

## KEY FACTORS AND BENEFITS OF CHOOSING SPECIFIC IT SYSTEMS BY POLISH ENTERPRISES

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### **Abstract:**

Current research concerning information systems demonstrates how the systems in question are used in different enterprises, yet little is revealed about the key criteria for choosing a particular system by a given company. The aim of this article is to show the deciding factors as well as investigate the primary motivation behind adopting a specific information system by a given enterprise. A company whose long-term aim is to implement an information system pays attention to a variety of factors –from usability, i.e. the extent to which a particular solution may be useful in regular business activity, through technical aspects and elasticity, to cost analysis, including maintenance expenses following the implementation of the system adopted. Furthermore, the author of the article attempts to systemize the benefits of choosing specific IT systems by a company. The research conducted among more than 100 enterprises proves that the decision as to which IT system should be implemented is reached taking into account a range of independent factors. The benefits resulting from choosing a given system over the other enhance the company's competitiveness, enabling the enterprise to expand in a dynamic business environment.

*Keywords: information system, factors of choosing IT system, ERP, benefits of implementing IT system*

# 1. KEY FACTORS OF CHOOSING IT SYSTEM

While selecting the information system the company takes into account many factors that affect the shape and course of the decision-making process. The choice of the system very often is a strategic decision, which ties in serious financial costs not only for the organization, hence the degree of the complexity of the decision-making process and the factors influencing the choice of the system can be very different.

Among the factors which decide on the selection of an information system there can be distinguished:

1. Usability understood as adjusting the system to the business processes of the organization and its usefulness in the current operational work.
2. Performance understood as efficiency of the system of work in a corporate environment, its speed and capacity.
3. Costs which are financial expenditures required for the purchase, launching and operation of the system. They will be classified in detail later in this paper.
4. Compatibility with the existing solution or compatibility of the system with the one which is currently in use, the possibility of integration or data migration from the old system.
5. The possibility of expanding involving the construction of a system that provides the flexibility of its expansion and easily scaling tailored to the client's needs.
6. Technology. The application of a specific technology determines whether the system will be modern, whether it will have a longer life cycle and will be easier to adapt and safer.
7. Ergonomics affects the efficiency of work of the end-users, easiness of use and intuitiveness of the system.
8. Availability of the documentation determines whether the users can independently expand their knowledge about the system and develop it within the qualified substantial teams.
9. Warranty period is a factor that often becomes significant in view of the provided free revisions and possible adjustments to changes in the law (if provided in terms of the warranty).
10. Service and technical support are important from the point of view of ensuring the current functioning of the system and the stability of its work in the organization.
11. Brand and reputation of the manufacturer often determine the popularity of the system and its perception as a software product on the market. The more the manufacturer is recognized and worldwide, the more comfortable and safer a potential customer having the system can feel.
12. Flexibility is defined as the easiness of system personalization by the end-users according to their preferences, likes or needs.
13. Free probation period is often used by software suppliers and allows the users to familiarize them with the system, its functionality and the mode of operation.
14. Availability of new versions of software is understood as a cyclic system updates and releasing by the manufacturer ever newer versions which are written in newer technologies or with using modern algorithms.
15. Safety is perceived as the sensitivity of the system to the malware, the ability to defend against malicious attacks and resistance to intentional damage.
16. Compliance with the information strategy of the company – the companies, especially those which are better organized, have a number of studies on different areas of operation. Among them there can be distinguished the enterprise information strategy and in accordance with the guidelines there are often taken the decisions on the selection of the information system.
17. Support during implementation is particularly important at the stage of implementation of the system and is usually a very important factor when choosing a system, due to the success of the implementation work.
18. Support during exploitation shall enter into force after the stage of implementation and on the stage of the ongoing operation. The companies opting for the system expect at the very beginning the information on the costs and the conditions for the provision of such support so that the end-users could be provided with the adequate support during the system operation.

*(Top 10 Key Criteria When Selecting an ERP, 2014)*

## 2. RESULTS OF THE RESEARCHES

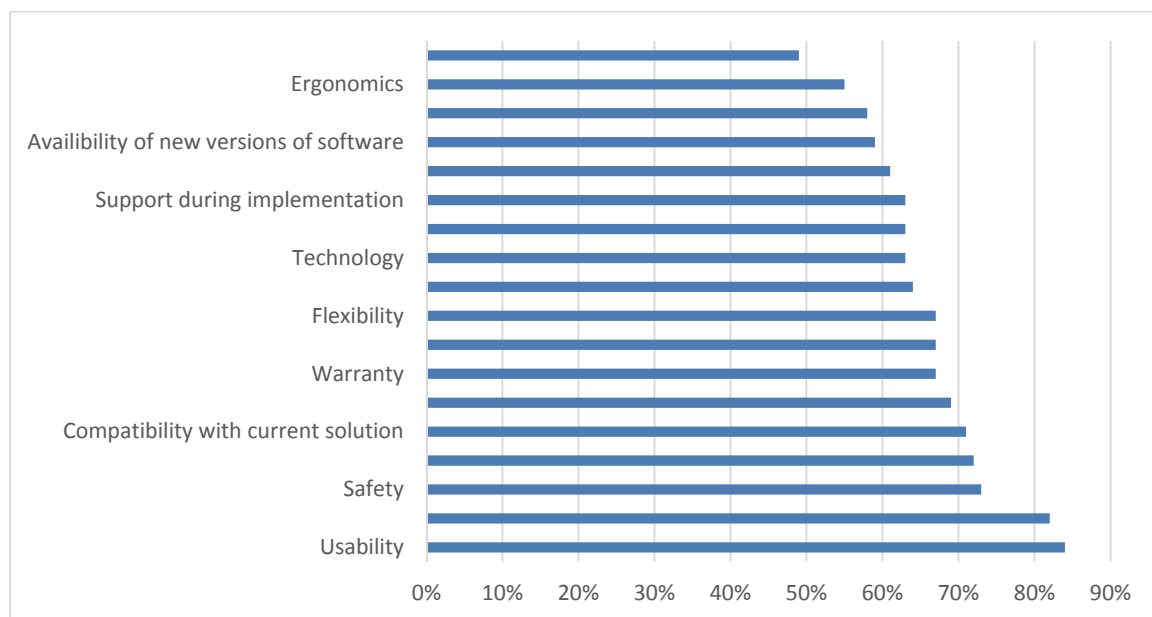
**Table 1:** The results of researches about criteria of choosing information systems

Factor name	1 – Not important	2	3	4	5 – Very important
Usability	1%	3%	12%	24%	60%
Performance	2%	5%	11%	35%	47%
Costs	2%	3%	26%	27%	42%
Compatibility with current solution	3%	6%	20%	35%	36%
Possibility of expanding	8%	9%	25%	32%	26%
Technology	6%	9%	22%	36%	27%
Ergonomics	6%	14%	25%	27%	28%
Availability of the documentation	3%	7%	23%	29%	38%
Warranty	4%	8%	21%	28%	39%
Service and technical support	2%	5%	21%	27%	45%
Brand and reputation of the manufacturer	5%	7%	27%	36%	25%
Flexibility	4%	6%	23%	35%	32%
Free probation period	9%	22%	20%	27%	22%
Availability of new versions of software	6%	10%	25%	32%	27%
Safety	6%	4%	17%	24%	49%
Compliance with the information strategy of the company	5%	8%	24%	38%	25%
Support during implementation	6%	8%	23%	32%	31%
Support during exploitation	6%	6%	24%	37%	27%

Source: own research

Analyzing the results shown in the table 1, we can tempt to create a ranking comprising the summed up 4 and 5 responses, which are the factors that from the point of view of enterprises seem to be the most important. And so, the chart 2 presents the system selection criteria listed in the ascending order, for the arranged 4 and 5 responses.

**Figure 1** summed up 4 and 5 responses about criteria of choosing information systems



Source: own research

The general conclusion that arises while looking at the graph is that the general awareness of the seriousness of the situation, when selecting the system by the companies, is rather high. The most important criteria that were indicated by over the 80% respondents as the most important ones are the performance and usability. It is a very comforting news, as in the process of implementation of the system the usability seems to be a key factor in order to succeed in the project and satisfy the users. In our daily work with the system the performance is a factor which ensures the security and stability of specific information for the organization.

Other factors which were indicated by more than the 70% respondents are the security, service and technical support, and compatibility with the existing solution. While the first two factors seem to be obvious from the point of view of business, the data security and provision of technical support, are extremely important factors necessary for the smooth operation, contrary the compatibility with the current solution is somewhat debatable. The new system should not necessarily be consistent with the one which is at present used as long as the previous software after the implementation of the new one is completely suppressed. If this action does not arise, then there is the need for integration of the two systems and their compatibility, but if the old system is not in use, then it is enough to migrate properly data from it and refrain its further use.

At the opposite extreme of the factors, which according to research have relatively minimal impact when choosing the system, there was indicated the free probation period (less than 50% 4 and 5 responses) and ergonomics, the possibility of expansion and the availability of new versions of the software (in the range of 50% - 60% of the 4 and 5 responses). And so, the free probation period is not a popular service offered by the suppliers of the solution due to the fact that the software itself without consulting and implementation services is not very useful for the organization. The know-how contained in the widely understood consulting is the added value to the software which is expected by the end customer.

Ergonomics seems to be the factor which is less exposed by the recipients of the system due to the fact that with the new system, the users should get accustomed and adapt to its characteristics hence the smaller importance of this criterion when choosing the system.

The possibility of expansion and the availability of newer versions of the software were also indicated as less important factors. Probably it has to do with the fact that the company while selecting the system wants by its implementation to provide the efficiency of operation for the subsequent years and at the moment of selection it does not think on the future development and expansion and upgrade. The implementation project itself is a heavy burden for the organization in the context of both human and financial resources so opting for its implementation in the near future the further development projects or system upgrade are not expected.

### **3. CHARACTERISTIC OF VARIOUS TYPES OF COSTS**

The enterprises while choosing the information system can take into account various types of costs, estimate their amount or not, or completely ignore them. The companies which take into account the cost aspects in the process of the system selection classified the following types of costs:

1. The costs of investment and development
2. The costs of maintenance and repairs
3. The costs related to employee training
4. The cost of salaries for the professionals
5. The cost of the license
6. The staff costs

*The costs of investment and development (1)* are the primary expense which, along with the license should be incurred while implementing the information system. These expenditures often determine which systems should be chosen, as in the system class, the costs of investment and the subsequent development of software can vary greatly and they will depend on the complexity of the system, the popularity of the solution and the accessibility of the companies or consultants who know and implement the system. The smaller solution, of more limited functional range, but relatively popular, will be less cost-intensive than enterprise-class systems, which are recognized on the global market as the ones of a very complex structure and which need qualified personnel to configure them. The investment costs are crucial in the process of implementing the system in the organization because

well done installation and configuration works in the process of the system implementation will generate lower maintenance and repair costs, and theoretically lower development costs. Anticipating in the very beginning some business processes, additional options and the functionality we can also limit the future development costs that will not be dependent on the changes in applicable laws, as the costs associated with them are difficult to estimate and they can be treated as the fixed costs, no matter what the Ordering party's needs are. Of course, along with the increase of the organization, the expectations towards the system will rise and thus the associated development costs may contribute to the improvement of work or business development and they will surely pay off in the achieved benefits.

*The costs of maintenance and repairs (2)* are closely related to the functioning of the already running system. At this point we can distinguish the expenditures incurred for the maintenance of the system: the annual license fees (maintenance) and fees for integrators who provide support, helpdesk and malfunction elimination service. The maintenance expenses are characterized by the fact that they are paid on a monthly, quarterly, semi-annual or annual basis and within them, the licensee is entitled to a new version of the system, to the upgrade, to the patches and normally to the hotline, the base of knowledge, and other resources provided by the software manufacturer. However, the mere cost of maintenance is only a part of the total operating expenditures as the maintenance takes into account only the license fees. In order to take advantage of the new version or the patch in the system the required components must be installed and configured. This involves the costs of the development service that are provided by a competent company or person. The same situation refers to the helpdesk services and the debugging, but these services are mostly provided by the companies that have relevant expertise and qualified personnel for such tasks. The enterprises in which the information system was implemented in order to protect in case of emergency and to provide assistance to their employees in case the lack of sufficient knowledge about the system, often decide to build their own substantive teams suitably qualified and trained to provide helpdesk service, debugging service or application upgrade service. The mixed model is often found where the company has its first and second support line while the third support line is provided by an external experts team (of the manufacturer or integrator).

*The costs of staff training (3)* are directly associated with the introduction the new system in the company, but at the same time they may improve the effectiveness and productivity of work, as well as the increase in employees' satisfaction. These additional beneficial effects are difficult to measure, but often they compensate the expenses for training. During the realisation of the project, there are very often planned the several types of trainings: for the project team, the technical staff, for the professional staff, the management staff or for all employees in the organization who will use the implemented solution. Both the types of trainings and their form should be adjusted to the final needs of the beneficiaries of the trainings. Therefore, these may be classical trainings with a trainer, e-learning trainings, train the trainers model, remote trainings, webinars and more. All these forms may be dedicated to a project, the organization, or they may be carried out as a part of the certified trainings provided by the software supplier or the accredited body.

The training costs will depend on the type of training, its form and the person who will conduct them. The experienced organizations do not exhibit attempts to look for savings in training budgets, as they know that the trained staff will guarantee the company's development, especially while anticipating the introduction of the new information system in the company.

*The costs of salaries for the professionals (4)* are the considerable expenditure in the project budget. The experienced and qualified consultants and software programmers determine the success of the project and at the same time they constitute a substantial item in the budget. In respect whether the project is carried out by an external implementation company or there are only hired individual consultants and / or programmers (freelancers) for the project who work on only specific modules and functionalities, we can talk about two types of financial settlements: the fixed price and time & material. The fixed price model means that the parties agree to establish a fixed project budget, its scope and duration of implementation. Within that framework, the supplier or integrator of the solution runs the project, and any exceeding of the cost parameters, the time or scope parameters constitute the subject of the additional settlements between the parties. The service provider in this model has overall responsibility for the implementation and success of the project towards the Ordering party. In contrast, the type of time & material financial settlement means that the ordering party pays the providers the specified in the contract amounts which base on the time sheets accounting only for the days or hours worked within a given project. This model is used most often in cases where the project

is run by independent consultants who complement the project team of the ordering party or in case the ordering party has difficulty in determining the precise range. In such a case, the works carried out under the project are most often accounted for in monthly periods. This model may entail certain risks for the Ordering party involving exceeding timetable of the project or significant overrunning the cost which were planned at the beginning.

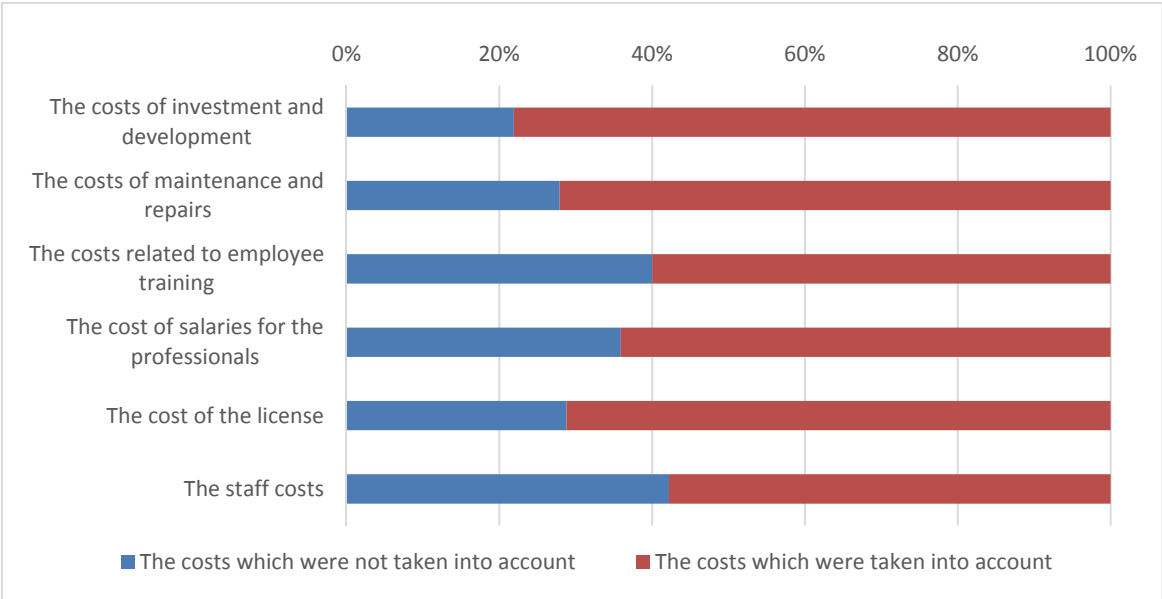
*Speaking of the license costs (5)*, we mean the expenditures which should be incurred in order to purchase a license for the software from an external provider. These are very often significant amounts if you decide to implement advanced or highly complex systems. Most often they depend on the number of users of the system or module, and are the quotient of the unit price and the number of users. In respect to the model of system licensing there may be different variants: the license of enterprise type (unlimited number of users of the system or module), the per user license or per processor license. Of course, the licensing model is chosen optimally in terms of cost for the organization, and so, for example, a global company with tens of thousands of employees which requires the same number of licenses should decide on the choice of enterprise model, in contrary the small or medium-sized company will rather use the per user license. The most common processor licenses types relate to technology components such as, for example, a database or an application server. The licensing model of the software is determined by its manufacturer and usually the final customer is forced to accept the types of licensing within different types of information systems.

*The personnel costs (6)* are not directly related to the financial expenses that the organization must incur for the information system, but they relate to the time spent by employees of the company who belong to the project team. As a rule, the persons performing the role of project manager, the substantive team members or the testers are designated to the project of the system implementation. The amount of time spent on the project will depend on its stage of completion, the role and the expectations of the implementing company. The personnel costs will therefore shape differently when it comes to the roles and the stage of the project.

If a person delegated to the project team plays a key role in the organization, the reducing of the operational working time spent by this person may result in the turmoil of the company functioning. The chosen project team should not paralyze the ongoing work in the company and at the same time it should ensure the success of the project with optimal personal costs.  
(Allen D.,2007)

#### 4. RESEARCH RESULTS ON TYPES OF COSTS

**Figure 2:** The percentage ratio of costs to be taken into account when choosing information system



Source: own research

The examined companies when choosing the information system generally have knowledge on the types of costs that will have to be incurred in deciding for the implementation. Depending on the cost item, from 20% to 40% companies did not take into account the particular types of expenditures while taking decisions. The detailed percentage values are shown in Table 2, which also presents the percentage of the companies which estimate ad valorem the different categories of the costs.

**Table 2:** The classification of costs when choosing an information system

	Type of costs	The costs which were not taken into account	The costs which were taken into account but they were not estimated	The costs which were taken into account and they were estimated	TOTAL
1	The costs of investment and development	21,90%	50,50%	27,60%	100,00%
2	The costs of maintenance and repairs	27,90%	41,40%	30,70%	100,00%
3	The costs of maintenance and repairs	40,00%	20,00%	40,00%	100,00%
4	The cost of salaries for the professionals	35,90%	19,40%	44,70%	100,00%
5	The cost of the license	28,80%	26,90%	44,30%	100,00%
6	The staff costs	42,20%	27,50%	30,30%	100,00%

Source: own research

Table 2 shows which cost aspects were taken into account in the selection of the information system. Therefore we can notice that the personnel (staff) costs and the training costs in 2/5 cases are not at all taken into account.

This may indicate the lack of a comprehensive look at the process of selection and implementation of the system, or it may indicate a narrow budget of the project and the omission of these costs. While training costs are external costs and ultimately the company can streamline the trainings out of the system or run these trainings using less expensive methods (e-learning, train the trainers) , the personnel costs are internal costs which the company will have to incur by engaging its own staff for project activities. The personnel costs are somewhat the costs of lost opportunities, which is the work that could be done in the time devoted to the project by our staff. The experienced organizations are aware that the participation of the persons from the organization in the project member team is critical, so that the project can be successful. Consequently, after the implementation of the system the personnel costs incurred for these works will pay off by making business processes more efficient, by the sales increase or by other factors on which the information system will have an affect.

Noteworthy is also the fact that relatively just few organizations estimate accurately the costs of the production of the information system. While the awareness of existing costs is large, less than half of the companies make attempts to calculate these costs. For the cost of investment and development, costs of maintenance and repairs and personnel costs, this percentage is only around 30%, while for the other costs it is about 40%.

## 5. CONCLUSION

The growing information awareness in the organizations, the wider range of information systems and the complexity of business processes cause that the choice of the system for the company in today's circumstances, is not easy. In addition, having in mind the continuity of the company work and taking care of the regime cost, the companies when choosing a system are driven by a number of factors when making decisions of purchase. The article presents the most important factors of the general nature, the run research allow to make the kind of a ranking list which systematize the factors from the most important ones to these less important from the point of view of the surveyed enterprises.

Totally separately the issue concerning the costs was treated due to the fact that nowadays a large number of organizations when choosing the system must head for the costs as the key factor. These

costs have been broken down into components taking into account the whole process of implementation and operation of the system. The results of research show a high awareness of the company when deciding on the system basing on the prism of costs. Considering only the aspect of the costs in the long run may prove to be fatal. It can be proved on the example of experience related to public tenders in which the only factor of the choice is the offered price.

At the stage of implementation or operation, it often turns out that the cheapest product does not meet the expectations of the customer, or even it cannot be adapted to the specifics of the company. A lot of such examples of the failed implementations can be attributed to the fact of relying solely on the criteria of price. Therefore, the author showed a number of factors not related to the costs that are important from the point of view of the organization. The results of research showed that the cost for the 69% of respondents is an important factor (summed up 4 and 5 responses), but even more important to the respondents than the costs are: compatibility, security, usability, performance, and service and technical support. These results are encouraging and if only the organizations when selecting the system will put up over the price the above mentioned criteria, then we can be confident about the final result of the implementation project.

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