THE SIGNIFICANCE OF THE ERP CLASS IT SYSTEM IN STRATEGIC DECISION-MAKING

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Purpose: The aim of the paper was to identify the scope of using the ERP class system in strategic decision-making processes.

Design/methodology/approach: The basic sources of the analyzed information are: the results of the survey questionnaire, direct interview with experts and literature review.

Findings: Based on research carried out among 14 leading companies in the printing industry, it can be concluded that there is a need for ERP class systems that include their functional capabilities to support the strategic management process. IT tools are necessary to make information available in real time so that strategic decisions can be made at reduced risk. In an interview with ERP class system experts, their full readiness to adapt their IT tools to the above-mentioned need has been emphasized.

Research limitations/implications: In the future, it is suggested to carry out similar studies on a broader scale. Research should be conducted among representatives of organizations in which such solutions have already operated, i.e. among users. There are also plans to conduct research in the analyzed scope in organizations of other industries than the printing industry. In the fourth quarter of 2022, it is planned to conduct research in the environment of enterprises that belong to the SME sector.

Practical implications: Owners of Polish enterprises should keep searching for ways to use ERP class systems in strategic management. Looking at the process of strategic management as well as long-term decision-making through the prism of the ERP class IT system will have an influence on the elimination or reduction of barriers related to such activity.

Originality/value: The analysis carried out in the article is a response to breaking down the barriers that make the implementation of strategic thinking in Polish enterprises, especially in the SME sector impossible. The value of this article is also the adaptation of an integrated IT tool to the implementation of processes related to making strategic decisions, providing, among others, information about resources. Moreover, an additional effect is the possibility of measuring the fulfillment of the assumed objectives resulting from the strategic decisions that had been taken.

Keywords: strategic management, Enterprise Resource Planning (ERP), strategic decisions.

Category of the paper: Research paper.

1. Introduction

Nowadays, it is important for companies, regardless of their size, to make the right decisions, which should be subject to the lowest level of risk. With such a changing environment, enterprises pay more and more attention to the quality of data necessary in making strategic decisions. This should be real-time data. Data on available resources in the organization and their use play a big role. For this purpose, it is recommended for managers to use ERP class systems. These systems are also the basis for decision making and the determination of strategies in order to increase productivity and reduce costs of running a company. Due to the fact that these systems enable comprehensive support of the company's current operations as well as forecasting and planning of these activities in the future, they indirectly contribute to the success of the company. ERP class systems are also a response to breaking down barriers that do not allow for the implementation of strategic thinking in Polish enterprises.

2. Method

In order to identify the scope of the use of ERP class systems in making strategic decisions, a survey has been used with deliberately selected 14 companies, which are the leaders of the printing industry on the Polish market, and simultaneously they belong to the small and medium-sized enterprises (SMEs) sector. The study was conducted during the RemaDays Warsaw 2020 international trade fair. A measuring instrument in the form of a direct survey questionnaire was used for this purpose. Moreover, an expert evaluation method has been implemented. The experts were the owners of three organizations that are manufacturers and distributors of ERP class systems in Poland. The expert evaluation method has confirmed the need and possibility of creating ERP class systems that will provide the necessary data for strategic decisions with a reduced level of risk. Experts have also pointed out the strategic advantages of ERP class IT systems. An in-depth literature review, on the other hand, was carried out to evaluate the scope of use of the ERP class IT system in a modern enterprise.

3. The scope of application of the ERP class IT system in the process of managing a modern enterprise

An integrated IT system is a management support tool that comprehensively serves all areas of the organization (Lenart, 2010, p. 345). The ERP system effectively collects various tasks performed in the company, mainly planning and controlling internal as well as external resources necessary for process and strategic management (Schuh, 2017). ERP organizes and integrates operational processes and flow of information in order to optimally dispose of resources such as people, materials, cash and production machines (Issar, Navon, 2016).

Continuous development of integrated ERP class IT systems, starting from simple inventory control systems to subsequent versions, which enrich them with new functionalities and modules, have an influence on the scope of their use. The development of these systems can be presented in the following stages:

- MRP (Material Requirements Planning) - is a system that supports production planning and scheduling. It also includes forecasting, determining inventory levels, tracking as well as quantitative settlement of production (Sutrisno, Airlangga, 2020).
- MRP II (Manufacturing Resource Planning) - is a system supplemented with mechanisms for planning other resources apart from materials, i.e. factors of production, e.g. energy, work. In MRP II, the so-called closed management loop is used, whose task is to combine data received at three levels of management, i.e. at the strategic, tactical and operational level (Gozukaraa, Tekinerdogana, Catalb, 2022).
- MRP III (Money Resource Planning) - this system was taken into consideration in evolution as a supplement to the functionality of MRP II with financial procedures. It kept improving the settlement of production and areas directly related to it, not only in terms of quantity, but also in terms of value (Kozioł, Karaś, Bełzowski, 2019).
- ERP (Enterprise Resource Planning) - constitutes a wide range of functionalities, i.e.: human resources management, quality management, support for contact with customers, distribution support, service management, etc. ERP class IT systems provide the opportunity to model processes, which modern enterprises should face. The main objective of the ERP system is to integrate all levels of enterprise management. It improves the flow of information critical to its functioning and allows for rapid response to development of demand. In the case of systems operating in the "online" version, this information is updated in real time and available at the time of decision making (Fauzi, 2021).
- ERP II (Enterprise Resource Planning II) - is a system based on cooperation with the company's business partners, who participate in resource management at subsequent stages, i.e. design, production and distribution of a given product. The ERP II system goes beyond the framework of the enterprise and enables cooperation of companies through the exchange of data and information (Chofreh, Goni, Klemeš, 2018).

- ERP III (Enterprise Resource Planning III) - is an extension of the concept of the ERP II system related to improvement of customer relations by incorporating them into the enterprise's IT system. The purpose of such action is to ensure their direct and active participation in the implementation of business processes. Thanks to the applications installed on IT devices, employees can have an access to the selected ERP functionality and perform their tasks at work with the system anywhere they are. This will be done mainly through making mobile support tools as well as social media available and support in the form of other tools for online communication both inside and outside the company. With this concept of creating IT systems, in which the main activity is to define services, it is possible to implement, even the most sophisticated user requirements. The presented assumptions of the functioning of the ERP III system are complemented by the provision of a constructive dialogue with the customer and, on this basis, the exchange of information in order to introduce innovations when it comes to production and services, and then sales or distribution of better products in improved versions. Such action closes the so-called "value proposition loop", which allows us, as the matter that goes beyond the boundaries of a company, to introduce knowledge about the needs of preferences as well as expectations of customers (Chofreh, Goni, Klemeš, Malik, Khan, 2020).

- ERP IV system (Enterprise Resource Planning IV) - is the planning of enterprise resources with a wider functional scope, using Internet technologies, with particular emphasis on mobile devices, cloud computing, fog computing, cognitive agent programmes, big data, big management. It also enables the implementation of mechanisms of globalization of economic activities as well as integration of connections between market partners and cooperating organizations (banks, Social Insurance Institution (ZUS), broadly understood administration) as well as with social networks. At this stage of development of the ERP class system, it fits into the requirements of the Real Time Enterprise (RTE) concept, which in previous versions of these systems was only a dream. An enterprise operating in compliance with the RTE principle becomes competitive by eliminating delays of management decisions as a result of the automatic implementation of various detailed and key processes. The ERP IV system is also a feedback to the challenge of the network economy related to the commonly implemented new way of organizing connections between cooperating parties. Moreover, in the fourth generation of the system, the Complex Event Processing (CEP) function is used. It operates on the basis of source data, which may be financial, geospatial control data or they can be streamed from the device. CEP detects events, combines them and indicates consistent cause-and-effect patterns (Bytniewski, Matouk, Hernes, 2018).

The presented class of ERP IV systems is a new direction in the development of management IT systems, with extended informative capabilities, turning information into knowledge and making it available in real time for quick decisions. The consequence of such action is the optimization of strategic and ongoing business processes. In this case, it is also possible to take into consideration data transferred in real-time. It should be highlighted that in ERP IV systems, all functionalities and technologies used in ERP III have been extended with solutions in the field of the use of artificial intelligence, the Internet of Things (IoT), big data, big management, industry 4.0 and fog computing (Elbahri, Al-Sanjary, Ali, Naif, Ibrahim, Mohammed, 2019).

Nowadays, Industry 4.0 plays an important role, where the main analytical goal is to draw attention to the main trends in the economy, that are being shaped by the fourth industrial revolution. During this activity, it is also significant to identify the necessary directions of changes in the management of the enterprise and the functioning of their environment that defines the rules affecting the possibilities of development, creating opportunities, but also barriers and even threats. Therefore, the opening of Polish enterprises to the potential of the fourth industrial revolution becomes a necessary condition for maintaining the ability to compete on the market and to meet the new, still invariably efficiently targeted market requirements. The concept of Industry 4.0 forces the management board to change business functioning models, which temporarily, as practice shows, leads to various asymmetries and socio-economic, management and regulatory maladjustments. Therefore, in such a situation, it is an obligation for companies to resort to technologies that integrate the digital and real world. First of all, we include ERP class IT systems and a cooperating module called Business Intelligence to this group. As a result, enterprises which are consciously subject to the fourth industrial revolution will see ways to mitigate these asymmetries and goal achievement of sustainable development, learning to reconcile social, economic, technological and environmental goals in the management process, while simultaneously reducing the waste of material and human resources. The justification for taking the presented actions is indicated, among others, by the increasing risk of threats resulting from the increasingly clear, especially in the European economy, syndrome of deepening access to raw materials, which may result in time delays, e.g. in the implementation of production orders which have been taken over (Frank, Dalenogare, Ayala, 2019).

One should remember that the ERP system does not have a defined standard, which means that the structure of such a system in particular applications may differ. Therefore, it can be perceived by users in the context of solutions that they use in their activities under different names. It can be named differently (Grzeszczyk, Nguyen, 2006):

- eERP (electronic Enterprise Resource Planning) – these are ERP class systems supporting, among others, the implementation of electronic transactions,
- @ERP (active Enterprise Resource Planning) – these are ERP systems focused on the reconstruction of organizational structures, management practices as well as business processes,
- IERP (Intelligent Enterprise Resource Planning) – these are intelligent ERP systems in which the balance point has been transferred to the strategic level and support of ERP systems with BI, SWO, SE, GSWD, artificial intelligence techniques, OLAP, data mining,
- EERP (ang. Extended Enterprise Resource Planning) – it is an extension of the functionality of ERP systems, e.g. through its integration with CRM, SRM, SCM systems.

The Business Intelligence subsystems of the ERP system also use the concept of the Strategic Scorecard. It is used to measure the effectiveness and control of the organization, which connects the organization's strategy with operational activities. It uses indicating instruments that support ongoing monitoring of achievements for the strategy adopted by a particular company (Bakkas, Manouar, 2018).

4. An evaluation of the level of influence of ERP class systems on effective strategic decision-making

In these difficult economic times, enterprises should refer to the concept of an open strategy, which aims to implement processes with increased openness to external forces and influences. This approach is all about the involvement of a relatively large group of stakeholders in the strategy formulation process as well as the transparent communication of strategic choices using various technologies (Morton, Amrollahi, 2018). Research and, above all, good practices regarding strategic openness are focused on transparency, participation, co-creation of values, active initiation of strategic changes, democratic strategic decision-making, inclusion as well as increased integration with external entities (Alexy, West, Klapper, Reitzig, 2018).

Information and Communication Technologies (ICT) support the involvement of stakeholders in the creation of strategic content and knowledge in the enterprise. Most experts focus on the dimensions of strategic openness, providing an analysis of the scope of formulating and implementing an open strategy in an enterprise. As a consequence, ICT is often included in project plans, but they are not considered in research regarding strategic openness. The team of scientists and experts indicates that future research and activities should be targeted to a comprehensive explanation of what types of IT systems exist and how they are used in an open strategy (Kesidou, Narasimhan, Ozusaglam, Wong, 2022). Based on the research

carried out among companies in the printing industry, entrepreneurs drew attention to the importance of placing functionalities from the field of strategic management in ERP class systems (Figure 1).
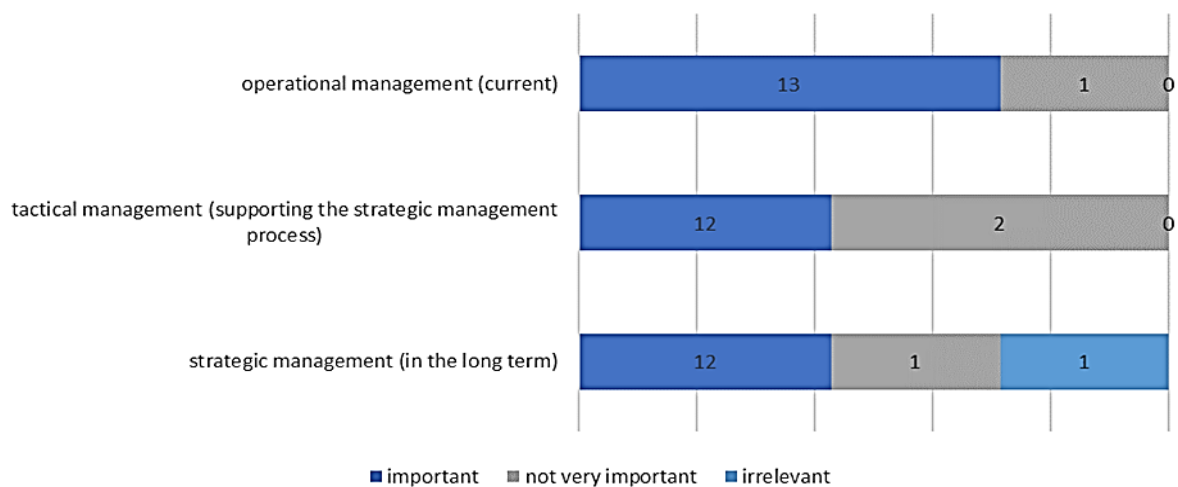
Figure 1. Demand for functional areas of ERP class systems.

Source: Personal analysis of the data gathered in the study.

The concept of an open strategy is based on an active exchange of knowledge and information. It occurs during the cooperation and implementation of the company's relations with the environment using ICT, which is described as a factor that constitutes a significant factor for the strategic openness of enterprises (Schlagwein, Conboy, Feller, Leimeister, Morgan, 2017). The companies from the printing industry clearly stated that they expect ERP class systems to "exchange data within the organization as well as with its environment" (Figure 2). Strategic openness is a concept offering various possibilities, especially in combination with IT. Key aspects of "openness", such as an access to resources and stakeholder participation in processes, can be implemented in completely new ways through systems and IT tools (Schlagwein, Conboy, Feller, Leimeister, Morgan, 2017). Individual experts indicate a clear link between strategic openness and the use of IT systems. This involves creating strategic openness by integrating IT systems with the dimensions of transparency and inclusion (Kindermann, Beutel, Lomana, Strese, Bendig, Brettel, 2021). The most mature IT systems that can be used to implement the open strategy concept are ERP class systems with modules corresponding to BI, CRM, DMS, BPM, SCM tools. To put it simply, ERP class IT systems also provide the opportunity to connect with all tools included in building the enterprise's strategic openness. Summing up, the concept of an open strategy together with the ERP class IT system allows for making strategic decisions with a reduced level of risk (Malik, Khan, 2021).
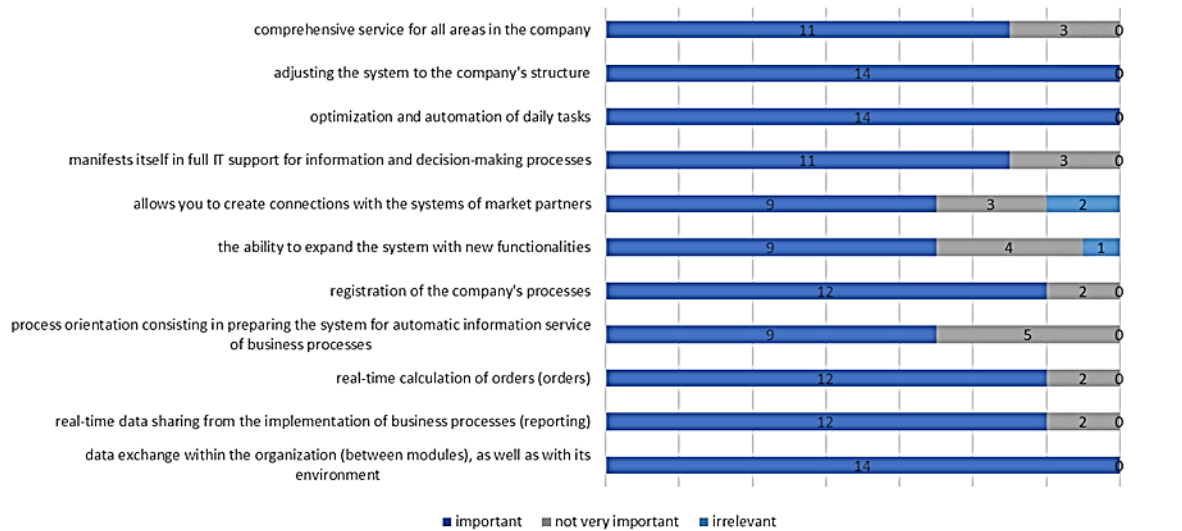
Figure 2. Expected features of ERP class IT systems.

Source: Personal analysis of the data gathered in the study.

ERP systems play a key role in today's organizations in decision-making processes on how to implement their vision and strategy. However, potential users should be aware of the costs and risks of implementation. Therefore, it is necessary to develop a proper approach to selecting the appropriate ERP system for a particular industry and organization. At the beginning, the vision, strategies and key performance indicators of the organization may be checked using the Balanced Scorecard (BSC) method (Grochowski, 2016). The proposed methodology can be used to decide on the implementation of the proper ERP system. Based on the analysis conducted with the help of BSC, we can prepare a request for quotation. From the implementation of Balanced Scorecard we know what is necessary to implement the action in order to achieve the planned long-term goals. The ERP class system, on the other hand, will allow for efficient implementation of these activities. The proposed methodology suggests numerous suggestions for successful implementation of the ERP system. Moreover, a lot of ERP class systems have a built-in BSC tool in their solutions, which is used to monitor the level of achievement of specific strategic goals resulting from previously made decisions (Rotchanakitumnuai, Speece, Swierczek, 2019).

Experts in the field of creating and implementing ERP class IT systems claim that they provide enterprises with dynamics, thanks to support in making tactical as well as strategic decisions. This is due to the current access to information thanks to management decision support systems, such as an ERP system. There are strategic advantages of ERP systems. These advantages are (Alomari, Amir, Aziz, Auzair, 2018):

- increase in the flexibility index,
- increase in the productivity index,
- correct communication, e.g. in informing about decisions that have been made,
- fast decision making,
- rapid response to dynamic changes in the enterprise's environment,

- reduced costs regarding running a business,
- increase in the level of revenues,
- shortened cycle times of particular processes,
- effective cooperation inside and outside the organization,
- transformation of the enterprise's strategy into the objectives of the main processes.

Organizations are obliged to manage changes, i.e. to introduce innovations regarding products, services or capital markets. By accepting ERP systems, we agree to the existence of various modules that help making decisions consistent with speed and efficiency in compliance with market requirements and enterprise expectations. Change management is very often perceived as information management. For reasons of strategic management, operational and financial information as well as changes in the light of this information, it is foreseen that strategies and practices are continuously compared with competition and the best organizational practices. Concepts of ERP systems solutions focus on ensuring competitiveness and increase in value of the organization in all business cycles. ERP users are offered very wide reporting opportunities. Due to the flexibility of the structures, it allows to create a report for the user on any topic. Moreover, it can provide user support when it comes to problem solving due to high analytical capabilities. Therefore, when processing data in the enterprise information bank, indicators of managers' decisions are generated. Apart from ensuring automation, the ERP system function provides accurate and timely information to improve the decision-making processes of managers and employees (Hadi, Alnoor, Abdullah, 2018).

The ERP system, operating together with other operating systems of the organization, creates opportunities for effective corporate supervision, providing information on the effectiveness of the implementation of planned activities resulting from previously made decisions. It is able to link business activity as well as market forecasts with development, production, as well as the warehouse system. Thanks to this, the company is able to develop a system that significantly reduces costs thanks to more accurate and up-to-date planning. Information from corporate governance can be provided to management board using the previously mentioned Business Intelligence (BI) subsystem (Danilczuk, Gola, 2020). This is evidenced by the needs reported by representatives of Polish companies in the printing industry (Figure 3).
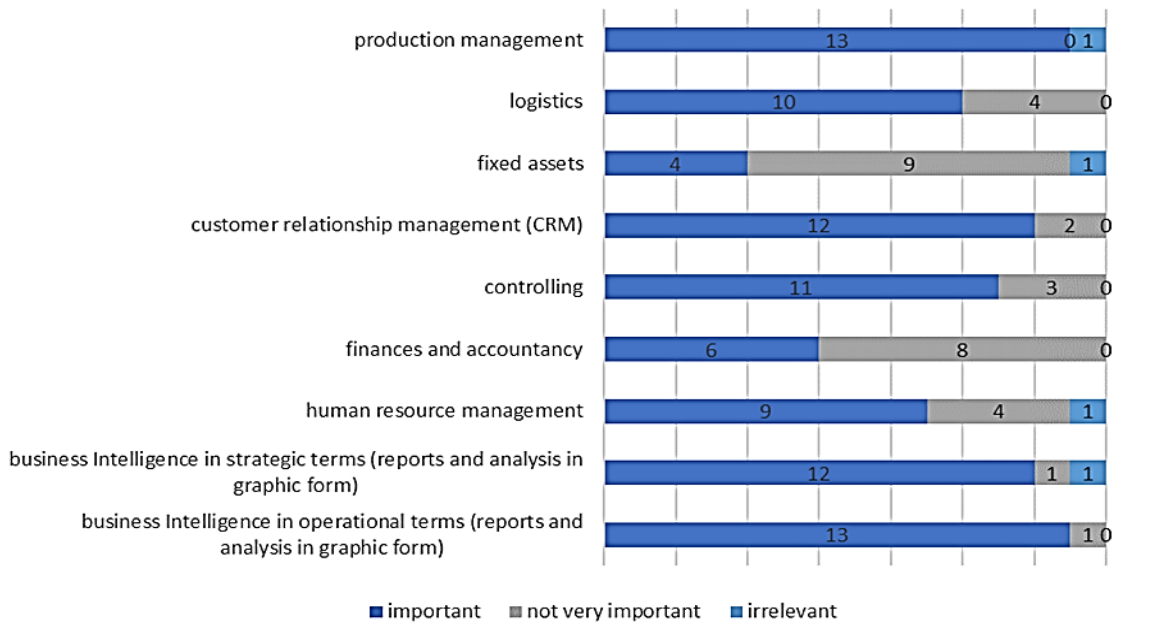
Figure 3. Demand for subsystems of the ERP class system.

Source: Personal analysis of the data gathered in the study.

Moreover, the linking of the ERP system with the CRM system also allows the company to see a broader business and operational context globally with the current and required time base. Therefore, both short-term and long-term strategies can be developed. By configuring this system, it is also possible to monitor KPI (Key Performance Indicators) and NPS (Net Promoter Score) in each country with the same parameters. It is also practicable to compare them and implement positive trends from one country to another. Thanks to this, the Organization has an influence on successful trends, processes and activities as well as competing with local players on the market (Pohludka, Stverkova, Ślusarczyk, 2018).

It is also worth noting that companies creating ERP class systems include tools supporting strategic management processes in their solutions. One such tool is SAP Strategic Enterprise Management, which supports strategic planning, risk management, performance monitoring as well as value communication. SAP SEM is closely integrated with existing business implementation systems, as well as with extended SAP finances. It enables two-way information flow: corporate strategists can monitor performance continuously, using feedback from business implementation systems, and changes in strategy can be brought to operational level with new goals and KPI (Mathrani, 2021).

5. Conclusion

ERP class systems are an effective form of data integration supporting decision-making processes in the enterprise. The concept of building a company strategy oriented on the use of

integrated systems supporting the most important decisions in various positions should mainly take place at the strategic level. However, taking into account this approach, other levels should also be considered, including the operational as well as tactical level.

The high complexity of business processes as well as the need for fast and reliable access to information force enterprises to implement technologies that will allow to achieve a competitive advantage in a dynamic market. ERP belongs undoubtedly to one of such technologies. The use of integrated ERP class standard software can only be profitable and simultaneously consistent with the concept of competitive advantages, when, in addition to the rationalization potential, the potential of decision support will also be implemented. Then the enterprise will have a specific resource of competitive and developmental advantages.

Among Polish enterprises, there is a need to exchange data within the organization, and above all with its surroundings, which should be supported by ERP class systems as the basis for safe strategic decisions. Moreover, companies should remember to refer in their activities to the concept of an open strategy, which aims to implement processes with increased openness to external forces and influences. Therefore, it is necessary to place functionalities referring to strategic management in ERP class systems in order to implement the concept of an open strategy. The ERP system creates opportunities for effective supervision of the organization, providing information on the effectiveness of the planned activities resulting from previously made decisions. The organization's strategists can monitor performance on a continuous basis, using feedback from business implementation systems, i.e. ERP class systems. One should also pay attention to ERP class systems, which inform about available resources in the organization as well as the method of their use, which has an influence on the effectiveness of strategic decisions.

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