ИКОНОМИЧЕСКИ УНИВЕРСИТЕТ – ВАРНА

КАТЕДРА „ИКОНОМИКА И УПРАВЛЕНИЕ НА ТЪРГОВИЯТА И УСЛУГИТЕ“

Yanko Georgiev Georgiev

INTEGRATED MANAGEMENT OF KEY BUSINESS PROCESSES IN THE ENTERPRISES FOR PRODUCTION AND TRADE OF BREAD AND PASTRY PRODUCTS

A B S T R A C T

of a dissertation for obtaining an educational and scientific degree "Doctor" in a professional field 3.8. Economics, scientific speciality "Economics and Management (Trade)"

Varna

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The dissertation consists of 204 pages, of which:

Introduction - 4 pages

Main text (three chapters) - 236 pages

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Tables - 38 pieces

Figures - 29 pieces

The defence of the dissertation will take place on ..... from .... in the hall ..... of the University of Economics - Varna at a meeting of the Scientific Jury, appointed by Order .... of the Rector of the University of Economics - Varna.

The materials on the defence are available to those interested in the University of Economics - Varna, www.ue-varna.bg.

И К О Н О М И Ч Е С К И У Н И В Е Р С И Т Е Т – В А Р Н А

Стопански факултет

Катедра „Икономика и управление на търговията и услугите“

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I. GENERAL CHARACTERISTICS OF THE DISSERTATION

1. Relevance of the topic

A fundamental concept in economic theory is the statement that companies operate in an environment with limited resources and compete for access to them. During the years of development of the economic system, the world has gone through several crises - economic, demographic, political. Many companies faced bankruptcy, while others managed to prosper and continue their development even in the most challenging periods based on competitive advantage. Today, the world is facing a crisis of a new kind. The Covid 19 pandemic poses questions around the globe to managers, such as how to keep their companies in the market and how to continue to grow and profit despite the unusual environmental conditions.

The answer to some of these questions has been known for more than 80 years and is associated with the use of business information systems and the achievements of information technology. Created to support part of the activities of the then enterprises, today, their manifestation in the form of ERP systems is becoming a key element of modern management. The current functions of business information systems significantly build on the capabilities of their predecessors and now have the task to cover the overall management of the enterprise and to organise each process of its activities. They seek to manage and organise and optimise the company's activities, improving its competitiveness and supporting its existence and development, regardless of the economic environment in which it operates.

Significant theoretical achievements in business information systems are a solid basis for their adaptation and application in business and specifically for their use in enterprises engaged in the production and trade of bread and pasta.

It is necessary to consider the fact that the investment in a business information system is severe and poses many risks to the company. To decide on the

implementation of such a project, the company management must have sufficient data to support the benefits of the investment.

2. Object and subject of research

The research object in the present dissertation is an enterprise for production and trade in bread and pasta. The **subject** of the study is the process of implementing an ERP system and the impact it has on the enterprise's economic performance.

3. Purpose and task of the dissertation

The **purpose** of the development is based on a theoretical overview of business information systems applicable in the production and commercial enterprise and study of possibilities for the introduction of ERP systems in the enterprise for production and trade in pasta, to introduce and implement such a system and evaluate economic effects of its use.

Achieving this goal implies solving basic **tasks** related to:

1. Clarification of the theoretical foundations of business information systems and their application in manufacturing enterprises and the particular definition of the ERP system with all its specific features
2. and defining the key business processes in the enterprise for production and trade in bread and pasta and the possibilities for their optimisation with the help of ERP software.
3. Study of the implementation process of ERP system with its main aspects and assessment of its course in an enterprise for production and trade in bread and pasta.
4. Study of the enterprise's economic condition and primary indicators for production and trade in bread and pasta before implementing the ERP system and assessing their changes after starting the use of the software.

4. Research thesis of the dissertation

The **thesis** defended by the author is that the conducted economic research will contribute to the discovery of opportunities for optimising the activities of enterprises for the production and trade of bread and pasta through the implementation of ERP system. In addition, the changes in the leading financial and production indicators, which play a crucial role in determining the economic condition of the enterprise and the effect that the ERP implementation project has had on the development and operation of the company, will be studied.

5. Methodology of the research

In the research, research methods are applied to achieve the set goal and to solve the related tasks such as comparative method, structure indicators, financial analysis, graphical method, PESTEL analysis, Z-score analysis. The leading economic indicators characterising the enterprise's activity are calculated. By comparing their values for the whole studied period, it aims to trace the company's pace of development. With the help of the graphical method, the trends in the change of the individual factors are outlined more clearly. PESTEL analysis helps make a more objective assessment of the impact of the ERP system on the enterprise's activities, providing data on the development of the economy and the sector in particular. The Z-score analysis's performance assesses the company's state, using a wide range of indicators that provide additional information about the direction of development and the state of the company for the entire study period.

6. Limitations of the research

The imposed **limitations** are primarily related to the use of an insufficiently rich database of the object of study and reduced to information obtained from the annual financial statements of the enterprise. To maintain confidentiality and protect the interests of the researched company, the present dissertation uses data available in the commercial register. In addition, the company operates in a highly competitive

sector and in an environment influenced by many external factors, including the evolving pandemic situation, the consequences of which are yet to be seen. All research and data used are current at the time of development of this dissertation. The study period covers the years from 2012 to 2020. The choice of this period is motivated by the author's idea to study the reporting years in which the company operated without the help of the ERP system and those after the implementation of the software. It covers a period in which trends in the development of the enterprise and its various indicators can be formed and tracked.

7. Approbation

Scientific articles and reports have been published on the dissertation topic, where some of the theoretical conclusions and practical applications are presented. The comparative analysis of key economic indicators and their change as a consequence of implementing an ERP system in the enterprise for the production and trade of bread and pasta can be used for further research on the benefits of implementing business information systems.

8. Structure of the dissertation

The dissertation has a total volume of 276 pages and includes an introduction, three chapters, a conclusion, a list of references and appendices. The main text consists of 38 tables and 29 figures.

The content of the dissertation is as follows:

Introduction

Chapter one: Theoretical foundations of business information systems applicable in the production and trade enterprise

1. Nature and types of business information systems

1.1. Historical development of business information systems

1.2. Nature of ERP (Enterprise Resource Planning) systems

2. Key resources and processes in enterprises managed with the help of business information systems

3. Processes for implementation of ERP systems

3.1. Theoretical foundations of the processes and problems facing the implementation of ERP systems

3.2. Key processes in the implementation of ERP systems

3.3. Critical factors for the success of ERP system implementation

4. Research methodology

Chapter two: Research of the possibilities for the introduction of ERP systems in an enterprise for production and trade in bread and pasta

1. Brief description of the enterprise for production and trade in pasta and the environment in which it operates

2. Definition and characterisation of the critical business processes in the enterprise, managed through ERP system

3. Economic analysis of the activity of an enterprise for production and trade in bread and pasta before the introduction of ERP system

Chapter three: Possibilities for introduction and implementation of ERP system in an enterprise for production and trade in pasta

1. Implementation of ERP system in an enterprise for production and trade in pasta

2. Comparative analysis of economic effects from the introduction of ERP system in an enterprise for production and trade in bread and pasta

3. Opportunities for upgrading the ERP system in an enterprise for production and trade in bread and pasta

Conclusion

References

Appendix

II. SUMMARY OF THE DISSERTATION

Chapter one

THEORETICAL FUNDAMENTALS OF BUSINESS INFORMATION SYSTEMS APPLICABLE IN THE PRODUCTION AND COMMERCIAL ENTERPRISE

The first chapter of this dissertation aims to clarify the nature and types of business information systems and the processes of their implementation.

The first paragraph of the first chapter traces the historical development of business information systems. Although often associated with modern computer technology, we can trace their origins since the 60s of the twentieth century. Authors such as PJ Rondeau, LA Litteral, FR Jacobs, and FC Weston have historically systematised a retrospective focusing on production planning and control software systems by looking at Reorder Point (ROP) systems. Material Requirements Planning (MRP), Manufacturing Resource Planning (MRP II) and Enterprise Resource Planning (MRP II) and Enterprise Resource Planning (MRP II). Enterprise Resource Planning (ERP).

From 1960 to 2020, six stages in the evolutionary development of enterprise planning and operations management, illustrated in Figure 1, can be distinguished.

Figure 1. Evolution in the level of process planning in the enterprise

Each of these stages is a prerequisite for optimising the activities of enterprises leading to ERP systems, which aim not only to cover the entire activity of the enterprise, to summarise data from all units but also to present the complete set of configured information in an accessible way to ensure that the needs of management staff are met.

In the course of the research, various authors' definitions for ERP systems are considered. On the one hand, they are defined as an enterprise information system designed to integrate and optimise business processes and transactions in the corporation. ERP is a set of concepts and systems inspired by industry and is a commonly accepted practical solution for achieving an integrated information system in the enterprise. On the other hand, they are defined as an integrated software solution covering a range of business processes and enabling companies to gain a holistic view of their activities. They promise a single database, one application and a unified enterprise-wide interface. " A wide range of definitions of ERP systems is reviewed in the paper. Referring to the presented theoretical views in the dissertation, ERP systems are perceived as an integrated system built of different modules, working individually or as a whole in a single database. All stages, departments and processes in the production enterprise are integrated. Its main goal is to provide timely, accurate and detailed information about the current state of the enterprise. In addition, the ERP system should store historical activity data, thus, using embedded algorithms to support the planning, organisation and control at the strategic and tactical level.

Based on the theoretical review, some main conclusions are drawn:

First, economic theory focused on the planning and managing production processes has undergone significant evolution. Moving from the development of systems and methods to optimise the processes taking place in the production enterprise to the development of software products to integrate these methods and systems, achieving higher efficiency.

Second, the authors from different schools of economics agree that ERP systems are a means of optimising all activities and processes in the enterprise. This allows the implementation of these systems to support company management by providing consolidated data on the company's activities and tools for their better management**.**

Third, whether we consider the ERP system a specific software solution or a comprehensive concept of enterprise management, the main goal is to provide a comprehensive view of the activity and achieve integrity between all departments and units. This is achieved by ensuring continuity of ongoing processes in real-time and without an idea of the place.

The second paragraph of the first chapter is devoted to defining key business processes in enterprises managed with the help of business information systems.

To define the critical business processes, one should consider the essence of the concept of enterprise first. The works of contemporary authors are considered, deriving a definition that boils down to "economic organisation that independently carries out its economic activity, independently makes decisions and determines its economic behaviour following their own individual goals." Understanding the term enterprise complements it as "a place where the labour force joins the means and objects of labour, from which a certain type of finished product is obtained". Based on this, the company is defined as a separate unit established for business activities to meet consumer needs and, in this aspect, generate profit for the owners. The company only makes decisions about its activities and development, carries out business activities within the meaning of the Commercial Code, meets the needs of consumers by creating products or offering services, and generates profit for its owners.

After the essence of the enterprise has been clarified, the main resources necessary for the functioning of a company are considered. In the dissertation, they are defined as:

• Capital;

• Fixed and short-term assets;

•Human Resources.

The availability of all necessary resources for the activity and existence of the enterprise is only the first prerequisite for its successful existence. The next and most important part of the activity of each company is the investment of available resources in the ongoing business processes and respectively their transformation into a final product that brings income to entrepreneurs.

There are several basic business processes in every enterprise engaged in the production or provision of services. Although different and tailored to the specifics of the individual company, we could identify three main processes that are inherently applicable in any company, regardless of the activity and sector in which it operates or the size of the company. These three main business processes are supply, production and marketing.

The integrity of all ongoing business processes is important not only for the successful implementation of the activity and the set goals of the company management but also for the functioning of the enterprise as a whole. Good management of individual processes and the interaction between them leads to improved efficiency in the activity and higher competitiveness. The complexity of each of these three key business processes and their fragmentation into separate smaller but interconnected processes requires a system of overall enterprise management.

Several conclusions have been drawn from the presentation:

First, enterprises are independent economic units producing goods or providing services and aiming to satisfy specific consumer demands and generate profit for their owners. In their operation, companies make independent decisions for their activities and development, aiming to achieve high efficiency, improved market position and success in their development.

Second, no enterprise could function without key resources in capital, material and human resources. The successful development of the enterprise is

conditioned both by the availability of these primary resources and by their proper management.

Third, the functioning of each enterprise is reduced to ongoing business processes. No matter the field of activity, there can be no manufacturing enterprise without supply, production, and marketing processes. This is the reason why we define them as key business processes.

Fourth, key business processes determine the need for a high level of efficiency in their management. Achieving high results is a consequence of successful management of processes separately and as a whole system. This raises the need to use business information systems, the main purpose of which is to manage all processes in the enterprise.

The third paragraph of the first chapter clarifies the theoretical foundations of the processes and problems facing the implementation of ERP systems and discusses the key processes in their implementation.

Some international studies have been reviewed among companies that have gone through the processes of implementing an ERP system and those that already operate with one. The presented research outlines several problems and challenges for the successful completion of such a project. For example, new studies show that "96.4% of ERP implementation projects have failed" and "70% do not meet the expected benefits". At the same time, a survey conducted among IT managers responsible for implementing ERP systems in their organisations found that "2/3 of respondents said that this is the system of the greatest strategic importance for their company."

From the presented data and all reviewed research, it is concluded that ERP systems are of great importance for developing companies that implement them, but this is a project that poses huge risks if not organised properly and the right decisions are not made.

ERPs are used in companies from different industries around the world, can establish no identity in their activities, and should adapt any software implementation of

software to the organisation in which it is implemented. Thus, precise and clear steps that will lead to the successful implementation of the project cannot be determined. However, key processes applicable to ERP implementation are outlined, regardless of the size, scope, and nationality of the enterprise in which they are implemented. Figure 2 illustrates these key processes and the sequence of their course.

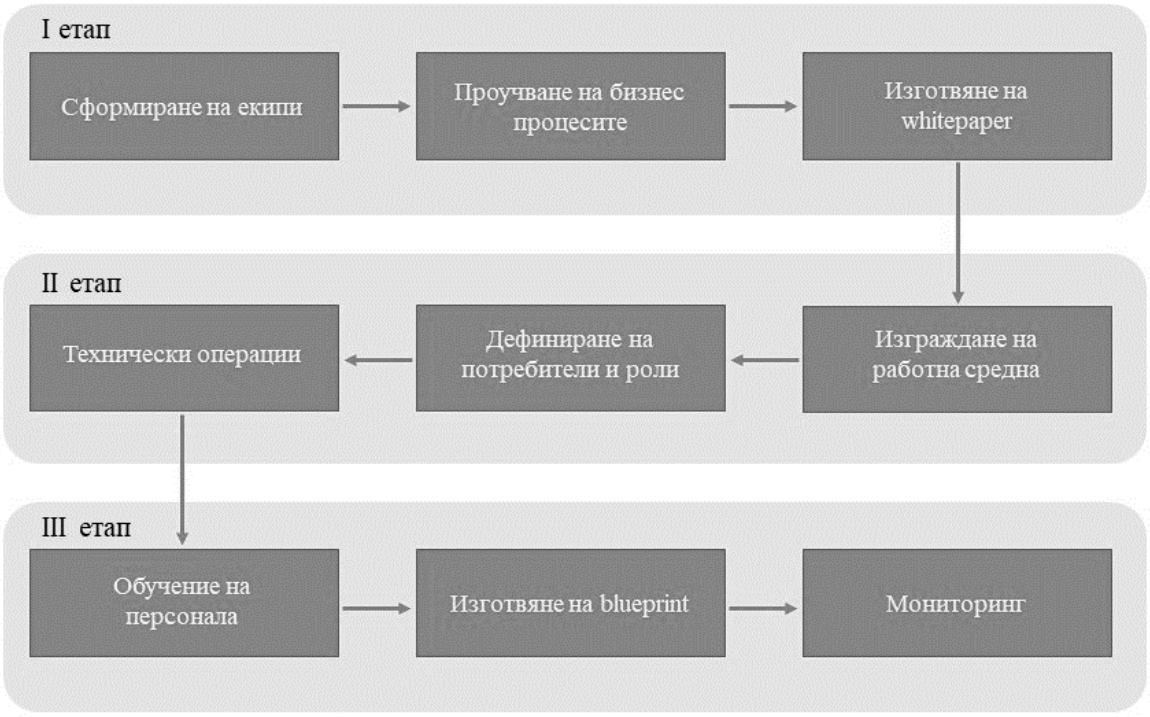

Figure 2. Key processes in the implementation of ERP systems

Successful implementation processes are supported by knowledge of Critical Success Factors (CSFs). Rockart defines them as a "limited set of areas that will ensure a positive performance for the entire organisation if the results are satisfactory." These are some key areas where things need to go well for business. " If the results in these areas are not satisfactory, the organisation's achievements will not be desirable. Therefore, for the successful implementation of the ERP system and the improvement of the overall activity of the enterprise, it is necessary to know the key success factors, as they have a great influence on the project implementation and achieving high results.

As a result of all the information in chapter one we could draw the following conclusions at its end:

First, the concept of implementation of ERP systems means all ongoing processes in the enterprise for the preparation and implementation of selected ERP software. This includes the steps to choose a system, manufacturer and implementer of software, conducting stages of research and building a working model that adapts the company and the system to each other and commissioning the final working product approved by all stakeholders.

Second, the ERP implementation project cannot be considered a standard project with a start and end, ending with the commissioning of the system, but rather a project continuing until the enterprise's existence to build an environment in which software and business processes operate in synergy.

Third, knowledge of the stages of implementation of ERP systems allows companies wishing to integrate such a system to anticipate the scope of the project better, expected problems and difficulties, and more accurately systematise the desired results, minimising the gap between expected and achieved goals.

Fourth, several key success factors can lead to better results. Underestimation or ignorance of these factors and worsening the results achieved may lead to the complete termination of the ERP implementation project.

Chapter two

INVESTIGATION OF THE POSSIBILITIES FOR INTRODUCTION OF ERP SYSTEMS IN AN ENTERPRISE FOR PRODUCTION AND TRADE IN BREAD AND PASTRY PRODUCTS

The second chapter of the dissertation presents a brief description of the enterprise for production and trade in bread and pasta and the environment in which it operates. The key business processes taking place in the enterprise and managed through ERP system are defined and economic analysis of the activity of the object of the dissertation for the period before the introduction of the ERP system is performed.

The **first paragraph** examines the specifics of the market in which the surveyed enterprise for the production and trade of bread and pasta operates. An analysis of the consumption of bakery products was made, referring to data on sales of the top 25 producers in Bulgaria. To better understand the state of the market, the sales of bread only were considered, where a different trend of development is emerging, in a negative direction. What ?. Data on the ten largest suppliers of the enterprise and the ten raw materials with the highest delivery value provide additional information about the object of the study.

The company's product mix is presented in detail, where four main categories of products are visible, reduced to Bread, Snacks, Sweets, and Easter cakes. Each category is divided into groups, which more accurately classify each finished product of the enterprise. The structure of the product mix carries information about the relative share of each group in the total number of items and the total quantity produced.

The structure of the building stock and the company structure, presented in the dissertation, help to better understand the need for an ERP system and its application to the current organisation in the company.

Most of the tasks set before ERP systems are related to sales management and customer relations. Data on the types of customers in the studied company and their geographical distribution are derived. The foreign markets that the company reaches are considered, together with the relative share of sales for each country.

The following conclusions were made from the presented information:

First, the company operates in a highly competitive environment, in which a limited number of companies holds a large part of the market share. Given the specifics of the sector and products, the potential for exporting goods and conquering new markets is limited.

Secondly, the dependence on suppliers is strong and this is due to the need to deliver raw materials at the right time, in the right place, in the right quantity and quality.

Thirdly, the wide product mix is important for the sector and the market positions of the enterprises in it, as there are also product lines with low levels of demand, respectively profitability, but necessary for the formation of prestige and maintaining market share.

Fourth, the great diversity in the product range requires a significant building stock and the maintenance of many production machines, and this can create difficulties for management and the inability to achieve optimal results for the company.

Fifth, the customers of the surveyed company are concentrated in the region in which it operates, but thanks to the work with food chains it reaches consumers throughout the country and abroad.

Sixth, the surveyed company manages to maintain high levels of sales to foreign customers, thanks to the diversity of its product mix and products with a longer shelf life. This can be beneficial for the company in case of expanding its business or in the event of a collapse in domestic demand.

The second paragraph of chapter two is devoted to defining and characterising key business processes in the enterprise for production and trade in bread and pasta.

The production of pasta has its peculiarities: firstly, because of the specifics of the product created, namely perishable goods and secondly, because of the nature of demand. Pasta products have a short shelf life. Their sale on the market must be consistent with this period in which the product is edible and with good quality indicators and characteristics desired by the customer. The demand for bread is characterised by the desire of consumers to buy and consume a product produced within the day it is consumed or within short shelf life. In addition, as a product that is a major part of the table and participating in the daily menu of consumers, regular deliveries and a non-stop production process are required.

In this way a product is formed, which is determined by the following requirements:

• Non-stop production process;

• Impossibility to maintain stocks of finished products;

• High requirements for the qualities of the manufactured product.

Figure 3 shows the organisational structure of the main business processes in an enterprise for production and trade in bread and pasta. Only the processes identified as key are presented, as they characterise the enterprise, and the use of ERP systems would have the greatest impact on the business.

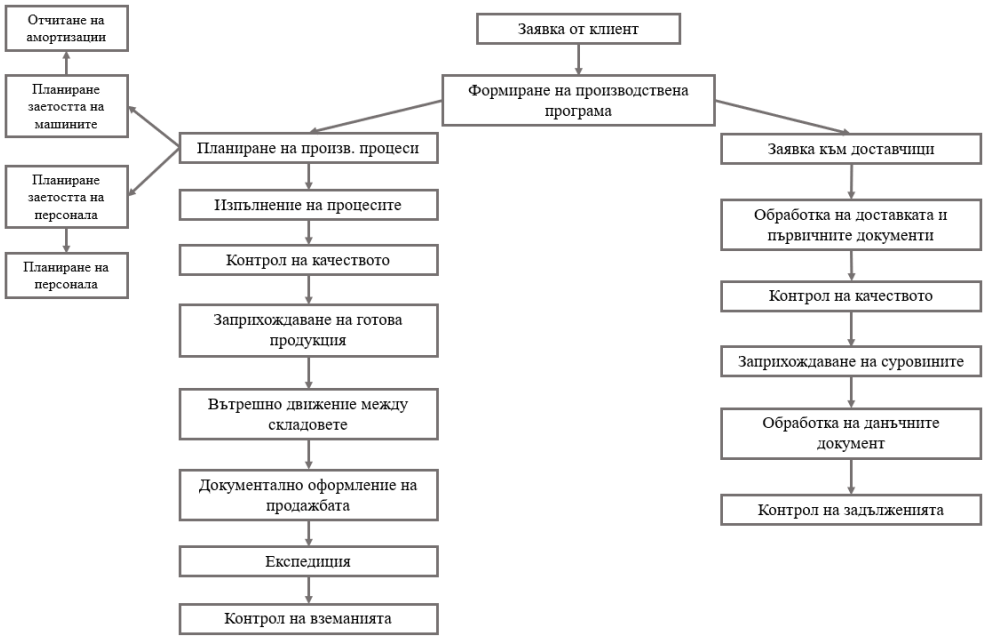

Figure 3. The organisational structure of key business processes in an enterprise for the production of bread and pasta

Each process presented in Figure 3 is discussed in detail, and the possibilities for its optimisation using an ERP system are identified.

As a result of the presented processes and the possibilities for integrating an ERP system to them, the following main conclusions are formulated:

First, the operating regime in the enterprise in question goes through a large number of delivery, production and sales processes, each with its characteristics and complexity of implementation. Each process is characterised by specific indicators, the optimisation of which can improve the overall performance and financial and economic indicators of the enterprise.

Second, each of these processes has its specific tasks to solve, which involve the use of significant resources and resources, and solving these issues is important for the effective functioning of the enterprise.

Third, from the activity and organisation of the enterprise, the object of the present research, it is evident that in practice, and not only in theory, ERP systems can also be integrated into every aspect and process of the activity. These are systems

designed to optimise companies' work and the presented opportunities for implementation in business processes show it.

Fourth, the introduction of the ERP system will optimise the activity of organising deliveries in the enterprise by integrating technical means and computer algorithms for planning and reporting material flows entering the enterprise.

Fifth, the production processes will be organised with the help of an ERP system, which will monitor their proper and timely flow, while improving the quality of products and reducing technological waste. Through its characteristics and capabilities, the ERP system will support the company and in particular production management in the stage of planning, organising, and controlling production resources and processes.

Sixth, the company's commercial activity will be supported by the ERP system by automating manual processes, organising the company's document flow, and building a unified database presenting the necessary information to management, sales representatives, and external control bodies.

In the third paragraph of the second chapter, an economic analysis of the activity of an enterprise for production and trade in bread and pasta was performed before the introduction of the ERP system. The aim is to determine the company's economic condition, which will be used as a starting point in assessing the impact of the implemented information system.

In the specific case, the period considered for the enterprise subject to the study is 2012 - 2016. In 2017 the project for implementation of the ERP system started and as a result changes in the results of the enterprise can be expected as a result of the ongoing implementation.

In the course of the research data on the levels of income and expenses of the enterprise are presented, with their absolute and relative changes. The changes in the profitability ratios of significant indicators for the studied period in addition to the efficiency and liquidity ratios were monitored. The indicators representing the turnover of inventories are considered, and a comparison is made between the cost

of materials and the value of production, to assess the production activity of the enterprise and its efficiency and opportunities for improvement. The main goal of the ERP system is to improve the company's relationships with its counterparties. Data on the number of trade payables and receivables from customers for the period are also presented.

During the study period, the macroeconomic indicators for Bulgaria are presented to compare the development of the enterprise and the economy and assess the strength of internal factors in this process. The z-score analysis assessed the possibility of insolvency of the company during the study period.

The following conclusions were formulated from the review of the economic condition of the surveyed enterprise:

First, for the company, there is a constant growth rate of operating costs, which, however, is accompanied by a higher growth rate of revenue, showing that the development for the 5 years in question is in a positive direction.

Second, the indicators of efficiency, profitability and liquidity support the assertion of an upward pace of development, but the slowdown in the last for the current sample of 2016, indicates the likelihood of reversing trends.

Third, the rapid development for the period, supported by increased sales revenues, leads to the need for increased production. However, the indicators for the turnover of inventories and their deterioration are an indicator of the untapped potential of the enterprise.

Fourth, while trade payables for the period decreased, indicating greater autonomy of the company, receivables from customers increased significantly. This poses risks to the management and development of the company and should be subject to improved control.

Fifth, for the period under study, the company operates in a growing economy, with positive indicators. Despite the favourable environment, the company is growing faster than the economy, proving its growth potential.

Sixth, the Z-score analysis confirms all the conclusions made, which in turn highlights the stability in the development of the studied company.

CHAPTER THREE

POSSIBILITIES FOR INTRODUCTION AND IMPLEMENTATION OF ERP SYSTEM IN AN ENTERPRISE FOR PRODUCTION AND TRADE IN PASTRY PRODUCTS

The third chapter of the dissertation presents the processes of implementation of ERP system in an enterprise for production and trade in bread and pasta. The impact of the implemented ERP system is assessed with the help of the comparative analysis of economic indicators. Possibilities for upgrading the already implemented system and how they could support the activities of a company for production and trade in bread and pasta are discussed.

The first paragraph of the third chapter presents the three main stages that the implementation of the ERP system goes through. They are defined as:

1. Research;
2. Implementation;
3. Post-implementation process.

The three stages always take place in the presented sequence, and the implementation and success of the next stage refer to the accumulated data and the achieved results from the previous one. Hence, no stage can be missed and the achievement of positive results is linked to the quality and in-depth work at each stage.

To better understand the ongoing processes are fragmented into individual elements, each element is considered in detail. The company's managers have defined critical factors for the success of the project and the set goals.

A detailed examination of the implementation process helps to identify weaknesses and gaps in the implementation of the project, which affect the

subsequent post-implementation process. The presented data can contribute to the easier implementation of similar projects for the implementation of ERP systems in other enterprises.

Defining the types of participants, as specialists in specific fields, it helps to build teams that will lead the project to successful completion and utilisation of the full potential of the ERP system. The different types of hardware devices are considered, the provision of which is crucial for the operation of the system and could help the enterprise's processes.

The considered Post-implementation processes and their course in the implementation of the specific project, provide useful information about the opportunities for improving the implementation of projects of this scale. The problems that have occurred in the company and the possibilities for overcoming them are considered, which can be applied to other companies.

From the review, describing the progress of a project to implement an ERP system in an enterprise for the production and trade of bread and pasta, the following conclusions are drawn:

First, the implementation of an ERP system is a complex project that goes through several stages and processes.

Second, the project is of long duration, justified by the complexity of the implementation itself and the large number of activities that accompany it.

Third, for the successful implementation of an ERP system, the individual stages and processes of the project must be well known, because they determine both the successful completion of the implementation and the realisation of the full potential of the ERP system.

Fourth, the stages and processes are interrelated and the success of a process depends on the realisation of the previous ones. Respectively, the successful completion of one stage is directly dependent on the previous activities.

In the second paragraph of the third chapter, to assess the effect of using the new software and how it has affected the company's development, a comparative

analysis of the economic effects of implementing the ERP system in a company for production and trade of bread and pasta. Given the impact of the economic environment in which each company operates, to objectively assess the impact of ERP software, the changes in key economic indicators for the country during the same period are considered.

In the enterprise subject of this study, the ERP systems implementation started in the second half of 2017, and the actual start of work is carried out on 01.12.2017. The full use of the system begins in 2018 when all major implementation processes are completed and the company's employees work with the new system. The period under review covers the years 2016-2020. This period includes three full years during which the ERP system has operated and whose impact is being assessed.

It track the trends in the development of the company and the impact of the ERP system, data on the company's economic indicators for the period 2016 - 2020 are presented. Using the graphical method, the change in these data for the period from 2012 to 2020 has been monitored, which helps assess the ERP system's impact on each indicator.

The macroeconomic indicators are supplemented by data on costs of activities for the processing industry, revenues from the activities for the processing industry and sales of bread and pasta. The comparison made with the change of the same in the studied enterprise achieves a more accurate assessment of the impact of the ERP system, clearing the influence of external factors on the development of the company.

The following conclusions can be drawn from the study:

First, the company reports positive financial results and values of key economic indicators for the entire study period. These indicators maintain an upward trend, even for periods with negative values for some macroeconomic indicators.

Second, there is a very strong and clear change for 2018 in all the main coefficients characterising the economic condition of the enterprise. This change is

not supported by such a significant change in macroeconomic indicators. Therefore, we take into account the achieved results as a consequence of the beginning of work with the ERP system.

Third, the positive results are maintained in the periods after 2018. The slower growth or decrease rates at some of the ratios are a consequence of the strengthened investment policy of the company and the change in the structure of the balance sheet. The levels of investment show rather the continued development of the company and the management's confidence. In the years before the use of the ERP system, we do not report such levels of investment activity, which is an indicator of improved levels of internal stability for the company.

Fourth, during the period under review, the surveyed company operates in a growing economy. However, the pace of development is not constant, and in the manufacturing industry, there is a contraction for the last reported year.

Fifth, the high results achieved by the company are a fact. The growth of the company in the period 2012 - 2020 is significant. The period in which the ERP system was used also reported improvement in some indicators. We could not link all the positive results entirely with the use of the ERP system, but the data presented show a clear link between the two.

Sixth, with implementing the ERP system, the studied coefficients do not reach their optimal values. Still, comparing their change with the sector's economic situation, we report a positive direction of development. Despite the deteriorating processing industry and the industry for production and trade in bread and pasta, the company in question maintains positive values of the studied indicators.

The third paragraph of the third chapter discusses the possibilities for upgrading an ERP system in an enterprise to produce and trade bread and pasta.

Implementing an ERP system can be considered a project with a beginning and an end, starting with selecting a project contractor and ending with the start of work with the software. However, practice and research show that the implementation of ERP software is a project that does not end with the start of work

with the program, which we can say for two main reasons: first, each company can be defined as a constantly changing and evolving organism, and these changes must also be covered by the software used; second, the modularity of ERP systems allows their phased introduction and upgrade. Therefore, new modules covering new departments and activities of the enterprise can be added to an already implemented system.

For an enterprise for production and trade in bread and pasta, particularly in what is the subject of this study, several possibilities for upgrading the already implemented ERP system have been identified.

They come down to the following:

• Use of Business Intelligence or BI (Business intelligence) technology;

• Implementation of "Software as a Service";

• Development of a module for managing the framework agreements of the enterprise.

All three presented opportunities for upgrading the system should bring benefits to the company and its management.

The first two are largely a consequence of technological development and the opportunities that modern information technology presents, while the third is dictated more by the needs of management and organisation of the enterprise. Although presented from the point of view of a company engaged in the production and trade of bread and pasta, these opportunities are widely used and can be useful for both manufacturing companies and companies in other economic sectors.

As a consequence of the detailed examination of each of the possibilities for upgrading the ERP system, the following conclusions are drawn:

First, the development of information technology and economic theories is an ongoing process and the development of ERP systems, as a result, is an inevitable consequence of these systems are to remain on the market.

Second, the use of the analytical capabilities of information systems, and in particular Business Intelligence technology, can bring many benefits to any

enterprise, not just those involved in the production and trade of bread and pasta. The benefits consist of quick and easy access to systematised data on the company's activities and preparing forecasts based on past periods.

Third, Software as a Service technology brings many additional benefits to each of its users, such as greater flexibility, lower costs and increased security. By integrating such an opportunity in an ERP system, the utility for enterprises from all spheres of economic activity can be increased.

Fourth, the framework agreements between the bread and pasta production and trade company and the retail chains are specific and applicable to other production companies, mainly in the food industry. The development of a module for their monitoring significantly optimises the work of the production plant and will bring additional security when concluding framework agreements. In addition, the ERP system will be able to offer widely applicable functionality, making it a better choice for other enterprises.

Conclusion

In the course of development, the essence of ERP systems is clarified, with their theoretical foundations and their modern manifestation in the economic and IT environments. A theoretical summary of the nature of ERP systems is made, based on a study of the scientific literature and the conclusions of many authors. The author's definition of the term ERP system is derived. The process of implementing this type of software solution is defined, with all the steps it goes through and the critical success factors that could help the successful implementation of the software. The main resources of an enterprise for production and trade in bread and pasta are considered. Its key business processes are presented, representing the sequence of individual processes, the relationship between each of them, and the result of each stage. In addition, opportunities for integrating an ERP system into these processes and how it can support and optimise the company's activities are presented.

The study of basic financial and economic indicators characterising the activity of a company for production and trade in bread and pasta before the process of implementing an ERP system and after the start of its use, answers questions about the effect of software application and the impact that it affects the activities of the company. The results obtained are indicative for the object of the study and are relevant and applicable to any other manufacturing enterprise with an activity corresponding to that of the object of study.

III. REPORT ON THE CONTRIBUTIONS IN THE DISSERTATION WORK

The results of the research in the dissertation give us reason to summarise the following essential contributions in theoretical and practical terms:

1. Theoretically, this dissertation gives an overview of issues related to the nature of ERP systems, their development and modern manifestation in economic theory and practical application. It outlines the main business processes and resources in the manufacturing enterprise, the management of which can be supported or carried out using a business information system.

2. Based on an in-depth literature review, the sequence of the processes for implementing an ERP system is presented, with the main aspects in the course of each of them, the difficulties before their implementation and the results of their completion.

3. The research plan characterises the key business processes in the enterprise for the production and trade of bread and pasta. It traces the integration of the ERP system to them, recording the benefits that the software brings for the activity.

4. Based on the adapted methodology, a comparative study was performed in the change of fundamental financial and economic indicators characterising the activity of the enterprise before and after the introduction of the ERP system, taking into account the economic situation in the country and macroeconomic indicators representing the development of processing industry in the sector for production and trade in bread and pasta.

5. Possibilities for upgrading the ERP system in an enterprise for production and trade in bread and pasta related to the use of "Business Intelligence" technology, implementation of "Software as a service" and development of a module for managing the framework agreements of the enterprise with his clients.

IV. PUBLICATIONS ON THE DISSERTATION

Articles

1. Georgiev, Y., Theoretical Foundations of ERP Systems Under Digitization, Izvestia Journal of the Union of Scientists - Varna. Economic Sciences Series, Union of Scientists - Varna, 8, 2019, 2, 21 - 26.
2. Georgiev, Y., Comparative analysis of key economic indicators and their change as a consequence of the implementation of an ERP system in an enterprise for production and trade in bread and pasta., Izvestia Journal of the Union of Scientists - Varna. Economic Sciences Series, Union of Scientists - Varna, 10, 2021, 2, 99-105.
3. Georgiev, Y., Critical success factors for ERP implementation., Izvestia Journal of the Union of Scientists - Varna. Economic Sciences Series, Union of Scientists - Varna, 10, 2021.

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4. Georgiev, Y., ERP Implementation Process, Economic Science, Education and the Real Economy: Development and Interactions in the Digital Age: Proceedings of the Jubilee International Scientific Conference in Honor of the 100th Anniversary. since the founding of the University of Economics - Varna, Varna: Science and Economics, 1, 2020, 714 - 724.