

Necessity of Enterprise Resource Planning Systems for Small and Medium-sized Enterprises

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Abstract – For small and medium-sized enterprises (SMEs), the advantages of ERP systems are obvious. Many small businesses initially use different software and applications to manage each business process, such as separate programs for invoicing, finance, sales, etc. However, these programs are not integrated with each other, which can cause problems such as data loss between different databases, errors caused by manual data entry, and time-consuming manual processes.

However, ERP systems provide a single, integrated system that connects all important business processes, reducing data loss and errors. With the help of an ERP system, businesses can manage finances more efficiently, implement more consistent sales and marketing strategies, better plan and organize production and logistics processes, and manage human resources more effectively.

However, ERP systems also have some disadvantages, such as implementation costs and time-consuming implementation. In addition, businesses should choose an ERP system according to the number of their staff and the complexity of their processes to best suit their needs.

The efficient operation of small and medium-sized enterprises (SMEs) and the growth of their performance is facilitated by the use of various technologies/techniques. Covid19 has highlighted even more the importance of using these technologies - which differ from sector to sector - but at what point during the company's life cycle does an SME reach the stage where it already needs a complex, integrated business management system ERP?

Keywords – Digitalization, SME, Life Cycle, ERP, Technological Platforms.

I. INTRODUCTION

As a result of the pandemic, the market demand for the SME sector also changed in connection with digitalization, and the use of IT systems became a necessity [1]. However, companies operating in different sectors reacted differently and then

adapted to the changed economic situation. In addition to sectoral differences, even the life cycle of the company affects the application of technologies.

Despite the competitive business environment, the use of the up to date technology can help SMEs

create a new strategy and anticipate long-term growth. Another possible advantage of using modern technologies is to increase the digitization of internal processes, improve performance efficiency, transform business models and ensure business survival [2].

Over the past few years, many studies have dealt with ERP (Enterprise Resource Planning) for SMEs and its advantages, however, the current environment has highlighted that a young SME does not need to use an integrated enterprise management system for proper and efficient economic operation, which, on the one hand, it may depend on the industry, on the other hand, on the life cycle of the company. [3].

The aim of the study is to highlight that regardless of the industry, it becomes necessary for SMEs to introduce an integrated corporate management system over time, in which the stage of the company's life cycle plays an important role.

II. MATERIALS AND METHOD

Today's companies must be digital to be competitive in a world where both end users and business partners expect products and services to meet their needs in the fastest and most convenient way. In this process, SMEs also play a big role, since small and medium-sized enterprises are the backbone of the economy. However, it should not be overlooked that different sectors have different needs for digitization, and therefore use digital technologies to different extents. Among small and medium-sized enterprises, the patterns of digital diffusion remain relatively the same regardless of company size, the differences in the application of technologies are more likely to be linked to sectoral differences [4].

Among other things, during Covid19, it was visible how much technological investment companies had to use in order to stay alive. In the digital transformation, small businesses operating in the construction industry and the hospitality industry have mostly lagged behind. For other aspects and dangers of digitization, see [5],[6]. The experiences gained during education can be well utilized for small and medium-sized enterprises as well [7] - [10].

It can be seen that digital transformation is slower in the construction industry. According to Orsolya Nagy and Zs. Roland Szabó [11],[12], this may be due to the fact that, on the one hand, the level of

digital knowledge of managers and employees is low, organizational structures are rigid, and integration between companies is at a low level, and on the other hand, many new technologies appear, but with these there is a lot of uncertainty. Furthermore, there are few reference projects that support the effectiveness of these technologies.

The application of technologies can help SMEs to deal more easily and more efficiently with the problems they encountered during Covid-19. This is possible through the effective use of e-commerce, social media and various other technological platforms. Social media tools include Facebook, Linked-in, Twitter, YouTube, and Instagram. And e-commerce channels include many platforms, such as Alibaba [13]. During the pandemic, the value of these *online* channels increased, as a result of online orders, system usage increased, which boosted the online activity of SMEs and, as a result, the number of transactions also increased significantly. Based on Figure 1, most of the companies (40.29%) operating in the catering industry, and the least (7.99%) companies operating in the construction industry, had an interface through which they could serve online requests. All in all, only about every fifth company has a *webshop*. The epidemic situation also pointed out that they have to manage the use of social media more and more consciously and intensively, but due to a lack of capacity, they do not always have the right specialist at their disposal. Social media tools can be an excellent resource for maintaining two-way communication with customers and properly analyzing their needs. The continuous monitoring of demand helps with production planning, which helps SMEs to respond more quickly to the market, thereby increasing their efficiency [14]. A striking difference is that, in contrast to the webshop, SMEs are more open to social media both overall and broken down by sector (approximately two out of three companies – 59.33%). The least (39.21%) was the construction industry, and the highest proportion (80.77%) was companies operating in the information and communication sector who appeared on a social media platform or tried to exploit the positive opportunities provided by social media.

B2G- (Business to Government) relationship is outstanding for all sectors, this is mostly due to the introduction of mandatory applications (e.g. tax returns).

In the case of production processes, Industry 4.0 offers new paradigms in the industrial management of SMEs. Supported by a growing number of new technologies, the concept appears to be more flexible and less expensive than traditional enterprise information systems such as ERP. However, SMEs are ill-equipped to face new opportunities in their production planning and control functions. They are (Networked, communicating with each other, "intelligent" electronic devices) often limited to the adoption of cloud computing and IoT (Internet of Things) [15].

AI and Big Data (A technological environment processing a large amount of rapidly changing and very diverse data.) can help SMEs, for example, identify potential customers, assess their needs, and automate routine tasks and data extraction.

Big Data or CRM (Customer Relationship Management), which aim to better understand and serve the needs of customers, are used in very different ways by different sectors. Both are mostly used by the information and communication sector, the former in 26.73%, the latter in 60.48%. All other sectors lag significantly behind in terms of their application.

In the field of ERP systems, it can be seen that SMEs also use it in a low proportion. Within the various sectors, wholesale trade (53.09%) and the information and communication sector (52.59%) use some type of ERP system to the greatest extent. The two sectors least open to ERP are catering (16.79%) and construction (22.55%). Overall, even the sector with the highest rate barely exceeded 50%, which means that few SMEs, regardless of industry, use an integrated corporate management system.

After that, the question arises as to whether it is absolutely necessary for an SME to use a corporate management system, or whether it is enough to connect different technologies/applications on one platform.

III. RESULTS

A. Relationship between SME and ERP

During the development of an SME, it may reach a point where the degree of complexity of company processes exceeds the level that can be followed. For example, the company's administrative activities multiplies. In such cases, the use of an invoicing program, Excel, or paper-based administration has more disadvantages, both in

terms of resources and in terms of efficiency. Furthermore, individual activities are becoming more and more opaque. This is when the need to invest in a company management software may arise, with which individual operations remain transparent and processes are simplified.

In the case of companies, the price and costs are the primary considerations when choosing an ERP system. However, after the implementation, they are often unwilling to make further investments for the sake of development, and sometimes even revert to using the old systems. This is usually due to a lack of appropriate professional knowledge. However, some SMEs also take into account the changes that the ERP system can bring to their business activities, primarily those that strive for future growth and development [16]. The purpose of ERP is to rationalize and better integrate the information system. Even if the implementation of the ERP system is still considered a high-risk project for SMEs, due to its size and cost.

Of course, the needs and expectations of an SME are different from those of a large or multinational company. However, it is important for all economic operators to make their business processes as efficient as possible.

While large companies tend to be highly dependent on ERP systems, this applies to a lesser extent in the case of SMEs. This is partly due to the lower number of employees of SMEs, among whom it is easier to flow and share information, and it is easier to understand the operation of the organization. Furthermore, fewer human resources are involved in business processes.

Based on analyzes by Gartner Research [17], the market revenue of ERPs showed an increase of 9% in 2019 and only 4% in 2020, but it can also be observed that companies that use cloud-based ERP systems they deal with its development and sales, they continuously achieve higher income growth. Renting these systems is also beneficial for SMEs because in this case some of the hardware and human costs related to their design and operation can be reduced. Recently, the demand for a data-based decision-making mechanism has increased in every company area, which can be a prerequisite for a well-designed ERP system [17],[18].

The ERP systems available for SMEs already fully cover the basic requirements, such as integration, finance, accounting, HR (human resources), CRM, logistics, project management. Of course, it is also

true that the support, implementation, and automation of the given area may differ within individual ERP systems. Support for industry specificities and special features is also a dividing line. In addition, more and more people are putting emphasis on data analysis, real-time access to reports, increasing automation options or perhaps even incorporating document management, process management, and simulation tools [19] - [22].

However, until business processes are mature and less regulated, it is more difficult to benefit from the use of ERP systems, which require a high degree of standardization of business processes.

With low ERP complexity, new employees can get to know organizational routines faster and thus focus on value-creating activities sooner. On the other hand, in companies with high ERP complexity, new hires invest more time and resources in learning and adapting to new routines. Consequently, the company cannot fully enjoy the benefits of growth until employees have learned how to use the system. Learning how to use the new system is a critical point, which is why it is necessary for the management to try as hard as possible to make people aware of why it is necessary to learn a new system. Thus, it can be observed that in addition to ERP complexity, there will be a period when this complexity is opposed to growth, they balance each other to a certain extent. Consequently, it depends on the complexity of the ERP whether growth increases or decreases the profitability of young [22],[23].

Jakob Schlichter and his co-authors [24] found in their analysis among SMEs that young SMEs may be less dependent on ERP systems and that they may be counterproductive for these companies in periods of low growth, as time, energy and resources are taken away from market and customer acquisition. During periods of low growth, it is more beneficial for young SMEs to focus their time and resources on acquiring customers, building their market position and positioning the company, rather than on building the organization internally. When the SME reaches a certain level of growth, and in order to benefit from the growth, the use of an ERP system becomes a necessary condition. That is, it is only worth implementing the introduction if the SME is experiencing a period of growth or wants to grow further.

It follows from all of this that IT (*information technology, informatics*) cannot be a goal, only a

tool/resource, as well as the good IT that is not visible [25].

B. The efficiency of the ERP system in the case of SMEs

Due to the above, our goal is to depict the efficiency of the ERP system in the case of SMEs. Because - as can be seen above - an integrated corporate management system is not necessarily necessary for a young SME, but as it progresses in growth, the use of a complex system becomes more and more necessary, until then it is sufficient to apply and connect different technologies on one platform.

To represent this, we created a three-dimensional model, in which time is located on the x-axis, the efficiency of the ERP system on the y-axis, and the SME size on the axis.

By the efficiency of the ERP system, we mean the investment in the ERP, operation, and the share of resource use realized in these two, which contributes to the achievement of the short and long-term goals of the SME. Based on this type of definition, this metric can even be negative, since if it hinders, delays, or prevents the company from achieving its goals to some extent, it appears as a negative effect. Effectiveness can therefore be given as a ratio (%) - rather estimated, as it determines the share with which it contributed to the achievement of the goals. Accordingly, Figure 2 theoretically shows how the efficiency of the ERP system relates to the size of the SME and its time spent on the market. The figure can be considered a characteristic curve, and the specification of the measure of efficiency can only be given with detailed SME analyses. T stands for time, k for SME size, and e for efficiency.

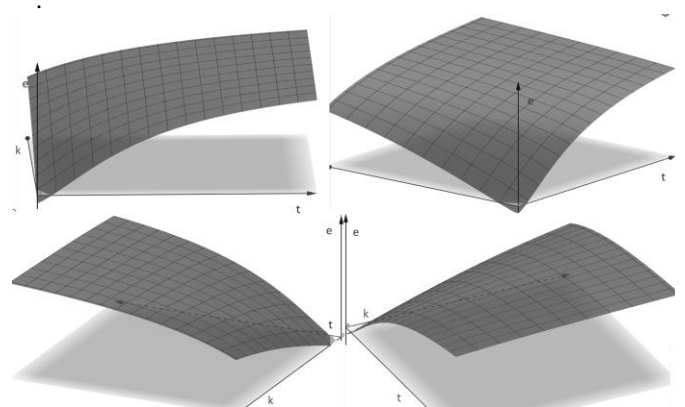


Fig. 1 ERP efficiency, depending on the size and market time of the SME

Although the need for an ERP system may appear and become necessary at different times/sizes for each sector, it is inevitable that it will be implemented after a certain size and time in order to preserve and increase efficiency.

IV. DISCUSSION AND CONCLUSION

It can be seen that regardless of the industry, few SMEs use an integrated corporate management system, on the contrary, they use social media. However, it is important to highlight that other technologies are also used at a low level, such as CRM, Big Data or RFID (radio frequency identification, radio frequency identification). Of course, the low level of resources is behind this, and low digital knowledge can also cause problems. The study wanted to draw attention to the fact that it is not absolutely necessary for a young SME to use an ERP system, and it may even have a negative effect on its operation. As time progresses and grows, it becomes necessary to establish the regulation of company processes, which is one of the basic conditions for the application of the ERP system. As a consequence, it is worthwhile for a young small business to properly apply the various technologies, even by connecting them on a single platform, and later introduce a complex system that makes the company's operation more transparent and therefore more efficient.

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