the development of warehouses instead of rented premises, the development of its own vehicle fleet, and of course the development of its application.

In addition, FTP has many problematic aspects in its work; the company needs to develop the digital aspects of its work in order to attract new clients and better

meet the needs of existing clients. First of all, I would like to note that the company does not collect data about its clients from the site, since it does not provide a client profile. The company also does not provide full data on orders; tracking occurs only through the application. Thanks to the application, the company may have the opportunity to attract many more customers.

In addition, FTP has the opportunity to change its business model through the acquisition of its own trucks and warehouses. This would give the company much more opportunities for development; the company could rent out its warehouses during a period of declining orders.

As for digitalization itself, the company does not have any system that would simplify or improve the company's performance indicators. FTP does not have full-fledged use systems, such as a CRM system or a WMS system. These systems would improve the company's performance, as they would reduce the time spent on order processing, improve the quality of work with clients, and help receive feedback from the company. However, the company is not ready to fully adapt to the digitalization system.

This conclusion can be made based on the company's indicators. FTP is trying to withstand competition in the market, but in the world of modern technologies there are no official digital systems. Therefore, it is now critical for the company to focus on this issue. In order to be able to adapt to digitalization, you first need to understand what to implement or change. To do this, it can be suggested for the company to use Trend Radar, which would help determine which digital systems can improve the company's performance. However, as stated earlier, the company must be prepared for the adaptation process. For effective adaptation, it is necessary to conduct a step-by-step analysis of the process, determine the company's level of readiness for digitalization, and determine which systems can be implemented in the company.

CHAPTER 3
PROJECT PROPOSALS REGARDING THE ADAPTATION OF THE BUSINESS MODEL OF A LOGISTICS COMPANY IN THE CONDITIONS OF DIGITALIZATION

3.1 Conceptual model of business model adaptation logistics company in the conditions of digitalization

The most important guarantee of success is the combination of business needs and innovations offered by the modern digital world. Digital transformation can be a major competitive advantage. For proper adaptation, it is necessary to fully assess the company's capabilities, understand which processes need to be launched and how they will be controlled.

For each process, the following must be defined:

– responsibility for its implementation and achievement of the specified results (the person responsible for the process must be given the appropriate powers in relation to all structural divisions – participants in the process);

– interrelationship of the process with the organizational structure of the enterprise, structural subdivisions involved in the execution of the process, and their interaction;

– a set of indicators by which the implementation of this process will be evaluated, a scheme of analysis of these indicators and decision-making based on the results of the analysis;

– scheme for setting goals for process improvement and planning measures to achieve these goals;

– the procedure for performing activities within the process (if necessary, can be documented);

– interaction with other processes and/or consumers and other external organizations (coordinated inputs and outputs).

The process of adapting a business model requires stages of implementation of processes, the order of their implementation. One example of such stages of digitalization of a company and their order:

1. Strategy. It should be a corporate business strategy and reflect the company's priorities.

2. Process modernization. It is necessary to study business processes for the possibility of automation.

3. Choice of technology. It is necessary to evaluate digital platforms and the most effective tools specifically for the needs and capabilities of the company.

4. Implementation. Start using selected digital solutions.

5. Acceptance. When implementing all four steps, you need to understand that all company employees will know and have the skills to use the program. There will be a need to provide the right training tools to quickly and easily implement new aspects of the system in your daily work.

However, it should be understood that the digitalization process requires certain changes in business. For example, as the new era includes new external factors and opportunities, strategic models need to be revised. The process of strategy formation and implementation must be constant to adapt to rapid changes in the digital environment. Some industries and missions of some companies may cease to be relevant. This forces each company to clearly understand the environment in which its business operates.

Changing customer behavior and expectations, digitalization by companies and changes in the competitive landscape are driving digital transformation. Market participants are faced with competitive problems and compete with an increasing number of opponents and participants. Environmental pressure arises, competitors demonstrate digital advances, and new market players emerge with disruptive digital business models. If the pressure is high in intensity and quickly accumulates, then this leads to the need for a response - the introduction of our own digital capabilities.

In the process of optimizing business processes, it is very important to correctly assess the direct use of digital technologies, the ability to use and the current level of efficiency. For this purpose, it is recommended to develop an information model for the purpose of analyzing business processes. It should take into account the complexity of processes, labor costs of participants, cost estimation, improvement of the planning system, execution control, document flow system, analysis of business process characteristics. When building a model, additions may arise regarding the specifics of the enterprise itself.

Also, the effectiveness of business process management is influenced by their connection with the environment. The mechanisms of the enterprise must be regulated by the state and local governments when developing economic development strategies and economic legislation.

Effective business process management is an example of a manufacturing process and its relationship with the environment. The mechanisms operating at the enterprise must be guided by the state and local governments when developing economic development strategies and economic legislation.

The digital space allows any company to adapt goods and services to the needs of consumers. All employees must be aware of the company's digital transformation process and participate in it. This requires fundamental participation at all levels of the organization from ordinary employees to shareholders.

Management factors at each enterprise are internal in nature. How an enterprise can cope with the process of adapting a business model without serious problems depends on these internal management factors. They include economic, production, technological, organizational, marketing, technological and personnel factors. In practice, this is the goal, structure, task, technology of the enterprise. Factors in the internal environment of the enterprise have a direct impact on the functioning of the enterprise. Thus, it is possible to note the factors influencing the logistics company, both external and internal. The main factors are depicted in Figure 3.1.

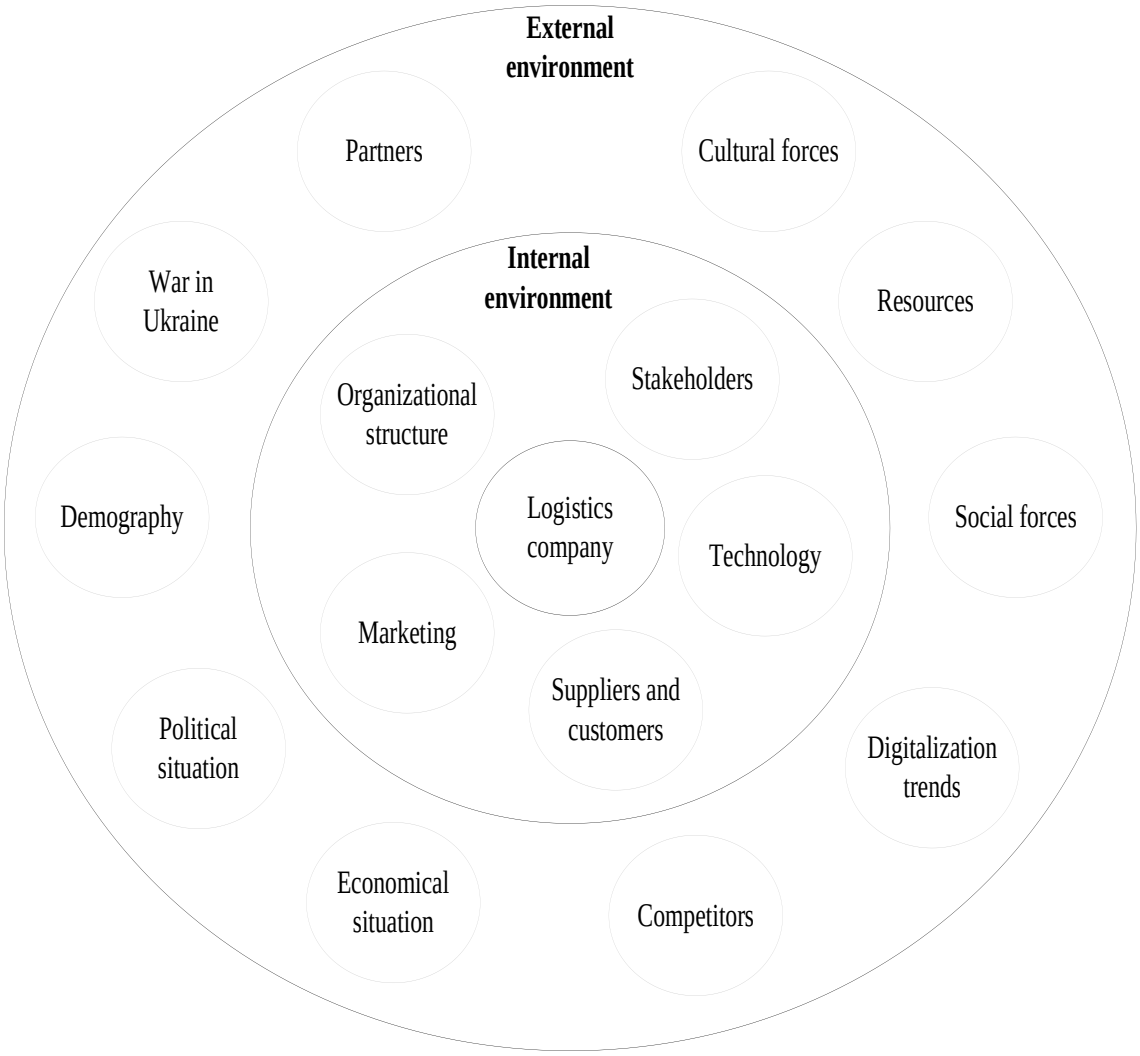

Figure 3.1 – Internal and external factors affecting the logistics company

Source: created by author

A company can have both strengths and weaknesses. And these aspects may influence a company's choice to digitalize or remain with its current business model. Therefore, there are factors that influence this choice. Based on that, it is possible to determine the main factors that affect the logistics company to provide digitalization in the company. Factors that influence the decision of the company to leave its business model on the present level are represented in Figure 3.2. The factors that affect the company to digitalize are represented in Figure 3.3.

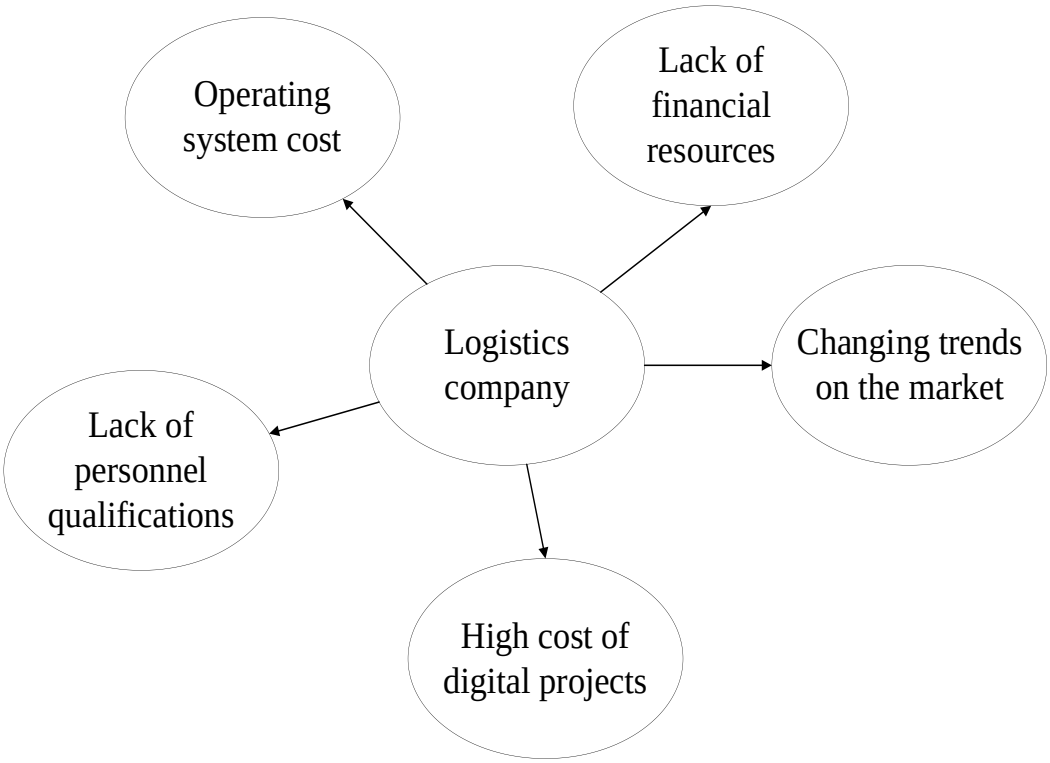

Figure 3.2 – Factors that stop company from digitalization

Source: created by author

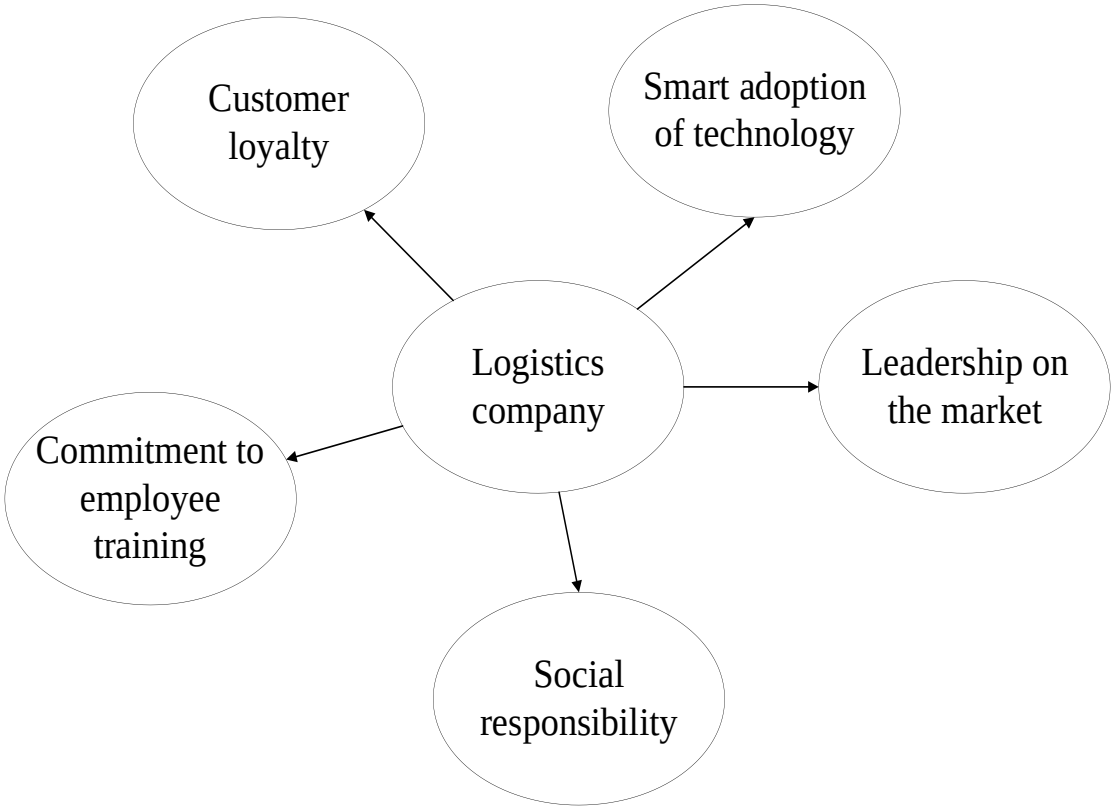

Figure 3.3 – Factors affecting the company to digitalize

Source: created by author

Making a decision on digitalization, a company faces some questions that either push it to a positive decision to change its business model or block this path. Let's consider the first option. Customer expectations are growing along with technological progress. Hence, an important factor is customer loyalty, which becomes the main driver of change. This will allow the company to maintain its leadership in the market, which will properly affect the financial position of the company. Technology adoption should be smart, not change for the sake of change. There is a very fine line here; changes cannot be implemented halfway, or too many unnecessary changes can be made that will interfere with productive work.

And here questions arise about training employees to achieve adopted plans and decisions. Employees must be committed to learning, otherwise it will not be possible to achieve the intended result. These issues are reflected in the diagram. It is also necessary to take into account the issues that hinder digitalization processes. All of them are objective, they need to be taken into account and ways to solve limiting factors must be sought.

One of the points is the lack of financial resources, as well as the cost of the operating system. When choosing a solution and overcoming this factor, it is necessary to be guided by the planned result, which we should get at the “output”.

A limiting factor is also the changing trends in the market, which require constant changes in the company. The qualifications of personnel have reached their maximum at the current moment; the introduction of new things requires the involvement of employees in the processes of change, which undoubtedly hinders the process of change.

These issues are reflected in the diagram. Summarizing the analysis of these two schemes, we can conclude that limiting factors should be subject to careful analysis with decisions made to overcome them. The decision must have a balanced and logical result, based on the desires and capabilities of the company.

Also, it is important to understand that all stages of adaptation must be clearly tracked, the company must understand their importance, what they can bring to the company. At each stage of digitalization of a logistics company, there are changes

of company’s performance, which directly affect the company’s business model. Thus, it is possible to highlight the following aspects of the influence of digitalization on the company's activities:

– Digital Reality: the company's existing business model is defined together with an analysis of the added value, while studying the interests of stakeholders and the needs of customers. This provides an understanding of the digital reality for this company in various areas.

– Digital Ambition: on the basis of digital reality, the main goals of digital transformation are determined in the context of time, finance, space and quality. Digital ambition postulates what goals should be taken into account for a specific business model and its elements, how to prioritize the goals and dimensions of the business model.

– Digital Potential: best practices and enablers of digital transformation development are established. This serves as a starting point for the design of the future business model. All elements of the business model must be logically interconnected.

– Digital Fit: the design options of the digital business model are analyzed, they are evaluated and compared with the existing business model, possible combinations of design elements are evaluated. Digital Implementation: the implementation of the developed digital business model takes place. At the same time, the development of the digital customer experience and the digital value creation network, which describes the integration with partners, is ongoing. Resources and opportunities are also determined at this stage.

For a clear understanding of the sequence of processes required for effective adaptability of a logistics company, the following stages are distinguished, represented in Appendix I.

This diagram describes the step-by-step sequence of each process for effective adaptation of the company in the conditions of digitalization. As can be seen, this aspect involves not only the company itself, but also the activities of its competitors.

This is done to complete the picture and to fully analyze the existing market, what services are provided, what needs to be changed in the company's activities in order to meet current realities and customer requirements.

In addition, it is important to note that the company may be constantly reviewing this process. Since the company can make new decisions on digitalization, implement new systems, each time the company can refer to this block diagram and repeat the processes specified in it.

The adaptation process is very important for any company, as it affects the company's business model, and ineffective adaptation management can lead to serious losses. The organization of control is one of the most important parts of ensuring the fulfillment of assigned tasks and making corrective decisions when indicators deviate from the planned ones.

To achieve this goal, it is necessary to update the strategic management methodology, develop modern methods and mechanisms, investment and financial instruments. Developing strategic goals requires the adoption of strategic plans in the medium and long term, a plan for adapting to change, the use of digital resources, and the adoption and promotion of innovation.

To fully adapt a company, it is necessary to determine the main goals, understand what actions to take, what needs to be changed to fit the new business model, what this can lead to, etc. Therefore, the company must have a clear model with all the stages that the adaptation process takes on. Based on the analysis, a conceptual model of adaptation of a logistics company in the context of digitalization is proposed. The conceptual model is shown schematically in Appendix J.

This model helps a company to determine not only how to adapt its management to the conditions of digitalization, but also helps to reveal important aspects of this process. Thus, this conceptual model describes the components of adaptive management, namely adaptive management in the conditions of digitalization and in the conditions of modern development. Thus, managers have more opportunities to study this issue through the model and choose the type of management that is more suitable for the company.

In addition, this model describes the main tasks of adaptive management in the context of digitalization, which also directly helps managers determine what goals should be set in the company, how to distribute responsibilities among departments for more effective management, and what basic conditions must be met. This also applies to tools of digitalization. Modern trends change faster than companies have time to adapt to something new, therefore, such trends need to be constantly monitored and approaches with a certain novelty must be offered to clients. Thus, the company will have more opportunities to attract attention to itself, and therefore attract new customers.

In addition to clients, stakeholders are also interested in digitalization. After all, thanks to digitalization, a company can attract investors, and therefore develop even more. Thanks to the constant development of trends and digital systems, companies will always have something to implement, improve, and test. This means that demand and supply will always increase.

Also, the model clearly describes the stages of adaptive management, which again will help companies understand this process much better without the chance of missing one of them. This model is quite flexible and any logistics company can use it if it decides to digitalize. An important aspect of the adaptation process is a step-by-step understanding of each micro-process in a given system. Without a clear description, any company may experience disruptions, and therefore it will not be possible to fully say that the company is effectively adapting to digitalization. In addition, taking into account changes in customer behavior and their requirements, without “step-by-step” instructions, a company may simply lose customers, since it will not be able to serve them. Therefore, it will be important for a logistics company to determine the stages of adaptation and what actions should be taken at each of them. To do this, the company can use the presented block diagram. Also, it is important for the company to determine the adaptation model itself, which is also proposed in this part of the work. This model considers such aspects as the main tasks of adaptive control in the digitalization process, the main stages, components of adaptive control, etc. Based on this conceptual model, the company will have

more opportunities for further development. However, in addition to understanding the model, it is important to analyze the company, how effective this process is and whether the company is ready for changes.

3.2 Development of a system for assessing the effectiveness of adaptive management of business processes of a logistics company

Digitalization is changing the world around us, companies, industries, business models and business processes. It is important to adapt flexibly and quickly to new challenges by changing and restructuring some production processes. Digital transformation not only leads to changes in the product environment, but also initiates changes in business models, which changes the life cycle of the company.

It is necessary to highlight several ways in which digitalization can influence changes in companies and their business models:

1. Optimization of existing business models (for example, cost optimization);

2. Changing existing business models (for example, expanding an existing business);

3. Development of new business models (displacement of established market participants, new products/services).

The company needs to be confident not only in how it adapted and did not cause losses, but also to determine that the adaptation was effective. For this aspect of the analysis, it is necessary to determine the level of effectiveness of the company's adaptation. The effectiveness of adaptive management of business processes in the minds of digitalization can be thoroughly observed in the following subsystems of indicators:

Subsystem 1. Effectiveness: the stage of achievement of the goals set for it by the administrative structure.

Subsystem 2. Economics of the organization: characterizes the stage where the subject of the enterprise activity obtains the necessary resources.

Subsystem 3. Product strength and performance: characterizes the industrial stability of the receiving structure.

Subsystem 4. Profitability of company`s activity: characterizes the financial stability of the enterprise structure.

Subsystem 5. Productivity of the work: characterizes the efficiency of the victorious living process.

Subsystem 6. The vibrancy of working conditions: characterizes the range of friendly and carefree minds of the people.

Subsystem 7. New innovation: allows you to evaluate the infusion of digital and information and communication technologies on the technical and technological stability of the receiving structure.

The effectiveness of business process management in the context of digitalization can be assessed by the following criteria:

– private and consolidated integral performance indicators of business process management in the context of digitalization of the economy;

– indicators of indicative assessment of the effectiveness of the business process management system. It is based on the use of a set of partial indicators and makes it possible to assess the relationship between the effectiveness of the management system of a business entity and its production, financial, non-financial indicators, the effectiveness of the management system of a business entity at different stages of management decision-making, and to conduct a comparative assessment of effectiveness before and after the implementation of measures as part of adaptation to the requirements of digitalization;

– determination of the content of the digital environment of the business process, presented as a result of the intelligent integration of elements and tools of

digital transformation, digital communication and data transmission channels, private digital platforms of basic information technologies, software and databases of various enterprise systems, the analysis of which will allow a qualitative assessment of the current digital maturity of the business entity, develop proposals for reforming the structure of the digital environment.

Modeling of business processes is usually carried out and is used by business analysts and managers who strive to improve the efficiency of the process and their quality. In large companies without formalization and description of business processes it is difficult to ensure the appropriate level of executive and technological disciplines. Formalization and description of business processes is key a condition for their automation.

An interconnected system of business processes depicts the entire complex of structural tasks and functions subdivisions, the implementation of which must be ensured in the process the company's activities. Modeling business processes allows regardless of the current number of company personnel, on to fix one or the other at any stage of its evolutionary development functions not only for specific structural subdivisions, but and by specific specialists.

There are many subsystems in this system, each of them can be assessed to one degree or another, and each includes its own performance indicators. Thus, any company that has used this system will have a clear understanding of what level it is in the adaptation process, how effectively it carries out this adaptation, which aspects require more attention and changes, and which indicators have already returned to normal and become positive for companies. For a better understanding of the system, its schematic is represented in Appendix K.

In such system it is important to form aspect of business model of the company and provide a full analysis of all indicators in order to understand the situation of the company. It is important to underestimate the full analysis of company`s effectiveness, quality of services, profitability, productivity, etc. This model allows the company to distribute responsibilities for managing all aspects affected by the system, to monitor which indicators are returning to normal, and where the company

has bottlenecks. In order to overcome the bottlenecks of the company, it is important to understand that main aspects that influence the company`s performance. Such system also helps with that understanding, since the company would be able to analyze all fields of its work.

In addition, this system is aimed at analyzing indicators that will reveal the company's full potential, which in turn can help it decide which digital system can be implemented. For example, if a company has a high productivity indicator, then the company has good working conditions, and therefore the quality of work life is also high. This will help the company develop social sustainability; in turn, working conditions can be improved by introducing robotization or artificial intelligence. After all, if the company has good conditions for employees, then it will not be difficult for them to switch to new technologies.

Also, for example, a company may have high quality indicators for the services provided, which means that the company has a close and profitable relationship with clients who can rely on the logistics company. Consequently, this company can develop in the direction of working with clients and introduce the same CRM system, which will improve this relationship even more.

Thus, this system can open up the potential for a company, indicate both strengths and weaknesses, show in which industry the company should develop and invest, if any. In addition, this system will indicate where the company is not yet ready to implement digital projects, but where it is worth paying attention and improving performance so that the company has even more potential in the future.

This adaptation assessment system will help the company navigate and quickly respond to changes in any aspect of the company's work, and determine where the company should pay more attention. Also, this system can show in real time the company's readiness for any changes that relate not only to digitalization.

However, to fully assess the company's performance, it is necessary to consider each subsystem separately, namely, what indicators are included in it, what these indicators mean, and how they need to be calculated. This explanation of the system will be indicated in Table 3.1.

Table 3.1 – Main indicators of subsystems for assessing the effectiveness of adaptation of a logistics company in the context of digitalization

№	Subsystem	Main indicator	Formula
1	2	3	4
1	Subsystem 1: Effectiveness	KPIs	Depends on the company`s main goals. Usually shows the deviation between the forecasting indicator and the result of the company for the year.
2	Subsystem 2: Economy of the organization	ROA	ROA = Net income / Average total assets
		ROE	ROE = Net income / Average total equity
3	Subsystem 3: Quality of logistics services	Timeliness	$T = \frac{1}{n}\sum_{i=1}^{n}\frac{t_{\exp\_i}}{t_{fact\_i}}$, where t_{exp_i} – orders fulfillment time, expected by customer; t_{fact_i} – the actual time of orders fulfillment; n – the total number of customers.
		Work without claims	$Y = \frac{\sum Q_{ex} - \sum Q_{cl}}{\sum Q_{ex}}$, where Q_{cl} – the total number of orders, which was made with claims from customers; Q_{ex} – the total number of executed orders.
		Reliability	$R = \frac{\sum Q_{rel}}{\sum Q_{ex}}$, where Q_{rel} – the total number of orders, which was made with all contractual terms; Q_{ex} – the total number of executed orders.
		Affordability	$A = \frac{1}{n}\sum_{i=1}^{n}\frac{C_{\exp\_i}}{C_{fact\_i}}$, where C_{exp_i} – price (cost) of orders, expected by customer; C_{fact_i} – the actual price (cost) of orders for customer; n – the total number of customers.
		Service flexibility	$F = \frac{\sum Q_{ex}}{\sum Q_{req}}$, where Q_{ex} – the total number of executed orders; Q_{req} – the total number of customers requests (contacts).

End of Table 3.1

1	2	3	4
4	Subsystem 4: Profitability	Gross profit Margin	Gross profit Margin = Gross Profit / Revenue
		EBITDA Margin	EBITDA Margin = (Net income + Interest + Tax+ D&A Expenses) / Revenue = EBITDA / Revenue
		EBIT Margin	EBIT Margin = (Net income + Interest + Tax) / Revenue = EBIT / Revenue
		Net profit Margin	Net profit Margin = Net income / Revenue
5	Subsystem 5: Productivity	Labor productivity	Labor productivity = Revenue / Number of staff
6	Subsystem 6: Quality of working conditions	Employee turnover rate	Employee turnover rate = Employee who left / 0,5*(Employee at the beginning + Employee at the end) *100
		Gender diversity	Represents the percentage of female in the company.
		Lost Time Injury Frequency (LTIF)	LTIF = ([Number of lost time injuries in the reporting period] x 1,000,000) / (Total hours worked in the reporting period)
		Employee engagement	Employee engagement rate = Number of employees whose score of engagement is higher than 7 / Total number of employees *100
7	Subsystem 7: Implementation of innovations	Digitalization index	$DI = \frac{\sum_{i=1}^{n} Weight_n * Metric_n}{Total\ Weight}$, where $Weight_n$ – weighting coefficients for each metric; $Metric_n$ – metrics characterizing the company's digital readiness; Total Weight – the sum of all weighting coefficients.

Based on this table, it is possible to conduct a detailed analysis of the entire company's activities, touching on all the main indicators, which reflect not only the effectiveness of the company's adaptation to digitalization, but, in principle, the

entire work of the company. Thanks to this assessment system, you can consider the company's productivity, the level of its involvement in ensuring a safe work environment, determine the company's digitalization indices, and analyze how effectively the company operates using KPIs. Of course, not all indicators have clearly defined formulas, since a company can analyze some indicators using its own examples. So, for example, different companies may have their own KPI systems, which in turn helps to analyze its activities. Also, for example, a company may have a specific Gender diversity level, the norm of which the company chooses for itself.

In addition, this assessment system allows you to analyze all indicators as a single system, thanks to the introduction of an integrated indicator. To determine the contribution to the formation of the assessment system, it is necessary to summarize each indicator of the subsystem by creating the integral criteria. Also, based on the integrated indicators of each subsystem, the overall integral indicator of the company can be determined. The formulas for these indicators will be as follows:

$$IC_n = \sqrt[m]{\prod_{i=1}^{m} C_i}\,, \tag{1}$$

where

IC – integral criteria;

n – number of subsystem;

m – the number of the criterions analyzed;

C_i – the value of criterions analyzed.

$$IC_{total} = \sum_{i=1}^{n} Ci\,, \tag{2}$$

where

IC_{total} – total integral criteria;

n – number of subsystem;

C_i – the value of criterions analyzed.

It is possible to carry out a clear and deep analysis of the company's activity, to determine what changes should occur. Consequently, the next stage of the work will be the calculation of these indicators for the FTP company, the analysis of the level of the results of these indicators. Based on these results, it is possible to make recommendations for the logistics company.

3.3 Approbation of the proposed evaluation system of adaptive management of the logistics company in conditions of digitalization

First of all, it is worth determining the level of development of the adaptation process at the FTP company. To do this, it is necessary to conduct a full analysis of the indicators according to the proposed assessment system. Since it was previously highlighted based on other analyzes that the situation in the company is not the best, now it is worth paying attention to all the details. Such analysis would be performed in the order as in the proposed system of company adaptation assessments.

Subsystem 1 “Effectiveness”. In this part of the analysis, it is worth determining what KPI indicators the FTP has. Since the company is developing its services, they will certainly be interested in the quality of the services that the company provides. In addition, the company is interested in its Market share. Therefore, we can highlight the following main KPIs that are important for FTP:

- Level of services;
- Profitability margin indicators;
- Market share indicator;
- Satisfactory index.

In this subsystem, it is important to determine to what extent the company adheres to its goals, how the plan set by the FTP is being fulfilled, and whether

responsibilities for achieving the company's forecasts are correctly distributed. It is important to analyze and compare the results of FTP based on the forecasted values.

In order to compare the effectiveness of implementing these KPIs, it is necessary to compare the company's goal for all 3 years according to these indicators with the company's actual results It is important due to the fact that such results show the ability of FTP to be flexible, understand what are the main focuses of the company. The results of this comparison will be displayed in Table 3.2.

Table 3.2 – Subsystem 1 - KPIs indicator calculations of FTP company

Indicator	Forecast for 2020	Actual result for 2020	Forecast for 2021	Actual result for 2021	Forecast for 2022	Actual result for 2022	Deviation 2022	Deviation 2022, %
Level of services	0,8	0,74	0,75	0,72	0,78	0,62	-0,16	-0,21
Net profit margin	0,05	0,042	0,04	0,039	0,06	0,042	-0,02	-0,30
Market share indicator	0,05	0,04	0,05	0,03	0,03	0,03	0,00	0,00
Satisfactory index	0,9	0,78	0,8	0,83	0,85	0,70	-0,15	-0,18

Based on the obtained results, it is possible to conduct that company has not fully reached its goals. First of all, the company did not achieve the predicted indicator in the level of services. This is due to the fact that the FTP company had problems fulfilling orders in 2022 due to martial law, closed ports, and airlines. This is why the company at first could not fulfill orders in full and at the same level as before. These factors also influenced the reduced Satisfactory index. Although customers could agree with the company, there were many dissatisfied customers whose orders could be delayed or not fulfilled at all.

As for the market share indicator, the company is stable in its position in the market, therefore it can make a fairly accurate forecast. Unfortunately, there have been no significant changes in the company for FTP to reach a new level in the

logistics market. On the other hand, it's hard to say that the company has undergone negative changes, therefore FTP remained in the same place in the market as before.

As for net profit margin indicator, the company also got result lower than the forecasted one. This may happen due to the decrease in sales. The factors influencing this indicator are the same as the others. There is an influence of many aspects on these indicators, in 2022 they have unstable situation.

Also, it is possible to say that FTP is not being able to forecast its KPIs` results due to the fact that within each year the actual results were lower than the forecasted ones.

As for integral criterion, it is possible to calculate it for all 3 years:

$$IC_1(2020) = \sqrt[4]{0{,}74 * 0{,}042 * 0{,}04 * 0{,}78} = 0{,}176.$$

$$IC_1(2021) = \sqrt[4]{0{,}72 * 0{,}039 * 0{,}03 * 0{,}83} = 0{,}163.$$

$$IC_1(2022) = \sqrt[4]{0{,}62 * 0{,}042 * 0{,}03 * 0{,}70} = 0{,}153.$$

Based on the obtained calculations, it is possible to conduct that that within each year such indicator is decreasing.

Subsystem 2 "Economy of the organization". This subsystem has two indicators that can show at what stage a business entity receives the necessary resources. To analyze this subsystem, it is necessary to calculate Return on Assets and Return on Equity for 3 years and compare them. The results of such analysis is represented in Table 3.3.

Table 3.3 – Subsystem 2 - Economy indicators calculations of FTP company

Indicator	2020	2021	2022	Deviation 2020/2021		Deviation 2021/2022	
				UAH thsd, y-o-y	%, y-o-y	UAH thsd, y-o-y	%, y-o-y
Return on Assets (ROA)	0,026	0,026	0,028	0,000	-0,95	0,002	6,54
Return on Equity (ROE)	0,338	0,351	0,323	0,012	3,65	-0,027	-7,73

Based on the obtained results, it is possible to conduct that company`s ROA has increased in 2022 compared to 2021 by 6,54% while in 2021 there were no changes in the indicator. In general, it is possible to say that in 2022 company`s ROA is equal to 2,8%, which is normal for the company with assets-light business model. Moreover, in 2021 such indicator got as stable as in 2020, which is great for the company, due to the fact that there were major changes in operation in 2020 and 2021 compared to 2022. Such increase may be caused by the only slight decrease in net profit of the company.

As for ROE, in 2022 there was an increase of equity of FTP, which caused the decrease of ROE in 2022 compared to 2021 by 7,73%. In 2021 compared to 2020 there was an increase by 3,65%, which means that company had a higher debt in 2021 to pay off. In 2022 company did not get such high debt, so then the equity did not affect the performance of the company that much.

As for integral criterion, it is possible to calculate it for all 3 years:

$$IC_2(2020) = \sqrt[2]{0{,}026 * 0{,}338} = 0{,}094.$$

$$IC_2(2021) = \sqrt[2]{0{,}026 * 0{,}351} = 0{,}096.$$

$$IC_2(2022) = \sqrt[2]{0{,}028 * 0{,}323} = 0{,}095.$$

Based on the obtained calculations, it is possible to conduct that that within each year such indicator is more on a stable side with subtle changes.

Subsystem 3 “Quality of logistics services”. Another important aspect of the performance of FTP is its quality of the service. For any logistics company, it is important to fully or almost completely meet the client’s needs.

And for this, the company must have high quality indicators and properly structured processes for fulfilling orders. In addition, for such an analysis it is important to receive feedback from customers in order to correct mistakes that the company may make. This is an integral part of quality analysis, because without correcting errors there will be no progress, which means the company will have a much greater chance of losing clientele, which will lead to a decrease in sales and the number of orders.

Clients may simply go to a competitor, given how many similar offers can now be found on the logistics market. This is why it is so important to conduct this analysis based on several indicators that can fully reveal the company's potential, determine where changes should be made, as well as how ready the company is to adapt to digitalization without obvious negative changes in the quality of the services provided. An analysis of the quality of services for the FTP company will be presented in Table 3.4.

Table 3.4 – Subsystem 3 - Quality services indicators calculations of FTP

Indicator	2020	2021	2022
Timeliness	0,688	0,745	0,728
Work without claims	0,731	0,824	0,683
Reliability	0,779	0,801	0,785
Affordability	0,526	0,642	0,437
Service flexibility	0,735	0,834	0,821

Based on the obtained results it is possible to conduct that company`s general performance is on the medium level. So, for example, the company has the lowest indicator of affordability, which means that FTP clients expect prices for services to be much lower than they actually are. As for the next rather low indicator, namely work without claims, this result may be due to the fact that due to the closed corridors for air and sea transportation, the company began to have complaints.

In addition, due to international transport, FTP is much more difficult to control the integrity of the cargo upon delivery, which also affects the number of complaints from customers. However, this does not mean that the company has a bad indicator, it only means that FTP has something to strive for to improve the quality of its work.

As for the other three indicators, the company has quite good results. Based on these indicators, we can confidently say that FTP clients can rely on the company and trust it. This allows the company to build a base of loyal customers who are

confident in the quality of the services received. In addition, FTP has a good flexibility indicator, which can already be shown by two main factors: the company has a well-developed process of responding and adapting to changes, and also that the company will not have difficulties responding to new changes in the logistics market. Consequently, the company has more opportunities for development. And as for timeliness, FTP also has a good level of this indicator, which means an almost exact comparison of the delivery time that the client expects and the actual delivery time.

As for comparison of 2021 and 2020, the situation in 2021 was much more positive for the company. All indicators were increasing due to the ability of the company to get better at its services provision. Situation on the logistics market got also more stable and company was able to finally overcome the adaptation to covid period, which caused the stable increase of FTP`s quality of services.

As for integral criterion, it is possible to calculate it for all 3 years:

$$IC_3(2020) = \sqrt[5]{0{,}688 * 0{,}731 * 0{,}779 * 0{,}526 * 0{,}735} = 0{,}686.$$

$$IC_3(2021) = \sqrt[5]{0{,}745 * 0{,}824 * 0{,}801 * 0{,}642 * 0{,}437} = 0{,}766.$$

$$IC_3(2022) = \sqrt[5]{0{,}728 * 0{,}683 * 0{,}785 * 0{,}437 * 0{,}821} = 0{,}675.$$

Based on the obtained calculations, it is possible to conduct that within each year such indicator is not that stable. There was an increase in 2021 and decrease in 2022, which was caused by such fluctuations for all 5 indicators for this period of time.

Subsystem 4 “Profitability”. An important aspect of a company’s operation is also its profitability. Since during digitalization a company may incur losses at first until adaptation is completed, profitability is an important factor in this analysis. Without proper analysis of this indicator, you can make the wrong decision and go into the red, which in turn can lead to bankruptcy.

During the adaptation period, the company must have enough funds to cover the costs of purchasing a digital system, as well as for the first stages of adaptation

in order to continue its activities. Thus, the analysis of the profitability of FTP will be carried out in Table 3.5.

Table 3.5 – Subsystem 4 - Profitability indicators calculations of FTP

Indicator	2020	2021	2022	Deviation 2020/2021		Deviation 2021/2022	
				UAH thsd, y-o-y	%, y-o-y	UAH thsd, y-o-y	%, y-o-y
Gross profit Margin	0,478	0,509	0,426	0,031	6,59	-0,083	-16,38
EBITDA Margin	0,424	0,458	0,371	0,034	8,12	-0,087	-19,07
EBIT Margin	0,106	0,094	0,121	-0,012	-11,66	0,027	28,47
Net profit Margin	0,042	0,039	0,042	-0,002	-5,69	0,003	7,57

Based on the obtained results, it is possible to conduct that in 2022 company`s performance got less profitable than in 2021 or 2020. This was, of course, due to many factors as war, lack of number of orders, closed corridors for transportation. In 2022 gross profit margin has decreased by 16,4% compared to 2021, while in 2021 such indicator has increased by 6,59%. As for EBITDA margin, in 2022 it also decreased by 19%, while in 2021 there was an increase by 8%. However, in 2022 the EBIT margin has increased by almost 29%, while in 2021 there was a decrease of such indicator. As for net profit margin, it also increased in 2022 by almost 8%.

Such changes in the indicators reflect that company`s operating performance has decreased, which means that company is not as able to involve investors as it was in 2021. Moreover, FTP is getting less efficient at the usage of its core business activities. It is possible to say that in 2022 company lost its potential for growth and not as stable as it was in 2021.

As for integral criterion, it is possible to calculate it for all 3 years:

$$IC_4(2020) = \sqrt[4]{0{,}478 * 0{,}424 * 0{,}106 * 0{,}042} = 0{,}173.$$

$$IC_4(2021) = \sqrt[4]{0{,}509 * 0{,}458 * 0{,}094 * 0{,}039} = 0{,}171.$$

$$IC_4(2022) = \sqrt[4]{0{,}0426 * 0{,}371 * 0{,}121 * 0{,}042} = 0{,}168.$$

Based on the obtained calculations, it is possible to conduct that within each year such indicator is more on a stable side, however there are decreases and increases within all 3 years.

Subsystem 5 “Productivity”. Productivity is also an important aspect of a company’s work, which allows you to determine how effectively the company invests its resources to obtain results. In this process in the FTP, this directly concerns the output in the form of fulfilling delivery orders and the effort invested in it. Therefore, the productivity indicator for FTP will be displayed as follows:

Labor productivity (2019) = 12708,40 / 74 = 171,74 UAH/employee.

Labor productivity (2020) = 13834,30 / 81 = 170,79 UAH/employee.

Labor productivity (2021) = 15348,30 / 86 = 178,47 UAH/employee.

Labor productivity (2022) = 14118,14 / 90 = 156,87 UAH/employee.

Based on the obtained results, it is possible to conduct that company in 2022 started to get less revenue per employee, compared to 2021 and 2020. In 2021 there was a slight increase due to the fact that company got more stable on the market. In 2022 the decrease happened due to decrease in the revenue and the situation on the Ukrainian market. In such case, it is possible to say that FTP gets almost 157 UAH per each employee.

As for integral criterion, it is possible to calculate it for all 3 years, however, the formula for such criterion would be different, since in such subsystem there is only one indicator to analyze. However, the formula for calculations would be different due to the fact that there is only one indicator in such subsystem. The criterions are:

IC_5 (2020) = Labor productivity (2020)/ Labor productivity (2019) = 0,994.

IC_5 (2021) = Labor productivity (2021)/ Labor productivity (2020) = 1,045.

IC_5 (2022) = Labor productivity (2022)/ Labor productivity (2021) = 0,879.

Based on the obtained calculations, it is possible to conduct that the integral criterion is not stable within each year, it is slowly decreasing. This may be caused by some changes in the structure of the company, unstable changes in the amount of revenue and in the number of employees.

Subsystem 6 “Quality of working conditions”. Modern companies are very attentive to the issue of sustainable development. The social aspect is also important in this issue, as it shows not only the responsibility of employees in the development of this issue, but also the effectiveness of the company itself in improving sustainability.

Thus, in a modern company it is very important to ensure a safe and clean workplace, increase the percentage of women on staff, and involve all employees in the development company. These aspects are very important for the company, as they directly affect its image and the interest of clients working with a company that has a more modern approach to work. This also applies to international employees as it is important for them to work in a safe environment with a quality work environment. Analysis of the results raises the question of the sustainability of FTP, which will be discussed in Table 3.6.

Table 3.6 – Subsystem 6 - Quality of working conditions indicators calculations of FTP

Indicator	2020	2021	2022
Employee turnover rate	0,096	0,045	0,055
Gender diversity (percentage of women in staff)	45	50	67
Lost Time Injury Frequency (LTIF)	-	-	-
Employee engagement (annual percentage)	68	71	75

Based on the obtained results, it is possible to conduct that company provide safe environment for its employees. More than 75% of them are involved in development of the FTP. Moreover, the employee turnover rate shows that there is not a lot of people that want to quit working for FTP. It is worth noting that when analyzing these aspects, FTP, unlike many other logistics companies, has a very high percentage of women in its staff. On average, in large logistics companies like DHL, there are few women among the employees; the DHL company has only set itself

the goal of reaching 30% in this aspect, while FTP has a much higher percentage of women working in the company than men.

Also, it is possible to conduct that company has a decrease of employees who leave the company within each year. In 2022 due to the war some people had to quit their jobs, however, a lot of women came on their places. As for other years, the situation is a more normal for every company, sometimes some people can leave their jobs due to other reasons.

However, there is a positive increase in the gender diversity, which is caused by the war since a lot of men were mobilized. Due to that, the percentage of women in the staff of FTP is increasing.

Company does not provide any information about any injuries that happen at work, in such case it is not possible to calculate Lost Time Injury Frequency (LTIF) for FTP.

As for integral criterion, it is possible to calculate it for all 3 years:

$$IC_6(2020) = \sqrt[3]{0{,}096 * 0{,}45 * 0{,}68} = 0{,}309.$$

$$IC_6(2020) = \sqrt[3]{0{,}045 * 0{,}50 * 0{,}71} = 0{,}252.$$

$$IC_6(2020) = \sqrt[3]{0{,}055 * 0{,}67 * 0{,}75} = 0{,}302.$$

Based on the obtained calculations, it is possible to conduct that the company`s integral criterion is getting more stable on 2022.

Subsystem 7 “Implementation of innovations”. For this work, this is the most important aspect of the analysis, since it directly shows the current level of digitalization of the company. Based on these indicators of digitalization indices, you can determine how ready the company is to implement something new, how much the company is developing in the digital sphere at the current stage, and what technologies it uses. Indexes help to analyze in detail the quality of the implementation of digital aspects in the company, the level of improvements that are brought to the company, the quality of the system provided for the client, for the company’s employees. In addition, these indicators help determine the level of online trading of the company, how active clients are on the same company website,

or in the case of FTP, what is the activity in the application, what should be improved in it.

First of all, it is important to analyze the main weights of FTP and the results of such weights. In such case, for FTP the analysis show that main weights for the company are:

Weight for the percentage of employee using digital tools – 0,3 for 30/45/35%;

Weight for automation level percentage – 0,4 for 60/75/65%;

Weight for percentage of usage of analytical data – 0,3 for 30/35/30%.

In such case, the result of Digital Index would be:

$$IC_7 = DI\ (2020) = \frac{(0{,}3 * 30\%) + (0{,}4 * 60\%) + (0{,}3 * 30\%)}{(0{,}3 + 0{,}4 + 0{,}3)} = 0{,}42.$$

$$IC_7 = DI\ (2021) = \frac{(0{,}3*45\%)+(0{,}4*75\%)+(0{,}3*35\%)}{(0{,}3+0{,}4+0{,}3)} = 0{,}54.$$

$$IC_7 = DI\ (2022) = \frac{(0{,}3 * 35\%) + (0{,}4 * 65\%) + (0{,}3 * 30\%)}{(0{,}3 + 0{,}4 + 0{,}3)} = 0{,}455.$$

Based on the obtained results it is possible to conduct that the situation for digitalization of FTP is not the stable due to the same reasons as all other indicators. In such case, it is possible to say that within all 3 years company tries to at least stay on the same level with all the changes on the market, but does not try to improve this level.

After the analysis of each subsystem, it is possible to provide a table with all the results along with some analysis. Table 3.7 would represent the previous analysis in order to sum up the situation of FTP by comparing the integral criterion for each subsystem. It is also possible to schematically depict the dynamics of the results for integral criterion of each subsystem.

The results would be represented on Figure 3.4. Based on the obtained results it would be possible to analyze the main trend of FTP`s performance, what are the main focuses of the company and understand if there are any adaptations in the company for now.

Table 3.7 – The results of integral criterions of FTP

№	Subsystem	IC 2020	IC 2021	IC 2022
1	Subsystem 1	0,176	0,163	0,153
2	Subsystem 2	0,094	0,096	0,095
3	Subsystem 3	0,686	0,766	0,675
4	Subsystem 4	0,173	0,171	0,168
5	Subsystem 5	0,994	1,045	0,879
6	Subsystem 6	0,309	0,252	0,302
7	Subsystem 7	0,420	0,540	0,455
8	TOTAL	2,852	3,033	2,727

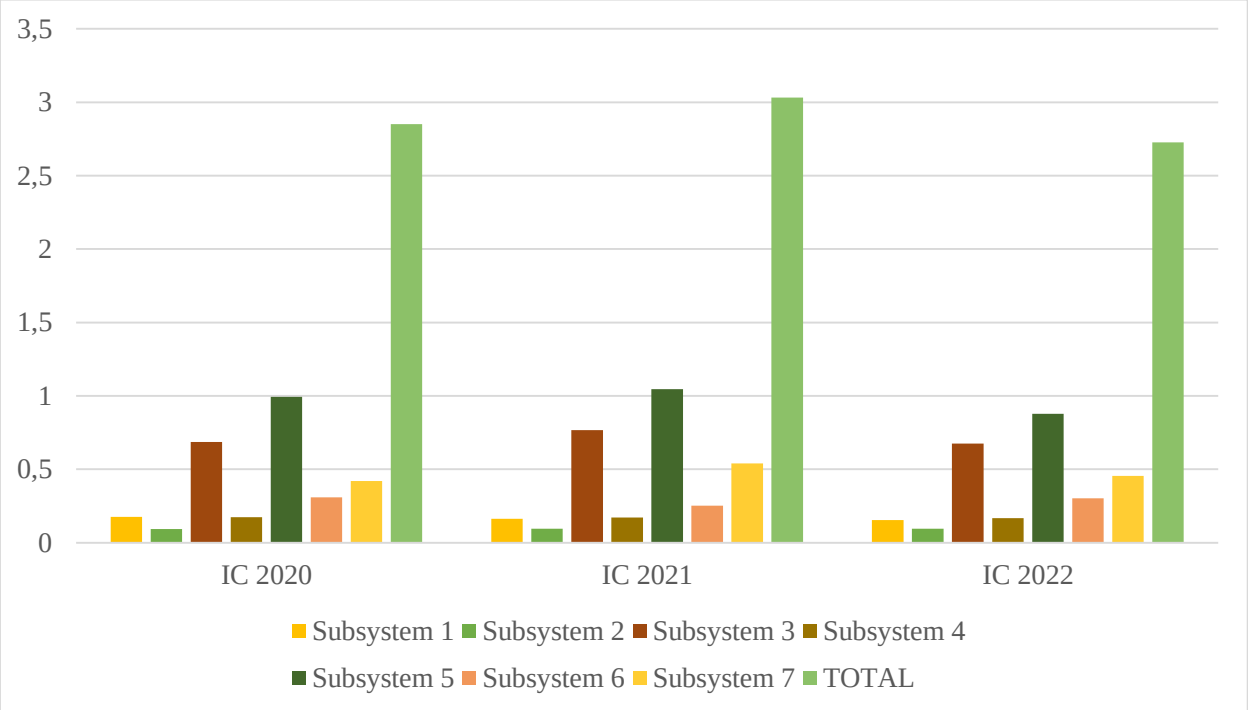

Figure 3.4 – Integral indicators of FTP

Based on the obtained results, it is possible to conduct that the company's situation with digitalization is extremely negative. In 2022 the criterions for all subsystems have decreased compared to 2021. It is also possible to say that some of such criterions in 2022 are lower even than in 2020, which shows that company got

less stable on the market. Due to that, FTP is not ready for digitalization. The company has not developed any full-fledged digital systems that would improve the company's activities. On the other hand, as mentioned earlier, FTP has a developed application, but it does not fully cover the entire digitalization potential that the company has. Thus, it can be noted that the company should pay more attention to digitalization.

Company may provide main strategies in its digital implementation, which may focus on different aspect. Each of them can be analyzed by the conceptual model or the evaluation system that focuses on the analysis of company`s performance. Digitalization may change the operational processes, customer experience, business model of the company, etc. The main focus of this work is changes in the business model of the company since it may influence the overall performance of the FTP. Based on that, company may include in its activity any type of digital strategy, which may be chosen by its adaptive management.

In general, based on a detailed analysis of the logistics company FTP, it can be noted that at the moment the company not only does not use any digital systems, but is also, in principle, not fully prepared to make any changes in its business model. The company should pay more attention to this aspect, since digitalization provides much more opportunities for development.

However, the company should first of all pay attention to digital systems, which directly affect the company's business model. Also, it is needed to take into account competitors` experience, due to which company may decide which digital systems would be beneficial to use. To make this decision, company can turn to the trend radar, which determines all modern digital trends in the logistics market. Also, company should focus on its business model, since trends would change it. A great example for FTP would be international logistics company with the same business model (business-light) – DSV. Company focuses on providing more digital experience for its employees and customers. Due to that, DSV developed its own trend radar. An example of a standard trend radar is represented on Figure 3. 5 [6]. As for DSV, its trend radar would be represented on Figure 3.6 [12].

Figure 3.5 – Impact radar for business model of the company [6]

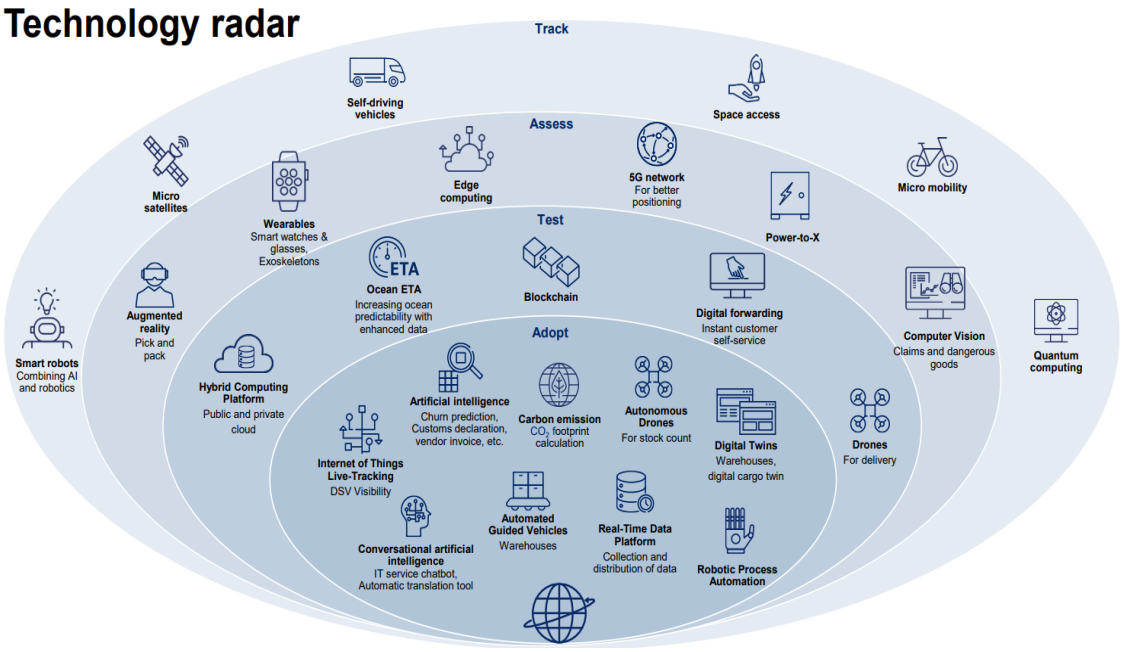

Figure 3.6 – Trend radar of DSV [12]

Based on this, it is possible to determine not only the main trends that the FTP company can take advantage of, but also which digital trends are suitable for it as a company with an asset-light business model. It is also worth noting that there are

now following trends that directly affect the company's business models. Some of them have more potential in the future. FTP may include in its structure:

– Artificial intelligence;

– The "Internet of Things";

– Digital ecosystem.

FTP may also use block chain, however, it does not really would affect its performance in a more modern way. For a more modern approach in logistics company may use Artificial intelligence. The example of usage of AI in logistics would be customs declaration. For FTP this would be a great opportunity to improve its existing Customs Logistics. The example of such customs processes is represented in the Figure 3.7 [12].

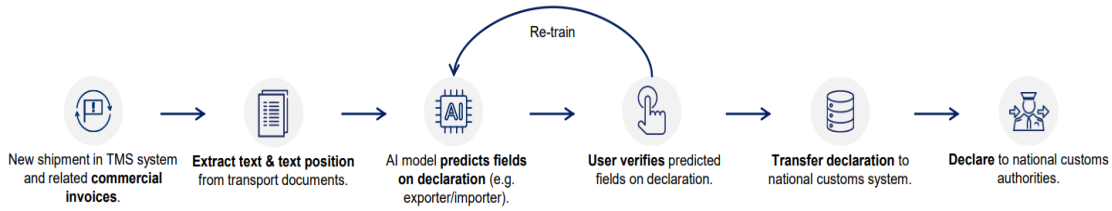

Figure 3.7– Artificial Intelligence – customs declaration process [12]

Another trend suitable for FTP will be the use of the digital ecosystem. The company has a big problem with communication within the company, because of this the full potential is not revealed. Thanks to the digital ecosystem, the company will have the opportunity to automate the work process, which in turn will reduce the influence of the human factor on the company's work and bring more opportunities for development.

The latest big trend for logistics is IoT. This trend allows you to automate many logistics processes, such as supply chain, order processing, customer service, warehouse work, storage of goods, shipments, etc. A company that implements IoT has many opportunities for digitalization and process automation, which in turn improves the company's work and the quality of the services provided.

In case if the company introduces digitalization into its processes, namely the proposed trends, this will affect all aspects of the evaluation system. So, for example, the introduction of a digital ecosystem into the work of the FTP, the company will have the opportunity to automate the work process. This trend will increase many factors, because the company will not only have processes automated, but will also have “extra hands” to develop something new and improve the old. Thus, this trend towards working conditions within the company, the turnover of employees will become less, because many will want to stay in a developing company. In addition, this will also affect the development of the company, which means that in general it is possible to predict revenue growth, which in turn affects many aspects, such as labor productivity of the company, profitability (financial margins), economy of the organization (ROA and ROE). Due to changes in the profitability, the KPIs of the company would also be affected due to the fact that Net Profit Margin is on the KPIs of FTP. In case of growth of economy, this may be affected by changes in the assets structure of the company, which may increase the ROA. In general, it is possible to conduct that FTP would work more effectively, and may increase some of its indicators.

Another trend is IoT, which would also affect positively the company`s results. One of the main cases where the changes might happen is company`s services. FTP may use any system that IoT provides, automation of its logistics services, for example. This will directly affect the quality of the services provided, and therefore will increase all criteria for assessing their quality. Consequently, an improvement in services will also lead to an increase in the KPIs of the company, since the level of services provided, as well as the level of customer satisfaction, is important for FTP. The second will also be influenced, since as the quality of services improves, the level of customer satisfaction will increase.

In addition, the company was proposed to use AI, and using the example of DSV, it was proposed to use customs declarations created by artificial intelligence. This, in turn, will affect the improvement of the same services provided, and therefore increase the company’s profit. Also, it is worth noting the growth of the

digitalization index itself. First of all, in general, it will be possible to talk about the company as already modern with digital changes, however, it is worth noting that these systems affect all indicators important for evaluating the company. Thus, the digital ecosystem affects employees using digital tools percentage and on automation level. IoT affects the automation level and usage of analytical data percentage, due to the future ability of the company to gain more feedback from clients. AI also affect all these 3 aspects.

Based on that, it is possible to forecast the integral criterions results in case of digitalization of FTP. The results of the forecast are represented in Table 3.8 and on the Figure 3.8.

Table 3.8 – Forecasts of digitalization results of FTP

№	Subsystem	IC Forecasted
1	Subsystem 1	0,165
2	Subsystem 2	0,105
3	Subsystem 3	0,740
4	Subsystem 4	0,205
5	Subsystem 5	0,990
6	Subsystem 6	0,460
7	Subsystem 7	0,735
8	TOTAL	3,400

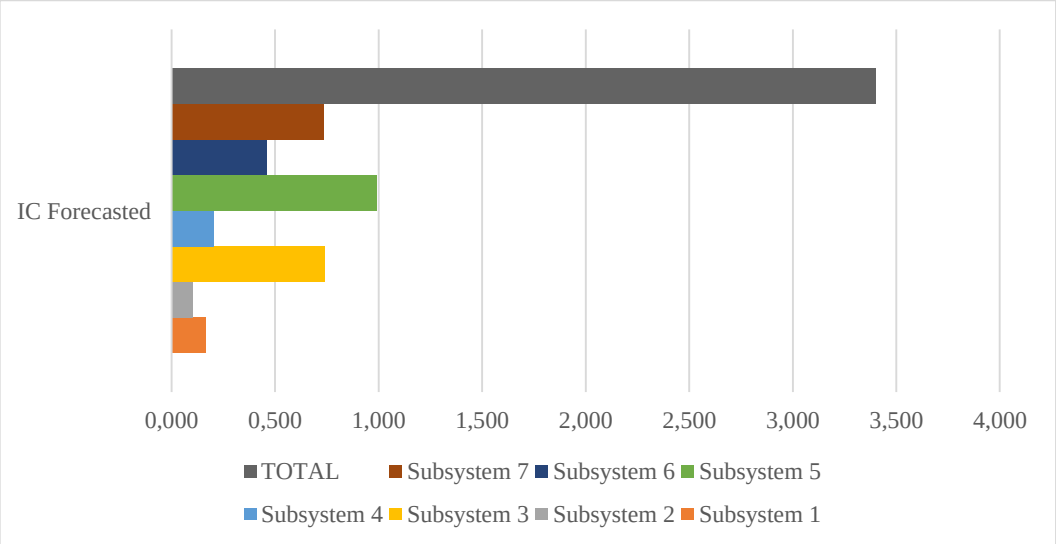

Figure 3.8 – Forecasts of digitalization results of FTP

Thus, all these systems will influence each subsystem of assessing the company's effective adaptive management. Therefore, the FTP company should decide which improvements are most important to it. Based on the trend radar, the company could implement several systems in its activities, which in turn would improve the company’s performance across the entire proposed assessment system. In addition, this would help develop FTP as a more modern company, which in turn would attract more clients. And growing customer demand is one of the levers for improving its activities.

In addition, it is worth noting that the FTP company has already begun to try to adapt its business model to some changes. For example, the company began to cooperate with the Pritula Foundation, as well as with the Financial Defense of Ukraine. These collaborations have changed FTP supplies and opened up new directions in its work, because now it has to organize the delivery of goods to “hot” spots, send military supplies, equipment, and uniforms. Consequently, the company’s actions regarding the formation of delivery routes have changed

In addition, due to the migration of the Ukrainian population, the company was able to organize a more flexible response to orders abroad by opening a hub in Poland. Thanks to this, the company was able to redirect some of the orders there and send international deliveries through Poland in the period 2022, despite the closure of air routes and sea channels.

It is also worth noting that FTP is thinking about changing its business model. The company has long discussed ideas about its own cars and warehouses. This would allow the company to be more flexible, fulfill orders much better and change its cost structure. After all, at the moment the company uses trucks and warehouses for rent. Thus, the company decided to try integration with the asset-based business model. The FTP company purchased 1 truck for its own use and is already trying to deliver to them, without rent.

Thanks to adaptive management, the company was able to achieve these changes and improve its activities at the present time. Without this process, FTP would continue to rent trucks, would not deviate from its business model, and would

fulfill orders to the extent that it does now. Without these changes, in 2022 the company would have indicators much lower than the current ones, the quality of services would decrease, as well as their quantity. Therefore, it is important for a company to develop and be confident in its actions.

3.4 Chapter 3 summary

In the project part of the thesis, a conceptual model was developed for adapting the business model of a logistics company in the context of digitalization, which allows not only to determine the main tasks and stages of digitalization, but also reveals the main stages of this process. Using this model, a logistics company can be fully prepared for digitalization processes, determine for itself the main aspects that it will affect, as well as what principles are used taking into account digitalization and the sustainable development of the company.

One of the components of the proposed conceptual model is a system for assessing the effectiveness of adaptive management in the context of digitalization, which allows you to assess the impact of the adaptation response on certain areas of the company’s activities. This system allows you to conduct a detailed analysis of the company’s work, identify strengths and weaknesses, and also assess the company’s level of readiness for digitalization. This system can be assessed at any time during the company’s operation, whether it is just readiness for digitalization or already at the moment of introducing digital tools.

The testing of the developed system for assessing the effectiveness of adaptive management in the context of digitalization was carried out on the basis of data from the logistics company "FTP". The calculation of the indicators included in each subsystem and the complex integral indicator make it possible to identify bottlenecks in the adaptation system of a logistics company in the context of digitalization.

As a recommendation, the following digital tools were proposed for implementation: AI, IoT and digital ecosystem, based on the practice of such a company as DSV, since FTP and DSV have the same business models - assets light. The introduction of such digital tools, in our opinion, will increase the level of digitalization of operational and strategic activities, which is confirmed by the forecast indicators of all groups of indicators included in the complex integral indicator, which indicates the effectiveness of the proposed recommendations.

Of course, current trends are created both by customers and, in general, by competitors in the market. Every day more and more programs appear that can improve and facilitate the work of anyone, including a logistics company. This applies to more familiar IoT, as well as something new like AI. However, it is important to always be confident in the readiness to implement this novelty.

CONCLUSIONS AND RECOMMENDATIONS

Clients, modern trends, suppliers, stakeholders, investors - everyone creates their own requirements for a logistics company. And the more modern the company's approach, the more requirements it must fulfill. To meet the requirements, the company must be flexible, fast, and responsible. And for these aspects, the company must be well technically developed, because without automation of at least part of its processes, the company will collapse as soon as it tries to reach a modern level.

Digitalization is a long and painstaking process if carried out without proper preparation. For a company to be ready for change, it is necessary to bring in a number of processes that influence these changes. To do this, it is necessary to analyze the company at many levels, consider not only the usual financial analysis, but also analyze the company's capabilities for digitalization, its current level of development, interaction with customers, with supplies, and the presence of existing digital systems.

A modern logistics company provides not only a simple range of services such as transportation, storage, contract execution, but also allows clients to track their orders 24/7, helps with the financial component, uses more modern technologies in its work, automates order processing processes, and digitalizes the work component. However, not every modern company fulfills these conditions; there are many other factors that allow it to maintain its competitiveness, being either a small company that has only recently entered the market, or simply a company with incomplete digitalization of the enterprise.

However, in the modern world, the more technology, the better it is for the company and its development. Consequently, more and more companies are turning to digitalization, which in turn brings more and more opportunities for the company. At this stage, it is much more convenient for the client if the company has a system

for processing their orders, or the company accepts some kind of feedback from the client. After all, this is how the company develops.

Digitalization plays a major role in the current development of logistics. This process affects the company's business model, its management and planning system, and interaction within the company. Thus, digitalization can affect all processes, systems and chains. On the other hand, the company may have difficulties with digitalization, because it is not always possible to be 100% ready without proper preparation. This is exactly what is discussed in this work – the company's readiness for digitalization.

Using the example of FTP, the importance of digitalization was given. Many foreign large logistics companies such as DHL, DSV, as well as the Ukrainian company "UkrPoshta" have long begun to introduce digitalization into their daily basis. However, FTP has not yet reached this level of technology. After the analysis, it was revealed that the company, like many other Ukrainian companies, was affected by the war, changing market trends, closed air and sea corridors, and many other negative factors. Thus, we can say that in 2022 the company failed to cope with the issue of improving its work; many indicators had a negative downturn effect compared to the previous year. From here it can be noted that the FTP company is no longer coping and cannot maintain the set bar without introducing automation of logistics processes or changes in the company itself. However, as mentioned earlier, the company is gradually changing its business model through cooperation with funds, adapting to an asset-based business model. This is due to the decision to improve the quality of work, reduce operating costs, remove third parties from their activities during transportation, that is, get rid of truck rentals.

In general, this work analyzed the factors that influence a company's choice of digitalization. Thus, the company does not dare to digitalize under the influence of such factors as:

- Cost of the implemented system;
- Lack of finances for implementation;

– Insufficient level of qualifications of employees;

– Constant change in trends in the logistics market, etc.

Under the influence of these factors, it may be difficult for a company to make a decision about digitalization and companies start with something small, simpler and less expensive in order to determine whether it is ready for the conditions dictated by digitalization. It is possible to say that the FTP company could not cope without digitalizing its processes, albeit at a small level. Like FTP, many logistics companies would not have managed without the introduction of digital tools. This is where the importance of digitalization of enterprises grows. However, without a proper understanding of this process, a company that is implementing digitalization may not adapt fully effectively, which means it may suffer losses or even abandon the idea of digitalization altogether, since this will only incur costs.

To solve this problem, a conceptual model of adaptation of a logistics company in the context of digitalization was proposed. The company needs to effectively adapt to changes in the business model without high losses, and therefore, it is worth turning to the proposed conceptual model, because it reveals the main stages and tasks of adaptive management, components and principles of change. Thanks to the developed model, the company will have a better understanding of what processes to use for effective changes, what tasks need to be set. In order to avoid some kind of collapse, a company that plans to implement digitalization should pay attention to the tasks set in the model, taking into account the impact of sustainable development on the company.

In addition, the work proposed a system for assessing the effectiveness of adaptive management of a logistics company. This system allows a company to analyze its activities, determine either the company’s readiness for digitalization, or how effectively this process is currently going on, if the company has already implemented something. This system is focused on any stage of digitalization of a company, as it helps to analyze all processes, namely:

– Effective operation of the company;

- Enterprise profitability;
- Quality of services provided;
- Company profitability;
- Company productivity;
- Quality of working conditions;
- Level of innovation in the company.

These subsystems allow to conduct a complete analysis of the company, determine the level of quality of its work, what conditions it provides for its employees, how productive and profitable its activities are. After such a detailed analysis, the company can decide for itself whether to remain at the current level or improve its activities by introducing digital tools, existing systems, artificial intelligence, or analyze the work of other companies with a similar business model in order to understand from their experience what changes waiting for company. In addition, this work considers the integral indicator calculated for each of the subsystems. This indicator will help to summarize all subsystems together and view the overall development trend of the company. Thus, the analysis of subsystems will be combined into a single structure, allowing us to consider the effectiveness of adaptive management and determine at what stages changes need to be made.

This assessment system was examined using the example of FTP and showed the same dynamics of change as financial analysis in the analytical part of the work. In general, we can say that after the results of 2022, the company needs to introduce digital systems into its activities, because the company cannot cope with the assigned load. The system of indicators made it possible to understand the general situation in the company, and also made it possible to determine which FTP systems should be implemented in its activities. Thus, the company was offered the implementation of AI, Digital ecosystem, and Internet of Things. These systems will directly affect the existing aspects of the company's work and help to improve it.

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Appendix A

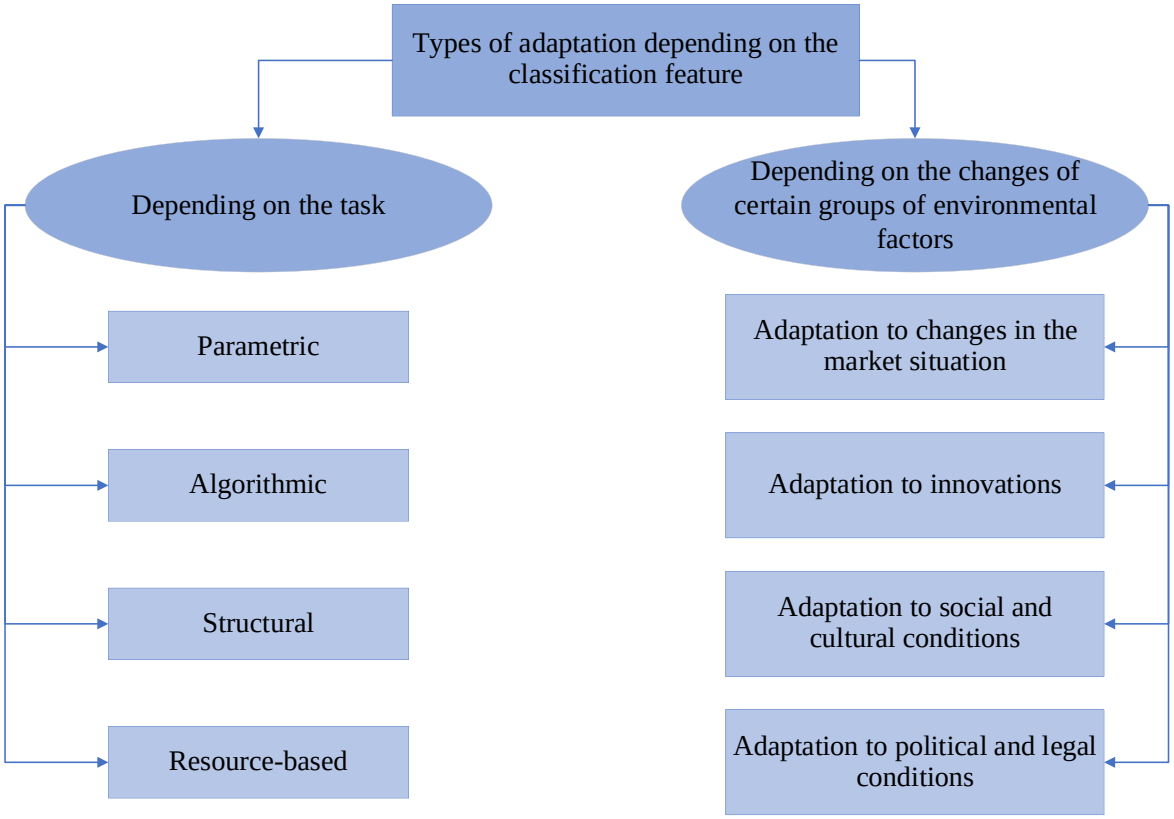

Figure A.1 – Types of adaptation depending on the classification feature
Source: created by author based on [72]

Appendix B

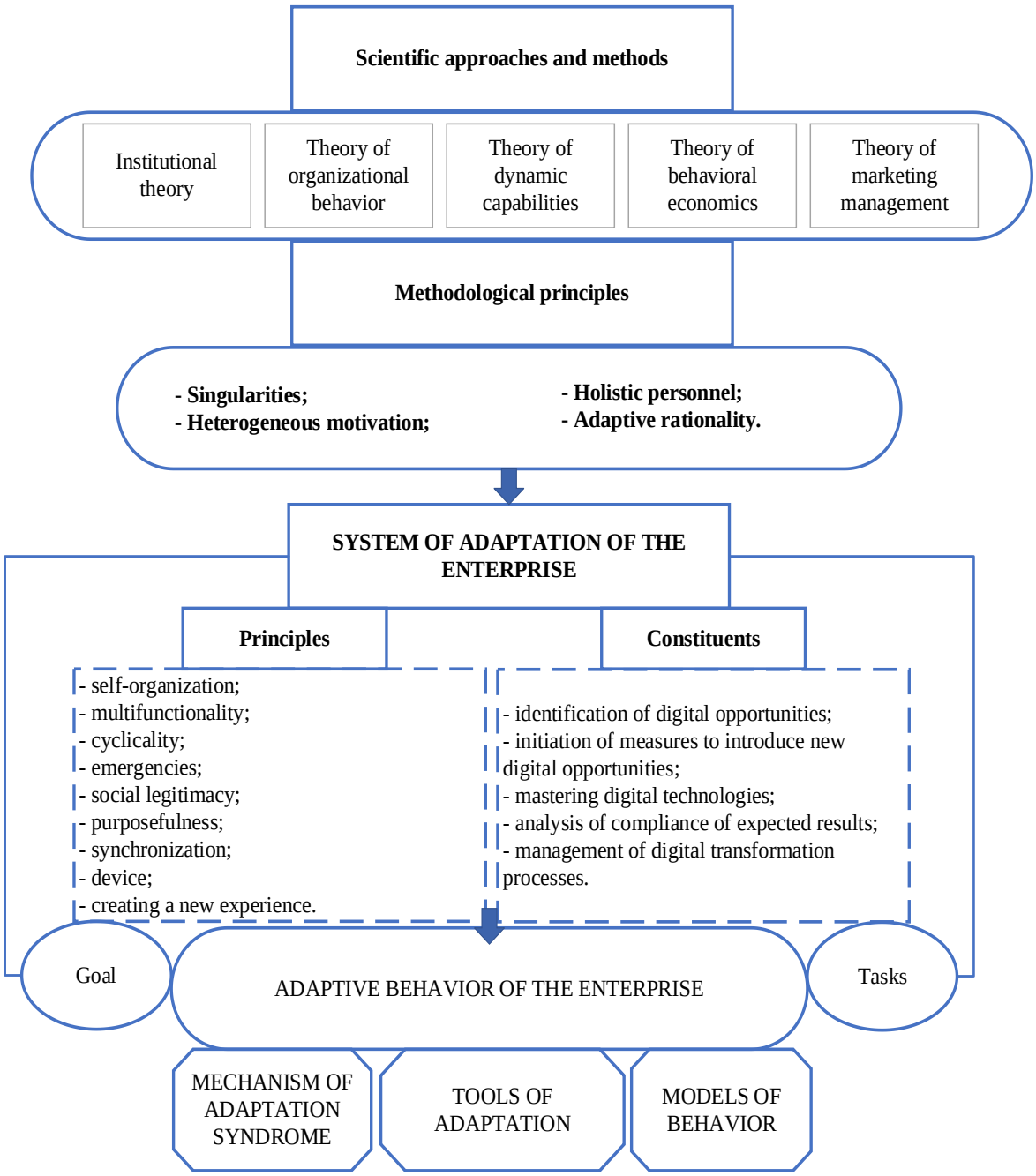

Figure B.1 – Theoretical and methodological basis of adaptive behavior
Source: created by author based on [56]

Appendix C

Table C.1 – The essence of approaches to the adaptive development of the management system from the standpoint of existing approaches to management

Approach to management	**The essence of adaptive development from the standpoint of approach**
Systematic approach	A group of interrelated elements that enable activities related to adaptive development, having input and output, as well as communication with the external environment.
Functional approach	The delegation of powers and responsibilities through development functions. The system of delegation of authority and responsibility permeates all activities related to adaptive development as a whole.
Process approach	The definition of sub-processes of the process of adaptive development of the management system, management of these processes to obtain the best results of adaptive development, increase efficiency and ensure consumer satisfaction.
Structural approach	Allows to ensure the coordination of individual works related to the development of the management system and interaction between individual employees participating in the process of adaptive development. Such approach involves the use of decentralization, division of labor and other means of increasing the efficiency of adaptive development.
Indicative approach	Evaluates the effectiveness of the results of adaptive development. With such an approach, the problem of assessing the effectiveness is shifted towards the establishment of indicators, quality criteria of implemented measures, measured in numerical form or determined by experts.
Institutional approach	Reduces uncertainty, the structure or activity that organizes interaction between participants in the development process. Understanding the norms, systems of rules, frameworks of a certain institution indicates that the institution sets certain limits of interaction in the process of adaptive development.

Source: created by author based on [55]

Appendix D

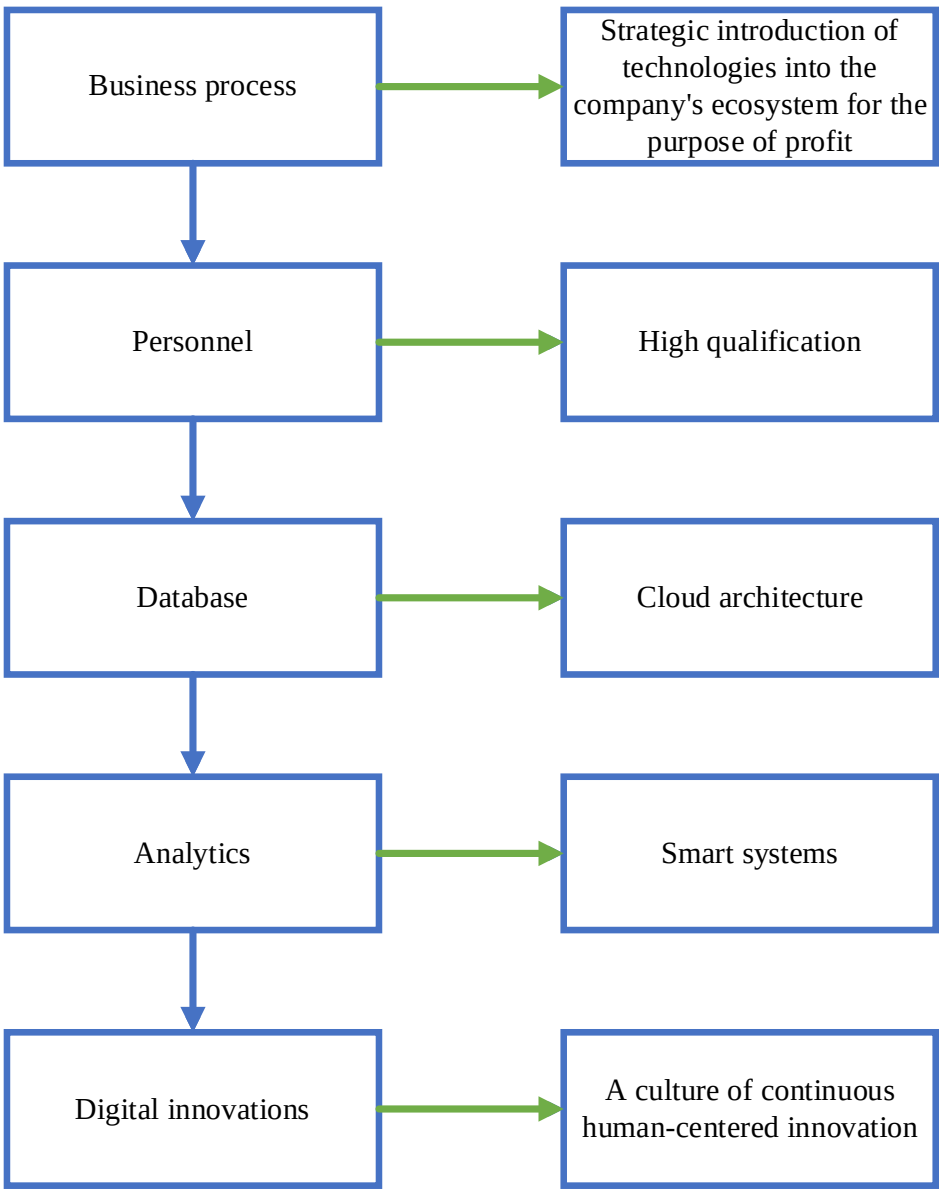

Figure D.1 – Block diagram of the digital transformation of the company's business process

Source: created by author based on [78]

Appendix E

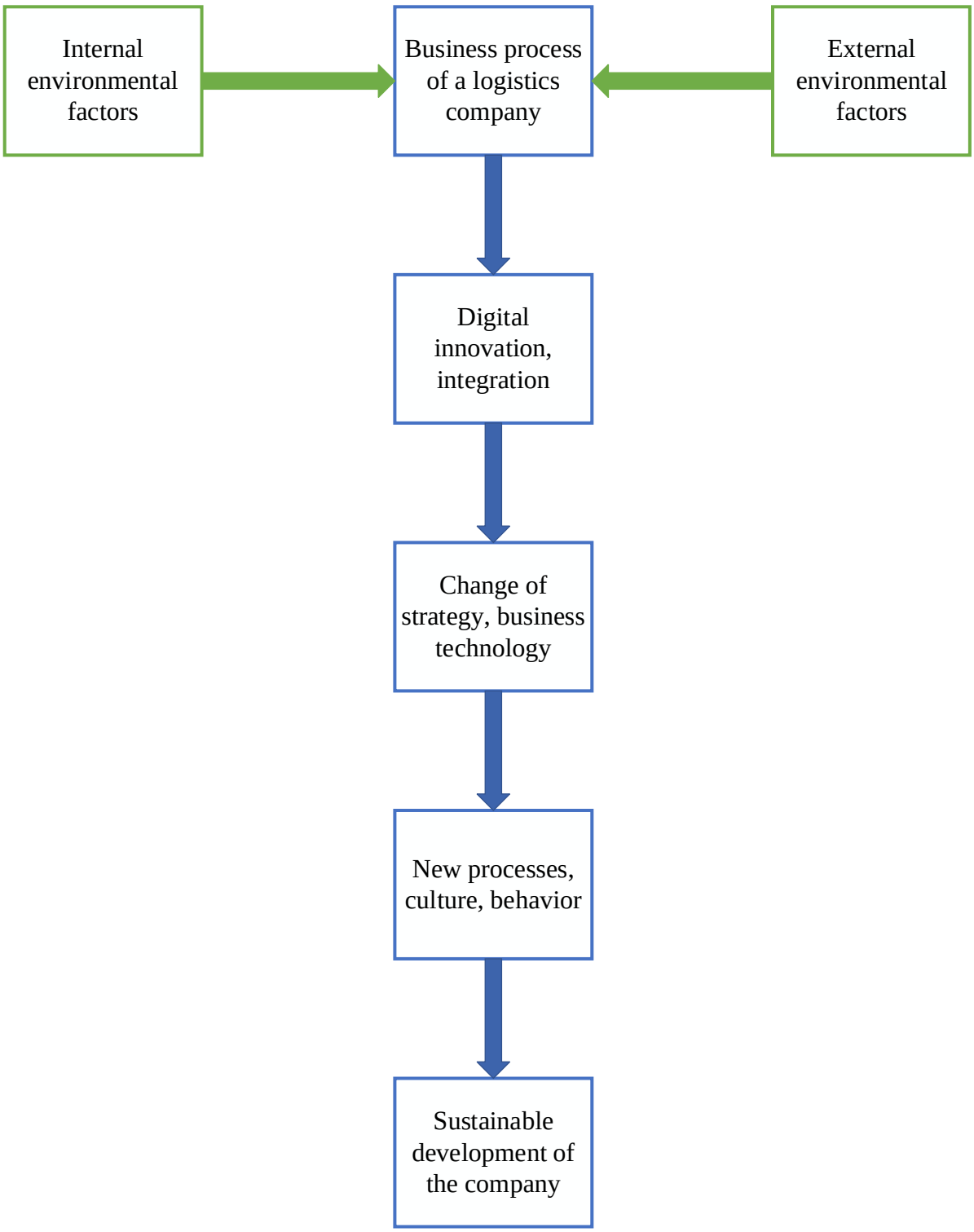

Figure E.1 – Block diagram of the digital transformation of the logistics company's business process

Source: created by author based on [78]

Appendix F

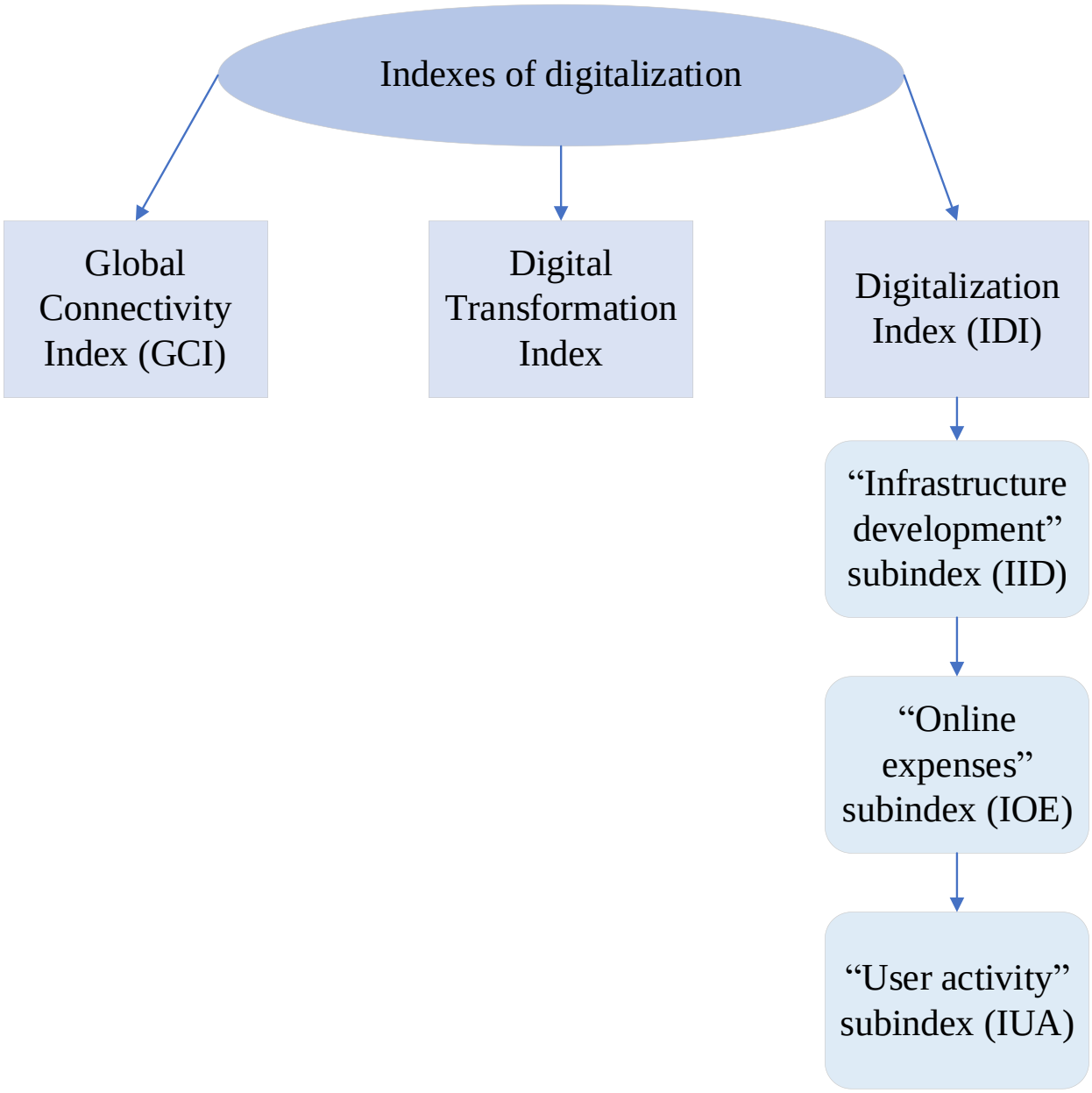

Figure F.1 – Block diagram of indexes of digitalization

Source: created by author based on [41]

Appendix G

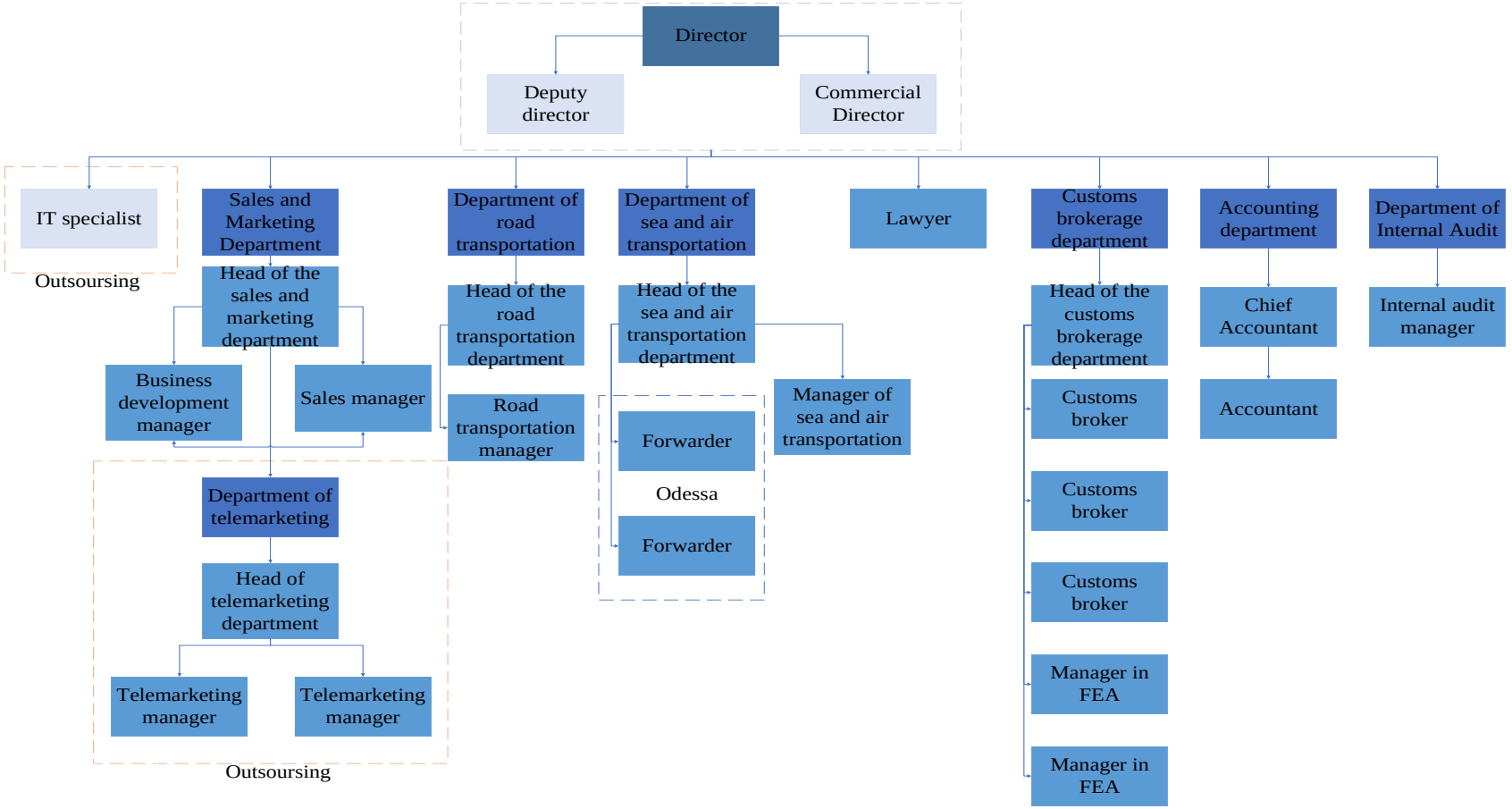

Figure G.1 – Organizational structure of FTP

Appendix H

Table H.1 – Financial screening model – “diagnostics by signals” of FTP

	0	**1**	**3**	**5**	Value for 2020	Estimation for the Year	Values for 2021	Estimation for the Year	Values for 2022	Estimation for the Year
	Risk zone	Danger zone	Stability zone	Well-being zone						
1. Indicators of financial stability										
Equity ratio	<0,5	0,5-0,65	0,65-0,8	>0,8	0,078	0	0,074	0	0,086	0
Debt to equity ratio	>2,0	2,0-1,5	1,5-1,0	<1,0	11,894	0	13,466	0	13,879	0
Debt ratio	>0,8	0,8-0,7	0,7 -0,5	<0,5	0,922	0	0,998	0	1,188	0
2. Indicators of liquidity										
Cash ratio	<0,1	0,1-0,15	0,15 -0,2	>0,2	0,218	5	0,210	5	0,155	3
Accounts payable to receivable ratio	>2,0	2,0-1,5	1,5-1,3	<1,3	1,258	5	1,469	3	1,395	3
3. **Indicators of business activity**										
Total Asset Turnover	<0,4	0,4-0,6	0,6-0,8	>0,8	0,629	3	0,661	3	0,654	3

Receivable Turnover	>0,15	0,15-0,1	0,1-0,05	<0,05	0,052	5	0,046	3	0,083	3
4. Indicators for assessing the balance sheet structure										
Current ratio	<2,0	2,0-2,2	2,2-2,4	>2,4	1,051	0	0,967	0	0,819	0
The Equity to Total Debt ratio	<0,8	0,8-1,0	1,0-1,5	>1,5	0,084	0	0,074	0	0,072	0
5**. Indicators of profitability**.										
EBITDA Margin	<0,15	0,15-0,2	0,2-0,25	>0,25	0,271	5	0,307	5	0,246	3
Return on Equity	<0,07	0,07-0,1	0,1-0,15	>0,15	0,338	5	0,351	5	0,323	5
Return on Assets	<0,2	0,2-0,4	0,4-0,8	>0,8	10,166	5	11,655	5	8,769	5

Table H.2 – Scale assessment of the status of the logistics company

Status	Value
Sustainable	>4,5
Relatively stable	>2,5
Unstable	>0,5
Crisis	<0,5

Appendix I

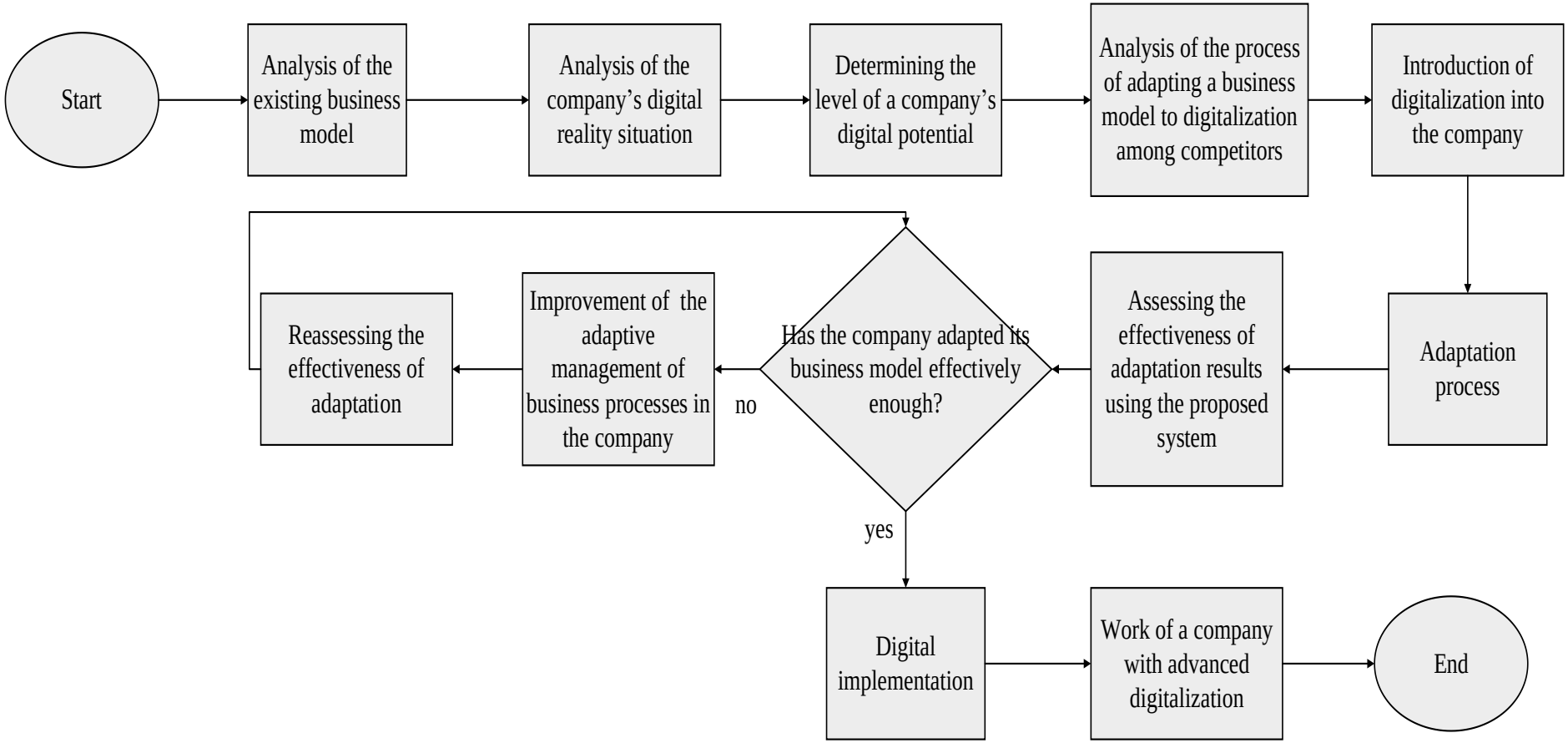

Figure I.1 – Block diagram of the process of adaptation to digitalization

Appendix J

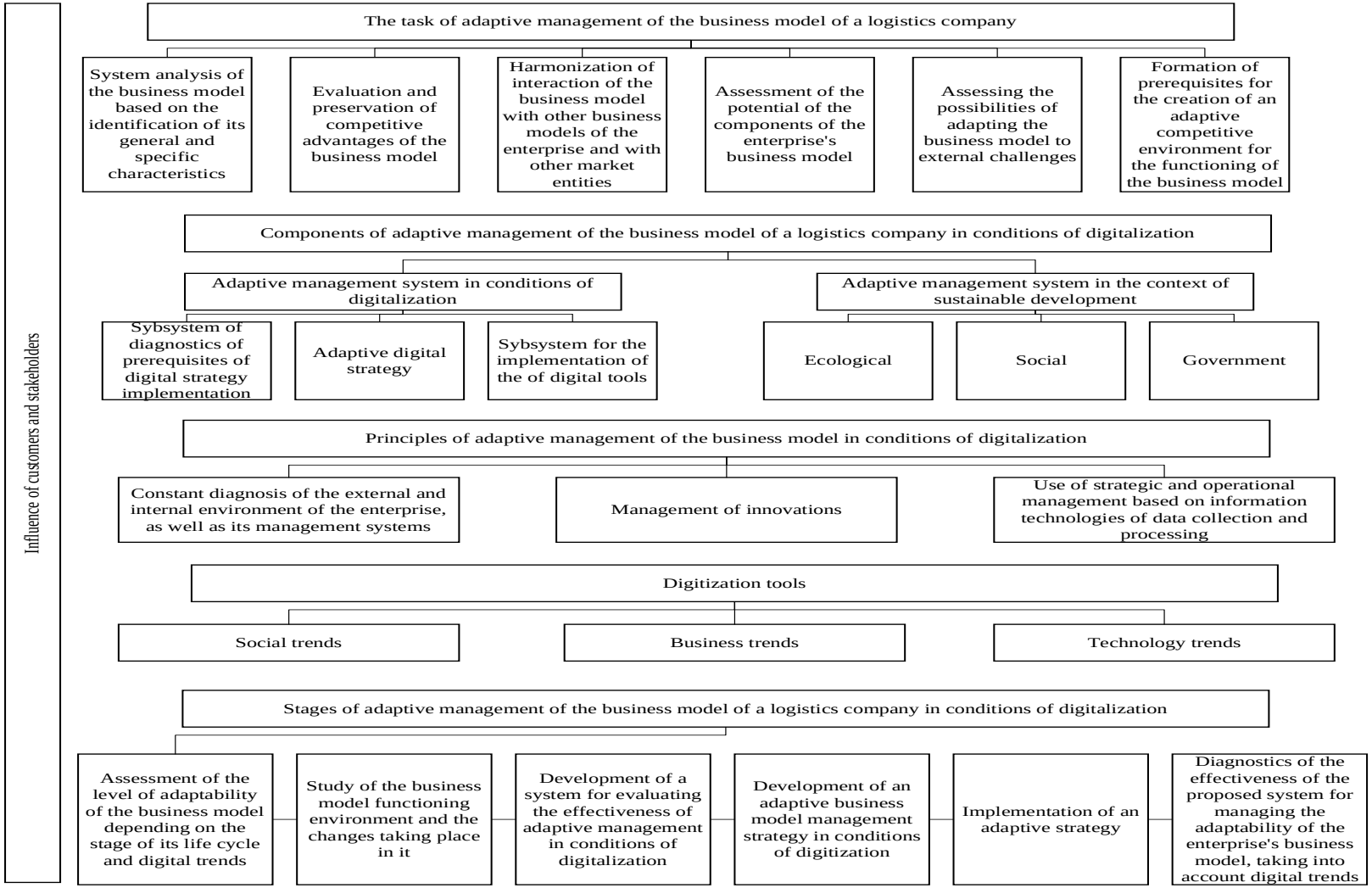

Figure J.1 – Conceptual model of adaptation of the logistics company in the context of digitalization

Appendix K

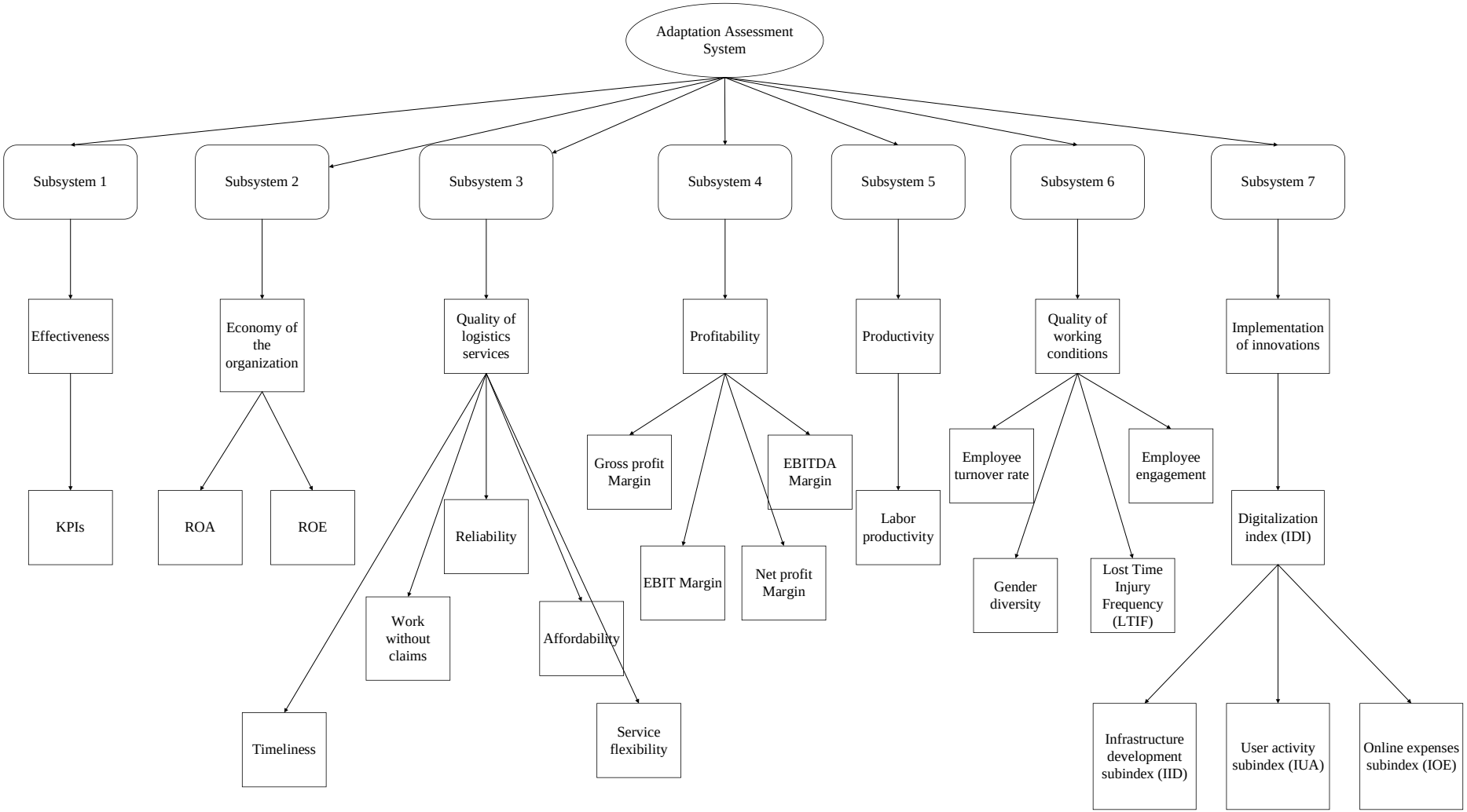

Figure K.1 – System of effectiveness of adaptive management of business processes in the logistics company