

THE MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

AZERBAIJAN STATE UNIVERSITY OF ECONOMICS

INTERNATIONAL GRADUATE AND DOCTORATE CENTER

MASTER DISSERTATION

On the topic

**“MANAGEMENT OF LARGE COMPANIES USING INFORMATION
TECHNOLOGIES”**

Latifli Elmira Galib

BAKU – 2020

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Elm andı

Mən, Lətifli Elmira Qalib qızı and içirəm ki, “Management of large companies using information technologies” mövzusunda magistr dissertasiyasını elmi əxlaq normalarına və istinad qaydalarına tam riayət etməklə və istifadə etdiyim bütün mənbələri ədəbiyyat siyahısında əks etdirməklə yazmışam.

İNFORMASIYA TEXNOLOGİYALARININ İSTİFADƏSİ İLƏ İRİ ŞİRKƏTLƏRİN İDARƏ EDİLMƏSİ

XÜLASƏ

Tədqiqatın aktuallığı: İnformasiya texnologiyaları bugün böyük şirkətlərin əvəzolunmaz parçasıdır. Onların tətbiqi nəinki şirkətlərin fəaliyyətinin asanlaşmasına, həmçinin xərclərin azalmasına, şirkətin mənfəətliliyinin və məhsuldarlığının artması ilə bazarda rəqabət qabiliyyətliliyinin güclənməsinə yol açır.

Tədqiqatın məqsədi: Tədqiqatın məqsədi informasiya texnologiyalarının tətbiqinin vacibliyini və bunun böyük şirkətlərin, xüsusilə də bank sektorunun idarəetməsinə hansı şəkildə təsir etdiyini müəyyənləşdirmək, şirkətlərdə texnoloji innovasiyaların yeni trendlərini təhlil etməkdir.

İstifadə olunmuş tədqiqat metodları: Dissertasiyada böyük şirkətlərin idarə olunmasında informasiya texnologiyalarının istifadəsinin təhlili üçün sistem analizi, səbəb-nəticə əlaqələrini müəyyənləşdirmək üçün dialektik metod və digər ümumi elmi metodlardan istifadə edilmişdir. Faktiki materialın təhlili və sistemləşdirilməsi zamanı iqtisadi, məntiqi və statistik təhlilin metodlarına müraciət edilmişdir.

Tədqiqatın informasiya bazası: Tədqiqatın informasiya bazasını müxtəlif ölkələrin elmi məqalələri, məşhur informasiya texnologiyaları şirkətlərinin hesabatları və statistik göstəriciləri, Azərbaycan Respublikasının qanunvericilik sənədləri, Kapital Bank əməkdaşı olan müəllifin əldə etdiyi real statistik göstəricilər təşkil edir.

Tədqiqatın məhdudiyyətləri: Təəssüf ki, bugün Azərbaycanda təşkilatlar öz statistik göstəricilərini global şəbəkə üzərindən konfidensiallığın qorunması üçün paylaşmır.

Tədqiqatın elmi yeniliyi və praktiki nəticələri: Tədqiqat Azərbaycan bank sistemində tətbiq olunmamış proqnozlaşdırıla bilən bank sistemini nümunə olaraq gətirir. Tədqiqatın nəticələri informasiya texnologiyalarının tətbiqi ilə şirkətin məhsuldarlığının və biznes proseslərinin effektivliyinin artması, müştərilərin öz yaşayış yerini tərk etmədən mobil tətbiqlər və internet sayəsində müxtəlif əməliyyatları apara bilməsi ilə mənfəətliliyinin yüksəlməsi təşkil edir.

Nəticələrin istifadə oluna biləcəyi sahələr: Bu dissertasiya bank sektorunda hələ informasiya texnologiyalarının nailiyyətlərindən tamamilə yararlanmış banklar üçün əhəmiyyətli bir resurs sayıla bilər. Big data və suni intellekt texnologiyalarının tətbiqi ölkə ərazisində fəaliyyət göstərən bütün iri şirkətlər üçün, xüsusilə banklar üçün gələcək hədəflərdən biri olmalıdır.

Açar sözlər: iri şirkət, informasiya texnologiyaları, innovasiya

MANAGEMENT OF LARGE COMPANIES USING INFORMATION TECHNOLOGIES

SUMMARY

The actuality of the subject: Information technology has the most advanced methodology which not only enables user or organization to work reliably but also reduces cost of productivity and it give rise to the business to compete the market of business.

Purpose and tasks of the research: The purpose and task of the dissertation work, is to determine the importance of information technologies, to review the impact of application of IT in the management of businesses, to analyze current trends of innovations in large companies.

Used research methods: In the process of working on the dissertation, it was used comprehensive approach to studying the use of computer technology in management of large companies, including system analysis, dialectical method for identifying cause-effect relationships and other scientific methods.

The information base of the dissertation: In the dissertation, secondary sources were used to apply the selected research methods. These sources include the reports of famous firms and business websites, research articles from journals and thesis topics.

Restrictions of research: In Azerbaijan not every company shares its statistics in global networks.

The novelty and practical results of investigation: The research offers new predictable banking system which has not been performed in Azerbaijan. Research shows that there is positive relationship between information technologies and firm effectivity.

Scientific-practical significance of the results. Results have scientific and practical importance for large companies, including banking sector. It shows us that artificial intelligence and big data should be implemented in companies.

Keywords: large company, information technologies, innovation

ABBREVIATIONS

AI	Artificial Intelligence
ICT	Information and Communications Technology
IT	Information Technology
GDP	Gross Domestic Product
OECD	Organization for Economic Co-operation and Development
US	United States
UK	United Kingdom
R & D	Research and Development
IoT	Internet of Things
ERP	Enterprise Resource Planning
BPM	Business Process Management
ABS	Automated Banking System
DWH	Data Warehouse
OLAP	Online Analytical Processing
OLTP	Online Transaction Processing
ATM	Asynchronous Transfer Mode
NFC	Near Field Communication

TABLE OF CONTENTS

INTRODUCTION	8
CHAPTER I. LARGE COMPANY IN THE SYSTEM OF MODERN ECONOMY	11
1.1. The modern economy as a combination of small, medium and large businesses	11
1.2. Large companies and the need to use information technology in their management	20
1.3. Budgeting, risks and their assessment in the conditions of modern large business	28
CHAPTER II. THE DEVELOPMENT OF INFORMATION TECHNOLOGY AS A FACTOR IN THE GROWTH OF LABOR PRODUCTIVITY AND CAPITAL IN THE CONTEXT OF GLOBALIZATION	37
2.1. Changes in the organization and productivity in terms of the introduction of information technologies	37
2.2. Changes in the structure of profitability as a result of the use of Internet technologies and sectoral differentiation of the level of profitability	45
2.3. Cost management is the central task of managing a large company	54
CHAPTER III. INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE MANAGEMENT OF CORPORATE RELATIONS ON THE EXAMPLE OF KAPITAL BANK OF AZERBAIJAN	63
3.1. Banking system of Azerbaijan and place of Kapital Bank in it	63
3.2. Implementation of modern information technologies in Kapital Bank	70
CONCLUSIONS AND RECOMMENDATIONS.....	79
REFERENCES	82
List of tables.....	87
List of pictures	87
List of figures	87

INTRODUCTION

Relevance of the research topic: Information technology fosters innovation in business. Innovation results in improved data storage, faster processing, smarter apps, and wider information distribution. By implementing innovations to its business processes a firm may be able to dramatically cut costs, improve the quality and customer service, develop innovative products for new markets. That is why information technologies is one of the main element in the management system of the large company.

Statement of the problem and learning level: In this dissertation we are looking at different world practices in the example of large companies, by analyzing that how information technologies influence on businesses.

Connor and Martinsons (2006) stated that information technology is a valuable aid because it provides information for decision making.

David Kay (2003) takes organizational technology investments into new support initiatives for customer service. The author notes that there are many suppliers of ROI tools and a useful tool that measures the economic benefits of investing in this technology. He explores technology investments for an organization in new support initiatives for customer service. The author points out that ROI tools have many suppliers and is a useful tool that measures the economic benefits of investing in technology.

Micheal Gilman (2003) led to better business solutions by discussing data mining technology and the importance of IT for higher performance. Historical data or historical data are the key to investment success. However, the author was unable to determine the technical requirements for the information required to use the application platform and system.

Guido Sacci (2003) discussed the issue of effective IT management, from technology management to increasing the value of business.

Dechow et. al., (2007) emphasized the importance of information technology in management control.

Purposes and objectives of the research: Purpose of this dissertation is to understand importance of technological innovations in companies, to examine the potentials of application of IT in large businesses, to assess the benefits of adoption of IT in big companies. The tasks of research are investigating the use need to use information technology in the management of large businesses, analyzing current trends of innovations in large companies, searching advantages of information technologies in large companies, especially in banking sector and making suggestions on these issues.

Object and subject of the research: The object of the research is the impact of information technologies on big companies. The subject of the research is the implementation of new technological innovations in large businesses.

Research methods: During the thesis study, the author used an integrated approach to study the use of computer technology in the management of large companies, including system analysis, dialectical method to define cause-effect relationships, and other general scientific methods. Economic, logical and statistical analysis methods were used in research and systematization of case materials.

Research database: The data collection for the research was done by analyzing publications and statistics of many foreign academicians and companies, conference documents, Azerbaijan legal documents.

Research limitations: Data collection for risk assessment of large companies, the effect of information technologies on banking system especially in Azerbaijan is not easy. Not every company shares its statistics in global networks.

Scientific novelty of the research: The author proposed predictive banking system which has not been implemented yet in Azerbaijan. Predictive banking system analyzes and forecasts purchasing and payment ability based on spending behavior and the amount in customers' current accounts, and makes suggestions to the customer accordingly.

Scientific and practical significance of the results: There is positive relationship between information technologies and firm productivity and profitability. Results have scientific and practical importance for large companies,

especially banking sector, including:

- to be able to serve more customers and increase production volume due to fulfilling demands in short time;
- development transaction volume by increasing the potential number of customers;
- increasing the company's competitiveness;
- reduction in the number of departments and employees, taking into account cost elements
- improving customer services through managing more effective and productive customer relations;
- creating predictive banking system;
- creating new products which will be more desirable for customers according to their habits and behavior.

CHAPTER I. LARGE COMPANY IN THE SYSTEM OF MODERN ECONOMY

1.1. The modern economy as a combination of small, medium and large businesses

The formation and development of market relations presupposes the free and equal coexistence and development of various forms of ownership and various sectors within each form of ownership. Considering the private sector of the economy, we can talk about three groups of enterprises, which, according to generally accepted terminology, are defined as large, medium and small enterprises depending on their size, as well as a group of individual entrepreneurs. Each of these three groups has its own internal interests that determine the strategy of their economic behavior, their attitude to the state, socio-economic, political and national problems.

The classification of a business by the size (scale) of the activities of market economy entities is extremely important because it allows us to identify and analyze the strengths and weaknesses of small, medium and large businesses, and determine the best options for their relationship and interaction. World experience in market management shows that small, medium and large enterprises are not mutually exclusive, but complement each other. The most important component of the market economy should be the presence and interaction of large, medium and small enterprises. For classifying an enterprise as large, medium or small, certain criteria is essential (Гиниятуллин А.Р., 2013). The complexity of their definition consists primarily in the fact that they cannot be equivalent for all spheres and branches of the national economy. For example, what can be considered a large enterprise in the sphere of services or trade will turn out to be medium or even small in the manufacturing industry, and, the average food industry enterprise in its size characteristics will seem small in coal mining, etc.

The relationship between small, medium and large enterprises depends on the role and importance of each sector of the economy at a certain stage in the formation and development of a market economy.

However, at any of these stages, large business remains the leader; only its structure is changing.

The European Union classifies the firm size according to the number of employees, turnover, and the capital employed.

Table 1: The size of the firm as defined by the European Union

	Small	Medium	Large
Number of employees	< 50	50 to 249	> 249
Turnover	< € 10 m	€ 10 m to € 50 m	> € 50 m
Capital employed	< € 10 m	€ 10 m to € 43 m	> € 43 m

Source: https://assets.pearsonglobalschools.com/asset_mgr/current/201214/BusinessStudiesChapter3.pdf, 03.09.2019

In Azerbaijan the firm size is classifying according to the average number of employees and annual revenue.

Table 2: The size of the firm as defined by the Cabinet of the Ministers of Azerbaijan

Categories	Average number of employees	Annual revenue (thousand manats)
Micro business	1-10	≤200
Small business	11-50	200 < an.rev. ≤ 3000
Medium business	51-250	3000 < an.rev. ≤ 30000
Large business	251 and above	30000 < an.rev.

Source: <http://www.e-qanun.az/framework/41048>, 03.09.2019

Each of these businesses have particular role in a modern economy of the country. In the structure of the modern mixed economy, small, medium and large businesses not only coexist, but also organically complement each other. This is evidenced by the integration forms of their cooperation. The integration of large, medium and small enterprises is not some ideal model, which replaces the old mechanisms of resource allocation or the previous organizational forms. It is about creating a new quality of the market and organizational structures, or a qualitative transformation of these forms.

Large businesses mainly determine the economic and technical power of a country. In our country, the advantages of large-scale production have been propagated for a long time. Large companies have leading role in a market economy. This is because the center of economic growth, from the end of the 19th century to the present, in all the leading countries of the world has been and remains the capital and knowledge-intensive industries, such as the oil, chemical industry, metallurgy, automotive, electricity, electronics, etc. e. In these sectors, economic development is determined by a relatively small number of large companies. They are sectors of national importance and only large companies are able to cope and manage it.

In order to develop themselves, on the one hand they tend to integrate, absorbing or concentrating smaller partners, and on the other hand, they are uniting into international structures, partially losing their independence and falling under the influence of stronger partners. At the same time, by managing the situation in the international market, large capital becomes an instrument of expansion of international business structures in the domestic market of the country.

Typically, the concept of "large business" applies to such giants as, for example, General Motors, Microsoft. The largest companies in the world include such companies as General Electric (USA), Coca-Cola (USA), Exxon (USA), SOCAR (Azerbaijan) and others. It is thanks to large enterprises that the business is developing, which is based on mechanisms to reduce production costs. Large firms are carriers of scientific and technological progress, they accumulate, and then implement the methods of rational entrepreneurship. Most modern large firms are international companies operating in global markets, which allows them to take advantage of the relatively cheap resources of the global economy by placing different stages of production in different countries (<https://studme.org/121107087973/ekonomika/uslugi>).

At the same time, the possibilities of small enterprises are very great, especially in modern conditions. Small businesses have particular importance in the transition to a market economy. Because they stimulate economic competition, structural reorganization of the economy, affects the weakening of monopolism, and promotes

the formation of a new social part of business owners. Many years of experience in developed countries have shown that without a wide network of small enterprises, the functioning of the commodity market is impossible. The presence of a sufficiently large number of small enterprises allows intensively restructuring the structure of the economic complex.

The small business sector represents the most extensive network of enterprises and individual entrepreneurs operating mainly in local markets and directly related with the large-scale consumers of goods and services. Because of the small size of these enterprises, they are technologically, industrially and managerially flexible, and it allows them to react sensitively and in a timely manner to the changing market conditions. The small business sector is an integral, objectively crucial element of any developed economic system, without which the economy and society as a whole cannot normally exist and develop. Although the “face” of any developed state is made up of large corporations, and the presence of a powerful economic force - large capital to a great extent determines the level of scientific, technical and production potential, the true basis of a country's life with a market management system is small business as the most dynamic and flexible form of business life. Exactly, in the small business sector the bulk of national resources are created and circulated, which are a substantial ground for medium and large businesses.

Medium-sized businesses are more dependent in domestic economic conditions and are forced to compete within their group, as well as with large domestic businesses and foreign capital. This determines the interest of medium-sized businesses in protecting the domestic market by pursuing a protectionist state economic policy and the formation of certain rules of market relations, which predetermines a closer connection between medium-sized businesses and national interests.

One of the reasons for the successful development of small and medium-sized businesses in advanced economies is that large-scale production is not opposed to small-scale production. It is known that Japanese super giants rely on thousands of family enterprises and micro-firms with a high level of detail (operational)

specialization and responsibility, with the highest level of computer support. Small business dominates in manufacturing, construction, services, and now - in high technology.

Due to their mass character, small business, including individual entrepreneurship, represents a large part of small owners, that determine the socioeconomic and partly political level of development of the country. By their standard of living and social status, they belong to the majority of the population, while being both a direct producer and a consumer of goods and services.

The concept of "large business" is mainly economic. The legislation of both foreign countries and Azerbaijan does not specifically highlight this concept. Today in Azerbaijan a lot of large companies, such as SOCAR, Aztelekom, Kapital Bank, Az-Granata, Azercell, "Matanat A" and etc. are operating. These companies have a significant positive impact on the development of the country's economy.

The concept of "small business" is defined both economically and legally. As the experience of countries with highly developed economies shows, it is an essential component of a market economy. In its most general form, small business is understood as economic activity carried out by subjects of a market economy under certain conditions established by law, state bodies, and other authorized organizations that determine the essence of this concept.

In addition to large and small businesses in the modern market economy, a significant layer of medium-sized businesses remains. Like large business, medium-sized business does not have a special legal status either. It has an intermediate position between small and large businesses located at different poles of the economy and plays an extremely important role. It acts as an intermediary and a link between large and small businesses, between small business and the state. The small size of firms, the instability and high riskiness of small businesses do not allow them to establish stable ties with large businesses directly. At this time medium-sized businesses take on this role, creating a complex network of diverse in form, legal and organizational design relations with both large and small businesses.

Thus, the modern market economy is characterized by a complex combination of industries of different scales - large, with a tendency to monopolize the economy, capital, equipment and cooperation among many workers.

The size of enterprises depends on the specifics of industries, their technological features, and the effect of the economies of scale. There are industries associated with high capital intensity and significant production volumes, a large share of fixed assets and entrepreneurial costs. In these sectors, mainly large business is concentrated. The sectors that determine scientific and technological progress (STP) are growing at the fastest pace, since they accumulate financial, production and human resources faster than others. In industries with low capital expenditures, where the share of personnel costs is large in the costs of entrepreneurs, rather small enterprises are preferable.

Firms of different sizes play a different role in ensuring the sustainability and competitiveness of a market economy. They have different risks and benefits.

The strengths of large businesses:

- ability to actively change the external environment of entrepreneurship;
- opportunities to create and accumulate achievements of scientific and technical progress, procedures and rules of rational business;
- saving on production costs;
- sustainability.

The weaknesses of large businesses:

- reduced incentives to increase production efficiency;
- an opportunity to limit the access of other firms to the achievements of scientific and technical progress and rational business;
- decrease in management efficiency with the growth of the volume of the company;
- inflexibility, the possibility of loss of contact with the consumer.

The strengths of small and medium-sized businesses:

- flexibility;

- higher profitability compared to large businesses;
- use of unoccupied resources from informal markets;
- dependence on the support of large firms and the state.

The weaknesses of small and medium-sized businesses:

- high risks;
- intuitive character and non-specialized management;
- limited access to high quality resources;
- lack of financial resources, difficult access to information and scientific achievements (https://kpfu.ru/docs/F1949424198/1_Sadurt.pdf).

But every businessman wants to grow and improve his business and firm size.

Here are some reasons:

- survival. In some industries small enterprises should grow, otherwise they may not be able rival with larger competitors, they may not survive and can falling under influence of big businesses;
- growth of future profits. With larger volumes of sales, the firm hopes to make more profit in the future;
- increase market share. Large companies can dominate the market. They have power on raising prices or control part of the market;
- reduce risks. Risk can be decreased through diversification. Spreading into new markets and new products means that if one product fails, success in others can keep the company going.

The integration of small and large businesses, the main forms of manifestation of which are a subcontracting system, leasing, franchising, a system of venture capital funds, seems to be beneficial and necessary for each of its components, as well as for the country's economy as a whole. Large enterprises can use the effective market and structural flexibility of small enterprises, the speed of finding and implementing new technological solutions, penetrating new markets, and quickly collecting important information. In turn, small business receives real financing from such cooperation, support for innovation, etc. The integration of strong

enterprises of large and small businesses can accelerate the process of stabilization and development of the country's economy, manifested in general economic growth (СЫСОЕВ Г.Б., 2007).

Subcontracting is a form of production and functional integration relations, franchising is production and marketing, leasing is production and financial, and venture financing is a form of innovative and functional integration relations. It must be emphasized that all these forms meet the criteria for supporting small and medium-sized businesses, since the consequence of their use should be: firstly, increased stability, and secondly, a mutually beneficial movement of information, technological, raw materials, financial, human resources. Further development of the economic integration system became possible primarily due to the growth of production specialization and due to which industrial and economic cooperation is developing.

A subcontracting system is a long-term supply relationship between a large (main) company manufacturing significant volumes of mass production and many small enterprises operating on the basis of detailed, technological, model specialization in the production of products that are manufactured in relatively small volumes or with a narrow nomenclature. This form of cooperation is beneficial for small and medium-sized businesses, since they have almost no chances to stay in independent markets. This is especially true for technologically sophisticated products, the organization of production and marketing of which requires great managerial, financial and technical capabilities that small firms do not own. Using the production potential of small and medium-sized companies, large companies provide them with certain benefits: they guarantee the purchase of a significant share of manufactured products, supply or lease means of production, determine preferential conditions for the purchase of raw materials and materials, etc.

“AZKON Lift” company has been an official representative of Shanghai Mitsubishi Elevator since January 2016. Over the years, the company as a subcontractor has gathered up to 1,500 leading world brands in Azerbaijan

(elevators, escalators, trawlers, wheelchairs, trucks and lifting equipment) (<https://www.azkonlift.az/>).

“BOS Shelf” LLC is one of the main subcontractor of the “Shah Daniz 2”. The company mainly specialized on piles and jackets fabrication, piping works (<https://www.edu-active.com/jobs/2016/may/09/vacancy-qa-technician-baku-azerbaijan.html>).

Franchising (from French franchise - privilege, liberty) is a way of delivering products and services to consumers, a form of organization and implementation of entrepreneurial activity on the basis of cooperation of material and financial resources and the efforts of different enterprises. In a developed market economy, the largest number of firms operating under such a system is concentrated in the service sector: restaurants and cafes, grocery stores, construction and reconstruction, car service, retail and wholesale, while providing various kinds of services - accounting, auditing, legal, tourism, hotel industry, etc.

McDonald's, KFC, Pizza Hut, and several companies are examples of businesses which operating on a franchise agreement in Azerbaijan (<https://www.amrest.eu/en/cooperation/franchise>).

For those who are starting their own business, breaking into the market is very difficult. Therefore, you need to look for such ways of doing things that would enable customers to get acquainted in practice with samples of manufactured products.

Leasing is a certain type of investment activity aimed at acquiring property on the terms of a financial lease agreement between the owner (lessor) and the client (lessee). In order to generate income, a significant number of state enterprises and organizations are ready to put into circulation surplus machinery and equipment. Transferring it to small and medium enterprises on leasing terms can increase the level of return on funds.

“Ata Leasing”, “Caucasus Leasing”, “Agro Leasing” are among the companies that provide leasing to small and medium-sized businesses in Azerbaijan. (<https://banker.az/lizing-sirk%C9%99tl%C9%99ri/>).

Venture (risk) financing is a long or medium-term investment in the form of loans or equity investments in order to create and develop small and medium-sized fast-growing companies. It is through their venture capital funds that corporations provide market financing for small firms. As a rule, small venture enterprises are associated with the field of R&D (research and development), therefore, the concept of "small innovative enterprises" is often used to designate them.

The best example of venture capital fund in Azerbaijan is Barama Innovation and Entrepreneurship Center. Barama Innovation Center was established by Azercell in 2009 to support entrepreneurship in Azerbaijan. The center supports IT projects and help startups to become independent companies (<https://barama.az/en/barama-innovasiya-ve-sahibkarliq-merkezi>).

1.2. Large companies and the need to use information technology in their management

Despite the fact that in the recent past people did not have a clue what information technologies are, today they have firmly entered our life and entrenched in it. It is impossible to imagine modern world without IT, they are implemented in all areas of human life.

The World Bank's 2016 World Development Report, Digital Technologies, outlines three mechanisms for impacting companies, people, and government on integration, competition, and innovation. In the case of companies, this is manifested in the expansion of trade, as country barriers are being destroyed and all companies, regardless of their size, gain access to the global trade market. Using the Internet and digital technologies reduces the time to search for quality information, reduces transaction costs to almost zero, which significantly increases labor productivity and capital efficiency (https://unctad.org/meetings/en/Presentation/dtl_ict4d2016_01_WDR_pptWorldBank_en.pdf).

As a result of the work being done for information and communication technologies development in the Republic of Azerbaijan, it is important to accelerate the country's integration into the global electronic space, to create new forms of

social and economic activity, to create information and knowledge markets, to increase efficiency in various sectors of the economy. During the period 2003-2013, the government has been focused on the ICT sector with a great deal of attention and care, purposeful, comprehensive and consistent activities. It is clear that many international reports, including the World Economic Forum's report on the Global Information Technology Report, have begun to take into account ICT outcomes in the Republic of Azerbaijan, and in the 2013 report on “Government Success in ICT Support” and “Government Perspectives. According to the index of importance to ICT”, our country is in the top ten in the world. In total, this report ranked 56th out of 144 countries in the Network Readiness Index and was in the leaders' group among the CIS countries (Azərbaycan Respublikasında informasiya cəmiyyətinin inkişafına dair 2014-2020-ci illər üçün Milli strategiya, 2014).

Today, businesses rely so much on information technologies. The development of human society requires material, instrumental, energy and other resources, including information. In the conditions of fierce competition, each company aims to find both external and internal reserves in order to increase the efficiency of its activities, minimize costs and at the same time be a sought-after partner in its business economic environment. The largest increase in the volume of information is observed in industry, trade, financial and banking, marketing and various services. Information is one of the main, decisive factors that determines the development of technology and resources in general. Especially, the role of information technologies in the operation and management of large companies is indispensable. It fosters innovation in business. Innovation results in improved data storage, smarter apps, wider information distribution and faster processing (Бабина С.И., 2019).

In the new paradigm of the development of the world economy, information technology is considered as the main productive resource that determines the growth of social welfare. Information technologies are developing rapidly, penetrating into all new spheres of human activity. The use of digital technologies can raise the state economy to a new level and, accordingly, significantly affect the standard of living of its population. As for the real sector of the economy, in the coming decades all

business processes, interactions between enterprises and stakeholders, as well as markets for all resources will undergo significant transformations, adapting to the requirements of digital technologies and systems. Technologies of big data, machine learning, distributed registries, robotics, virtual and augmented reality, wireless communications and many others, including those that are just being discussed, based on the unconditional and large-scale use of digital data sets, determine our near future today (Скворцова Н.А., Лебедева О.А. и Сотникова Е.А., 2018).

One of the main elements in the management system of a modern enterprise is information that is first generated, accumulated and converted using a variety of hardware and software. Obviously, with the development of scientific and technological progress, the global market for information technology tools (computing, peripheral, special and communication equipment, as well as software, information and service tools) is rapidly expanding and differentiating, which means that options for possible solutions in the field of technological environment formation are multiplying areas of information processing (Report of National Academy of Sciences, 2017).

Nowadays the formula for business success is simple: drive innovation with information technology. For organizations in the digital economy, priorities in the structure of assets and resources are changing. Intangible assets, information software tools that completely change the philosophy of doing business and allow you to manage the value chain of the company at every stage of the development, promotion and sale of products and services come to the fore (Nikoloski K., 2014).

There are subsystems to support the ordinary employee in the information technologies, business executing the standard tasks from the top managers whose job is to make strategic decisions. Each subsystem constitutes information technologies. The systems used in enterprises: executive support systems, management information systems, decision support systems, office automation systems, intranet uses, auxiliary systems are.

Executive support systems are the systems that are developed in order to provide the opportunity for analysis for this level in the development of modeling

and development plans developed for the top managers. The management support system requires the output of decision support systems. According to this output, some information can be stored, filtered, using graphical interfaces in the office environment for these managers to calculate, summary information presentation.

Management Information Systems are the systems that enable the management of the information to be used in the decision-making process in the most accurate manner with minimal cost in a given period. Like most systems, the data storage processing function serves strategic, tactical and operational levels, which are relevant to the internal activities of the enterprise, where control and statistical data can be retrieved, and accesses in line with authorizations.

Decision Support Systems is an important system for decision makers and managers. The best feature of these systems is that there is no need for programmers. It allows planning of the relationship with the future and supports the whole decision-making process. It allows comparison of decision options depending on the databases prepared as desired.

Office Automation Systems are computerized systems in order to automate the routine work done in the office working environment. These are the systems used to control other processes such as order, stock, operational etc., and to make routine decisions. The software used in the preparation of the physical output of the writings in electronic environment, electronic mail, meetings, etc., are the applications that allow the planning of functions.

Intranet Application, is a system that provides use of services such as e-mail, web server, which restricts access to the internet, but which are based on the communication protocols of the internet, allow the use of a defined group, inter-group, interpersonal and of course inter-resource access to meet information needs.

Businesses benefiting from the advantages offered by Information Technologies have made significant gains in terms of competitiveness in marketing of products and services compared to other companies in the same market. The continuous changes in information technologies have led to the emergence of different business opportunities. However, many jobs have become easier, more

convenient and remote, banking transactions can be an example to it. With the help of information technologies, enterprises have gained revenue by selling their idle capacities to other enterprises. However, with these opportunities, managers need to evaluate how changes in the structure of their enterprises in the sector in which they operate and how the sector will use this technology. Managers will have the opportunity to see how they can create new jobs from existing jobs. In order to benefit from information technology facilities, action plans of the enterprises are required. In other words, managers should have a plan with strategic investments to acquire the technology required to take advantage of this technology. For businesses, remote access, online ordering system and management have come with great convenience, so that the services have become widespread and have the opportunity to run effectively. Computer - aided production controls processes have enabled the efficient execution of production functions. Information technologies have provided many opportunities for input supply production, output management, marketing, sales and service management, and have provided competitive advantages to enterprises by reducing costs and introducing new ones in the field of products and services.

The formation of large enterprises and corporate structures (associations, holdings, industrial and financial groups) requires a complete restructuring of their management systems. In addition, at the present stage, the technology of managerial processes requires a change: the procedures for collecting, processing, accounting and analyzing information, methods and techniques for making decisions. At the same time, it is necessary to use new technical means and information technologies in control systems to increase management efficiency.

Today, the effective operation of enterprises, especially manufacturing and trading, is impossible without ERP (Enterprise Resource Planning). ERP is a software package which is used to manage the enterprise: control of its operational activities, financial reporting, the work of the HR service, logistics and more. ERP helps automate and speed up business processes, makes them transparent, and facilitates analytics.

Typically, ERP systems consist of various modules that meet the needs of organizations in process automation. Each of the modules is focused on a specific area of activity or business process. According to the composition of the modules used, the structure of the ERP system can be divided into two components: basic elements and advanced elements.

The basic elements include all the functions of the system that carry out production management: enlarged and detailed capacity planning, development of a basic production plan, planning of material requirements, processing of product specifications, routing of production, procurement and inventory management.

Advanced components include all the features that make production work. As a rule, these elements are implemented as separate modules. These components include:

Financial management. This element of the ERP system allows you to maintain a general ledger, manage settlements with debtors and creditors, perform fixed asset accounting, manage cash, plan financial activities, maintain financial statements and accounting, etc.

Human Resource Management. It allows you to carry out personnel records, carry out payroll, keep records of working hours, work schedules, plan staff, manage staff motivation.

Supply chain management. This element is one of the key in the ERP system. It allows you to forecast demand, plan and manage logistics both within the enterprise (warehouse and production logistics) and outside it (logistics of external deliveries and sales of finished products), manage purchases and suppliers.

Customer Relationship Management. This element of the ERP system performs the same functions as individual CRM systems. Their functionality largely depends on the manufacturer, but the main actions include sales management, accounting for customer interactions, and marketing management.

Business Intelligence. BI becomes indispensable for those organizations which rely on data and its analysis to conduct their business. The Business Intelligence

component of ERP collects and analyses data which helps to gain insights to run a business. It also helps to monitor key performance indicators (KPI).

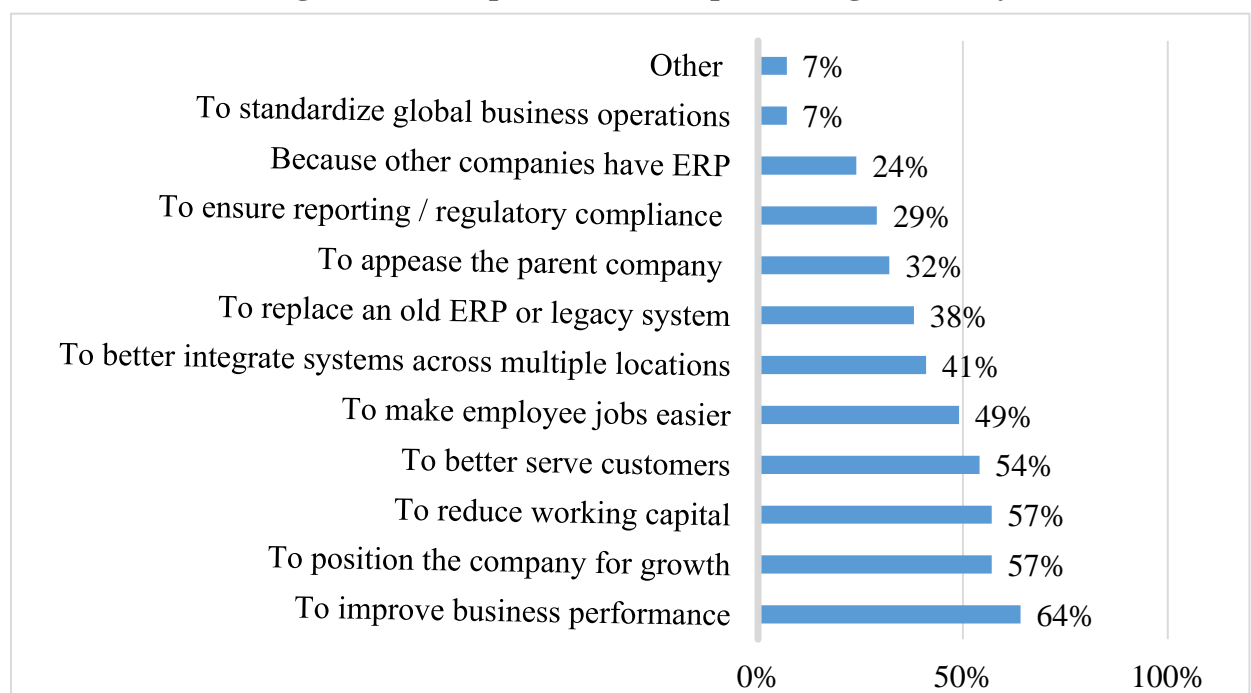
Inventory Management System. This component takes care of all the orders and ensure its supply using the SCM component of the ERP software. It also keeps track of products available in the warehouse (<https://erpnews.com/6-main-erp-components>).

List of ERP software packages contain about 115 types of software. The most prestigious and widely used ERP systems are:

- SAP ERP;
- Oracle E-Business Suite;
- Microsoft Dynamics AX and Microsoft Dynamics NAV;
- 1C;
- Epicor ERP 10 and etc.

ERP is a significant investment even for any company. There are lots of reasons why businesses implement an ERP. Some of these top reasons are to prepare the business for expansion, to simplify the work of employees, for better customer service, and to enhance business performance.

Figure 1: The top reasons for implementing an ERP system



Source: <https://cdn2.hubspot.net/hubfs/2184246/2018%20ERP%20Report.pdf>, 22.09.2019

SOCAR Polymer, a company specializing in the production of high density polypropylene and polyethylene, has completed a project to create a single automated business management system based on SAP ERP. Thanks to the implementation, constant monitoring of efficiency is ensured, decision-making processes, external and internal audits are simplified. Personnel management is carried out using the cloud service SAP SuccessFactors.

Previously, production management was difficult, there was no control over the processes, employees were overloaded with paper work. The installed software is outdated and does not support compatibility with the necessary IT solutions.

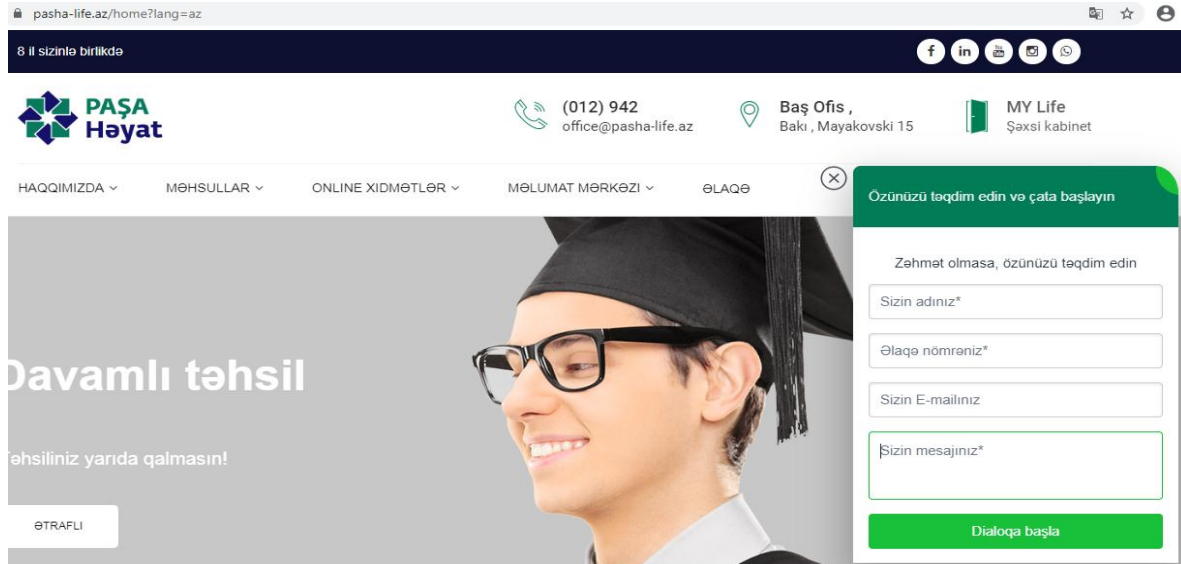
The implementation project took a year and a half. Currently, the company has already implemented 13 of the 16 planned modules; at the same time, the transformation affected both business and technical processes, which allows us to automate all areas related to production. A single source of “truth” is formed from these modules of accounting, finance, procurement, materials, quality, warehouse and personnel management, production planning, plant maintenance and sales. Information is available in real time and is collected automatically. Closing a fiscal month or year is performed without entering data manually, which saves employees time and eliminates possible errors. Paper work is minimized as much as possible, which led to a reduction in the volume of administrative and operational work (<https://infocity.az/2018/12/socar-polymer-transformirovala-biznes-s-sap-erp/>).

SINAM is one of the largest companies providing IT services in Azerbaijan. It has own Enterprise Resource Planning and Management System which is SINAM ERP. This system provides the management of human resources, establishment of accounting on the basis of national and international standards. The system was also integrated with Oracle BI for the generation of different analytical reports for decision making of budgetary institutions (<http://azinnex.com/en/products/detail/19>).

Artificial intelligence is one of the strategically important tools for improving implementation of information technologies in businesses. AI helps to understand your customers better, to improve your business processes and the level of automation (Niemann F., 2016).

Today almost companies try to get benefits from AI by implementing it in their marketing, business processes and CRM. Today chatbots are the best example of implemetning AI in websites of companies.

Picture 1: Example of chatbot from the web-site of Pasha Life

The image is a screenshot of the Pasha Life website. At the top, there is a dark blue header with the website URL 'pasha-life.az/home?lang=az' on the left and social media icons (Facebook, LinkedIn, YouTube, Instagram, Twitter) on the right. Below the header, there is a navigation bar with the Pasha Life logo and several menu items: 'HAQQIMIZDA', 'MƏHSULLAR', 'ONLINE XİDMƏTLƏR', 'MƏLUMAT MƏRKƏZİ', and 'ƏLAQƏ'. To the right of the navigation bar, there is contact information: a phone icon with '(012) 942 office@pasha-life.az', a location pin icon with 'Baş Ofis, Bakı, Mayakovski 15', and a 'MY Life Şəxsi kabinet' link. The main content area features a large image of a smiling man in a graduation cap and glasses. Overlaid on the right side of this image is a chatbot window. The window has a green header with the text 'Özünü təqdim edin və çatı başlayın'. Below this, there is a sub-header 'Zəhmət olmasa, özünü təqdim edin'. The form contains four input fields: 'Sizin adınız*', 'Əlaqə nömrəniz*', 'Sizin E-mailiniz', and 'Sizin mesajınız*'. At the bottom of the form is a green button labeled 'Dialoqa başla'.

Source: <https://pasha-life.az/home?lang=az>, 24.09.2019

1.3. Budgeting, risks and their assessment in the conditions of modern large business

In any business, whether it is a small company or a large company, there is a totality of income and expenses represented by the flows of funds that need to be managed and planned, based on the current economic indicators of business activity. That is, here we begin to talk about budgeting as a method of financial planning of all incomes and directions of spending money to support the optimal proportion between financial and material resources based on such planned indicators as sales or production, cost estimates, capital investment plans, etc. Budgeting is a management tool and a process that includes all four management functions - planning, implementation, accounting and control, adjusting the results of the economic entity.

Budgeting is the production and financial planning of the enterprise by drawing up the general budget of the enterprise, as well as the budgets of individual units in order to determine their financial costs and results.

In organizations, budgeting, as a rule, is carried out by responsibility centers or business segments, which allows transferring part of decision-making authority to a lower level in order to increase the efficiency of business process management (Карлина Е. П., Чеснокова С. Ю. и Потапова И. И, 2009).

Financial planning is carried out through the preparation of financial plans for various purposes and contents, depending on the tasks and objects of planning. It can be divided into time periods:

- long-term (strategic) - defines the main goals of the organization, ways to achieve them from 5 years;
- medium-term (tactical) - from 1 to 5 years, establishes the funds required for the implementation of strategic goals;
- short-term (operational) - is carried out in the current mode (in essence, this is budgeting).

Budgeting at the enterprise is a short-term financial planning, budget management, distribution of resources and assets of an economic entity in time. The result of budgeting is a budget - a document with a detailed plan of the company for the near future, aimed at achieving the goals of the organization. The period for which a specific budget is developed is the budget period, usually 1 year (<https://wiseadvice-it.ru/o-kompanii/blog/articles/postroenie-budzhetrovaniya-na-predpriyatii/>).

Tasks of the budgeting:

- cost optimization;
- coordination of the work of enterprise units;
- identification of areas of loss or development;
- analysis of the financial activities of the enterprise as a whole;
- drawing up a financial forecast;
- strengthening discipline in the enterprise and enhancing employee motivation.

The main functions of budgeting:

- planning function - looking for ways to allocate and use resources taking into account the market situation, provides for problems and risks, offers ways to solve them;

- monitoring and evaluation of performance - an analysis of effectiveness by comparing planned and actually achieved results, analysis of factors that influence the final result;
- assessment of work efficiency and motivation of employees - an assessment of the results of the work of managers, as well as the basis for a material incentive system for employees of the division, assessment of the work of the heads of the division. Budgeting encourages employees and managers to achieve their goals, although they can have a flip side - if used as a means of coercion for employees who do not fulfill planned tasks, they can create an atmosphere in the team that is not conducive to productive work and the achievement of the organization's goals;
- communication between different levels of employees - is a combination of upward and downward flows of information. Employees know what the manager wants from them, understand their tasks, the tasks of each unit and the entire enterprise as a whole.

Advantages of budgeting:

- has a positive effect on the motivation and mood of the team;
- allows you to coordinate the work of the enterprise as a whole;
- budget analysis allows you to make timely corrective changes;
- allows you to learn from the experience of drawing up budgets of past periods;
- allows you to improve the process of resource allocation;
- promotes communication processes;
- helps lower level managers understand their role in the organization;
- serves as a tool for comparing achieved and desired results.

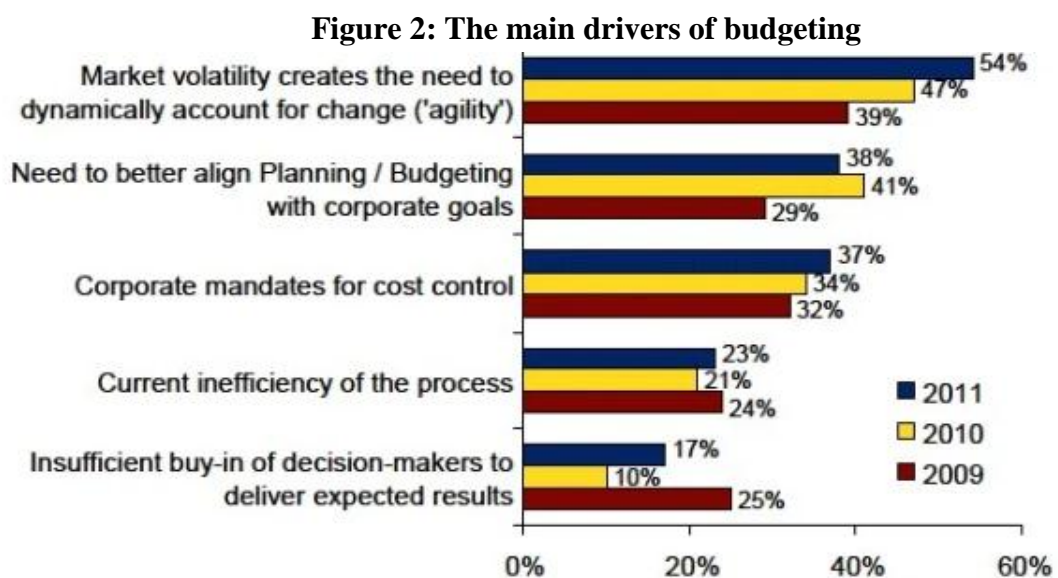
Disadvantages of budgeting:

- different perceptions of budgets among different people (for example, budgets are not always able to help solve daily, current problems, do not always reflect the causes of events and deviations, do not always take into account changes

in conditions; in addition, not all managers have sufficient training to analyze financial information);

- the complexity and high cost of the budgeting system;
- if budgets are not communicated to each employee, then they have almost no effect on motivation and results of work, but instead are perceived solely as a means to evaluate employees' performance and track errors;
- budgets require high productivity from employees; in turn, employees counteract this, trying to minimize their workload, which leads to conflicts, causes a state of depression, fear, and therefore reduces work efficiency;
- the contradiction between the attainability of goals and their stimulating effect: if reaching the set goals is too easy, the budget does not have a stimulating effect to increase productivity; if it's too difficult, the stimulating effect disappears, because no one believes in the possibility of achieving goals.

According to a report by Aberdeen and SAP, the three main drivers of budgeting and forecasting in 2011 were to help organizations cope with market volatility, agree on a strategy and control costs. Since these three have been the main driving forces over the past three years, we can safely assume, given the global economy, that in 2012 these three will prevail:



Source: <https://soniajaspal.wordpress.com/tag/finance/>, 28.09.2019

There are three main approaches to the budgeting process:

1. top-down;
2. bottom-up;
3. bottom up / top down.

The “top-down” approach means that top management implements the budgeting process with minimal involvement of managers of departments and lower-level departments. This approach makes it possible to fully take into account the strategic goals of the company, reduce time spent and avoid problems associated with the coordination and aggregation of individual budgets. However, the disadvantage of this approach is the poor motivation of lower and middle managers regarding the achievement of goals.

The bottom-up approach is applied at large enterprises, where department heads draw up the budgets of plots, departments, which are then generalized to the budgets of the workshop, production and plant, respectively. In this case, middle and top managers will have to coordinate various budget indicators. One of the disadvantages of this approach is that the revenue is overestimated and underestimated so that planned expenditures may receive an unjust fee during execution.

The bottom-up / top-down approach is the most balanced and avoids the negative consequences of its two predecessors. With this approach, senior management gives general guidelines regarding the goals of the company, and lower and middle managers prepare a budget aimed at achieving the goals of the company (Кучеренко А.И., 2010).

The concept of risk covers almost all activities of an economic entity. There are many risks that arise in the operation of an enterprise. The classification of these risks is a rather complicated problem. Many economists are engaged in the search for optimal classification criteria. One of the first classifications was given by Keynes J.M. He approached this issue from the side of the entity engaged in investment activities, and identified three main types of risks:

- entrepreneurial risk - the uncertainty of the expected return on investment;

- "lender" risk - the risk of default on the loan;
- the risk of a change in the value of a monetary unit is the probability of loss of funds as a result of a change in the rate of a national currency (market risk).

Currently, almost every work devoted to risk issues provides one of the classification options. So the vast majority of authors identify operational, market and credit risks. To these main risks are added business risk, liquidity risk, and the risk associated with regulatory bodies.

There is no well-defined risk classification. There are more than 40 risk criteria and more than 220 types of risks. So in the economic literature there is no consensus on this issue. It is possible to construct a gradation of risks depending on which area of activity they appear. For example, in a unified system of planning, control and analysis of enterprise cash flows (budgeting) it is advisable to classify risks in accordance with the blocks of the budget process.

The first step in the budgeting system is the collecting and processing of information. At this stage, the risk consists in limited information, which creates uncertainty in the business and becomes a serious problem in the absence of optimization of production, budget, management processes and ultimately leads to a significant and unreasonable increase in costs and production downtimes that affect business results.

In the modern economy, one of the most reliable sources for the formation of an information base, which serves as the basis for classifying risks in an enterprise in the process of budgeting and making management decisions, is accounting and management reporting. The lack of information or its incorrectness provokes the emergence of intermediate management risks, expressed in errors made by managers in the process of preparing the budget process and its implementation. The risk of the decision maker should also be noted here. The foregoing risks in terms of predictability are predictable or difficult to predict. For example, objectively assessing the available information, one can more confidently predict the occurrence of information risk and determine the degree of its influence, and changes in the

legislative base can provoke the transformation of risk from predictable to difficultly to predict.

The second step in the budgeting system is planning. There is a risk of a methodology that should be identified in terms of costs, sales and profits. In the theory and practice of planning activities, a large set of different methods for developing plans has been accumulated. According to scientists, there are more than 200 different methods, but in practice 15-20 of them are used. In order to develop an optimal planning methodology, dozens of scientific conferences and forecasting symposiums are held in the world. Over the past 20 years, forecasting problems have been discussed at more than 80 international conferences and symposiums, and over 10,000 papers have been published on these problems.

In conditions of uncertainty and instability, a decline in production, economists consider it appropriate to use normative forecasting. In terms of the prospects for the development of forecasting, combined methods are proposed, namely a combination of econometric and institutional methods, as well as a search for methods and ways to minimize errors in the forecast parameters.

At this stage, there is a high probability of risk associated with incorrect allocation in the process of setting up a budgeting system of responsibility centers, accounting and distribution of responsibilities.

After the formation of the planned indicators and bringing the established limits to the attention of responsible persons, the stage of their implementation begins. The element of risk at this stage occurs when the distribution of functional responsibilities for the implementation of budget indicators is incorrect. At this stage, the appearance of personnel risk, management risk, characterized by errors in management policy, is likely.

The production activity of economic entities involves constant participation in a variety of civil law relations, which are executed through the signing by the parties of agreements that reduce both tax and civil risks of participants in the contract process. At enterprises, there may be a risk of increased competition due to leakage of confidential information, the appearance on the market of the same type of

substitute goods that can satisfy consumer demand, lower cost of existing goods on the market. At the stage of analysis and control of budgeting indicators, there are risks associated with the lack of developed analytical methods. Forms and methods of analytics should be developed, an analysis algorithm described, basic data formed with indicators and analysis elements (http://www.rusnauka.com/21_DNIS_2009/Economics/49190.doc.htm).

The causes of the risks of the control system may be: the lack of regulatory deviations of the fact from the plan, the non-specific responsibility for the formation, execution and control of the budget within the framework of the authority of specialists and managers.

During the procedure for adjusting budget indicators, the most likely impact of risks arising in the process of analysis and control, because violations and assumptions at the previous stage can significantly affect the adjustment process. At any of the highlighted budgeting stages, the following risks may occur:

- political - related to the political situation in the country and the activities of state authorities (revolutions, military operations, etc.);
- legislative - changes in existing norms and standards, for example, the introduction of new taxes, higher tax rates, the abolition of tax benefits.
- natural - associated with possible natural disasters and environmental pollution (floods, fires, earthquakes);
- regional - due to regional legislation;
- industry - depend on the development trends of the industry;
- macroeconomic - due to the economic processes in the country (inflation, currency, structural risks, etc.).

The proposed classification of risks in the budgeting system can be supplemented by private classifications based on economic, financial, industrial feasibility and the specifics of the activities of economic entities.

An important property of any system is its ability to self-organize. The processes taking place inside and outside generate it and accumulate the need for changes and constant adaptation. Knowing the current state of the risk system,

trends, and the characteristics of their development provides more opportunities to influence the risk system and manage them in the process of formation, execution and analysis of budget indicators.

For financial predictions and budgeting AI is today one of the main tools. 78% of the managers of finance departments are convinced that AI will help them to detect and prevent fraud much better. A similarly large group expects that AI has the potential to help make predictions about their company's financial situation (IBM corporation, 2018).

CHAPTER II. THE DEVELOPMENT OF INFORMATION TECHNOLOGY AS A FACTOR IN THE GROWTH OF LABOR PRODUCTIVITY AND CAPITAL IN THE CONTEXT OF GLOBALIZATION

2.1. Changes in the organization and productivity in terms of the introduction of information technologies

Griliches noticed that the economy is shifting progressively to sectors where it is difficult to measure the output and output quality, such as government, finance, and health. Unlike counting wheat or tons of steel fabric, medical aid or banking loans are less standardized. Measurement is also very difficult in sectors with quick technological changes, such as software and computer industries. Measuring output and efficiency requires measuring output deflators and input prices that reflect quality changes, which is a big problem. How can you compare a smartphone with a host 20 years ago today, without mentioning new applications without its predecessors? In the 1990s and 2000s, significant progress was made in improving price deflators for IT hardware, but more complex in terms of software. Recent evidence offers that admission of cloud computing and the other changes complicates even the assessment of changes in equipment quality (Griliches Z., 1994).

Brynjolfsson and Hitt proved that it took up to seven years to fully realize the performance benefits of large enterprise systems, often requiring significant organizational and technological changes to fully utilize accompanying hardware and software investments (Brynjolfsson E. and Hitt L.M., 2003).

The spread and implementation of technologies is time consuming and resource intensive and requires extensive experiments with errors and variable time delays. Based on Paul David's work, Siverson considered the slowdown in the growth of productivity in the context of the history of electrifying the production process in the end of the 19th century (Siverson C., 2013). Siverson argues that the effect of electrification on productivity comes in two separate waves. The first wave came quickly and represented adoption of electrification within the current production

organization. The second wave reflected new ways to organize production around this new technology. Achieving all the benefits of efficiency and the influences of new technologies can take decades, and new business methods, infrastructure, etc. that can affect the size and distribution of technology benefits and the nature of its implementation. It may require additional “common inventions”. Similarly, although the first looms allowed weavers to produce 2.5 times more fabric per hour, additional improvements in knowledge and skills increased productivity 80 times per hour over the next 80 years (Bessen J., 2015). For IT systems, the value of intangible additions of computer equipment, including changes in human capital, and business processes, can have a value ten times bigger than the direct costs of computer equipment, but it is also expensive and time consuming to invent and apply.

Instability and dynamism of the environment put forward new requirements for modern industrial enterprises. Changes in the internal and external situational variables of the enterprise lead to a violation of its balance, which provokes a decrease in efficiency. Flexibility and adaptability of the enterprise are one of the main factors in increasing its economic stability.

In modern business, information technology is as important an enterprise component as strategy, processes, organizational culture and structure and other variables.

The competitive advantage of modern organizations cannot be achieved without the use of information technologies that affect strategy, business processes, organizational structure, leadership, organizational culture and climate, incentive system, and employee competency model. The information revolution has a significant impact on competition, on the structure of the industry, the creation of a competitive advantage, the emergence of new types of business.

It has long been no longer necessary to consider IT only as a means of data processing. Using technologies, it is necessary to extract information from the data for the needs of the user, and the problem of "information overloads" arising in this regard requires modern high-speed means of selecting, further processing and

updating information. In this case, you should consider the issue of commercially viable and convenient interfaces, as well as the interaction of shared knowledge between organizational units and cooperation partners.

The rapid integration of networks of local systems with regional and even international structures leads to the abandonment of the classical working fields of computer science and the widespread involvement of telecommunications. Organizationally, this leads to the "erosion" of the information boundaries of the enterprise. It is becoming increasingly difficult to determine where it begins and where it ends. The creation and operation of an appropriate communication structure for such "virtual enterprises" refers to the tasks of information management, as well as the classic function of ensuring the production process or developing goods and services based on IT.

Big Data Technologies - a series of approaches, tools and methods for processing structured and unstructured data of huge volumes and significant diversity. These technologies are used to obtain human-perceived results that are effective in conditions of continuous growth, the distribution of information across multiple nodes of a computer network. They were formed in the late 2000s as an alternative to traditional database management systems and solutions of the Business Intelligence class. Currently, most of the largest suppliers of information technology for organizations in their business strategies use the concept of "Big Data", and the main analysts of the information technology market devote the concept to dedicated research.

The term Big Data refers to data sets whose size exceeds the capabilities of typical databases for storing, managing and analyzing information. Currently, many companies are monitoring the development of Big Data technologies.

In modern conditions, organizations create a large amount of unstructured data, such as text documents, images, videos, machine codes, tables, etc. All this information is stored in many repositories, sometimes even outside the organization. Companies may have access to a huge array of their own data and not have the necessary tools that could establish the relationship between this data and make

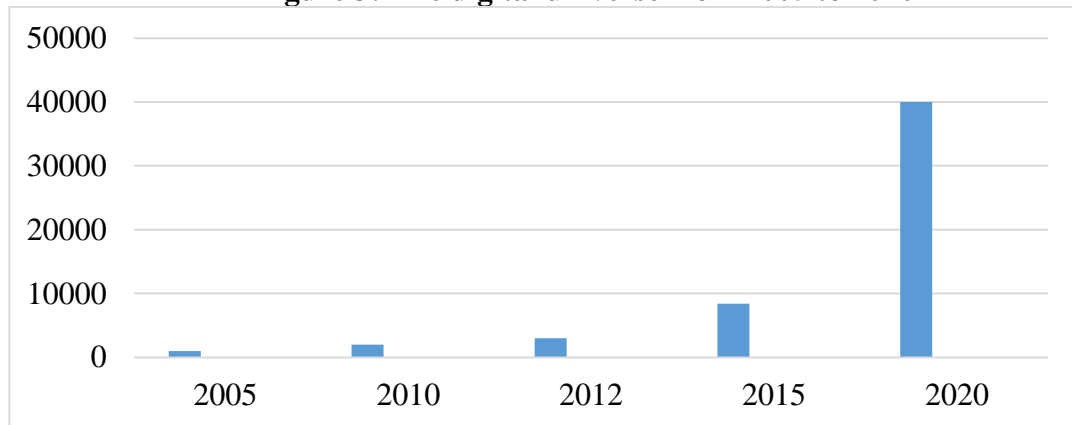
significant conclusions based on it. Traditional methods of information analysis cannot keep up with the huge volumes of constantly growing and updated data, which ultimately opens the way for Big Data technologies (Buyya R., Calheiros R.N, and Dastjerdi A.V., 2016).

The data plays a big role in understanding valuable information about target demography and customer preferences. We create new data from every interaction with technology, whether active or passive, that can identify us. Our data profile grows exponentially, with data from products, video cameras, credit cards, mobile phones and other common areas. With the right analysis, these data can explain a lot about our personalities, behavior, and life events. Companies can use these ideas to develop products, business strategies and marketing campaigns to satisfy targeted customers.

The concept and importance of big data has existed for years, but technology has recently allowed us to provide the speed and efficiency at which large data sets can be analyzed. Since both structured and unstructured data will increase significantly in the coming years, it will be collected and analyzed to identify unexpected ideas and even help predict the future.

The digital age has created a huge amount of information, and the total amount of data is expected to increase to 44 zettabytes by 2020. This large amount of data proved to be extremely valuable for large company companies - for the first time, businesses can integrate different data into important resources for AI algorithms to manipulate and understand behavior. Acceptance of big data in companies reached 53% by the end of 2017 (<https://www.plugandplaytechcenter.com/resources/impact-big-data-business/>).

Figure 3: The digital universe from 2005 to 2020



Source: <https://www.cs.princeton.edu/courses/archive/spring13/cos598C/idc-the-digital-universe-in-2020.pdf>, 21.10.2019

The following features of Big Data technologies can be distinguished:

- work with information of huge volume and diverse composition;
- information is often updated and is in different sources;
- a qualitatively different method of opening analytics to identify practical knowledge that is directly monetized into profit;
- visual display of reports and scenarios analysis ("what if ...");
- the purpose of applying Big Data technologies is to increase work efficiency, create new products and increase competitiveness (Gantz J., and Reinsel D., 2012).

According to McKinsey's Global Institute report, data has become an important factor in production along with labor and capital resources. The use of Big Data will become the basis of competitive advantage and growth of companies (<https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/big-data-the-next-frontier-for-innovation>).

The volume of information at the enterprise is steadily growing due to data received from sensors, measuring and “smart” devices. The most promising devices are sensors that can transmit data in real time. All devices in the enterprise using such sensors can be networked, and Big Data technologies will allow you to process the information coming from them and carry out the necessary events in automatic mode. For example, enterprises can use sensors to receive every minute data on the status of their equipment and based on these data to predict the optimal time for

replacement and maintenance. Too early replacement will lead to additional costs, and later - to loss of profit due to equipment downtime.

Big Data technologies can be useful for solving the following tasks:

- market forecasting;
- marketing and sales optimization;
- effective customer segmentation;
- improvement of goods and services;
- making more informed management decisions based on Big Data analysis;
- optimization of the investment portfolio;
- increase in labor productivity;
- effective logistics;
- monitoring the status of fixed assets.

The methodology and tools for working with structured data have long been created. This is a relational data model and database management system. But in modern conditions, enterprises need to process large volumes of unstructured data of various types and previous methods are not quite suitable for this work. We need new techniques for handling data. Currently, the Big Data model implemented in the Apache Hadoop project is becoming increasingly popular.

The Big Data concept is revolutionary and holds transformational possibilities for almost every business. The term itself, however, is a problematic one, for a variety of reasons.

The expected impact of applying Big Data may depend on the activity type and the current policy of a particular business. During working with big data, methods of knowledge manipulation are used: various methods of the theory of recognition and classification, intelligence analysis methods and data generalization, intelligent approaches in the form of neural networks, genetic algorithms, and other branches of AI.

The main purposes of the Hadoop platform are processing, storage, and data management.

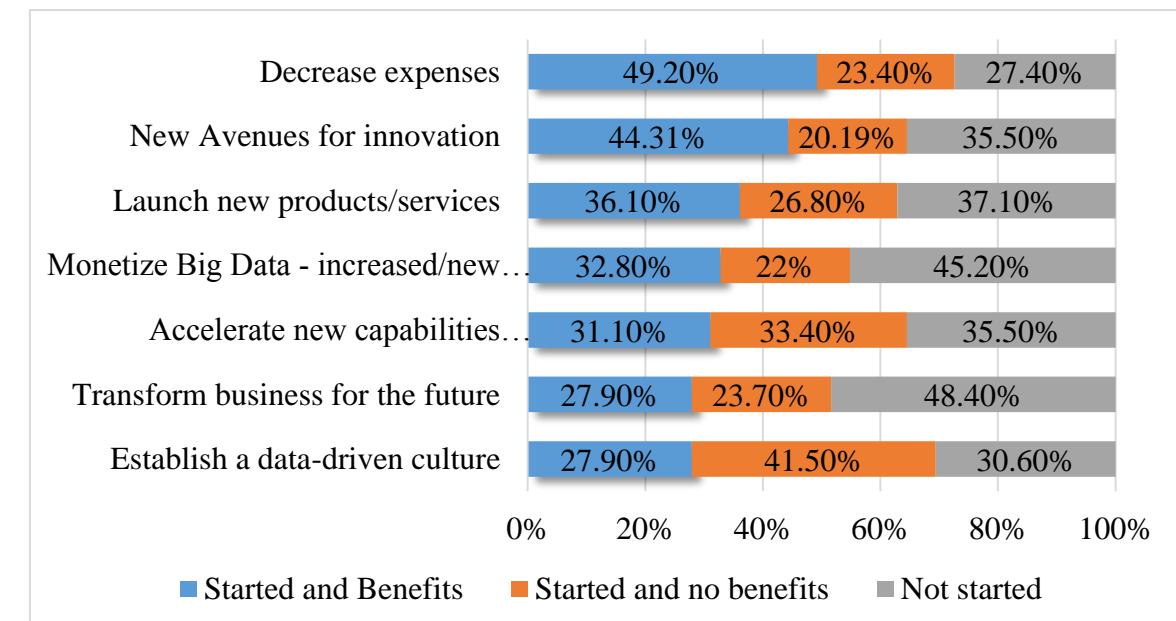
The main components of the Hadoop platform are:

- fault-tolerant distributed file system Hadoop Distributed File System, through which storage is carried out;
- Apache Hadoop YARN, which performs the function of data management;
- Map Reduce software interface, which is the basis for writing applications that process large amounts of structured and unstructured data in parallel on a cluster of thousands of machines (<http://www.pcweek.ru/upload/iblock/d05/jet-big-data.pdf>).

Companies get measurable results from Big Data investments. According to NewVantage Venture Partners, Big Data benefits businesses by reducing costs (49.2%) and creating new opportunities for innovation and destruction (44.3%). By combining advanced analytics and Big Data, you can open new possibilities to reduce costs, achieving the most measurable results, which will lead to the fact that this category will be the most common in the study. 69.4% started using big data to create a data-driven culture and 27.9% reported

(<https://www.forbes.com/sites/louiscolumbus/2018/05/23/10-charts-that-will-change-your-perspective-of-big-datas-growth/#26c011a29268>).

Figure 4: Big Data Initiatives and Success Rate



Big Data business initiatives underway; with successful results.	Started	Success
Reduce costs by increasing operational cost efficiency	72.6%	49.2%
Create a data-driven culture	69.4%	27.9%

Create new opportunities for innovation and destruction	64.5%	44.3%
Speed up deployment of new features and services	64.5%	31.1%
Launch new product and service offerings	62.9%	36.1%
Monetize Big Data by increasing revenue and new revenue sources	54.8%	32.8%
Transform and change your business for the future	51.6%	27.9%

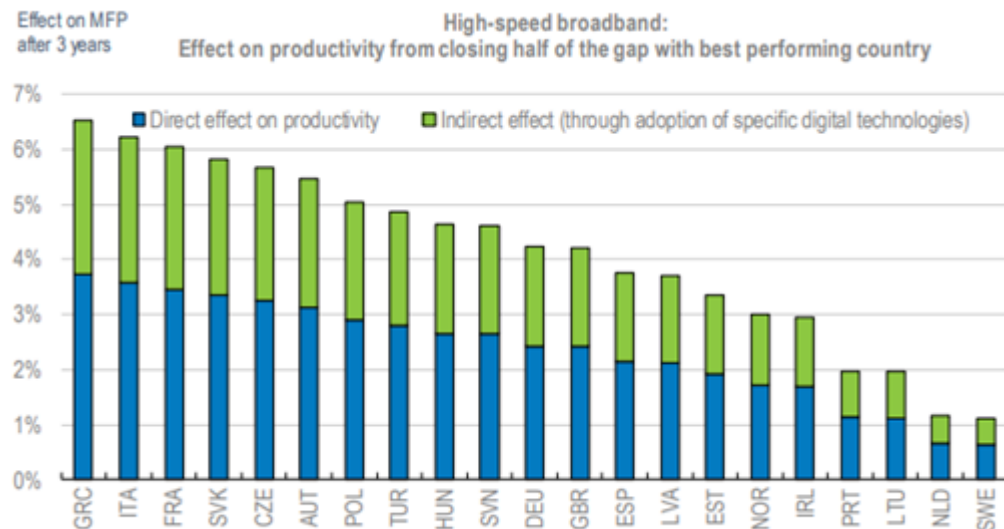
Source: <http://newvantage.com/wp-content/uploads/2017/01/Big-Data-Executive-Survey-2017-Executive-Summary.pdf>, 27.10.2019

In Azerbaijan few companies use Big Data. In 90% of companies, Data Analytics is not up to standard. They use regular reporting - when they write reports, which are then presented to the manager. And, for example, descriptive analytics or predictive analytics is an absolute innovation for companies. They are still reluctant to use it. Azercell among the companies in Azerbaijan which uses Big Data. Azercell monthly carries out 200 segment companies. Always actual issue of safe information storage in the context of Big Data has become doubly relevant. At Azercell, the data security issue is at a high level and it is strictly controlled (<http://datareview.info/article/bolshie-dannye-po-azerbajdzhanski-itogi-big-data-day-baku-foto/>).

Productivity gains from the adoption of digital technology can be significant. For example, a 10 percent increase in industry-wide high-speed broadband internet (cloud computing) usage is associated with a 1.4% (0.9%) increase in multi-factor productivity for the average firm in the industry. This may reflect both the increase in productivity made by the firm introducing these new technologies (including the benefits of simultaneous investments in human and organizational capital), and positive secondary effects for other firms in the same industry (for example, suppliers benefiting from more dynamic interactions or competitors who tend to increase their productivity).

Access to high-speed Internet directly supports the company's productivity and also promotes the adoption of digital technologies that increase productivity such as cloud computing.

Figure 5: Increasing access to high-speed broadband is associated with higher productivity



Source: <https://www.oecd-ilibrary.org/docserver/273176bc-en.pdf?expires=1583412261&id=id&accname=guest&checksum=44FD24F9DF6B9DAB8FF325E147F07470>, 01.11.2019

2.2. Changes in the structure of profitability as a result of the use of Internet technologies and sectoral differentiation of the level of profitability

The information revolution has a significant impact on competition, on the structure of the industry, creating a competitive advantage, the emergence of new types of business. The Internet has a special impact on the economy, the impact of which has been studied in the works of M. Porter and D. Tapscott, whose positions diverge slightly. M. Porter, believes that the Internet has not created a new economy - the old economy continues to exist, gaining access to new technologies and based on the fundamental principles of doing business. According to D. Tapscott, it is necessary to change approaches to managing organizations, since the conditions for their functioning have changed primarily due to the development of information technologies. The Internet has become an integral part of modern life, it will soon connect business, every business function and most people on the planet. The Internet means the mechanism by which people and organizations exchange money, perform operations, report events, express opinions and contribute to the development of new knowledge (Tapscott D., 2001). D. Tapscott focuses on developing a new way of doing business - network companies, the emergence of which was made possible thanks to the development of the Internet.

To my opinion, despite differences in approaches, the results of scientific research by M. Porter and D. Tapscott complement each other and can be used to study the connection of information technologies, including the Internet, with other elements of the organization.

M. Porter sees many Internet threats, the main of which are: increased buyer power; increase in the number of possible substitutes for goods or services; the ability of suppliers to work directly with end consumers; reduction of entry barriers in the industry; increase in the number of competitors; increased competition in price; decrease in overall profitability; reducing the ability of all companies to create long-term operational benefits. The wide availability of information, the increasing pressure of consumers on the seller, make it difficult for companies to use all the opportunities of the Internet for profit.

Five key technologies stand out for their widespread application and impact on countries, industries, and stages of the value chain. The Internet of things, advanced robotics, artificial intelligence, 3D printing and wearables - unleashed competition in production systems, forcing companies to rethink and retool everything that they do internally.

Managers and CEOs that use these technologies and transform businesses quickly will bring their companies to success. Governments will also need to reassess their national competitive advantages and sources of economic growth. These government leaders, who can set the right policies to research, develop and disseminate these technologies and also prepare their workforce and supply chains for their use, will direct their economies to growth (Martin C., and Leurent, H., 2017).

The Internet of Things (IoT) is often presented as a revolution, but it is actually the evolution of technology developed more than 15 years ago. Operation and automation technologies, although conservatively, are now combined with sensors, cloud and communications devices in the information technology industry, according to which Information Handling Services (IHS) predict an increase in the number of these devices to 80 billion by 2025, up from 17 billion today. Urgent opportunities for producers are in intelligent management of the business, in real-

time asset management, as well as smart and related products and services. Cyber security and interoperability issues prevent manufacturers from using IoT in their production sites and supply chains, and 85% of assets are still not connected.

Softline is one of the IT companies in Azerbaijan which provides companies with IT services, include IoT. The implementation of IoT services by Softline, are following:

Building. Systematization and connection to a common network lends itself to the infrastructure elements of the whole building. This means the ability to analyze and control all processes and operations taking place inside, and, consequently, save resources and increase the comfort of people living or working in the building.

City. Internet of Things technologies are more confidently taking their place in the city economy. Many tasks of municipal administrations become much easier if smart devices connected to the network are used to solve them. They can help pedestrians navigate the city, regulate urban parking space, electrical networks, control lighting, and so on.

Agriculture. IoT developments are used to control pests, save water, control the storage and processing of products, optimize the movement of agricultural machinery and workers across the territory, and much more.

Education. Thanks to the Internet of Things, passive elements of the interior, such as a board and a table, can turn into smart assistants. Education is increasingly perceived as an intangible investment asset, and the process of formation, detection and capitalization should be as manageable as possible - and the Internet of Things helps successfully.

Healthcare. It is supposed that the work of the intellectual health system consists of two components. A database collected directly from patients is an intangible piece. Information can be collected automatically using sensors used both at home and in the hospital. Sensors and other devices, some of which can exchange the received data independently, are the second, material component of the system.

Production. Internet of Things is a system that speeds up the production process many times, is efficient, flexible, economical and requires almost no human

participation. Thanks to the automatic collection and analysis of data in production, companies have basically sources of information on which new business services can be developed, as well as existing business processes.

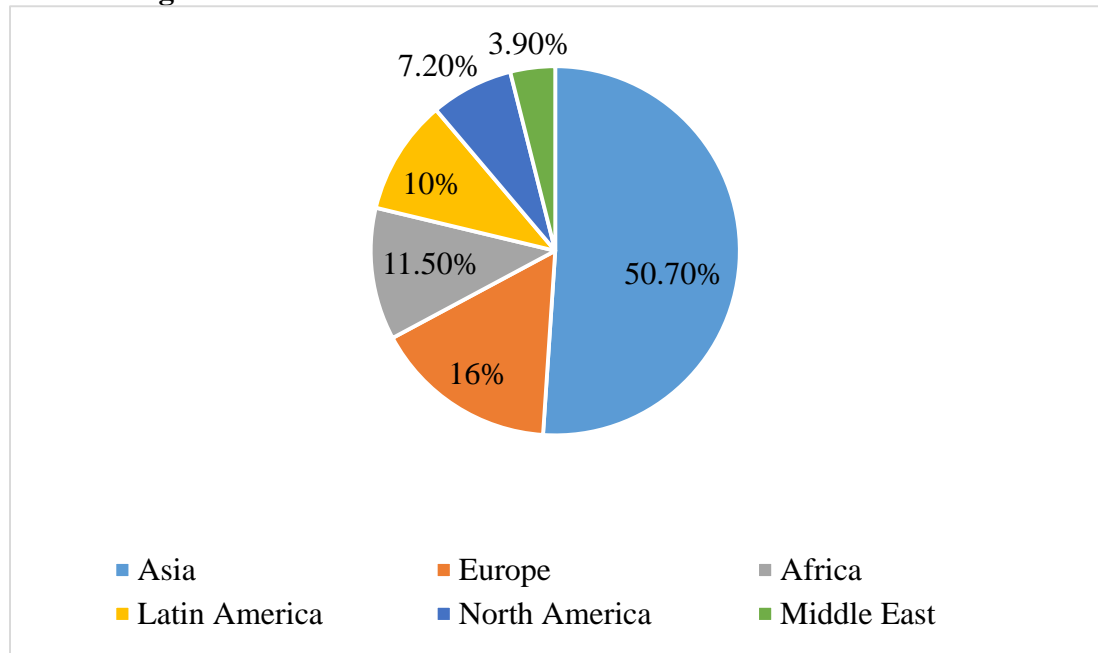
Logistics. Thanks to the Internet of Things technology, companies can combine warehouses, transportation and millions of goods in one smart self-managed system. IoT systems, which receive information about tangible assets throughout the supply chain, independently process and analyze the received data, also ensure that orders are stored correctly and will be in the hands of end customers as soon as possible (<https://softline.az/en/solutions/internet-of-things>).

Artificial Intelligence (AI) enables manufacturers to understand the overwhelming data produced by their factories, initiatives, and consumers, and turn this data into meaningful solutions. Today, 70% of the production data collected is not used. Using AI to connect IoT, manufacturers can manage and optimize business processes from desktop computers to machines, through department walls and vendor levels. The most promising near-term opportunities for implementing AI in production systems are quality management, predictive maintenance and supply chain optimization. Artificial intelligence products will change the rules of the game for customers, and manufacturers must be prepared to organize the networks necessary for their application (http://www3.weforum.org/docs/WEF_White_Paper_Technology_Innovation_Future_of_Production_2017.pdf).

In order to clearly understand the value and opportunities provided by technology, business leaders should examine the similar effects of various technologies on specific functions. The Internet is becoming part of the daily life of the whole world. For the global business environment, the technological revolution that the Internet represents has created a planetary-scale structure designed to provide manufacturers with access to consumers around the world and an ongoing interactive dialogue with them. This discovery for consumers has important implications for any business person who considers the Internet a tool to advance their interests at the national and international levels. The effect of the internet is increasing in terms of the number of users. International statistics provided by

Internet World Statistics show that the world population has reached 7.7 billion, 4.5 billion of which are Internet users.

Figure 6: Internet users distribution in the World - Mid-Year 2019



Source: <https://www.internetworldstats.com/stats.htm>, 09.11.2019

As the network of relations between countries and companies expands and deepens, the economic impact of globalization increases. As large segments of the population in emerging market economies gain new positions in the middle class, most jobs in the world are linked to cross-border flows. Digital data, information and communication flows make world-wide bounce of ideas and innovations; it enables companies to combine better resources and capabilities to create better products and services. Perhaps the most important global flows encourage companies to increase productivity and efficiency by opening more competition and best practices.

According to research of McKinsey Global Institute which examines in 13 countries, the effect of the Internet on economic growth that together cumulate over 70% of the world economy, the following implications of Global Internet have been acquired:

- the Internet is now implemented in every country, in every industry, in most companies, and by more than 2 billion people and continues to grow. Online commerce volume is about 8,000 billion (B2B + B2C);
- the Internet produces 3.4% of GDP in 13 countries; this is higher than agriculture (2.2%), public services (2.1%) or education sector (3%). It is estimated that the Internet creates \$ 1.672 billion of added value or 2.9% of GDP worldwide;
- although the Internet accounts for about 6% of GDP in developed countries such as Sweden and the UK, in 9 out of 13 countries its contribution is less than 4%, which leaves great opportunities for the further development of the Internet;
- the study indicates that in mature countries, the internet has made up 10% of GDP growth in the past 15 years, and its impact is expanding. In the past five years, the contribution of the Internet to GDP growth in these countries has increased to 21%. In our analysis, if we look at all 13 countries, the Internet has grown by 7% in the last 15 years and by 11% in the last five years. This is the reflection of small and medium enterprises (SMEs) getting efficiency gains from the Internet;
- a recent study by the University of Munich suggests that a 10% increase in high-speed Internet penetration leads to a 0.9-1.5 point increase in GDP per capita;
- using the Internet has led to a 10% increase in the profitability of the companies, half of the profit is determined by the growth of the business, and the other half is due to a decrease in costs;
- some jobs were destroyed with the advent of the Internet. However, a detailed analysis of French economy has revealed that the Internet created 1.2 million others, although it has destroyed 500,000 jobs in the past 15 years. Added 700,000 jobs or 2.4 jobs created for each job destroyed. This result was confirmed by McKinsey's global research on small and medium-sized businesses;

- 40% of Internet users in France, the USA and Germany visit a price comparison website every month. They look for hard-to-reach items or information. In addition to the impact on GDP, the Internet creates significant value for users ranging from 13 pounds per user (\$ 18) per month in Germany to 20 pounds (\$ 28) in the UK.

The Internet has changed every part of our life, but the business environment is the fastest and more open to important changes. Today, both small and large companies use the Internet to connect to their systems and databases, to communicate with their partners, and operate.

E-business or e-commerce consists of conducting business processes on the Internet. These electronic business processes include the purchase and sale of goods, materials and services; customer service; payment processing; production control management; cooperation with business partners; exchange of information; launching automated employee services; recruiting and more. E-business can include a number of functions and services, from the development of intranets and extranets to electronic services, the provision of services and tasks via the Internet by application service providers. Today, large companies are constantly rethinking their business in terms of the Internet, making specifications for availability, wide coverage and ever-changing opportunities, e-commerce to purchase spare parts and consumables from other companies, collaborate on promotions, and collaborate.

Information technology is one of the key factors that help businesses enter new markets today to be innovative and produce new products and services.

Here are the opportunities of e-commerce:

- it becomes an area where the power of traditional IT integrates with a new vision to do business as well as the Internet;
- this is not just a way of selling over the Internet, but also helps to modernize the supply chain and every types of sales, to improve customer service, improving “business-to-business” relations;
- automates the ordering process, reduces costs, increases the number of markets and competitiveness;

- it enables businesses to analyze their potential clients and allocate resources appropriately;
- it enables companies to be active 24 hours a day.

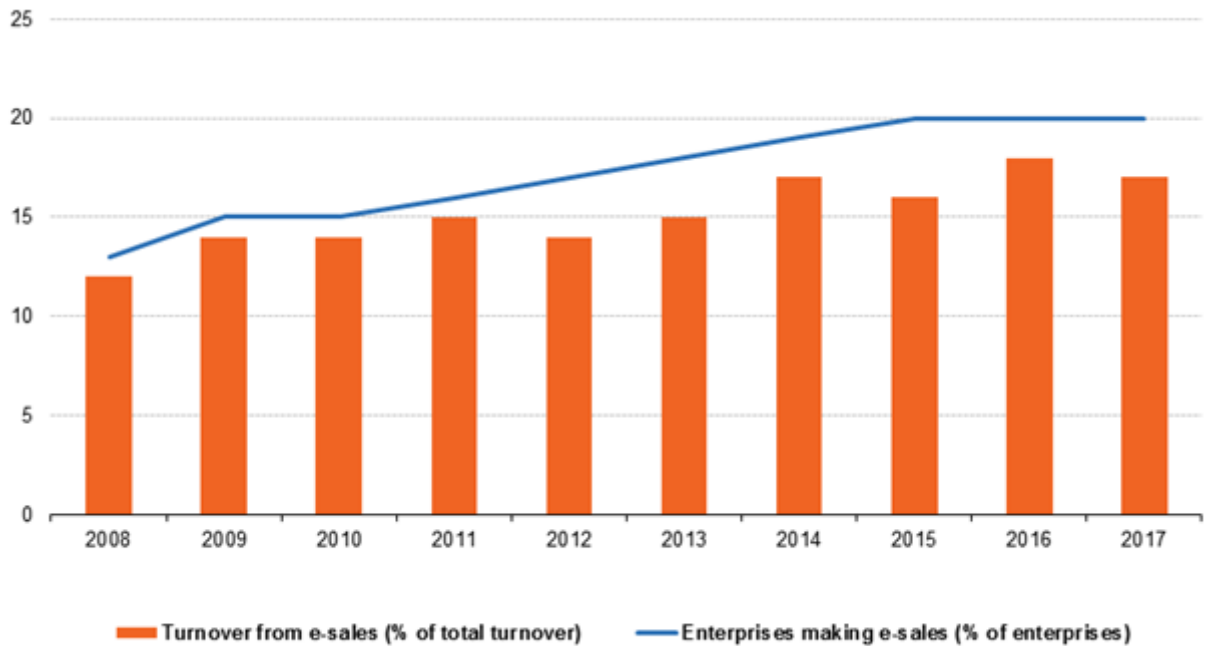
The largest companies can create their own e-commerce sites. But the largest and most widely known public platforms are open ecosystems that include the world of various actors. For example, e-commerce markets such as Amazon, Alibaba, Flipkart, Rakuten, and eBay support millions of vendors, creating price competition and enough product variety to attract large global client bases. These platforms offer small businesses export opportunities by offering logistics support, payment infrastructure, and a global overview.

The impact of e-business markets in international trade is important and continues to grow. Today, around 16 % of B2C e-commerce transactions are expected to reach 30 % by 2020, when cross-border and international sales can reach \$ 1 trillion. Cross-border B2B e-commerce is more. In 2014, the market was estimated to be 1.8-2 trillion. In 2015, \$ 2.2 trillion of cross-border e-commerce was equivalent to about 12 % of global merchandise trade. While the total growth in commodity trade is flattened, the share of electronic commerce is increasing (<https://www.mckinsey.com/~media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Digital%20globalization%20The%20new%20era%20of%20global%20flows/MGI-Digital-globalization-Full-report.ashx>).

The size of these platforms, coupled with the use of automated processes based on algorithms, reduces marginal cost to almost zero for platform operators. Platforms enable users to discover products, services, prices and alternatives. This eliminates some information asymmetries so that it can disrupt the work of traditional agents in this process.

20% of all businesses in the Europe were sold in e-commerce in 2017 and indicate a 7 percent increase compared to 2008. These e-sales accounted for 17% of the total turnover produced in 2017. Between 2008 and 2017, the share of electronic sales in total turnover grew by 5 percent, because at the beginning of the period studied, this share was 12%.

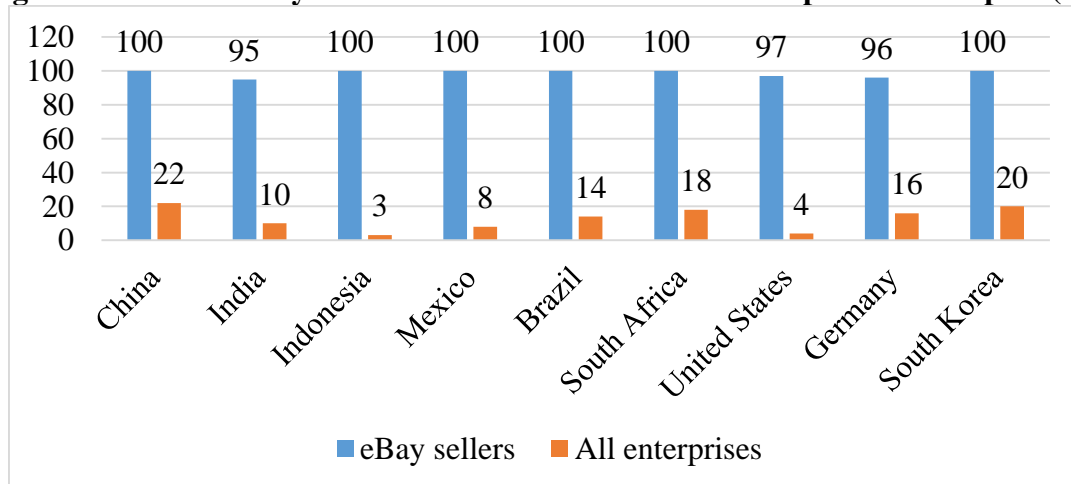
Figure 7: Enterprises making e-sales and turnover from e-sales, EU-28, 2008-2017



Source: https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_enterprises, 18.11.2019

eBay enables SMEs to attain global reach that comparable offline businesses have not achieved.

Figure 8: Share of eBay commercial sellers and offline enterprises that export (%), 2014



Source: eBay, World Bank Enterprise Surveys (using latest data available); McKinsey Global Institute Analysis

PayPal allows cross-border transactions that act as intermediaries for SMEs and their customers. Participants from developing countries are those who send or receive 68% of cross-border PayPal transactions. PayPal also helps with small

transactions: in 2013, the average transaction amount at a point of sale using a foreign credit card was \$ 169 in four developing countries, while an example of PayPal data for the same year shows an average value (Report of McKinsey, 2016).

Companies from all sectors began to adopt the new economic paradigm - restructuring for e-commerce. The first companies to adopt this strategy were from the following industries: telecommunications, information technology, audiovisual and multimedia content production. These companies became today's "giants". However, there are also new small innovative companies that find niches in the internet-related services market, multimedia content and software. The new paradigm can be applied in all sectors, there are already known achievements in the tourism industry, banking, stock market, computer and software sales, book sales and other products.

The adoption of this paradigm leads to a significant increase in efficiency and cost reduction in all sectors of the traditional industry. On the other hand, the digital revolution doesn't just mean using the internet as an e-commerce platform. The main challenge for companies is to reorganize organizational and business processes to increase efficiency over the Internet and ensure their presence in the global market.

The share of information and communication technologies in Azerbaijan's non-oil exports is increasing. GDP of information and communication services grew more than 40 percent from 2016 to 2019. The country's e-commerce growth rate is high, but its share in retail trade is only 0.2 percent. At the current level of internet penetration, the e-commerce share of Azerbaijani retailers can reach about 7 percent, according to the global trend. The leader of e-commerce in Azerbaijan, which is Azexport.az, has increased its presence on international online platforms by 300 times over the 3 years of its existence (<https://www.azernews.az/business/158903.html>).

2.3. Cost management is the central task of managing a large company

In the conditions of development of the economy of country, an important role for any type of business is played by costs, which are a decisive factor in obtaining

the necessary financial result. The result of the activities of any enterprise is the final profit, which is directly affected by such a process as cost management. Cost management refers to the efficiency of spending labor, financial and material resources. Today, market relations have set new challenges for firms. To solve them, the domestic theory and practical experience accumulated in this area are undoubtedly of great value. An integral part of the enterprise activity management system is the cost management system for production and sales of products. Changes in the external and internal environment of enterprises (increase in tariffs for services, prices for resources, products, etc.) predetermine the improvement of cost management methods, and the presence of risks affecting the activities of enterprises encourages senior management to pay more attention to managing the component cost management systems. The risk management methodology provides methodological approaches to the risks in the activities of enterprises with the aim of obtaining maximum profit.

Cost management is the process of effectively planning the costs of a business. It is considered one of the most difficult tasks in the field of business management. As a rule, costs and expenses in business activities are recorded by a group of experts using cost accounting documents. The process includes various activities, such as collecting, analyzing, evaluating and reporting cost statistics for the budget. By introducing an effective cost management system in general, the company's budget can be controlled. Expenses are not only expenses for the purchase of materials, equipment, salaries paid to employees of the enterprise, expressed in monetary units, but also loss of time, lost profit due to the wrong choice of strategy adopted by the company's leadership due to inaccurate data on "cost management".

Cost management is used by many enterprises as an integral part of the company. Cost management is also considered one of the forms of management reporting that helps determine future business expenses to reduce unnecessary expenses. When cost management is applied to a specific project, the expected costs of the business are analyzed at the start of the planning period. The project manager then approves the predictable costs of acquiring the materials needed for the project.

Costs and expenses are recorded during the project period to ensure that the cost is in line with the actual plan. After the completion of the project, the actual expenses are compared with the planned ones; these data will subsequently help in forecasting future expenses. Some of the benefits of cost management include:

- ability to predict future costs and project costs;
- content of centralized accounting of all projected;
- ability to ensure that costs are approved prior to execution;
- ability to control project costs.

Due to the lack of an accurate definition of the concept of "cost management" there are many unresolved problems associated with both approaches to cost management of the enterprise, and its organization in the enterprise. In addition, in a number of publications, cost management is considered as a management accounting method, and in others as a management method.

In modern conditions, the cost management system through its functions acts as the main information foundation for managing the internal activities of the enterprise, its strategy and tactics. The main purpose of this system is to prepare information for making operational and predictive management decisions.

The main goals of cost management include the following statements:

- in modern conditions, the main goal of creating a cost management system is to determine in the most effective way the price that the buyer would agree to pay for a certain set of goods and services, and to explore the possibility of selling these sets to customers at this price;
- optimization of financial results through maximization of profits. In this case, the main factorial chain of profit is studied in detail: costs - volume of production – profit;
- an objective assessment of the results of economic activity of the enterprise;
- making informed short-term and long-term management decisions.

Tasks of cost management:

- identification of the role of cost management as a factor in increasing economic performance;
- determining the costs of the main business functions and production units of the enterprise;
- calculation of the required amount of costs per unit of production, work, services;
- preparation of informational regulatory framework in the field of costs for economic decisions;
- the choice of cost management system that meets the conditions of the enterprise.

Functions of cost management:

- forecasting, rationing, planning and accounting of production costs, costing, planning and accounting for fixed (long-term) expenses for capital investments and investment activities;
- monitoring and analysis of costs in different directions, segments, products, units, deviations from the norms and cost estimates, dynamics indicators;
- the formation of internal quantitative and qualitative information for use in the operational management of economic activity, control of actions and staff incentives (<http://www.cis2000.ru/Budgeting/receivablesruG.shtml>).

Forecasting the dynamics and level of costs for product groups and certain types of goods is associated with the strategy of the enterprise and is calculated mainly for 3-5 years. This forecast is based on a quantitative assessment of factors that affect the level of costs, and their changes in the coming years in terms of quantity and cost. The main goal of the forecast of production costs is to determine the total cost of resources consumed in the production process (material, labor, money) and the calculation of the estimated profit for the long term.

Cost planning is the most important function of managing the production and business activities of the enterprise. The cost plan is an integral part of the annual business plan of the enterprise, which plays an important role in the formation of the

plan for labor and wages, the plan of material and technical support of production and the production plan as a whole. When drawing up a cost plan in modern conditions, it is necessary to provide for a reduction in unit costs in comparison with the base period. Cost reduction calculations should be based on technical and economic factors. Calculations by factors should be made taking into account the specifics of the enterprise.

The factors on the basis of which planning is carried out should be innovative and include: improving the technical level of production; improving the organization of production and labor; increase in volume and change in the structure of production; development of production.

Cost coordination (normative method) is a comparison of actual costs with planned (normative) ones, determination of deviations and taking operational measures to eliminate them. Timely coordination and cost management allows the organization to adhere to the plan and achieve the planned performance indicators.

Current costs are subject to short-term forecasting. Current costs are reflected in the estimates (annual, quarterly, monthly) for the enterprise as a whole, its individual units or individual elements (items) of expenses.

At enterprises, they make an estimate of production costs, including labor costs, together with social security contributions, material costs, maintenance and operation costs of machinery and equipment, as well as other costs associated with production; an estimate of management expenses, which includes personnel management expenses and an estimate of business expenses, taking into account expenses associated with the sale of products. One of the main tasks of short-term forecasting is the substantiation of priority expenses.

When managing costs, the strategic and innovatively-oriented goals of enterprise development in the long run are priority. Cost growth should be considered justified if it contributes to the growth of product competitiveness and maintaining a competitive position. At the same time, a search should be made for new ways to reduce costs without compromising product quality. And if, on the basis of marketing research, a tendency of steady demand for products in the long term is

revealed, the strategy of minimizing costs should maintain the innovative orientation of the enterprise.

To maintain leadership at low costs, in modern economic conditions, it is necessary to control all the factors affecting costs at all stages of the production cycle. And this means that it is necessary to look for possible ways to save on the volume of production; try to increase the intensity of capacity utilization; optimize communication with suppliers and customers; carry out continuous measures to reduce costs; strive to shorten the operating cycle. At this moment, each company, whether it is SME or large business, tries to implement opportunities of information technologies which ended with cost optimization and production effectiveness.

Organizational - economic methods of cost reduction in modern conditions include:

1. Using competition between suppliers of material resources, informing suppliers about more favorable terms of supply offered by their competitors;
2. Cosourcing - organization of joint procurement of material resources in conjunction with other enterprises, including competitors, in the interest of obtaining discounts on the volume of purchases; creation of joint “electronic platforms”, etc.;
3. Outsourcing - transfer to third parties (outsourcers) of the performance of certain functions, work, business processes, operations, etc.

A cost management system will be effective if its requirements are fully respected.

Cost management is based on the search for cost-effectiveness, and characterize only the use of a certain type of resources. For a complete picture of the overall cost-effectiveness, a generalized characteristic of cost and in-kind indicators is needed. This goal is served by general and comparative cost-effectiveness (<https://www.science-education.ru/ru/article/view?id=16460>).

The following statements are cost management breakthroughs a company should apply for:

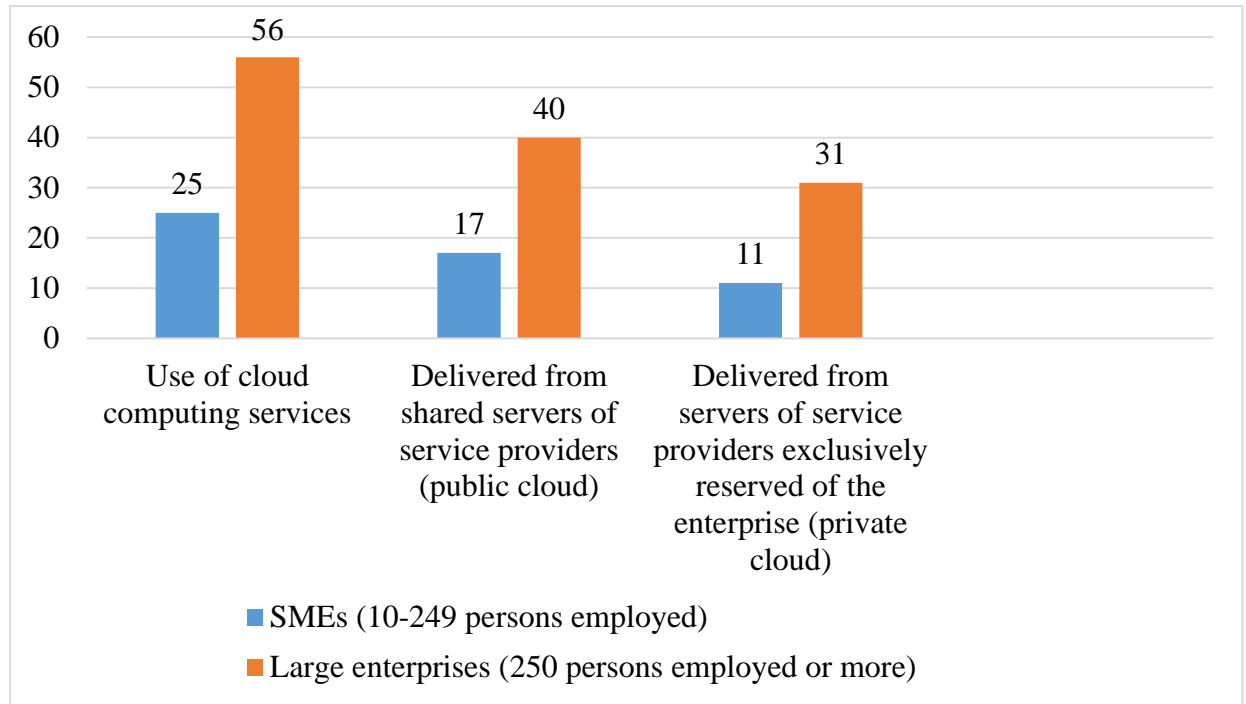
Mobile management. The mobile system is a virtual business management performed by applications on a smartphone. This alone allows you to reduce costs directly in company accounts, as it prevents the use of paper and printed materials. Enterprise Resource Planning (ERP) works as a hub that optimizes and integrates critical information. Documents, tables, contracts, payments, expenses and profits are available in the database and can be updated at any time. All this technological placement has a huge impact on the accounts of organizations, because control always centralizes the execution of tasks and takes immediate destructive measures.

Cloud Investment. Cloud computing sets industry standards for storing data on digital servers. The data stored on these services is much safer than physical servers. For businesses, this means lower maintenance costs and equipment safety. With this space released by digital services, there is more space to create useful places.

The cloud collaborates in the workplace in various industries and enables more efficient communication when sharing and accessing files. You can find email marketing management tools, expense management, analysis and customer service for administrators (<https://www.myabcm.com/blog-post/corporate-cost-management/>).

Service providers can provide cloud computing services in two main ways: through public instances or private instances. The second, used by 11% of businesses, by definition, includes a single tenant environment in which equipment, storage and a network are allocated for a business. As a result, the infrastructure guarantees a high level of security, as other clients of the service provider cannot access the same resources. About 11% of SMEs and 31% of large businesses reported using a private cloud.

Figure 9: Enterprises using cloud computing, by public or private cloud and by size class, 2018 (% of enterprises)



Source: https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_enterprises, 18.11.2019

Azcloud is the first data center in Azerbaijan and the South Caucasus region, launched in December 2016 by AzInTelecom LLC. Customized solutions by Azcloud enable the creation of an internal IT infrastructure with minimal entry costs. The solutions provided by Azcloud allow you to respond to your specific needs and get the infrastructure you need. You can get resources by choosing the CPU, HDD, RAM settings based on your current needs. The “pay-as-you-go” model that offered, allows you to predict the cost of the service and, as a result, reduce your costs for infrastructure services (<https://www.azcloud.az/az/view/services/>).

Management automation. Any information in a business can be automated. One of the potential improvement points offered by technology is repetitive tasks that take the employee away from what is really important. Even if the company does not have to deal with large amounts of documents, this process improvement can be a breakthrough in reducing costs in the current scenario.

Software for cost management. Cost management can be used in a company with software that provides a good integrated system. This cooperates to perform tasks and saves speed and cost. As soon as the organization learns about the value

of this technology, management and information processes begin to provide accurate data, which helps prevent price distortions and failures. Thus, it is easier to see if the product will bring real profit to the company. Investing in cost management is not just about industry performance; it also helps to make decisions, as different reports show different possible situations. The benefits of these investments are great because they separate organizations from competition. This control is necessary to detail unnecessary costs and which sectors and products' financial results can be minimized (<https://www.myabcm.com/blog-post/corporate-cost-management/>).

CHAPTER III. INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE MANAGEMENT OF CORPORATE RELATIONS ON THE EXAMPLE OF KAPITAL BANK OF AZERBAIJAN

3.1. Banking system of Azerbaijan and place of Kapital Bank in it

The banking system is an important element of the Azerbaijani financial system. Today, banks repeatedly surpass other financial intermediaries in terms of assets and capital, regional coverage.

The initial development of the banking system of Azerbaijan began in the second half of the XIX century. However, the institutional and legal construction of the banking system of the Republic of Azerbaijan began on October 18, 1991, after gaining state independence. The legal and regulatory framework of the banking system was established in 1992 with the adoption of the laws “The National Bank of the Republic of Azerbaijan” and “Banks and Banking Activity in the Republic of Azerbaijan”.

The banking system of the Republic of Azerbaijan consists of the Central Bank of the Republic of Azerbaijan and credit institutions (Banklar haqqında AR Qanunu, 2004).

The stage of development of the banking system in Azerbaijan can be divided into 3 parts:

1. the first stage was the establishment of the Central Bank (National Bank) system between 1990 and 1992;
2. development of the banking system in hyperinflation and unstable conditions in 1992-1994;
3. the stage of development of the banking system in the conditions of macroeconomic stability after 1994.

Now in Azerbaijan totally 30 banks are operating. Two of them are state banks: International Bank of Azerbaijan and Azer-Turk Bank (<https://www.cbar.az/page-188/credit-institutions>).

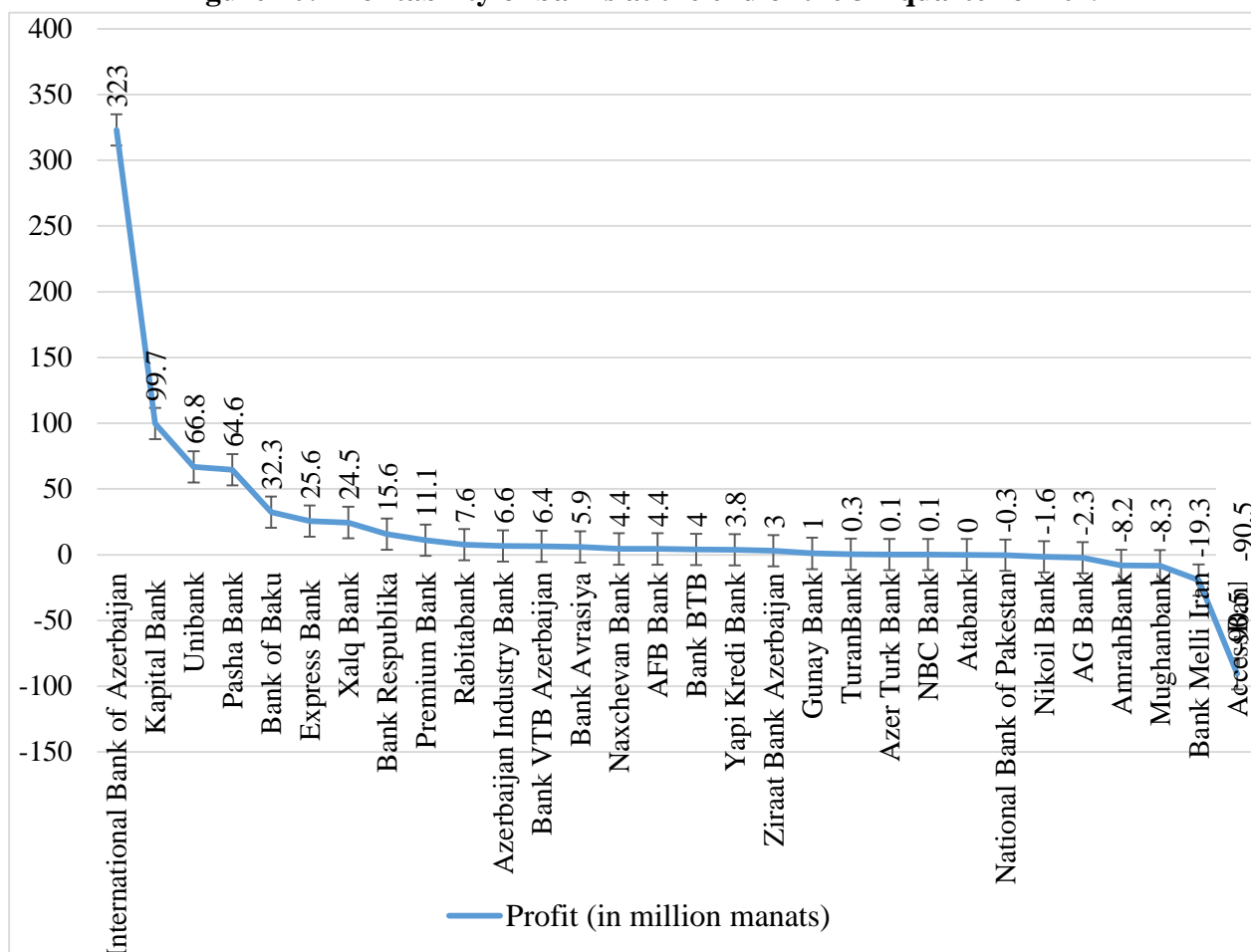
On February 11, 1992, Saving Bank of the Republic of Azerbaijan was formed on the basis of Azerbaijan Republican Bank of Savings Bank of the USSR. On February 21, 2000, as a result of the merger of Sberbank, the Azerbaijan Agro-Industrial Bank and the Azerbaijan Industrial and Investment Bank, the Azerbaijan United Universal Stock Bank (BUSBank) was established. On December 29, 2004, at an extraordinary meeting of shareholders of the Bank, it was decided to rename BUSBank and give the Bank the name Kapital Bank.

Now Kapital Bank is a financial institution with the largest service network in Azerbaijan. The bank, being universal, provides banking services to more than 3 million individuals and more than 22 thousand legal entities. Kapital Bank has more than 100 branches.

The Bank also participates in a number of social government programs and programs for the development of the real sector. In accordance with the legislation of the Republic of Azerbaijan, on May 3, 2018, Kapital Bank became the 100% owner of BirKart Non-Banking Credit Organization Limited Liability Company ("subsidiary"). The goal of creating NBCO BirKart LLC is to increase the availability of financial resources for the population, and also, with the aim of stimulating cashless payments, selling card products at points more accessible to people (<https://kapitalbank.az/about-bank>).

Kapital Bank ranks second place among Azerbaijani banks in terms of net profit. At the end of the 3rd quarter of 2019, the profit of the banking sector amounted to 522.7 million manats. Looking at the results of the first 9 months, the top three are "International Bank of Azerbaijan" OJSC (323 million manats), "Kapital Bank" OJSC (99.7 million manats) and "Unibank" OJSC (66.8 million manats). Their share in the total profit of the banking sector is also very high – about 94%.

Figure 10: Profitability of banks at the end of the 3rd quarter of 2019



Source: <https://bbn.az/banklarin-xalis-m%C9%99nf%C9%99%C9%99ti-uzr%C9%99-siralaması/>, 19.03.2020

Since 2013, the Central Bank together with the Association of Banks of Azerbaijan organizes competitions on an annual basis in various nominations in the field of expansion of digital payments, application of innovative payment solutions, development of e-banking and awards distinguished banks. In 2019, the following banks became the winners on 6 nominations announced by the Central Bank:

- “Leading bank in contactless payments” – “Expressbank” OJSC;
- “Leading bank in mobile banking” – “Kapital Bank” OJSC;
- “Leading bank in acceptance of e-trade payments” – “Unibank CB” OJSC;
- “Leading bank in contactless POS-terminal infrastructure” – “Pasha Bank” OJSC;
- “Leading bank in cashless payments in POS-terminals” – “Premium Bank” OJSC;

- “Leading bank in Internet banking” – “Pasha Bank” OJSC
(<https://www.cbar.az/press-release-2559/mrkzi-bank-trfindn-illik-sasda-hyata-keciriln-nagdsiz-odnislrin-inkisafi-uzr-musabiqnin-nticlril?language=az>).

Any enterprise needs automation of work processes, accounting and reporting, the bank is no exception. Every day, banks accept a lot of customers. The range of operations carried out by the bank is diverse - opening accounts, providing loans, accepting deposits, issuing transfers, etc. This is for the customer to receive, for example, a plastic card - a common thing. The work of a modern bank cannot be represented in manual mode. Thousands of operations are performed daily and requests are executed. If it were all processed by people, then the speed of execution would be slow. To accelerate transactions, banks switched to automated data processing. This has increased the processing speed of millions of times. In the banking system, for every service provided, even the simplest one, hides a lot of operations and transactions.

For all banks, uniform rules for accounting and reporting were established. They are fundamentally different from the rules for organizations, and also have a special chart of accounts and a huge amount of different reporting to the Central Bank of Azerbaijan.

Banking is not easy. It is known that these financial structures have their own chart of accounts, different from ordinary commercial enterprises, as well as specific reporting. Therefore, a conventional accounting program, for example, such as 1C Enterprise, is not suitable for operations with banking products. Here we need a special solution that will ensure the automation of numerous processes, their speed, high information security and at the same time allow accounting and management accounting. These solutions include Automated Banking Systems.

Automated banking systems (ABS) are information and computer networks that allow the bank to process information flows. Any ABS is a complex set of organizational, economic, information, software and technical support for a bank management system.

There are many proven ABS systems in the global IT market. Flexcube is one of the most applied ABS in world banks, also in Azerbaijan.

Flexcube - Automated Banking System, developed by Oracle Financial Services (OFS). Oracle Flexcube solution is intended for financial institutions and offers customer-oriented basic banking functions, Internet service and private equity management functions. Oracle Flexcube allows information workers to use a wide range of useful features, forms a complete picture of the data about the client and provides improved interaction in the process. Oracle Flexcube also offers a new open environment for development, thanks to which the community of users can create their own interfaces, business logic and implement integration. This is a universal solution for any bank. The Flexcube system is rightly called international, it is operated in 115 countries of the world, fully taking into account the specifics of the requirements of regional regulators.

Flexcube systems are a universal banking system, which is intended for the work of a credit and financial organization as a basic accounting system. It allows banks in a market economy and growing competition to solve such difficult issues as:

- replacement of obsolete complexes and complex systems with one application that works taking into account geographical and legal restrictions;
- a customer-centric approach, which gives the bank the opportunity to review its relationships with all customers at any time;
- wide integration opportunities;
- transition to a centralized processing system for a larger volume of transactions without a proportional increase in resources or infrastructure costs;
- the use of analytical tools to assess the needs of customers in the creation of new products and offers;
- high quality customer service;

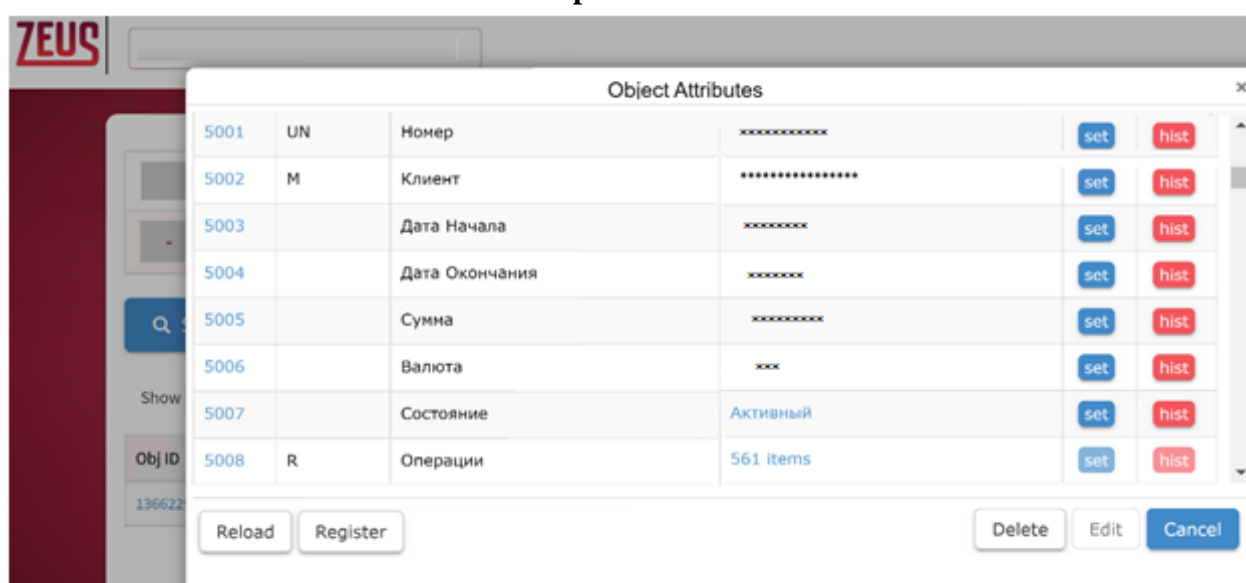
- quick and easy change of products and services in accordance with market requirements;
- support of numerous channels for the delivery of banking products and services;
- lower costs and higher profits (<http://corebanking.bakinity.az/flexcube.html>).

Now Flexcube is applied in some of Azerbaijan banks, such as Kapital Bank, International Bank of Azerbaijan, Azer Turk Bank, Pasha Bank.

Formerly, in Kapital Bank, Flexcube is used for all banking operations, excluding card transactions. Then banking operations which are related with individuals were transferred new ABS named Zeus, which is created for Kapital Bank and it has more user-friendly interface. Now only individual owner and legal entity banking operations are performed in Flexcube. In future these operations also will be transferred to Zeus.

Zeus is new ABS which created for Kapital Bank in 2018 and it includes operations with individuals (loans, current accounts, deposits and etc.) and transactions where cash accounts present. Today Kapital Bank tries to combine all operations and transactions in one ABS – Zeus.

Picture 2: An example of interface of Zeus ABS



Source: Author's insider information

TranzWare CMS is an Automated Banking System that combines the many automated banking back office functions necessary for both issuers and acquirers: managing the issue and circulation of payment cards, servicing acquiring operations and trade and service enterprises, analytics, and more. The solution provides support for a wide range of retail banking operations and many types of card products, accounts and payments. The revolving credit card module provides effective credit card management, has rich functionality with the ability to expand to support corporate credit cards, helps to reduce credit risks and increase the profitability of using a loan. It allows banks to solve such difficult issues as:

- emission, reemission, updating, revoking, replacing, blocking and reactivating cards;
- support for products of international payment systems (VISA, MasterCard, AMEX, Diners Club, JCB) and some local;
- managing a wide portfolio of banking products and various types of cards;
- support for magnetic stripe cards;
- support for various options for generating and selecting a PIN code;
- transaction support using POS, teller, ATM, (mobile) phone or Internet and so on (http://www.tadviser.ru/index.php/%D0%9F%D1%80%D0%BE%D0%B4%D1%83%D0%BA%D1%82:TranzWare_CMS).

Now Tranzware CMS is applied in Kapital Bank for these issues which are enumerated above. Also, Xalq Bank is in the process of integration into the Tranzware CMS.

Picture 3: An example of interface of CMS - ABS in Kapital Bank

Атрибуты счета

Основные | План счетов | Лимиты | Фин. профиль | Прочие | Системные | Полн.

Номер: 3881 944 Azerbaijan manati

Тип счета: Kart hesabi (AZN)

Клиент

Документ: Детально

Полный остаток: 0.00
Доступный остаток: 0.00
Неснижаемый остаток:
Кр. линия/Овердрафт: 0.00
Резерв по дебету:
Резерв по кредиту:

☐ Помечен
☐ Арестован
☐ Закрыт
☐ Расход запрещен
☐ Книжка выдана

Тип в ПЦ: 01 Расчетный
Статус в ПЦ: 3 Первичный открытый
Внешний счет:

Ввод Отмена

Введите внешний номер счета

Source: Author's insider information

3.2. Implementation of modern information technologies in Kapital Bank

As it mentioned in previous paragraphs it is impossible to imagine the activities of large companies without the application of modern information technologies. Kapital Bank, as a one of the large companies in Azerbaijan, tries to implement the latest technologies to improve firm productivity and profitability.

Business processes automation. Kapital Bank is one of the first banks which started to automate its business processes. Previously, transactions in the bank (opening a current account, income to the account, creation of credit and deposit agreements, card orders, etc.) were carried out by operators directly in the ABS. This meant that transaction was created one by one in those systems, and that different errors occurred as a result of time and human factors.

Business process automation meant speeding up process execution, accepting more customers during the day, and making fewer mistakes by the operator. Kapital Bank chose the ELMA BPM (Business Process Management) system for automating its processes. In late 2015, the partial automation of processes began. First process applicated in ELMA was "Plastic card order". ELMA was introduced in 5 months and it was very little time for such a project. Having received quick results, the task was expanded. The issuance of bank cards was followed by cash-out and cash-out

processes, credit processes and others. As a result, the ELMA implementation project closed the task of automating the entire front-end office of the bank.

Due to the fact that several disparate systems were combined into one, employees do not have to constantly switch between windows, which generally facilitates their work. Many manual operations, such as filling out paper documents, were automated in ELMA. Even employees who have been working in their usual ABS for a long time have noted the convenience of interacting with the new system. The number of errors in the processes caused by the human factor, and the training time for new employees were significantly reduced by implementing ELMA.

Upon completion of the implementation project, 7 bank operation circuits were automated:

- work with loans;
- deposit processes;
- work with plastic cards;
- cashless transactions;
- cash operations;
- work with accounts;
- service processes.







In total, these are more than 90 business processes (<https://marco.az/articles/998.html>).

Kapital Bank plans to reach a completely new qualitative level in relations with its customers. The Bank has signed a memorandum of cooperation with one of the world's leading companies in the field of IT, IBM. In the future, it is planned to migrate business processes from the ELMA BPM system to IBM. For this, the project has already been launched (<https://kapitalbank.az/news/ibm-608?hl=ru>).

Table 3: Average crediting number per day in one branch after implementing ELMA BPM

Процессы Задачи(0)

Кол-во: 100 Страницы: 1

Название экземпляра	Текущие задачи	Карта	Дата запуска	Branch	A.S.A	Маблағ
 Cash loan—Optimal 10/5/2019 2:04 PM+ BAYRAMOVA QARAXAN QIZI+1600+AZN	<Нет текущих операций>	Карта	05.10.2019	Abşeron rayon filiali	***** BAYRAMOVA QARAXAN QIZI	1 600,00
 Cash loan—Optimal 10/5/2019 2:04 PM+ BABAYEVA OKTAY QIZI+3550+AZN	<Нет текущих операций>	Карта	05.10.2019	Abşeron rayon filiali	***** BABAYEVA OKTAY QIZI	3 550,00
 Cash loan—Optimal 10/5/2019 1:25 PM+ DADAŞOVA SOKRAT QIZI+6400+AZN	<Нет текущих операций>	Карта	05.10.2019	Abşeron rayon filiali	***** DADAŞOVA SOKRAT QIZI	6 400,00
 Cash loan—Optimal 10/5/2019 12:54 PM+ MƏMMƏDOVA HƏSƏN QIZI+2100+AZN	<Нет текущих операций>	Карта	05.10.2019	Abşeron rayon filiali	***** MƏMMƏDOVA HƏSƏN QIZI	2 100,00
 Cash loan—Optimal 10/5/2019 12:24 PM+ KƏRİMOV OKTAY OĞLU+7500+AZN	<Нет текущих операций>	Карта	05.10.2019	Abşeron rayon filiali	***** KƏRİMOV OKTAY OĞLU	7 500,00
 Cash loan—Optimal 10/5/2019 12:12 PM+ BAXŞƏLİYƏVA LƏTİF QIZI+3700+AZN	<Нет текущих операций>	Карта	05.10.2019	Abşeron rayon filiali	***** BAXŞƏLİYƏVA LƏTİF QIZI	3 700,00

Source: Author's insider information

DWH. Data warehouse are used in some information systems of the large companies in the world, as well as in our country. This technology is mainly used by banks with a large number of customers and transaction volumes, also in Kapital Bank. Because in such banks, analytical and aggregate reports, historical data cannot be obtained from the database of the operating system, as the database of the operating system is overloaded, there are constant transactions, and this database is transaction type (OLTP), which is analytical for reporting (OLAP) need a database. The data warehouse stores data received from various sources (core banking, card processing center, internet banking, etc.) in a structured form in accordance with analytical reports and provided that the date is maintained. Preserving historicity means that the old data is not lost (for example, the balance of any account, both current and any past history). Today reporting system of Kapital Bank based on DWH. This database currently contains more than 4 terabytes of data.

BirBank. It is a mobile banking application provided by Kapital Bank. The application is the most downloaded mobile application in the financial category of the country with more than 1,000,000 users. By the end of 2019, there were 987K download in Android and 138K in IOS.

BirBank became the laureate of the National Internet Award in the nomination E-Government and Financial and Banking Mobile Applications in 2018.

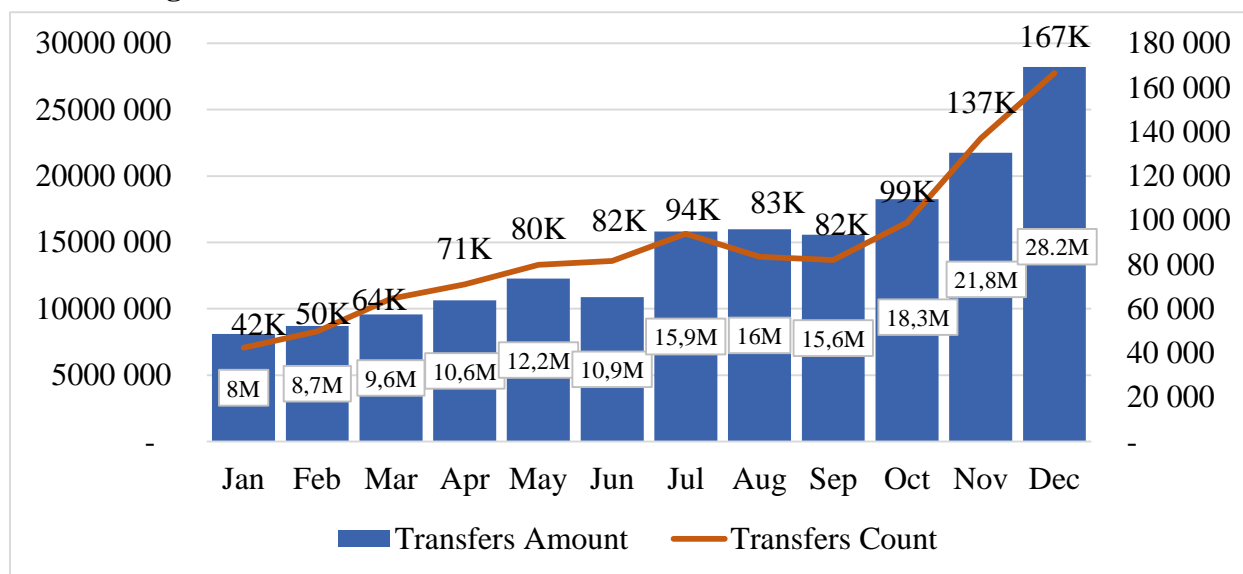
With the new BirBank application you can manage several banking operations from one account. In the updated application, you can use the following functions:

- online registration within a minute by simply entering your card details;
- fingerprint access;
- tracking loans, making monthly payments;
- deposit management, control over daily accrued interest;
- the ability to view card balances, receive statements and, if necessary, block cards;
- order virtual card;
- control over loans, obtaining statements and performing all operations on accounts;
- payment of debts for utilities and mobile services, timely payment of all payments by entering templates and activating automatic payments;
- transferring money between your accounts, to the accounts of others, to your card and other cards, creating templates and making instant payments according to templates;
- showing nearby ATMs and Kapital Bank branches on a map;
- sending funds to contacts from the phone book with the ability to cash in at ATMs of Capital Bank;
- the ability to request funds from other users of the application;
- ability to contact the Bank (chat);
- online applications for credit and payment cards;
- add cards issued by other Banks to the app.

NFC (Near Field Communication) is a contactless payment technology that allows a client to make payments through the BirBank mobile application using a smartphone, without the physical use of a bank card. To make a contactless mobile payment, all you need is to bring your smartphone close to the POS terminal, having

previously assigned a card from Kapital Bank in the BirBank application for NFC payments. If the client does not have a card, then he, without coming to the bank, through the BirBank application can order a Digital Card. The received card is immediately activated, and with its help it will already be possible to make contactless NFC payments (<https://kapitalbank.az/birbank>).

Figure 11: Total transfer amount and transfer count via Birbank in 2019



Source: Author's insider information

Customer Bank. “Customer-Bank” is internet banking system of Kapital Bank and it allows a legal entity and an entrepreneur to manage bank accounts in real time and minimize costs. It has been operating since 2015. Version 1, when first created, featured very minimal functions: to see account ballance and get extract and to make transfers. It was also weak in terms of security and stability. Now version 2 is used by customers.

Advantages of Customer Bank:

- monitoring accounts in online-mode;
- non-cash transactions:
 - inter-branch transfers;
 - intra-branch transfers;
 - intra-republic transfers.

- statements:
 - statements of current accounts;
 - statements of pos-terminals;
- conversion operations (cashless exchange);
- to transfer salaries;
- information about the obligations (credits) of the client;
- information about deposits (savings) of the client;
- information about disposals of clients;
- transfers from current account to business card, from business card to current account;
- card order, prolongation of cards and closing cards.

Features of “Customer Bank” system of Kapital Bank:

- simple and free connection;
- the “Customer Bank” service does not require additional software. It is enough to have a computer, Internet access and a standard web browser;
- no annual service fee;
- access to the system is possible via the Internet anywhere in the world;
- service of constant consultations and assistance of a special professional team;
- the Client-Bank system is protected at the highest level, all transmitted information is encrypted, electronic certificates are used to identify users (<https://kapitalbank.az/corporate-banking/business-internet-banking?hl=ru>).

BirPay. Kapital Bank terminals are part of the BirPay project which includes some banking operations and other payments. Since 2018, Kapital Bank terminals have been located in branches and departments. The purpose of making payments from the terminal is to facilitate the work of cashiers and branch employees and to carry out more customer transactions. Now more than 500 terminals are located in Kapital Bank branches and other place. Now, payments made through BirPay terminals are divided into 2 groups:

1. bank payments;
2. other payments.

Picture 4: An interface of Kapital Bank terminal



Source: Author's insider information

Bank payments are:

- cash inflows to current accounts;
- cash inflows to card accounts;
- loan payments;
- deposit payments;
- Khazri transfer system payments (Khazri is money transfer system which belongs to Kapital Bank);
- advance payment;
- payment of bank charges;
- payment for organizations;
- aliment payments.

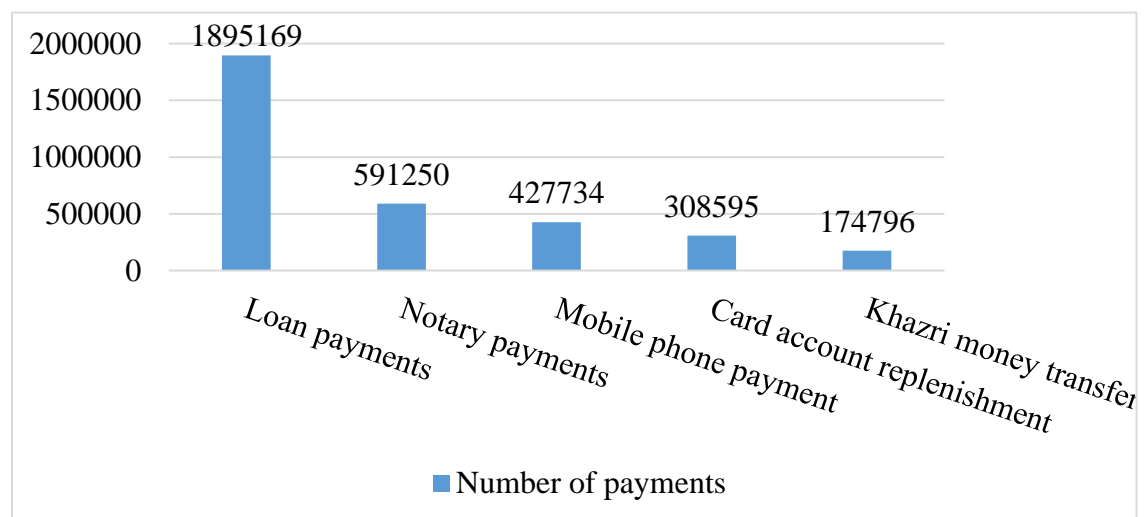
Other payments are:

- mobile payments;
- notary payments;

- communal payments;
- Internet payments;
- budget payments;
- payment of health insurance;
- payment for education;
- evacuation service payments;
- Agroleasing OJSC payments and so on.

According to the statistics of 2019 January-September, totally 4246323 payments were carried out through the Kapital Bank terminal and 1895169 of them are loan payments.

Figure 12: 5 most commonly used payment types via Kapital Bank terminals



Source: Author's insider information

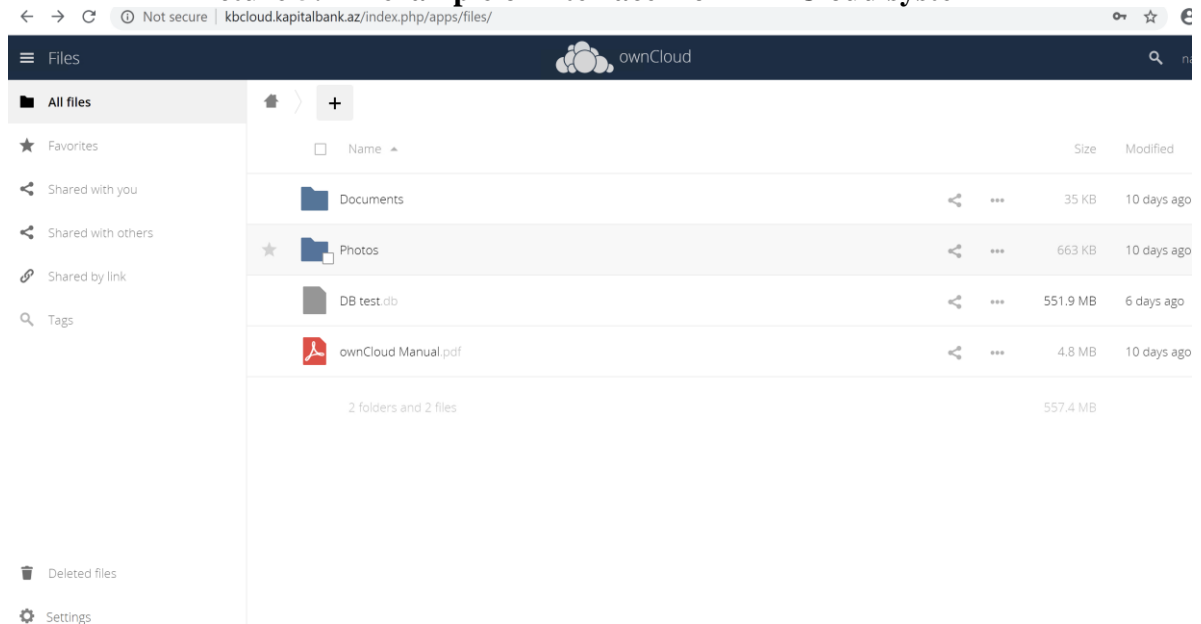
KB Cloud. Kapital Bank is one of the company in Azerbaijan which has own cloud system – KB Cloud. The vendor is ownCloud. Many world-renowned companies have built their cloud technologies on this platform, as DeLonghi, Rakuten, Investment Planning Counsel and so on.

Not only bank employees can use KB Cloud, you can create an account for the user from outside. In default KB Cloud give you 1 GB for your files, but if you ask the capacity can be increased up to 10 GB.

Advantages of KB Cloud:

- cryptography (confidentiality);
- synchronization between clients running windows (Windows XP, Vista, 7, and 8), MAC OS x (10.6 and later), or Linux;
- task manager;
- the address book;
- bookmarks;
- photo gallery;
- pdf viewer;
- an online text editor with syntax highlighting and folding;
- logging module and so on (<https://owncloud.org/features/>).

Picture 5: An example of interface from KB Cloud system



Source: Author's insider information

CONCLUSIONS AND RECOMMENDATIONS

As it mentioned in the dissertation, the work of modern businesses, especially large ones, is impossible without implementation of IT. Because information technologies have positive impact on profitability, productivity and competitiveness of the company.

Today large companies try to do their business by implementing new information technologies, such as AI, big data, and so on. Although this field is not developed enough in Azerbaijan, new projects continue to be developed. This is due to the fact that there is no such practice in the Azerbaijan, and its creation requires time and human resources.

Kapital Bank as one of the first banks which automated its business processes, got efficiency in the business. For example, before automation of the business processes, only 2-3 loan contracts were formalized per day in a branch. But after Elma BPM implementation this number decreased to 6-7 loans on average.

Internet and mobile banking also give to customers of the bank to control over loans, obtaining statements and performing all operations on accounts, help with cost savings through carrying out the operation without leaving the place of residence, reduce time for operations, so bank can serve to more customers during the day, minimizing paper work which led to a reduction in the volume of administrative work, strengthen brand image at the sector.

But unfortunately, there is few, sometimes no example of AI and Big Data in Azerbaijani large companies, especially in banking sector. There are some reasons for implementing these technologies in banking.

Artificial intelligence will help clients manage their simple banking needs more efficiently, it allows financial institutions to create more personalized consumer products. AI recognizes and extracts important information from loan applications, lease agreements, in order to save employees countless hours of work, it can significantly reduce the time to read or write customer information, redistribute time while performing revenue-generating tasks.

Predictive banking is one of the possibility of AI. It has features such as:

- notifies customers of repeat payments higher than average;
- reminding about transferring money to the savings account if the current account has more than average money;
- invites customers to create a travel plan for their accounts after purchasing plane tickets.

Future of financial services, such as banking depends on using and getting benefits from new technologies. One of them is Big Data technologies. The benefits of big data in banking:

- Big data gives you a full view on your business: from consumer behavior models to the effectiveness of internal processes and even wider market trends. This means that you can make informed decisions based on the data and then get business results;
- It allows you to optimize and facilitate your internal processes through machine learning and artificial intelligence. As a result, you get a significant increase in efficiency and lower operating costs;
- Big Data analytics in banking can be used to increase your cybersecurity and reduce risks. Using smart algorithms, you can detect fraud and prevent potentially harmful actions.

Large companies, especially banking sector in Azerbaijan should improve the implementation of AI and Big Data technologies. Some proposals are:

- more invest on new information technologies, including AI and Big Data;
- to benefit from the experience of the world's leading companies in this field;
- to test the initial application of AI and Big Data with pilot projects;
- focusing on segments, in which technological innovations can create radically profitable differences.

Results of this dissertation can be applied in banking sector. The reason is that, banks are critical financial intermediaries, responsible adoption of technological innovations and can also enhance the stability of the financial system and further

economic growth. These technological innovations provide opportunities to:

- to decrease the productivity of the bank;
- to develop operations and controls;
- to predict customers' needs and demands;
- creates brand image;
- cost saving.

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List of tables

Table 1: The size of the firm as defined by the European Union	12
Table 2: The size of the firm as defined by the Cabinet of the Ministers of Azerbaijan.....	12
Table 3: Average crediting number per day in one branch after implementing ELMA BPM	72

List of pictures

Picture 1: Example of chatbot from the web-site of Pasha Life.....	28
Picture 2: An example of interface of Zeus ABS	68
Picture 3: An example of interface of CMS - ABS in Kapital Bank	70
Picture 4: An interface of Kapital Bank terminal.....	76
Picture 5: An example of interface from KB Cloud system	78

List of figures

Figure 1: The top reasons for implementing an ERP system	26
Figure 2: The main drivers of budgeting	31
Figure 3: The digital universe from 2005 to 2020.....	41
Figure 4: Big Data Initiatives and Success Rate	43
Figure 5: Increasing access to high-speed broadband is associated with higher productivity	45
Figure 6: Internet users distribution in the World - Mid-Year 2019	49
Figure 7: Enterprises making e-sales and turnover from e-sales, EU-28, 2008-2017.....	53
Figure 8: Share of eBay commercial sellers and offline enterprises that export (%), 2014.....	53
Figure 9: Enterprises using cloud computing, by public or private cloud and by size class, 2018 (% of enterprises).....	61
Figure 10: Profitability of banks at the end of the 3 rd quarter of 2019	65
Figure 11: Total transfer amount and transfer count via Birbank in 2019	74
Figure 12: 5 most commonly used payment types via Kapital Bank terminals	77