

## **DILEMMAS OF CHOICE OF THE ENTERPRISE SYSTEM IN THE MEDIUM SIZE COMPANY**

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**Abstract:** Effective management in today's competitive environment requires the managers make the right decisions based on up-to-date business data. Timeliness of data is therefore the need to effectively administer your company's assets, as well as material that immaterial. The use of modern information technology allows efficient management of assets, even very large companies. Information technology support managers work in every type of business from the micro, small, and by the average to large companies. Without their use it is impossible to effectively compete in the global economy, based on knowledge, characteristic of this age.

The theme of the article is to present the business dilemmas related to the choice of the enterprise system for a company. The aim is to propose, on the basis of the case-study a particular production medium size company, the algorithm of choice the integrated management system. The company has a number of applications, and after examining their use it'll suggest for a company the solution of its problems through the implementation of the integrated management system. There is a possibility of purchase an applications, a outsourcing and the use of a hybrid, i.e. the use of your or purchased applications in main management processes in the company, which will complement the additional outsourcing applications. Case-study company presents dilemmas in choosing the right solution for your business.

**Keywords:** enterprise systems, application selection.

### **1. The difference between computer management systems and enterprise systems**

The enterprise (integrated management) system is that part of the system information of the organisation which has been computerised. Its task is to receive and transmit information from other areas of the organization and its environment, but above all support of management. It includes the most important activities in the company, and its basic feature is the integration of all company data entry, disposable, available immediately in each module, by any authorized user. The integrated management system covers all, or most of the areas of activity of the company, integrates data and processes, and also has the ability to fit the needs of the enterprise, which continues to change in a global economy. It is also possible to later join the following system modules, supporting other areas, which the firm with the development may need [1, p. 121]. Thus, the integrated management system helps solve all the major problems of the company.

Not all computer management systems are integrated. If they do not have a common database, or individual applications are not connected, there is no integration and effective use of systems with different databases is difficult, and even impossible. Therefore, the management company that has a computer applications, but not integrated is highly effective and can lead to significant losses in the company, and consequently to the deterioration of its competitive position.

## **2. Dilemmas of choice of enterprise system in the company of medium size – case study**

### **2.1. Short description of the company and the applications used in it**

Analyzed company is production company of medium size, with the number of employees 200, with the legal form of the limited liability company, located in the province of Lublin. It is part of a large group of foreign company. The company's organizational structure staff-linear. The value of marketed production from year to year increases and the crisis does not significantly affect the company's operations. It is a company intensively developing. The established strategy of the company, specializing in a specific range of technologically advanced and tailored to clients gives him an edge in the market. However, to maintain its position the company must continue to develop and introduce new solutions.

The company owns and uses a number of computer applications. The computer systems used in the analyzed company are:

- CMS (Content Management System) is a content management system and is used for preparing offers for customers. The system operates on the database MsSQL,
- SOLIDWORKS is a 3D graphics program, in which the Construction Department is preparing detailed drawings of parts and products, and creates a visualization of the products,
- Microsoft Excel is a basic spreadsheet program which creates a sales pipeline report. There are introduced to it the numbers of orders, production time, the severity, and the date of sale,
- Symfonia Handel is a program to help support the magazine and trade. With his help, orders are generated for the missing materials suppliers. The Symfonia Handel contains also the database of the contractors. The program runs on a separate database MsSQL,
- RSS (Resource Scheduling System) it is a resource planning system. With its help the technologist checks the load of machines, determine where, when and what time you perform an operation. He is also preparing a guide on how to be made the item. Each employee is required to log on to the system and enter the data, how much time spent on the execution of the work. The information are compared with the assumptions. The system operates on the database PerrasiveSQL,
- Symfonia Finanse i Księgowość is an accounting program. With its help billed invoices from contractors, and performed all accounting operations. It runs on a separate database MsSQL,
- Kadry i Płace Mikrobit is a program of cash and trade. With his help, settlements are employees of the company are calculated wages, adjusted operating time employees and prepared personnel and payroll records. The program works on its own database MsSQL,
- System RCP is a Registry of the Working Time of employees. Employees are held accountable on the basis of job cards, data from the RSS and the program Mikrobit, all the information is transmitted to Accounting, which combine information and determines the salaries of individuals.

As you can see the company has a variety of computer applications, covering almost all areas of the business and for the functioning of the company. Despite the fact that many of them are working on a database MsSQL, in any case, it is a separate database and they are not integrated with each other.

## **2.2. Study of utilization of the company computer applications**

To diagnose the use of available computer applications in the enterprise were conducted two types of studies - structured interview and observation.

The observation was made open to the public and lasted four days, and the staff knew the purpose of the stay of researcher. In the first days was observed working in the Procurement Department. It was noted that the person responsible for the order and supply does not have the necessary data on the stock. In the program he can check only a prepared list of materials, then he must personally go to the store and see how much and which material is of the stock. This solution generates a high risk of mistakes. Then after checking and recording the material deficiencies in the database searches are vendors materials data and, on this basis, orders are created. Material stocks are not exactly calculated, some semi-finished products are in arrears, and the other is not enough. Another division which was observed was Finance Department. It was noted that most of the time the Accounting needs for settlement workers. This is done with the help of three applications, each working on a separate database. The system is RSS printed worksheets in which is shown how particular workers time spent each day on individual details and order. The data are adjusted and combined with those from the Register of Working Time. The accounting must manually count all information and calculate the wages of individuals. It takes a few days each month. It is employed for this purpose an additional person. The data are entered into the program Microbit, the work is laborious and easily in it by mistake, which cannot be avoided. It wasn't noted that during the settlement of customers and suppliers there were bigger problems. Over the next days were observed departments of Marketing, Production and Planning. It is noted that the data necessary for the production and execute orders, were located in different databases are not integrated with each other. Separately, there are orders from customers with precise guidelines and the time needed to implement them, in a separate application are prepared a list of materials and data are contractors, and even elsewhere is calculated occupancy of machines and resources allocated to specific tasks. Each employee if necessary checks he needed information in another database, and on this basis does its work. Such an arrangement is unreliable, it takes too much time.

Then it was followed by a public categorized interview with fourteen employees from different departments. Subjects of the interview were directors and masters of the departments of Production, Planning, Customer Service, Purchasing, and Marketing department employees. Because during the observation, we found that the biggest problems are located in the Financial Department and Supply, and additionally other employees wouldn't be able to answer to the questions about the problems of storage, or for the settlement of employees, it was created three different versions of the questionnaire interview.

During the observation noted problems in the calculation of working hours and wages, it was decided to investigate the employees concerned. It has been noticed by employees the problem with mistakes when calculating the hours worked by the Accounting and payroll. Five people met with such a situation when you are working from twelve. Although it is a minority, the problem exists. The problem of bad chargeable hours notice only the employees of the Production Department, each of them met at least once with such a situation. The reason for the confusion is the settlement of workers according to the hours worked and the specific orders, and the lack of linked databases and the need by joining of the independent information by the Finance Department generates errors.

Orders of the materials are an important part of the production and operation of any

enterprise. Mistakes lengthen delivery times and work, which generates an increase in the cost of the company. Every employee, which this area of activity concerns noted this situation: eleven persons often, and seven sometimes. Nobody answered this question rarely or never, the problem is widespread in the company. Department in which employees work did not matter for a response.

Inventories and their normalized size are very important in the work of the company, affect both the costs and the possibility of rapid execution of orders. An important part of their calculation is correct, frequently updated database and a good flow of information.

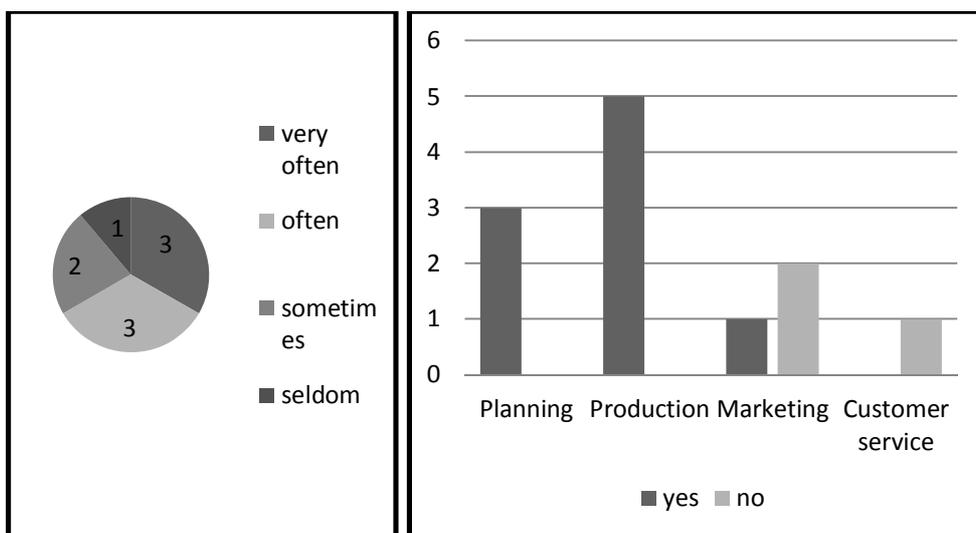


Fig. 1. The frequency observed by employees defaulting inventory in stock (Fig. left) and by the departments of the company (Fig. right), number of people  
Source: Own research

The problem of defaulting inventory in the store is fairly common in the enterprise and relatively uncommon. All subjects Production and Planning staff and one person from the Marketing Department at least once met with such a situation.

For efficient planning is extremely important to accurate data on all activities in the company, executed orders, activities, materials, equipment, employees, and suppliers. When the production plan differs from the company's capabilities and the reality is that he was ill-prepared. The vast majority of the employees noticed a situation where the implementation of the final order differs from the production plans, including six persons often, four - sometimes, and one rare. Department does not matter on the visibility of the problem.

At the time of the planned execution is influenced by many factors. Among other well-calculated demand of materials, labour, equipment and occupancy time of the individual parts. Among those, among which the study was conducted, six employees answered that sometimes, and six people that rarely observed situations in which delivery times to customers was delayed. There are situations in which the orders are not carried out on time.

An important element of the work is the appropriate allocation of staff, both in terms of

quantity and type of specialization for specific tasks. The correct calculation of the necessary human resources requires accurate information about the workload of orders, execution time details, as well as the intended purpose.

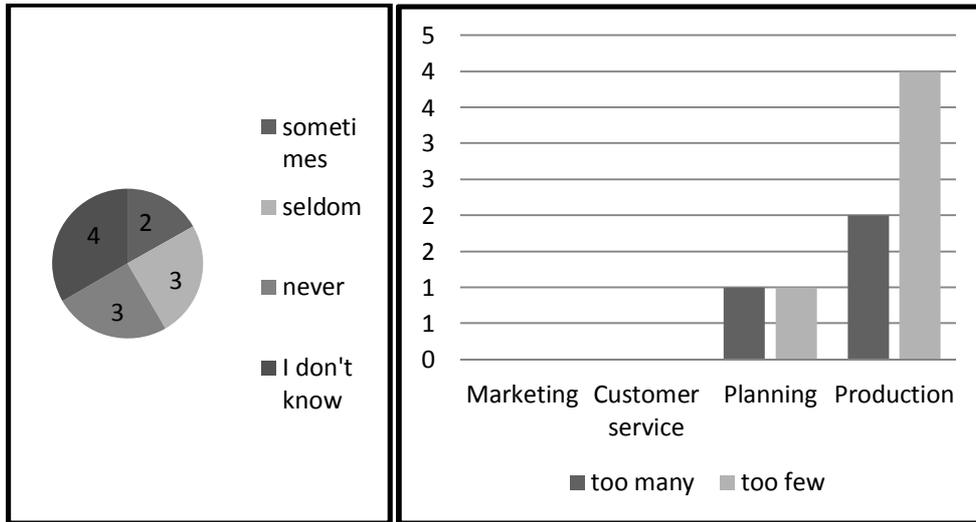


Fig. 2. Frequency of first noticed the wrong side of the number of employees to jobs (Fig. left) and by the departments of the company (Fig. right), number of people  
Source: Own research

By examining the incidence of first noticed the wrong side of the number of employees to jobs two people replied that sometimes met with such a situation, three seldom, three never, and four was not able to tell because the situation does not apply to them. This problem is only noticed among employees of Production and Planning. The reason they give out errors in the calculation of demand.

Downtime of machinery are very unfavourable situation in the undertaking. The reason for the downtime may be too small for the number of orders, or wrong calculations concerning the occupancy of the equipment. Six from the workers never noticed downtime of machinery in the enterprise, and two workers rarely noticed the situation. This means that the company does not have this problem and usually makes good use of its machinery.

In an interview with the head of Supplies it had learned that the company's stock is not included in any database. This situation generates too many errors, which, together with the frequency of their occurrence are presented in the next table.

The most common problem in this section are wrong-calculated material inventories and excess. Sometimes there are also errors on the quantity of ordered goods. Rarely there are errors on the estimated time of delivery, the type of ordered materials, as well as delays in delivery and delay in the execution of orders for clients. According to the head of Supply Division one, common database would help the company significantly improved its work, eliminate errors and speed up the procurement and supply of materials.

Tab. 1. Problems noticed by the head of Supplies along with the frequency of their occurrence

|  |       |        |           |       |            |
|--|-------|--------|-----------|-------|------------|
| Bad calculate the quantity of ordered goods  |       |        | X         |       |            |
| Wrong calculated delivery                    |       | X      |           |       |            |
| Mistakes in orders for the type of materials |       | X      |           |       |            |
| Too large stocks of material                 |       |        |           | X     |            |
| Delays in deliveries                         |       | X      |           |       |            |
| Delays in execution of orders for clients    |       | X      |           |       |            |
|  | never | seldom | sometimes | often | very often |

Source: Own research

During an interview with the Chief Accountant of the company, it turned out that a very large problem is the accounting staff. It takes too much time, all data must be entered manually from different applications and counted, the company employs for this purpose an additional person, which generates unnecessary expense. Sometimes, though rarely, the staff noticed errors and coming complaints about billable hours.

### 2.3. Diagnosed problems and the proposed solution

Analyzing the results of the research, it was found that the biggest problem in the enterprise is the lack of a single, integrated database, which could be used by all employees. Using multiple independent applications causes chaos and lack of flow of information necessary for the good work of the company. Employees spend a lot of time for self-integration of parts of the data. This problem has been diagnosed in the Department of Planning, Production, Marketing, Procurement and Finance. Sales reports are manually counted and performed in Microsoft Excel. Assumptions production plans often differ from the results of actual production. Finance Department needs too much time for the monthly billing staff, and integration of data collected from different applications generate errors and increases job. In conclusion it was noted that the problems are mainly due to distinct databases and applications used within the company. The solution to the problems of the company would be to use a single integrated management system.

Offer of the companies, both Polish and foreign, offering integrated management systems is very big. Selecting the appropriate application and its suppliers is a key element of effective implementation of the system. The product - enterprise system is offered by software vendors in three options. The first - it is the purchase of software for the property, the second - service model (cloud computing), the third - a hybrid. The first option is to purchase the application, which requires the possession of servers and specialists to take care of the system and the hardware. The second option is hiring a software lies in the fact that the company providing the service provides software, as well as your servers where the software is installed. Companies benefiting from the services does not need special equipment or servers, it takes only use the system, and this is done through the Internet. Users log into the servers provider which stores all data and information about the company. This fee covers a monthly fee for the use of the system. The task of the service is to continually adjust the system to the needs of the enterprise and repair any errors, no extra

charge. The third option - a hybrid is a combination of the two preceding models, and is owned or purchased use the application to manage key processes in the company, the application shall be supplemented by additional applications or functions of a specialized outsourcing company.

Under proposed a simple model selection scheme integrated management system.

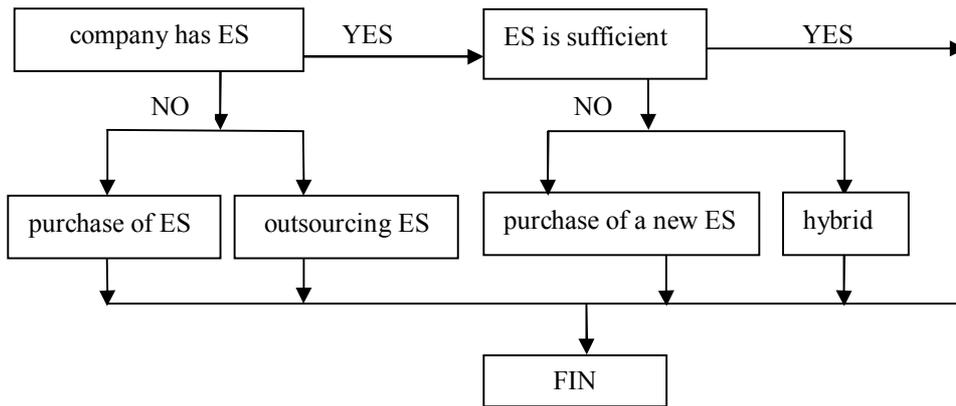


Fig. 3. Algorithm for the selection of the option of an enterprise system (ES)

Source: Own research

Using the above model and based on the company's research found that investigated the company does not have an integrated management system and therefore can only purchase a new application or use of the rental application specialist company (hybrid cannot be used). Searching for application providers sought a national company, supporting the Polish economy, but also offering an attractive price. It was decided to offer the product of the company Comarch. It is a large Polish company, according to prepared in November 2011. economic magazine it was ranked "Home & Market" in the thirteenth place among the top 100 IT companies in Poland [9]. Among the available systems in the Comarch company has been selected ERP XL system designed for medium and large enterprises. The company allows you to select the necessary modules that adapts and implements for each company. The choice must be made between two options: purchase the software and outsourcing. The table below presents the advantages and disadvantages of both solutions.

Comarch ERP XL in the service model has more advantages and fewer disadvantages than buying an ERP system Comarch XL. A significant disadvantage of using the cloud is the need for continuous Internet access and data security. It is, however, very intensively developing area and data security is high. Modern systems have a number of safeguards to protect data. While the purchase of the system implies the possibility of mismatching and implementation, which could not be removed without incurring costs, which will generate a huge losses.

Tab. 2. Advantages and disadvantages of buying software and cloud computing

| solution               | advantages  | disadvantages   |
|------------------------|---|---|
| Purchase of the system | <ul style="list-style-type: none"> <li>- The main costs incurred are only at the beginning of system purchase</li> <li>- Independence from external people</li> <li>- No risk of data leakage from the enterprise</li> </ul>  | <ul style="list-style-type: none"> <li>- Very high initial cost of purchasing software</li> <li>- Additional costs associated with the purchase of servers</li> <li>- The costs associated with the employment of implementing the system</li> <li>- Compensation of employees caring for the system</li> <li>- Additional costs in the event of changes in the company and the need to fit the software</li> <li>- The risk associated with the illness or absence of the staff responsible for system</li> <li>- Downtime in the event of a deterioration of the system</li> <li>- High risk in the event of bad implementation</li> <li>- The relationship of one person involved in the system</li> </ul> |
| Cloud computing        | <ul style="list-style-type: none"> <li>- Costs related to only a monthly subscription and training</li> <li>- High flexibility</li> <li>- Third party product adapts to the changing needs of the enterprise production and</li> <li>- Immediate repair the system, for which the company does not incur costs</li> <li>- No risk associated with absence of disease or any employee</li> <li>- No need to employ additional staff</li> </ul> | <ul style="list-style-type: none"> <li>- The risk of data leakage enterprise</li> <li>- The need for continuous access to the Internet</li> <li>- Dependence on external company</li> </ul>   |

Source: Own research based on data from the IT companies

When selecting the best system and solutions it was taken into account the needs of the company, the experience of companies selling systems, as well as the advantages and disadvantages of each solution. Has already been established that the company needed an ERP system that integrates most of the activities and areas of the company and will be the best provider Comarch Poland, which has extensive experience and success in this industry. Selection took place between the purchase of the system, and use it in a cloud of Comarch. Analyzing the advantages and disadvantages of each solution, and the cost of their implementation, it was decided that the best option would be Comarch ERP system XL module services. For making a choice provider appealed a lower cost compared to the

competition, as well as flexibility and matching solutions to the needs of enterprise applications to date, no extra charge. The company will be able to integrate almost all areas of activity and improve their work, offsetting the risk chosen the wrong product and the wrong implementation. In addition, if the company is not satisfied with the solution and after some time come to the conclusion that the better option would be to buy your own system (no dependence on access to the Internet and external companies) will be able to purchase such a solution. The risk associated with the purchase will then be smaller, because you know exactly what the company needs, which modules are necessary and how to implement them. Also, the employees will be well prepared.

In summary, the best solution to the problems of the company is the product of Comarch ERP XL module service provided by Comarch, available for a monthly fee in the cloud.

### **3. Conclusions**

The introduction of enterprise systems is becoming a necessity of any type of manufacturing companies because it allows fast response to changes in the environment and the efficient management of the company. A good flow of information and integration of all areas of work of the company that such solutions provide, are the way to achieve the success of the organization, its competitiveness, reduce costs and increase profits.

The production company does not have an integrated management system and uses many different applications. This generates confusion in the management of the company, which translates into the losses. Integrated ERP management system is designed to streamline the operation of the entire enterprise, ranging from better management, the improvement of work in almost every, the smallest area of activity. An important function of the introduction of the system is also a significant reduction in the company's costs and maximize profits. It will be translate into an increase in its competitiveness.

Proper selection of the appropriate application is a prerequisite for the effective use of the implemented system. This paper proposes to the company a system of the Polish company Comarch. It also presents a simple algorithm for selecting a suitable company form of use of the enterprise system. Companies that do not have an integrated management system can purchase applications or rent application in a cloud computing. Each approach has its advantages and disadvantages, but the case-study of the medium-sized production company shows that for the company is the second solutions the best. The company does not have to have your own server or servers for data collection does not need to employ specialists in the care of databases and same application, there have not also perform a backup of your database. In addition to the financial savings the company has access to free software upgrades, as well as to remove any apparent errors in the use of the application. Therefore this solution is the best for the company.

Another problem is as effective implementation of the system as well as its efficient use, but these are issues for further extensive studies.

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