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Enterprise Resource Planning Implementation And Current Trends

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ABSTRACT

Today the number of ERP deployments is increasing. Implementing ERP systems in enterprises is faced with big problems associated with the software itself, production time and high costs, as well as significant changes in the business processes of companies. This article tried to study the detailed ERP system implementation process and current trends in ERP software. Discussed the main problems of implementing an ERP system and solutions for automating business processes. Further, we found out some problems or gaps in an ERP system application process and tried to answer them with proposed solutions.

KEYWORDS

Enterprise, business process, management solution, Digital Marketing, enterprise resource planning system, ERP Implementation, Data-Cloud.

ABBREVIATIONS: ERP - Enterprise Resource Planning; CRM - Customer Relations Management;

INTRODUCTION

Enterprise Resource Planning (ERP) or ERP systems are designed to structure the economic and administrative processes in the enterprise and integrate them into a common

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management scheme. Simply put, it is software (SW), responsible for accounting and taxes, warehouse infrastructure, logistics, finance, personnel, working with the client base. ERP system is a term that hides a whole range of tools. The abbreviation stands for Enterprise Resource Planning, which translated from English means "enterprise resource planning" [1]. When it comes to a small company that can be handled by a small team of professionals, there is no need to think about planning. A completely different situation develops in production with several dozen or even hundreds of items that require a huge number of components, with a staff of more than several hundred people. In the absence of a clear resource planning system, the production process can turn into chaos.

An ERP system is a product of IT technologies, a software solution that builds an automated system for managing an enterprise's activities, including storing and processing large amounts of information; combining all information resources into a single database. Operating at once with all information on the enterprise contributes to a more competent distribution of resources, as well as making the most informed management decisions [2].

Good planning for a large business is an important element of effective work. Every enterprise has a database that stores all information about the ongoing processes. However, the ERP system with its modules for planning and optimizing all resources, including finances, time, consumables, etc., is fundamentally different from any information storage, but it is not original.

In other words, the ERP system always operates with the most relevant information. It can analyze the current situation and make informed decisions, which she communicates to the staff. Quite often at this stage, a well-grounded question arises: why to introduce this system, if among the production processes everything possible is already automated:

- Personnel management;
- Accounting of finance;
- Warehouse accounting, etc.

The fact is that the work of an ERP system is not limited to any specific area or division of the enterprise. It covers all of his work as a whole. It is a business automation tool that allows you to link all individual processes into a single centre based on a powerful software platform. Moreover, the emphasis is on unification.

The automation process for enterprises is no longer a novelty, but different programs were used to solve different problems, the data was combined into some kind of centralized database. An interesting fact is that programs for solving a particular problem in one enterprise could be written by completely different specialists. As a result, their integration into a single system was often not possible. Therefore, today the tendency of unified solutions with a full set of tools is becoming more and more traced - from accounting for raw material receipts to keeping records of wages [3].

The integrated management system maximally unites everything that happens in production into a common system. Thanks to this, less

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time is needed to search and adapt the information. One team is engaged in the maintenance and support of the system, that is, you will have to pay for the services only once. ERP-system can cover the maximum number of enterprise functions. Here are just a few of its features:

- Unification of all business processes;
- Business management according to general standards in the total share of all systems;
- Qualitative improvement of planning;
- A Single space for the work of all personnel of the enterprise, regardless of the distance;
- Coordination of production and supplies;
- Transparency and control of all processes; evaluation of the work of individual employees, departments as a whole;
- Prompt decision-making on production management;
- Fast receipt and processing of information.

MATERIALS AND METHODS

2.1. Preparation of technical specifications. An ERP system is a complex tool that unites all aspects of an enterprise's work. Therefore, companies often try to develop a detailed technical assignment, in which every point, every smallest process is thoroughly described. As a result, the work on the creation of a technical assignment may take several months, costing the company a tidy sum [4]. The technical assignment should be handled by a company representative who can not only prescribe methods and deadlines but also understand the essence of the task being prescribed. If in the course of work there are controversial points, the terms of reference are the document to which both parties appeal. As a rule, the terms of reference consists of the following points:

- Goal of the work;
- A description of the requirements;
- Implementation methods;
- An example of a working similar solution;
- Labour costs.

The terms of reference must be agreed upon by the contractor and the customer, signed by both parties. But it is impossible to foresee all the nuances in advance, therefore, more and more often companies draw up a light version of the technical task, which includes a list of the main modules and processes from which work will begin. Also, the terms of reference can be drawn up at a separate stage of implementation. This is a more flexible approach, but the project will take significantly longer to complete, and the final deadline remains a mystery until the very end. Some customers use another method, the so-called Agile, in which there is no preparatory stage at all. The implementation of the project begins immediately with the implementation of the ERP [5].

At first glance, it is completely unreasonable to use the program without delving into the essence of the business and without drawing

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up any documents. Nevertheless, this approach also exists. Some developers use the principle of implementing ERP systems according to this scheme - a preliminary general plan is created, as necessary, divided into small tasks. A similar method of implementing an accounting automation system is typical for sellers of boxed programs, such as 1C: ERP Enterprise Management 2. Like most other software products of the 1C company, the ERP system is somewhat modular, so it can be expanded to any required volume and for any client's tasks. The main advantage of this method is that the implementation begins almost immediately, as soon as the decision to purchase the program has been made. Such software products do not require lengthy preparation, which, in principle, is attractive for business. For example, it was decided to automate the sales department. The appropriate module is immediately selected, and work begins. This statement is true for any other department or process in the enterprise. This principle of ERP systems implementation is quite viable and is widely used in modern enterprises.

However, calling it simply would not be entirely fair, since it requires high professionalism from all participants, and from programmers, in particular, significant experience in implementing such projects. Implementation in parts is quite an interesting method of ERP integration, but it has a significant drawback - the lack of a comprehensive implementation plan [6].

Many of the errors that arise in the course of work are similar to those that emerge from the overarching terms of reference. A planning system is a complex software product consisting of many components, and an error in one module will certainly affect the work of another. In the case of a comprehensive technical specification, problems arise due to the fact that the authors try to foresee everything at once.

When implementing in parts, the absence of a general plan is to blame for the occurrence of errors, that is, programmers solve the current problem. The fact that the next stage of implementation will require documents and data from an already completed module, but only for the work of another department, they may not foresee in advance. Another disadvantage of this approach is the low involvement of company employees in the implementation process. As a result, they are not ready to actively test the new system and switch to it completely. There have been cases of sabotage of the use of new tools.

2.2. 4 stages of implementation of ERP-system in the enterprise. Full implementation of the ERP system in an organization can take anywhere from a few weeks to several years (depending on the size and scope of the company's activities). However, both the company's own IT professionals and employees of the development company can install the ERP system [7]. The implementation of the ERP system can be divided into the following stages:

Phase 1. Primary organization. A stage where tasks are defined, goals are set, followed by a technical project plan.

Phase 2. Project development. In addition, the work of the enterprise is studied: development plans, production processes. This information

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is needed to select the structure of the ERP system, as well as to make adjustments to the technical plan (if necessary).

Step 3. Completion of the project. The order of business processes in the enterprise is based on the established ERP system, so at this stage, it is necessary to transfer data from the accounting systems previously used to the ERP system, to combine them. If it is determined that the modules of the ERP system are not sufficient for a particular enterprise, it may be revised at this stage. At the end of the installation, the basic principles of the ERP system are communicated to the employees of the organization and tested.

Step 4. Start. In the last step, you can find and eliminate the problems that occur during the operation of the ERP system.

2.3. Methods of implementing the ERP system. The following methods can be used to implement an ERP system:

1. Step-by-step implementation method. In this case, the ERP system is introduced one by one into some interconnected processes. This minimizes the risk of problems.

2. "Big bang" - the whole system is installed at once. This approach can be used in a small organization with simple production processes. However, special attention should be paid to the test phase to identify all possible errors in the ERP system.

3. Deployment is the partial installation of software with distribution to other structures of the enterprise. This method can be applied both step-by-step and simultaneously because in general, the risk of failure is small.

The choice of the method of implementing the ERP system for each enterprise should be made very carefully, with an analysis of possible costs, as well as taking into account the experience of other companies.

2.4. Current ERP Software Trends. The ERP system was initially upgraded with the exclusive addition of the data cloud or data store management. Further digital transformation added some exclusive current trends or features to the ERP system explained below [8].

Data Cloud Acceleration: Data cloud-based ERP is a game-changing trend. The ERP software is served at user locations with hardware and start-up costs, which can be a high cost for small firms. The emergence of cloud computing helped users by major cost-cutting at the maintenance and upgrading of the software system. Business firms are also going for a hybrid ERP option. A Hybrid ERP system integrates the good points of cloud and physical site based ERP while balancing the weaknesses of each other. This tool is very useful for firms in digital business and services. Some of the best ERP software in the market today is NetSuite, Sage Intacct, Syspro, Sage Business Cloud Enterprise Management, and Oracle ERP [9].

Artificial Intelligence: AI that is an artificial intelligence with ERP, is termed as iERP. It helps businesses with the fast processing of complex unstructured data with innovative ways and actionable insights. iERP is creating simplified workflows, reducing mistakes, reducing the data processing time, and more [10].

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Mobile Application: Mobile had been earlier an "extra" belonging, but today it is a fixture. Today's ERP tool provides total mobile support by performing business processes anywhere and anytime with exceptional total productivity. For example, employees can perform urgently required work from home instead of long hours at the office by accessing all the data on their mobile. Smart communication allows Mobile ERP to reduce the risk of delay in production. Mobile ERP also allows real-time decision-making, smooth workflow, and increased efficiency[11].

Big Data Analytics: ERP software is highly acknowledged for data collection and organization. ERP software today has an added capacity for data analytics, ad-hoc reporting, and data presentation. The organization uses it for critical decisions making like finance matters or other aspects which facilitates decision making features from the manufacturing units to the individual executives. The future ERP shall analyze both data structured and unstructured. ERP software shall predict future trends based on data availability from all the departments that make a strong feature allocation of the predictive analysis.

3D Printing and Real-Time Data Support: Actual-time data access gives exact operation insights, timely decision making, customer satisfaction, and more. 3D printing is the current ERP trend in manufacturing, which allows companies for cost cuts and better efficiency. CRM and ERP integrated software can give data like buying histories, favourites, and other requirements of the customer that help to better judge the opportunity of the sales, customer retention, and creating brand loyalty [12].

Finance Focussed ERP: Modern finance integrated ERP system gives routine ledger, money and payroll management, assets control, and more. Built-in modern ERP software facilitates fast decision making and strategy deployment. It allows the finance department to react to any incidents in real-time and adapt to required changes.

Digital Marketing Focuses: ERP real-time data helps to decide the target audience for marketing campaign strategy. Digital marketing integrated ERP is also using social media bases for decision making by collecting data like links sharing, post publishing, response collection on social media surveys, and more.

Personalized ERP Solutions: The small business adopted the modular approach for ERP implementation. In 2019 modular approach changed to more personalized and vertical improvements at companies as they will get the improved solution without the need to depend on IT consultants or teams [13]. This personalized ERP solution is tailor-made to fulfil the specific need of a particular industry.

Additive Manufacturing: The adoption of additive manufacturing is another new trend in ERP in manufacturing. ERP provides digitized data to the 3D printers with a single platform. ERP software monitors total production material count starting from raw, in-process, finished goods, and final dispatch. Sculpteo study says that 51% of companies are utilizing 3D printers in their manufacturing process.

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IoT: IoT is the Internet of Things, can offer smooth sensor connectivity in a data network with no human involvement. IoT and ERP together collect, review, and process big data via network sensors that further help to monitor machine efficiency. In 2020 manufacturing industry has projected an investment of $40 billion on IoT platforms, services, and systems.

RESULTS AND DISCUSSION

3.1. Sectoral distribution of ERP projects. As Panorama Consulting Solutions notes, in other countries most of the ERP implementation projects are in the manufacturing sector - 43%; 11% of retailers use enterprise resource planning in their work; the same is in the financial sector.

In recent years, the system has been actively implemented by the public sector and the service delivery sector. The ERP system was originally created as a tool for the automation of industrial enterprises. The available cloud solutions have changed the situation, the popularity of the system has become quite high in other industries.

According to TAdviser, the largest segment of the use of automation was the trade sector - 16%. The second place was taken by mechanical engineering - 10%, the third place was taken by the construction sector. More than 40% fell into the "other" category. It includes the chemical and food industries, energy, transport, housing and communal services [14]. The distribution clearly shows that the tool is in demand in a wide variety of industries, which is greatly facilitated by its flexibility and fairly simple adaptation for a variety of purposes.

3.2. Where is the system in demand? In most cases, ERP customers and buyers are large enterprises with a wide range of products, a large number of branches, etc [14]. Only for them accurate resource planning and reliable process control are important. In addition, only large companies manage to recoup the costs of implementing this complex software product. For small and medium-sized businesses, automation using an ERP system remains an inexpedient financial investment. The solution is very large-scale, often slowing down production processes during integration, which, in turn, causes unnecessary losses.

3.3. Advantages. Five key points characterize the main advantages of ERP systems:

1. Versatility of the tool. Automation can be carried out in almost any production. The system includes a wide range of tools, some of which are suitable for companies operating in different sectors of the economy. The program is successfully used not only in manufacturing enterprises but also in banking, trade, provision of services, etc.;

2. Easy rescaling and flexibility of the tool allowing integration of other applications into it. The system is easy enough to configure for any processes, to ensure the work of a variety of enterprises;

3. A single platform provides a common information environment that greatly facilitates the interaction of structural units, personnel, managers;

4. Flexible distribution of admission, protection of corporate information;

5. Planning and accounting at a high professional level - prompt collection, processing, storage of significant amounts of information, accurate allocation of enterprise resources, accounting of all data, competent management decisions.

3.4. Flaws. Noting the extremely positive aspects of the automation system can get the wrong picture. ERP systems are imperfect, and they have several shortcomings, in particular: implementation takes a long time and is expensive. Management is forced to consider spending money and resources on automation as a strategic investment that will begin to pay off in 2-3 years. But these are only the most basic and expensive objects. There are also less significant disadvantages:

- Several people will have to be trained to interact with the program;
- The equipment must be first-class to withstand difficult working conditions;
- Service and surrounding systems must work quickly and reliably. This brings us back to the cost of the project, more precisely, the purchase and maintenance of equipment;
- You need a reliable security system to protect the information, especially when it comes to accessing the repository of corporate documents from remote departments via the Internet.

CONCLUSION

The integrated management system was created primarily for resource planning. ERP systems work with large amounts of data and can intelligently allocate available resources. ERP system acceptance rate had slow in the beginning due to ERP implementation is a time consuming and high investment process to adopt for any organization; however, it is adopted by nearly all the businesses nowadays and changing the business legacy due to its exceptional benefits. Good planning has a tangible effect on big business. For small and medium-sized businesses, the purchase of such a system will entail only large expenses without a visible improvement in work results. ERP systems got upgraded with advanced trends to work efficiently in the last decade and, further, every year added many breakthrough innovations to organizations. Mainly cloud-based ERP systems witnessed a high acceptance rate; however, it has issues with data security and recurring subscription investment. Still, it is a cheaper option to on-premise and can be tailor-made according to business needs that helped many small businesses.

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