

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Sumy State University

Academic and Research Institute of Business, Economics and Management
Department of Management named after Oleg Balatskyi

«Admitted to the defense»
Head of Department

(Signature) Ihor Rekunenko
(First and last name)
_____ 2023 y.

QUALIFYING WORK

to obtain an educational degree _____ bachelor's _____
(bachelor's / master's degree)

in the specialty _____ 073 “Management” _____ ,
(code and name)

educational-professional _____ program _____ **Management** _____
(educational-professional / educational-scientific) (the name of the program)

on the topic: **Using information technology in operative management of the
enterprise**

The recipient of the group **M-91an/1y** **Moroz Mykhailo**
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The qualifying work contains the results of own research. The use of ideas, results and texts of other authors are linked to the appropriate source.

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(position, academic degree, academic title, Name and SURNAME) (Signature)

Sumy – 2023

Remark:

1) It is specified if available

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I CONFIRM
Head of Department

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ASSIGNMENT FOR QUALIFYING WORK

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on the topic: **Using information technology in operative management of the enterprise**

The recipient of the group **M-91an/1y** _____ **Moroz Mykhailo**
(group cipher) (First and last name)

1. The topic of the work " **Using information technology in operative management of the enterprise** " approved by order № 0569-VI dated 25.05.2023 y.
2. The deadline for submission of the completed work by the acquirer 09.06.2023 y.
3. The purpose of the qualifying work: The main purpose of the thesis is to identify information technology in the operational management of the enterprise with possible ways to improve the situation through the examples of modern enterprises.
4. Object of study: The object of the study is information technology, which is used in the enterprise.
5. Subject of study: The subject of research is the properties of the object studied with a specific purpose. The object of the study is the use of information technology in the operational management of the enterprise.
6. Qualification work is performed on the basis The thesis work is based on the analysis of operational management, theoretical and methodological approaches to informing in the enterprise, and the use of technologies for informing at the enterprises. The goal is to formulate proposals for improving the use of information technology in the operational management of the enterprise.

7. Approximate plan of qualifying work, deadlines for submission of sections to the manager and content of tasks to fulfill the set goal.

№ of order	Title of the section	Submission deadline
I	METHODOLOGICAL FOUNDATIONS OF OPERATIONAL MANAGEMENT	17.05.2023
II	INFORMATION TECHNOLOGY IN MANAGEMENT OF AN ORGANIZATION	25.05.2023
III	USING INFORMATION TECHNOLOGY IN OPERATIVE MANAGEMENT OF THE ENTERPRISE	05.06.2023

The content of the tasks for fulfilling the set goal of the master's qualifying work:

In section 1, the student must Analyze different methodologies and frameworks used in operational management.

In section 2, the student must Analyze specific information technologies commonly employed in organizational management.

In section 3, the student must Propose recommendations for enhancing the effective use of information technology in operative management.

8. Consultations on work performance:

Section	Surname, initials and position of the supervisor/consultant	Signature, date	
		Issued the task	I accepted the task
1	Olena Pavlenko	14.04.2023	14.04.2023
2	Olena Pavlenko	14.04.2023	14.04.2023
3	Olena Pavlenko	14.04.2023	14.04.2023

9. Issue date of the assignment 14.04.2023

Head of qualification work Olena Pavlenko
(position, academic degree, academic title, Name and SURNAME) (Signature)

Tasks to be completed received Moroz Mykhailo
(Name and SURNAME of the acquirer) (Signature)

ANNOTATION

The structure and volume of the bachelor's thesis. The thesis consists of an introduction, three chapters, a conclusion, a list of references, consisting of 35 titles. The volume of the bachelor's work is 40 pages, including 9 tables, 1 figure and a list of references.

The purpose of the thesis. The main purpose of the thesis is to identify information technology in the operational management of the enterprise with possible ways to improve the situation through the examples of modern enterprises.

In accordance with the main goal, the following tasks were defined:

- to study operational management, its features and tasks in the enterprise;
- to analyze the theoretical and methodological approaches to informing in the enterprise;
- to analyze the informing at the enterprises with the help of technologies
- formulate proposals for improving the use of information technology in the operational management of the enterprise.

The object of the study is information technology, which is used in the enterprise.

The subject of research is the properties of the object studied with a specific purpose. The object of the study is the use of information technology in the operational management of the enterprise.

Research Methods. The methodological basis of the thesis consists of personal research, the study of materials to work with the discipline of "Operational Management", comparative analysis.

The Microsoft Excel program was used for the analysis of operational processes.

Approbation of the results. The main results and the results of the bachelor's work were presented at the scientific conference of Sumy State University (2023).

Keywords: USE, INFORMATION, INFORMATION, TECHNOLOGY, OPERATIONAL, MANAGEMENT, OPERATIONAL MANAGEMENT, ENTERPRISE, PERSONNEL

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INTRODUCTION

Information technology is the most important component of the process of using the information resources of society. To date, it has passed through several evolutionary stages, the change of which was mainly determined by the development of scientific and technological progress, the emergence of new technical means of information processing.

In modern society, the main technical means of information processing technology is a personal computer, which has significantly affected both the concept of building and using technological processes, and the quality of the resulting information.

The introduction of the personal computer in the information sphere and the use of telecommunications defined a new stage in the development of information technology and, as a consequence, changing its name by joining one of the synonyms: "new", "computer" or "modern".

The adjective "new" emphasizes the innovative rather than evolutionary nature of this technology. Its introduction is an innovative act in the sense that it significantly changes the content of various activities in organizations.

The concept of new information technology also includes communication technologies, which provide the transmission of information by different means, namely telephone, telegraph, telecommunications, fax, etc.

As the company grows, there are more and more inputs and counterparties, processes become more complicated and branched out. This means that the role of operations managers becomes more and more important.

In a Swiss watch every screw is in its place, every cogwheel performs its task precisely, pedantically and to the highest degree of quality. Operational processes are the same mechanism. Whether your company can become a Swiss watch depends to a large extent on how well operations managers work.

The purpose of the thesis. The main purpose of the thesis is to identify information technology in the operational management of the enterprise with possible ways to improve the situation through the examples of modern enterprises.

In accordance with the main goal, the following tasks were defined:

- to study operational management, its features and tasks in the enterprise;
- to analyze the theoretical and methodological approaches to informing in the enterprise;
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- formulate proposals for improving the use of information technology in the operational management of the enterprise.

The object of the study is information technology, which is used in the enterprise.

The subject of research is the properties of the object studied with a specific purpose. The object of the study is the use of information technology in the operational management of the enterprise.

Research Methods. The methodological basis of the thesis consists of personal research, the study of materials to work with the discipline of "Operational Management", comparative analysis.

Using Microsoft Excel can greatly enhance operational management in an enterprise. Excel provides a wide range of tools and functionalities that can help streamline processes, analyze data, and make informed decisions. By leveraging Excel's capabilities, operations managers can improve efficiency, track performance metrics, and facilitate effective communication within the organization. From data entry and analysis to creating visualizations and generating reports, Excel serves as a valuable tool for managing operational tasks.

Approbation of the results. The main results and the results of the bachelor's work were presented at the scientific conference at the economic faculty of Sumy State University (Sumy, 2023).

Keywords: USE, INFORMATION, INFORMATION, TECHNOLOGY, OPERATIONAL, MANAGEMENT, OPERATIONAL MANAGEMENT, ENTERPRISE, PERSONNEL

CHAPTER I METHODOLOGICAL FOUNDATIONS OF OPERATIONAL MANAGEMENT

1.1 Definition and features

There are many interpretations of the term "operations management." If we summarize them, we can give the following definition.

Operations management is the activity of a company aimed at making the processes of producing goods and services as efficient as possible: getting better results for less money. It is the management of the production of goods or services. It is not just controlling them, but continual improvement of processes.

For a specialist, becoming an operations manager is one of the main career paths on a par with project management. Knowledge of operations management will be useful to any manager or business owner.

Operations management is the company's activity aimed at making processes of producing products and services as efficient as possible: getting the best result for less money (Adam Hayes, 2023, March28); (Coursera. 2013, May 17).

Two features of operations management emerge from the definition:

1-Operations management focuses only on core activities. Its processes focus on planning and controlling the resources the company needs for its core business processes.

2-Operations management always seeks to improve process efficiency. A manager doesn't just manage resources to get a product or service. He is constantly working to do it as efficiently as possible: to improve quality with little or no increase in cost, or to reduce cost without loss of quality.

Although operations management focuses on a company's core business, this does not mean that it does not affect its support functions. It is important for every operations manager to understand how core and supporting processes affect each other.

Let's say a company's core business is the production of construction equipment. One of the auxiliary functions is supply and logistics. In this case the volume of manufactured products directly depends on how raw materials are supplied, how they are shipped, and how warehouse processes are set up. The operations manager in his work must also indirectly affect this area (Exeed college).

The same applies to financial accounting. It is difficult to imagine operational management if specialists do not understand how the production of products and services affects the company's financial performance (Team Asana, 2022, October 17).

In modern companies, it is not always obvious which activities are considered basic and which are considered ancillary. Consider, for example, the activities of Netflix. It is difficult to say which activity is primary: a media company that creates content, or an IT company that creates software for its consumption.

The principles I'll talk about below will help improve the efficiency of any kind of company activity (Kate Eby, 2023, March 3); (Vinish Parikh, 2021, October 8).

1.2 What problems operations management solves

As I defined above, the main goal of operations management is to make the company's core processes more efficient. To achieve this goal, the following problems must be solved:

- Increase the return on the company's available resources. Organize processes so that all resources - materials, equipment, time, labor - are spent rationally by the company.
- Reduce costs, but maintain current revenue levels. Look for weaknesses in processes where additional costs arise, and eliminate them.
- Improve the quality of products and services - optimize production processes. For example, implement new technologies that improve product quality while maintaining the same costs.

- Make changes in a timely manner. Continuously monitor how the company's key processes work and what affects them. Analyze what could be improved and correct it quickly. It's important to do this "as you go along," before there are any red flags. This approach helps the company stay competitive.
- Work with ancillary business processes - reduce their negative impact on the main processes. For example, optimize the delivery of goods, reduce the time of processing orders, processing of payment documents, payroll.

All these goals of operational management can be divided into three areas: cost management, quality management and volume management of products and services. I will talk about them in more detail below (Emeritus, 2023, May 22); (Conger, 2023, February 22).

1.3 Main directions of operational management

The operational management system includes three main areas (Fig. 1.3).

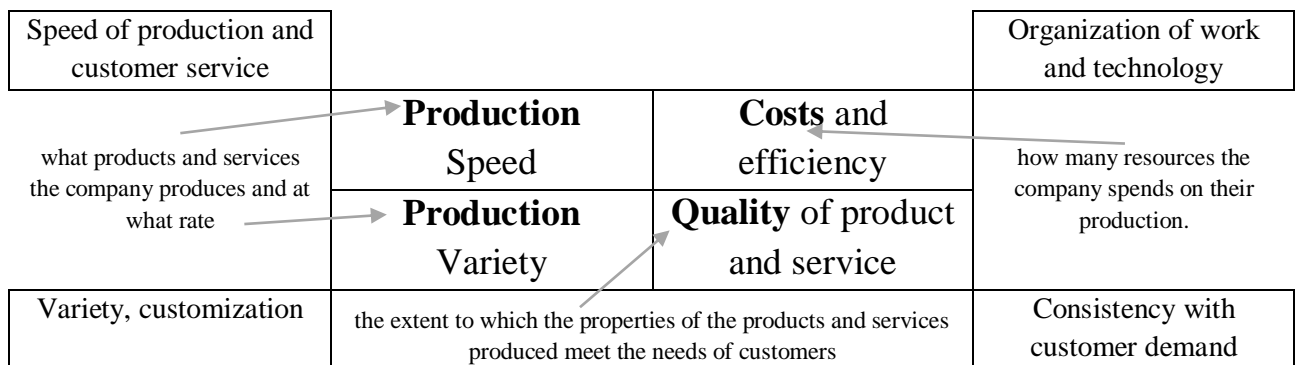


Fig. 1.3 - Interrelation of the main directions of operational management

Directions compete with each other. For example, it will be difficult for the company to simultaneously increase both the range of products and the volume of production. This will complicate all the process chains, and production processes will have to be restructured on a large scale.

Another example is the competition of product quality and production costs. It's hard to imagine a company producing a product of maximum quality without investing almost nothing in it.

The mission of operations management is to find a balance of these areas that would be acceptable to the company. Manage production volumes, product quality, and costs in a way that achieves operational efficiency.

Operations management - units involved

In fact, any head of division of an organization must have skills of operational management, since he/she has not only to arrange effective execution of operations within his/her division, but also interaction with neighboring subdivisions within the framework of business processes, projects and even assignments. Very often the initiators of using operational management tools are the owners and top managers of the organization, who understand that the company needs to adapt to the changing situation in the markets, and thus make it more effective.

Process office can become an instrument of operational management tools introduction, which can support projects on increasing operational effectiveness, modeling key business processes of the organization, as well as using different methods of analysis and optimization of business processes.

There are examples when head of process office, perfectly understanding business processes of organization is appointed to the position of operational director, thus getting authority over key functional subdivisions for increasing operational efficiency.

In the financial sector, taking into account the level of automation, an IT Director can be appointed to the position of Operations Director, because many business processes in the financial sector are already digitized, and the key factor is to further increase the level of digitization.

Operations management - current state

Considering that the majority of modern markets are experiencing stagnation or even recession, many owners of companies are strengthening the knowledge of their management teams in the field of operations management, because competition is growing, and therefore the company must produce a product or provide a service at the lowest possible cost, quickly, and with the necessary quality.

Now we can see a lot of projects on implementation of Lean Six Sigma technologies in manufacturing companies, projects on analysis and optimization of business processes in banking and insurance spheres. In fact, there isn't a single industry where owners and top management haven't taken the time to improve operational effectiveness by implementing operations management technology.

In some progressive organizations, operations management has embraced digital transformation technologies, introducing new business processes with minimal human involvement as a foot soldier of business processes. Technologies such as Artificial Intelligence, Robotic Process Automation, augmented reality and virtual reality are being incorporated into existing business processes, enabling operations management not only to reduce personnel costs but also to create scalable business models whose business processes enable them to operate in many different markets, including internationally.

If an Operations Director is not appointed, then all of the tasks of Operations Management are at the level of the CEO, who has to take care of increasing operational efficiency.

Operations management as a toolkit.

Training in operations management is practiced practically at all leading business schools, both in our country and abroad. Now the discipline is experiencing the second birth owing to an active application of information technologies, which requires from managers not only process-oriented thinking, but also understanding of the instruments required for automation of business processes, and for their control and analysis with the help of Business Intelligence systems. There are a lot of examples of using the various tools of operational management in practice on the market, the main

thing is to realize that it is necessary for the organization, and then begin to implement the best practices in their companies.

An example of increasing operational efficiency is the emergence of a large number of companies with a business model based on the Internet, where not only clients are looked for, but executors of business processes are recruited, internal business processes are automated, partners and suppliers are involved.

In fact, operational management becomes the center of expertise of the organization in organizing "digital" business processes, taking into account the possibilities of social networks, crowdsourcing, freelancers, as well as innovative technologies (iEduNote).

Companies are acquiring the properties of ecosystems where there are no rigid organizational boundaries, but only globally distributed business processes that involve not only full-time company employees, but also freelancers, and services that do all the routine work by applying artificial intelligence technologies. And it seems that operations management, as a scientific discipline, needs to absorb all the innovative technologies (Sweet Process); (Open.edu).

1.4 What good operations managers should know

An operations manager is a specialist who assumes responsibility for managing and solving the company's internal tasks: control of various departments, launching production processes, approving the sales plan and strategy, and many other things at the discretion of the company's CEO. An operations manager is a professional who understands the principles of competent planning of work activities for effective implementation of conceived ideas.

An operations manager is a person who actually takes over the entire routine of the company's internal processes. Operations managers, having knowledge in areas such as economics, finance, management, and production processes, are very valuable on the labor market. This is a very versatile profession and well-paid, because

absolutely any company, no matter what field it belongs to, would welcome a competent and efficient professional.

Usually there is a person in a company who is in charge of all operations - the company's chief operating officer. The people who report to him are the people who are responsible for individual operations - operations managers. They handle the following tasks:

- ✓ plan the operations of the process - labor, materials, equipment, and operating costs;
- ✓ supervise all steps in the execution of the operating plan;
- ✓ analyze deviations and solve current and strategic problems in the production of products and services;
- ✓ manage quality and production costs.

Typical requirements for operations managers are:

- Standard manager skill set - the ability to manage a team and leadership skills, and strategic thinking.
- Ability to plan and forecast company operations, taking into account all factors and resources.
- Ability to control operational data - e.g. process speed, cost, quality indicators. Analyze them and on this basis make further decisions.

In addition, operations managers often need specialized knowledge of the business or industry. For example, if a person used to manage processes in a cleaning company or restaurant, it would be difficult for him or her to start managing a chemical production facility. An operations manager needs to know a company's technology and understand how it affects operations.

Operational management skills should be possessed by any department manager. After all, his task is not only to set up processes within his department, but also to interact with other departments so as to increase the efficiency of the company's core processes.

What tools and skills does an operations manager use in his work?

The skill of "instant response" will come in handy not only in the cab industry, but also in many other businesses, especially since today more and more companies use real-time data to keep track of what's going on.

Here it is important to be able to navigate freely in the data - to know how to request this or that report with the necessary parameters, to understand the relationship between different figures, to build models. Very often the analysis is done in Excel - for example, when you need to test new functions of surcharges for drivers or interesting mechanics for passengers.

As long as there is no real observational history, we estimate the potential effect based on our hypotheses. In Excel, it's important to know how to use not only basic formulas, but also VLOOKUP/ INDEX(MATCH) functions and summary tables.

In order to develop such tests, you need to have a good understanding of the company's main financial indicators. Operations manager must be able to calculate how the proposed discounts and bonuses will affect the company's revenues, and how they will affect the costs. That is, the skill of financial modelling is essential, at least at the basic level.

What qualities are important to an operations manager?

Cold-bloodedness is required at all times to assess risks and make decisions in situations of uncertainty. The choice between rationality and emotionality is clear, and it is not in favor of emotion.

Determination goes hand in hand with curiosity. The operations manager must not only be able to set up processes, but also not be afraid of new things - tests and experiments.

The desire to improve oneself and everything around is almost the main trait of a good operations manager. Personally I get great pleasure from solving optimization challenges.

Structural thinking is required to understand how a lot of factors influence the final result. In order to test hypotheses, you need to know how the entire business is structured, what your function is in it, what the users' motives are, what leverage they

have, who else in the company can help you solve this or that problem, how to organize an experiment.

It's easy to get lost in this ocean of input, so it's important to structure your work, set priorities, and build up the process step by step (Nikita Duggal. 2023, May 16). Being able to connect with people is another key trait. Operational processes connect the very different functional areas of the company: marketing, lawyers, technical support, business development, finance and others. We receive and give data to other departments every day, and the quality of operational communication determines the ultimate success of the work (WGU); (The university of Scranton).

CHAPTER II INFORMATION TECHNOLOGY IN MANAGEMENT OF AN ORGANIZATION

Technology in Greek (techne) means art, craftsmanship, skill, and it is nothing but processes. The process should be understood as a certain totality of actions aimed at achieving the set goal. The process must be determined by the chosen human strategy and be implemented with the help of a set of various means and methods.

The technology of material production is understood as a process defined by a set of means and methods of processing, manufacturing, changing the state, properties, shape of raw materials or material. Technology changes the quality or original state of matter in order to obtain a material product.

Information is one of the most valuable resources of society along with such traditional material resources as oil, gas, minerals, etc., and therefore the process of its processing by analogy with the processes of processing of material resources can be perceived as technology. Then the following definition is true.

Information technology is a process that uses a set of means and methods of collecting, processing and transmission of data (primary information) to obtain new quality information about the state of the object, process or phenomenon (information product).

The purpose of material production technology is the production of products that meet the needs of a person or system.

The purpose of information technology is the production of information for human analysis and decision-making on the basis of it to perform an action.

It is known that by applying different technologies to the same material resource, it is possible to obtain different products. The same will be true for information processing technology.

The IT industry is actively developing. More and more aspects of human and social life are associated with it. Enterprise management is no exception. Businesses use a large number of solutions when performing their tasks. Information systems and technologies (IT) in organization management are methods that enable efficient

planning, data sharing, supply control, and other actions to optimize work processes and maximize profits. They are carried out on the basis of computers or other techniques. The chapter will detail this aspect of organization management, all its subtleties and varieties.

There are various definitions of the concept of IT. We can say that it is a set of processes of creation, storage, and distribution of information. Traditionally, it is customary to identify this industry with the use of computers. This is due to the fact that with their introduction, this sphere began to develop much faster. However, one should not limit oneself to electronic devices. Tools for recording data and their further exchange have been known since antiquity. These are books familiar to every person and their early analogues: papyri and clay tablets.

The purpose of using information technology (IT) in the enterprise is to solve problems in the management of objects and processes. With the help of writing, it was possible to greatly expand the possibilities for construction, crafts, and farming. Records helped our ancestors keep records and share experiences among themselves. The 19th century saw a breakthrough in this area. In addition to the tools already mentioned, new ones began to appear - typewriters, gramophones and records for them (IBM); (Chris MacKechnie, 2019, March 11). Since the early 1940s, electronic instruments began to be produced - the first computers, electric players and dictophones. The methods we are accustomed to began to be applied in the 1990s. Now the task of IT is globally the same, only now it is faster, more convenient and efficient (Margaret Rouse, 2018, May 3); (Wikipedia).

2.1 Application and importance

Nowadays it is difficult to overestimate the role of using information technology in business management, as well as in other areas of social life. There is a tendency to significant changes in all areas where human resources are present. Managers of companies are trying to optimize all processes and increase profits as much as possible.

Human Resource Management

This is one of the many areas in which the technologies described in this article are involved. To ensure the smooth operation of the department, small office managers consistently implement data collection and processing systems. They have several basic functions. Among them:

- *recording the number of active employees;
- *recording payroll transactions;
- *management of human resources - finding candidates for positions, training, conducting internships.

If we are talking about a larger firm, information technology in management activities covers management at all levels: tactical, strategic, as well as operational.

Basic requirements

There are a number of parameters that the software must meet if its goal is to optimize the work of the human resources department. Some of them are:

- *a high degree of protection against unauthorized access;
- *user-friendly interface;
- *fast data processing in real-time mode;
- *ability to function in a local network or on the internet;
- *rights ranking depending on the position and authority of the employees.

Today there are a lot of products on the market from different manufacturers. But before you buy it, you need to make sure that the program corresponds to the above-mentioned requirements. Otherwise it will not be able to perform the tasks assigned to it (ThemYou&Me); (TheScientific world, 2020, March 04).

2.1.1 Varieties

After we found out what information technology in management is, we need to deal with the categories into which they are divided.

1. Basic

This group includes all IT, which were created by man, and are used for various purposes. It is distinguished:

- ✚ Telecommunication - mobile communication, Internet, cable and satellite TV.
- ✚ Textual - for example, automatic speech recognizers that record it in printed form.
- ✚ Graphic - image manipulation: photo editors, drawing and modeling software.
- ✚ Multimedia - simultaneous image and sound processing.
- ✚ Databases - they are used for storage and processing of information.
- ✚ Internet - email clients, messengers, websites.
- ✚ Software - software development.
- ✚ Server - connect users.
- ✚ Security - prevent leaks and traffic theft.
- ✚ Artificial intelligence - teaching machine thinking processes.

A common characteristic of management information technology is versatility. IT is used in all areas of industry, as well as in everyday life.

2. Application-oriented

This category includes specific IT that are used in a specific industry. For example, in the field of economics or logistics.

3. Information technologies in education

Nowadays, they are actively used for the transfer, acquisition and accumulation of knowledge. Different means are used for this purpose. For example, the Internet. Now actively gaining popularity online courses and distance learning. Large databases are used for preservation.

In addition, they can be used to manage the entire educational process. They allow teachers, principals, and school managers to maintain two-way communication with parents, store grades, and create communities within the institution.

4. In the economy

The financial sector is also influenced by IT. There are a large number of examples. Here are some of them:

- ✚ Computer technology in business process management. Their work is that they analyze the financial condition of the company, the implementation of accounting for goods, costs and other parameters.
- ✚ Data protection, prevention of leaks. For example, through coding.
- ✚ Expert systems - they accumulate knowledge in a particular industry, and then suggest on their basis the solution to the problem.
- ✚ Reference and legal - provide consulting services on various questions. The most famous are Consultant Plus, Garant and so on.
- ✚ Corporate information technologies in production management. This group includes those intended for resource planning, supply management, implementation, and monitoring of all indicators.
- ✚ Support - they are used to find a way out of certain situations.

5. Energy

This is another area where IT is actively involved. They are necessary because companies in this area are divided into a large number of departments. Each of them uses their own communication structures.

Companies of this profile use a large number of control systems and computer technologies. Among them:

- ✚ cellular communications;
- ✚ internet;
- ✚ cost control and accounting;

billing; and others (E Emeritus, 2023, May 22); (Shopify Staff, 2020, November 16).

2.1.2 Functions

First of all, this is the search, processing and storage of information. It should be mentioned separately that the list of IT functions includes not only the work with old data, but also the continuous creation of new data. This is necessary in order to make

management decisions. The costs incurred for their development and gradual implementation are recouped through automation and optimization. As a result, the company's revenues increase (Fig.2.1.2).

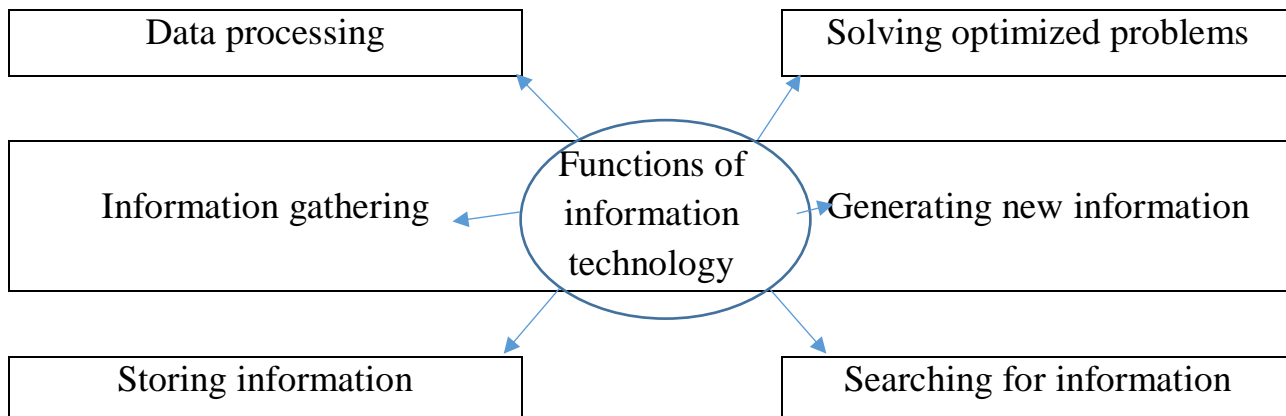


Fig. 2.1.2 - Functions of information technology

It is important to note that the task of information technology is not only to automate repetitive data processing operations, but also to generate new information for making management decisions.

To develop an effective system of information technology in the management of the organization it is necessary to carry out a detailed analysis of the controlled object, define the management tasks, develop its structure, select the necessary information.

After a detailed analysis it is necessary to develop an information model of management of the organization, which will fix the relationship between data processing tasks and new information flows. Then technical means are selected, information technology is developed.

Management information technology is constantly reaching new levels of quality and allows the use of the latest methods of processing and information needed to make management decisions.

The costs of implementing these technologies pay off and generate profits.

Information technologies are the basis for social, production and other technologies. They help to reduce the costs of other public resources.

The scientific basis for information technologies is the integration of informatics, cybernetics and administrative management methods (Master's in data science); (Indeed Editorial team, 2023, March 11).

2.2 Principles of modern information technology in management

There are several basic concepts according to which they are used in production. Among them:

1. Operational administration - this means that is carried out in real time.
2. End-to-end administration - support for the full management cycle. If we take a specific object, first the data about it is collected, then its state is predicted in a certain time interval, a plan is made, and potential executors are informed. The last stage is the verification of the task.
3. Adaptability - a principle according to which technological process control systems and information technologies are adapted to existing conditions.
4. Network regulation - the concept according to which there are vertical and horizontal directions of the firm's work.

Based on the above pillars, IT begins to act as an intelligent conveyor belt. This helps to automate part of management. As a consequence, it leads to a significant reduction in costs that can arise from poorly tuned controls. Proper implementation and use will help to significantly increase the resulting profits from business activities.

Information management systems

Today define information and management systems in the practice of managing firms:

Enterprise Resource Planning (ERP) systems. This is an integrated system that is a database based on a single application and a common user interface for managing financial and business activities. This includes such areas of company activities as planning and forecasting, sales management, production management, purchasing, finance, etc.

CRM (Customer Relationship Management) systems. These are systems for managing a company's external relationships. In other words, they deal with managing relations of the company with its customers (clients), partners, in general - with the whole outside world. This also includes management methods to increase sales efficiency. The systems under consideration are designed to automate the marketing department, call centers, corporate portals, etc.

BI (Business Intelligence) systems of information support of analytical activities. These systems act as a repository for analytical data. Here also include tools for processing the necessary information. The systems may be called OLAP-systems (On Line Processing Systems) in contrast to OLTP-systems (On Line Transactions Systems), which include ERP resource planning system and CRM customer relationship management system.

Special information systems

The following special systems used in the practice of companies are distinguished:

SCM (Supply Chain Management) supply chain management systems. These systems are used in the production of complex products, including components from different suppliers. It is important for companies to promptly program the delivery of the necessary parts in full and on time. The system provides planning and coordination of supply, transportation and warehousing processes.

MRP (Material Requirements Planning) systems. These systems deal with purchasing, production and sales of the necessary materials.

HRM (Human Resources Management) systems. The functions of these systems - recruiting, management and effective use of company's employees potential. This includes information support in staff training, data on personnel and evaluation of their achievements.

These systems are independent and not closed. But each system may have some attributes of the above-listed systems.

Today we can observe hybrid intelligent systems. In such systems various computer programs are embedded in artificial intelligence systems.

Cognitive information technologies, which include information technologies developed for the development of creative abilities of a person, are also actively developing.

Modern information technologies are changing and acquiring their distinctive features. Thus, if at the time of their emergence, the means of automating information processing were applied to existing management procedures, then today the situation has changed. They have become a catalyst for the spread of modern management technologies. Today, information technology is participating in the optimization of business processes. By participating in the optimization of business processes, information technology helps to achieve a competitive advantage (TeachOnline, 2020, June 17); (James Robertson).

2.3 The choice of options for implementing information technology in the firm

When implementing information technology in the firm, you must choose one of two basic concepts that reflect the prevailing views on the existing organizational structure and the role of computer processing of information in it.

The first concept focuses on the existing structure of the firm.

Information technology adapts to the organizational structure, and there is only a modernization of working methods. Communication is poorly developed, only workstations are rationalized. There is a distribution of functions between technical workers and specialists. The degree of risk from the introduction of new information technology is minimal, since the costs are low and the organizational structure of the company does not change.

The main disadvantage of this strategy is the need for continuous changes in the form of presentation of information, adapted to specific technological methods and

technical means. Any operational decision "gets bogged down" in the various stages of information technology.

The merits of the strategy include minimal risk and cost.

The second concept focuses on the future structure of the firm. The existing structure will be modernized.

This strategy involves the maximum development of communications and the development of new organizational relationships.

The productivity of the organizational structure of the firm increases, because data archives are rationally distributed, the volume of information circulating through system channels is reduced and a balance between the tasks to be performed is achieved.

Its main disadvantages are:

- significant costs in the first phase, associated with the development of the overall concept and survey of all units of the firm;

- the presence of psychological tension caused by anticipated changes in the structure of the firm and, consequently, changes in staffing and job descriptions.

The advantages of this strategy are:

- rationalization of the organizational structure of the firm;

- maximum employment of all employees;

- high professional level;

- integration of professional functions through the use of computer networks.

The new information technology in the firm should be such that the levels of information and subsystems that process it, communicate with each other by a single array of information.

This presents two requirements. Firstly, the structure of information processing system should correspond to the distribution of powers in the firm. Secondly, the information within the system must function in such a way as to adequately reflect the levels of management (Dorothy Leonard-Barto and William A.Kraus. 1985, November).

CHAPTER III USING INFORMATION TECHNOLOGY IN OPERATIVE MANAGEMENT OF THE ENTERPRISE

3.1 The concept of information systems and technologies in enterprise management

Today, there are a number of IT in the management practices of large companies and corporations. Among them:

- ✚ Resource Planning (ERP) is a database that allows you to manage business processes. It works on the basis of a single application with the same interface. It covers a number of areas. These include: making plans and forecasts, sales management, product release administration, procurement.
- ✚ Customer Relationship Management (CRM) is a management information technology that allows you to build relationships with customers and business partners. With its help it is possible to automate part of the work of the marketing department, call center and so on. Such a solution positively affects the revenues received at the end of the month and the profitability of the whole company.
- ✚ Support of analytical activities (BI). The system is designed to store the data that has been obtained through analysis. Another task they have is their subsequent processing (V.Milinevska, N.Kudrenko. 2019. December 05).

3.1.1 Ad hoc information and computer technology in management

This category includes non-closed systems that are used in the management of the firm. It is distinguished:

Supply chain management (SCM) - used in the process of creating complex goods. The peculiarity is that the components have to order from several different suppliers. To avoid disruptions in production, it is important to have all the elements

in the warehouses promptly. This IT makes it possible to calculate and monitor the supply at all stages.

Material flow planning (MRP) - with their help, the management of the corporation carries out the purchase, manufacture, as well as sales of products.

Human Factor Management (HRM) - systems are engaged in the search for potential employees, as well as monitoring their activities (Nist).

3.1.2 Selected information resource management technologies for recruitment agencies

The modern field of recruiting is no exception - it also actively introduces new solutions that help automate their work and reduce costs. Such IT is divided into the following categories:

- Electronic directories - they contain useful data about many industries. For example, a list of laws. Consulting bases are popular. They can also contain qualitative and interesting information on any other topic. They will be useful in the process of performing their tasks.
- Software that serves to automate some fronts of companies;
- Comprehensive solutions and the individual parts that comprise them;
- Specialized information management technologies.

✚ Narrowly-specialized applications

From time to time it happens that it is necessary to perform a separate type of tasks, which is not similar to the others. Special software is developed for this purpose. It is customized for processing a specific type of data.

- 1) such solutions include software for:
- 2) personnel records. for example, fixing the work experience, making vacations schedules.
- 3) determining the level of salary that each employee of the company will receive.

- 4) recruiting people to the staff;
- 5) conducting attestations, examinations, recording and analyzing the results.
- 6) use of information technologies in systems of organizational management of the enterprise is also necessary for training new employees and recording their success.

Of course, this is not all the functions that can be performed by narrowly-specialized applications. Nowadays, it is possible to order software for any task. However, it is important to take care of its quality beforehand, so that in the future you won't have to do it again or try to solve the problem yourself. Therefore, you should only turn to professionals who have the appropriate skills and experience.

A good option are companies that are creating ready-made solutions for businesses. Including - digital products. Turning to the firm, the client can, depending on the needs of his enterprise, purchase software for the automation of warehouses, property inventory, marking of goods and many others.

In addition, there are specific programs designed to reduce costs in a particular industry. For example, in the oil and gas industry. The customer gets a great combination of price and result.

Fully functional systems

This category includes information technologies designed to solve functional tasks, if the company employs a large number of personnel. In such cases, the manager needs to carry out a more thorough and thoughtful monitoring.

The programs described in this sub-item are able to satisfy any needs of a customer, even if they are technically complicated. Such requests may include:

- 1) organization management;
- 2) control of existing employees, evaluation of their performance;
- 3) keeping a turnover of all documents, which are connected with the staff;
- 4) calculation of the accrued salary for each employee;
- 5) recruiting;
- 6) conducting analytics.

Development of information technologies of organizational management makes it possible to make personnel records operative and process data in real time. In addition, the likelihood of error due to human error is now much lower due to the introduction of new approaches.

If mistakes have already been made, it is much easier to correct them with the help of modern tools.

By using the systems described, all areas of activity within the organization can be covered as much as possible. The main reason is the single space in which decisions are made (Eric St-Jean, Patrick Thibodeau).

3.2 Application of information technology in different spheres of operations management

- ❖ Data processing information technology
 - Characteristics and purpose

Information technology of data processing is intended for solving well-structured tasks, for which the necessary input data are available and algorithms and other standard procedures of their processing are known.

This technology is used at the operational (executive) level of low skilled personnel in order to automate some routine constantly recurring operations of managerial work.

Therefore, the introduction of information technologies and systems at this level will significantly increase staff productivity, free them from routine operations, perhaps even lead to the need to reduce the number of employees.

- At the level of operations the following tasks are solved:
 - processing data on the operations produced by the firm;
 - creation of periodic monitoring reports on the state of affairs in the firm;
 - getting answers to various routine requests and documenting them in the form of paper documents or reports.

➤ Examples of routine operations:

1) the operation of checking for compliance with the standard stock level of the specified goods in stock. If the inventory level is reduced, an order is issued to the supplier specifying the required quantity of goods and delivery dates;

2) operation of selling goods by the company, which results in an output document for the buyer in the form of a check or receipt.

An example of a control report: a daily report of cash receipts and payments by the bank, generated for the purpose of cash balance control.

An example of a query: a query to the personnel database to obtain data on the requirements for a certain position.

➤ There are several features related to data processing that distinguish this technology from all others:

- performing the data processing tasks required by the firm. every firm is mandated by law to have and maintain data about its activities that can be used as a means of securing and maintaining control at the firm. therefore, it is mandatory for any firm to have a data processing information system and develop appropriate information technology;
- solving only well-structured tasks for which an algorithm can be developed;
- execution of standard processing procedures. existing standards define standard procedures for data processing and prescribe their observance by organizations of all types;
- performing the bulk of the work in automatic mode with minimal human involvement;
- use of detailed data. records on the activities of the firm have a detailed (detailed) nature, allowing for audits. in the process of auditing the activity of the firm is checked chronologically from the beginning of the period to its end and from the end to the beginning;
- emphasis on the chronology of events;

- the requirement of minimal assistance in solving problems from the specialists of other levels.

➤ The main components

Let's present the main components of the information technology of data processing (Fig. 3.2.1) and give their characteristics.

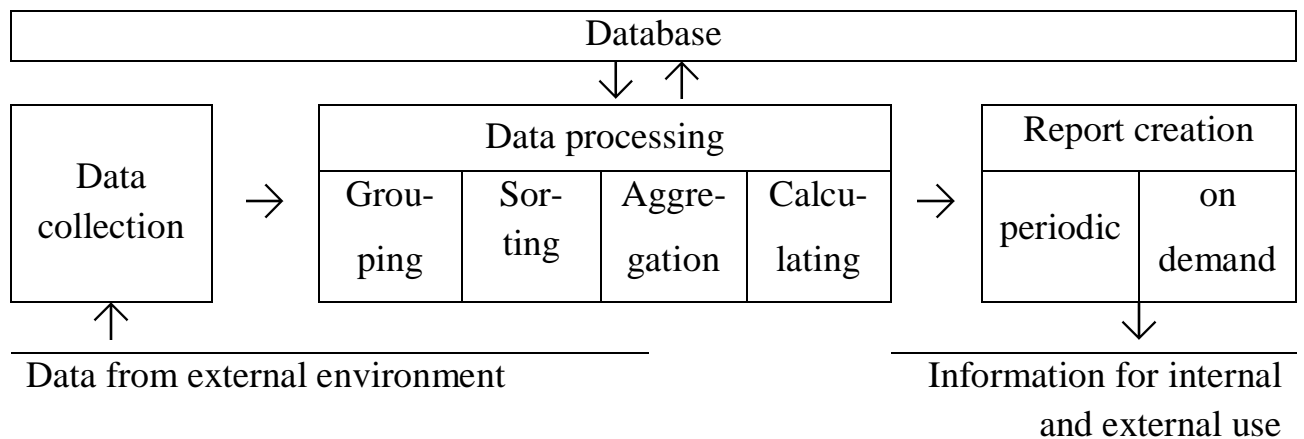


Fig. 3.2.1 – Main components of the information technology

Data collection. As a firm produces products or services, each of its actions is accompanied by corresponding data records.

Typically, the actions of the firm that affect the external environment are highlighted as operations produced by the firm.

Data processing. To create from incoming data information that reflects the activities of the firm, use the following standard operations:

*classification or grouping. Primary data are usually in the form of codes, consisting of one or more characters. These codes, expressing certain characteristics of objects, are used to identify and group the records.

Example. When calculating wages, each record includes a code (payroll number) of an employee, the code of the department in which the employee works, the position held, etc. Different groupings can be made according to these codes.

*sorting, which is used for sorting the record sequence;

*calculations including arithmetic and logical operations. These operations performed on the data make it possible to obtain new data;

*aggregation, which serves to reduce the quantity of data and is realized in the form of calculation of totals or averages.

Data storage. Many data at the operational level need to be stored for later use either here or at another level. Databases are created to store them.

Creating reports (documents). In information technology of data processing it is necessary to create documents for the management and employees of the firm, as well as for external partners.

In this case, the documents may be created either upon request or in connection with the transaction carried out by the company or periodically at the end of each month, quarter or year (Talend).

❖ Decision support information technology

▪ Characteristics and purpose

Decision support systems and the corresponding information technology emerged by the efforts mainly of American scientists in the late 70's - early 80's, which contributed to the widespread use of personal computers, standard application software packages, as well as advances in creating artificial intelligence systems.

The main feature of decision support information technology is a qualitatively new method of organizing human-computer interaction. Decision-making, which is the main goal of this technology, occurs as a result of iterative process (Fig. 3.2.2), which involves:

*the decision support system in the role of the computational link and the control object;

*a human as a controlling link, specifying the input data and evaluating the obtained result of calculations on a computer.

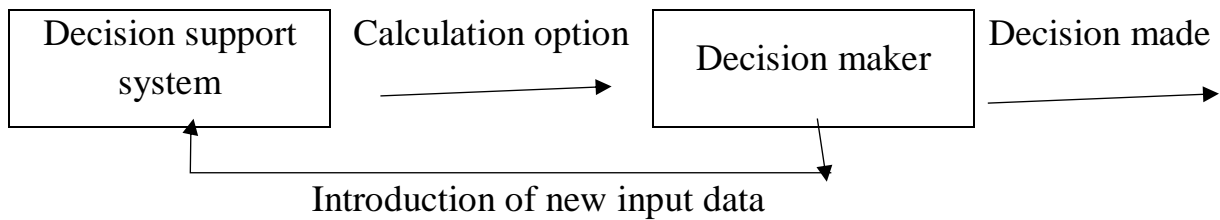


Fig. 3.2.2 - Decision support information technology as an iterative process

Completion of the iteration process occurs at the will of a human. In this case, we can talk about the ability of the information system together with the user to create new information for decision-making.

In addition to this feature of decision-support information technology, it is possible to specify a number of its distinctive characteristics:

- *orientation to the solution of poorly structured (formalized) tasks;
- *combination of traditional methods of access and processing of computer data with the capabilities of mathematical models and methods of problem solving on their basis;
- *aiming at non-professional computer user;
- *high adaptability, providing the ability to adapt to the peculiarities of existing hardware and software, as well as user requirements.

Decision-support information technology can be used at any level of management. In addition, decisions made at different levels of management often need to be coordinated. Therefore, an important function of both systems and technology is the coordination of decision makers at different levels of management as well as at the same level.

▪ The main components

A decision support system consists of three main components: a database, a model database, and a software subsystem that consists of a database management system (DBMS), a model database management system (MMBMS), and a user-computer interface management system.

Database. It plays an important role in decision support information technology. The data can be used directly by the user for calculations using mathematical models. Let us consider the sources of data and their features.

1. Part of the data comes from the information system of the operational level. To use them effectively, this data must be pre-processed. There are two possibilities for this:

- *Use a database management system that is part of the decision support system to process the firm's operations data;

- *to do processing outside the decision support system by creating a special database for this purpose. This option is more preferable for firms producing a large number of commercial operations. The firm's processed transaction data form files that are stored outside the decision support system for increased reliability and quicker access.

2. In addition to firm operations data, the decision support system requires other internal data, such as personnel movement data, engineering data, etc., to be collected, entered, and maintained in a timely manner.

3. Data from external sources are important, especially for decision support at upper levels of management. Among the necessary external data should be specified data on competitors, national and world economy. In contrast to internal data, external data is usually purchased from organizations specializing in its collection.

4. The inclusion of another data source - documents including records, letters, contracts, orders, etc. - in the database is being widely researched. If the content of these documents will be recorded in memory and then processed by some key characteristics (suppliers, customers, dates, types of services, etc.), the system will get a new powerful source of information.

The data management system must have the following capabilities:

- compiling combinations of data from different sources through the use of aggregation and filtering procedures;

- quick addition or exclusion of one or another data source;

- the construction of a logical structure of the data in user terms;

- using and manipulating unofficial data to experimentally test the user's working alternatives;

- ensuring complete logical independence of this database from other operational databases operating within the firm.

Model base. The purpose of creating models is to describe and optimize some object or process. The use of models provides analysis in decision support systems. Models, based on a mathematical interpretation of the problem, with the help of certain algorithms contribute to finding information useful for making the right decisions (Tech target contributor); (Thor Olavsrud, 2022, November 14).

3.3 How enterprise can improve modern office automation in the field of information technology

Historically, automation began in manufacturing and then spread to the office, with the initial goal of only automating routine secretarial work.

As communications evolved, office automation became of interest to professionals and managers, who saw in it an opportunity to increase their productivity.

An automated office is attractive to managers at all levels of management in a firm, not only because it maintains internal staff communication, but also because it provides them with new means of communication with the external environment.

Automated office information technology is the organization and support of communication processes both within the organization and with the external environment on the basis of computer networks and other modern means of transferring and working with information.

Office automation technologies are used by managers, specialists, secretaries and office workers, and are especially attractive for group problem solving. They increase the productivity of secretaries and clerks and enable them to cope with increasing workloads. However, this benefit is secondary to the ability to use office automation as a problem-solving tool. Improved decision-making by managers as a result of their better communication can ensure the economic growth of the firm.

At present there are several dozens of computer and non-computer technical products that provide office automation technology: word processor, spreadsheet, e-mail, electronic calendar, audio mail, computer and teleconferences, video-text, image storage, as well as specialized programs for managerial activities: document management, control over the execution of orders, etc.

Noncomputer means are also widely used: audio and video conferencing, facsimile, photocopiers, and other office equipment.

Main Components

- **Database.** An indispensable component of any technology is a database. In an automated office, the database concentrates data on the production system of the firm, just as in the technology of data processing at the operational level. Information in the database can also come from the firm's external environment. Professionals must be proficient in the basic technology operations of a database environment.

Example. The database collects daily sales information sent by the firm's sales agents to the main computer, or information on weekly raw material deliveries.

There may be daily information from the stock exchange via e-mail about exchange rates or quotations of securities, including the shares of this firm, which are daily corrected in the corresponding database array.

Information from the database is fed into computer applications (programs) such as word processing, spreadsheet, e-mail, computer conferencing, etc. Any computer application of an automated office allows employees to communicate with each other and with other firms.

Information obtained from databases can also be used in non-computer technical means for transmission, duplication, storage (OCI).

- **Word processor.** This is a type of application software designed to create and process text documents. It allows you to add or delete words, move sentences and paragraphs, set the format, manipulate text elements and modes, etc.

When the document is ready, the employee transcribes it to an external memory and then prints it out and transmits it over a computer network if necessary. In this way, an effective type of written communication is available to the manager. Regularly receiving letters and reports prepared with the word processor enables the manager to continually assess the situation at the firm (Wikipedia).

- E-mail. E-mails, based on the network use of computers, allow the user to receive, store and send messages to their network partners. This is a one-way communication only. This limitation, according to many researchers, is not too important, because in fifty cases out of a hundred official talks on the phone are only intended to receive information. To ensure two-way communication, one would have to repeatedly send and receive emails or use another method of communication.

E-mail can provide the user with different possibilities, depending on the software used. To make the message you send available to all e-mail users, it should be placed on a computer bulletin board, and you can specify that it is private correspondence if you wish. You can also send it with a notification of receipt by the addressee.

When a firm decides to implement e-mail, it has two options. The first is to buy its own hardware and software and create its own local network of computers that implement the e-mail function. The second possibility is related to the purchase of a service for the use of e-mail, which is provided by specialized communications organizations for a periodic fee.

- Audio mail. This is a mail service for transmitting messages by voice. It is similar to e-mail, except that instead of typing a message on the computer keyboard, you send it through the phone. You also receive messages sent over the phone. The system includes a special device for converting audio signals into a digital code and back, and a computer for storing audio messages in digital form. Audio mail is also implemented in a network.
- Tabular processor. It, as well as the word processor, is a basic component of the information culture of any employee and automated office technology.

Without knowledge of the basics of its technology it is impossible to fully use a personal computer in their activities. The functions of modern word-processor software allow you to perform numerous operations on data presented in tabular form. By combining these operations by common characteristics, we can distinguish the most numerous and applicable groups of technological operations:

data entry, both from the keyboard and from databases; data processing (sorting, automatic formation of totals, data copying and transferring, different groups of calculation operations, data aggregation, etc.); output of information in printed form, as imported files to other systems, directly into the database; high-quality design of tabular forms of data presentation; multifaceted and qualitative design of data in the form of charts and graphs; engineering, financial, statistical calculations; mathematical modeling and a number of other supporting operations (IBM. 2021, March 19).

- Microsoft Excel, a powerful spreadsheet application, is widely used in office automation for data analysis and manipulation. It provides advanced functionality for working with tabular data, making it an essential tool for professionals and managers. With Microsoft Excel, users can easily enter and manage data, perform complex calculations and statistical analysis, create charts and graphs to visualize information, and generate reports based on the data.

For example, managers can use Excel to track and analyze sales data, monitor inventory levels, perform financial analysis, and generate forecasts. The ability to create formulas and use built-in functions in Excel enables efficient data processing and automation of repetitive tasks.

Moreover, Microsoft Excel offers integration with other office automation technologies. Users can import data from databases into Excel for further analysis, and export Excel data to other systems or databases. This seamless integration facilitates data exchange and collaboration among employees, enabling effective communication and decision-making within the organization.

G	H	I	J	K	L
Employee	Project Completed in a Month	Number of Projects		productivity (%)	rate
Employee 5	9	12		0,75	16
Employee 1	8	10		0,8	14
Employee 4	7	9		0,777777778	13
Employee 12	8	9		0,888888889	14
Employee 8	5	8		0,625	8
Employee 11	6	8		0,75	12
Employee 13	4	8		0,5	4
Employee 16	5	8		0,625	8
Employee 2	4	7		0,571428571	4
Employee 3	5	7		0,714285714	8
Employee 7	4	7		0,571428571	4
Employee 10	5	7		0,714285714	8
Employee 14	2	7		0,285714286	2
Employee 6	2	6		0,333333333	2
Employee 15	4	6		0,666666667	4
Employee 9	1	3		0,333333333	1

Fig. 3.2.3 - Example: Employee Productivity Analysis using Microsoft Excel

By leveraging the power of Microsoft Excel in the tabular processor component of office automation, professionals and managers can optimize their data management and analysis processes, leading to improved productivity and informed decision-making.

- **Electronic Calendar.** It provides another opportunity to use a networked version of the computer to store and manipulate the work schedule of managers and other employees of the organization. A manager (or his secretary) sets the date and time of a meeting or other event, views the resulting schedule, and makes changes using the keyboard. The technical and software of the electronic calendar is fully consistent with similar components of e-mail. Moreover, the calendar software is often part of the e-mail software.

The system additionally allows access to the calendars of other managers as well. It can automatically align meeting times with their own schedules.

Using an electronic calendar is particularly effective for managers at the highest levels of management whose work days are scheduled long in advance.

- **Computer conferences and teleconferences.** Computer conferences use computer networks to exchange information between members of a group solving a particular problem. Naturally, the range of people who have access to

this technology is limited. The number of participants in a computer conference can be many times greater than in audio and video conferences.

The term teleconference can often be found in the literature. Teleconferencing includes three types of conferences: audio, video, and computer.

- Videotext. It is based on the use of a computer to obtain a display of text and graphics on a monitor screen. There are three options for decision makers to receive information in the form of videotext:

- *Create videotext files on their own computers;

- *Contracting a specialized company to access the video text files they have developed. These specially designed video-text files can be stored on the servers of the company providing the service or delivered to the customer on magnetic or optical disks;

- *Contract with other companies to gain access to their video text files.

The exchange of catalogs and price lists (price lists) of their products between companies in the form of video text is becoming increasingly popular. As for companies specializing in video text sales, their services are beginning to compete with print products such as newspapers and magazines. For example, in many countries it is now possible to order a newspaper or magazine in the form of video text, not to mention current stock market summaries.

- Image storage. In any firm, a large number of documents need to be stored for a long time. Their number can be so large that storage even in the form of files causes serious problems. Therefore the idea arose to store not the document itself, but its image (image), and to store it in digital form.

Image storage (imaging) is a promising office technology and is based on the use of a special device - an optical image recognizer that allows you to convert an image of a document or movie into a digital form for subsequent storage in the computer's external memory. The digitally stored image can be displayed in its real form on a screen or printer at any time. Optical discs of enormous capacity are used to store images. For example, a five-inch optical disc can record about 200,000 pages.

It is worth mentioning that the idea of storing images is not new and was previously implemented on the basis of microfilm and microfiche. The creation of this technology was facilitated by the emergence of a new technical solution - optical disc in combination with digital image recording.

- Audio conferencing. They use audio communication to maintain communications between geographically remote employees or departments of the firm. The simplest technical means of implementing audio conferencing is a telephone connection, equipped with additional devices that allow more than two participants to participate in a conversation. Creating audio conferences does not require a computer, but only involves the use of two-way audio communication between its participants.

The use of audio conferences facilitates decision-making, it is cheap and convenient. The effectiveness of audio conferencing increases when the following conditions are met:

- *The employee who organizes an audio conference must first ensure that all interested parties can participate in it;

- *The number of participants in the conference should not be too large (usually not more than six), to keep the discussion within the scope of the problem under discussion;

- *The program of the conference should be communicated to the participants in advance, e.g., by fax;

- *Each participant should introduce himself/herself before starting to speak;

- *A recording of the conference and its storage must be arranged;

- *The recording of the conference should be printed out and sent to all participants.

CONCLUSION

Operational management - management of the company's main operational activities with a focus on increasing the efficiency of processes.

Operational management has three main directions: volume management, quality management of products and services, and cost management.

It is important to find a balance of these directions, acceptable for the company, in order to get as close to its operational efficiency as possible.

Operations manager - a person who manages the main processes of the company. The highest position in the career of an operations manager is the company's chief operating officer.

Good operations managers must be able to plan and forecast the company's operations, monitor and analyze operational data, and make further decisions based on this.

Every business has operational processes in one form or another. But individual positions of operational managers are found mainly in medium and large companies - in startups, these processes are often managed by everyone a little at a time.

In management today use automated information technologies, which are implemented with the help of technical and software tools. Information technology implements the mechanism of management decision-making.

The widespread introduction of modern information technologies promotes the use of new approaches and methods for processing management information. The application of such technologies in the work of companies is a prerequisite for its effective functioning. The interest in information technologies is caused by great technological capabilities in processing management information, which directly influence the economic efficiency of work, increase of competitiveness and profitability in the market of services.

Today there is an active introduction of information technologies into the practice of modern enterprises, which ensures a narrowing of the gap with developed countries in terms of the level of informatization of the economy and society. However,

it should be noted that domestic information technology lags behind Western countries, as modern management technologies are not fully developed in our country.

Also, I would like to emphasize once again that information storage takes up space. The amount of automation and the type and nature of the use of technical means depends on the nature of the particular technology and the amount of information used.

Information technologies at enterprises exist in the form of various information systems and information complexes and are used in different segments of the management system.

For example, CRM and SCM technologies are used to manage relationships with partners and customers. They are focused on: sales growth, cost reduction, increasing customer and counterparty loyalty, and improving service quality. In general, these software products increase the competitiveness of the company's products.

Information technologies are used to manage business processes and increase the efficiency of the company's economic activity: BPR and ERP. These products help coordinate innovations, minimize risks, increase scalability and flexibility, and reduce costs. In general, they increase the economic security of the enterprise.

The HR software product is used in the human resources management system, which contributes to the efficient use of human resources. And the material resources management system uses MRP technology, which promotes the rational accumulation and use of material resources. Both systems increase the operational efficiency of companies and resource efficiency.

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