

APPLICATION OF RPA SOLUTIONS NEAR ERP SYSTEMS - IN THE BUSINESS ENVIRONMENT RELATED TO THE PRODUCTION AREA. A CASE STUDY.

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Abstract: The business environment is constantly changing in terms of accepting new technologies. RPA - Robotic Process Automation solutions are starting to enter more and more businesses in our country. The diversification of working methods with the multitude of challenges in the production environment, has led to the involvement of as many technologies as possible, which will help the business environment in our country to face the challenges. Maybe this will be a turning point in the activity of those who deal with such businesses - production, sales and distribution, automotive, pharma, etc. To meet today's demands, you need to invest in state-of-the-art technology. RPA is one of these technologies that will help Romanian businesses grow. In this article the author will want to exemplify, for a client from our country, who has businesses directed towards the production part, car upholstery and various accessories for the automotive area. The article will discuss what this customer does, the risks involved in introducing these new technologies, how the business has faced the new challenges. Also, during the implementation, a series of characteristics were collected, with the help of which, current or future decisions were made, regarding the adaptation of this new way of working, to the requirements of the business environment in our country. We will also discuss the two processes that have been automated within the company, namely make-to-order and make-to-stock, the advantages and disadvantages encountered, the adaptations and changes during the implementation.

JEL classification: C61, M15, M41, P41

Key words: RPA – Robotic Process Automation, SAP Implementation, ERP - Enterprise Resource Planning, PP – Production Planning

1. INTRODUCTION

Enterprise Resource Planning (ERP) is a system that can make significant changes to an organization. The system includes a combination of business procedures. They are grouped into departments in a single database. This database can be accessed and updated in real time from any connected device. The main feature of an ERP system is that it helps to integrate all the business functions of the organization in a single database, providing an accurate view of the business.

The ERP systems are designed to process a company's transactions and facilitate its integrated planning. It also provides quick access to production / customer / supplier information. The most important advantages of ERP implementation are the

new management and data collection processes that can be accessed much easier and faster (Fernandez D. et al., 2017). ERP systems have been accepted over time, because they had a great impact on the business environment: they organized the activity, they modeled legacy processes that required an adaptation of what now exists on the market, they organized people, they were the ones that formed the basis of the decisions necessary for a good development of the activity (O'Leary, D. E., 2000).

These imposed on the business environment an urgent adaptation to the procedures and working environments related to such a scenario. Initially, these systems appeared in the economic area, but, later, the technical departments also wanted an adaptation of the existing economic / technical processes to what is new in the technological era. Perhaps initially, these changes, brought about by the implementation of an ERP, were not so pleasant, but, over time, they proved beneficial without discussion. Companies in our country have longed for such an adaptation, seeing that the market economy requires such an information system (Eslam N. et al., 2012).

There would be much to discuss, from experience, in large companies, it has long been highlighted the differences with which such an ERP system came, ie with the fact that economic and technical processes of any kind could be modeled. Simply adding data to a database did not solve existing problems in companies. A series of algorithms had to be implemented, which, together with the explanations of the environments in which they were implemented, led to a well-deserved success (Leu J.D. et. al., 2009).

It is well known that, after the implementation of such ERP systems (SAP, Navision System, METYS, Oracle Application, etc ..), the advantages began to flow for companies: the data were collected in the same place, the software development mode was unitary, there were a number of improvements in the way of working, a unitary way of working was determined, the connections between the departments were much improved, the inter-company relations were brought to a common criterion (Zhou Y., 2009).

2. LITERATURE REVIEW

The implementation of such a system has brought a series of benefits, in our country, to companies. Maybe it sounds a little much, they brought a better organization of the activity, so the performances started to increase. The fact that each department was able to enter its own data, in the same interface, was very well received by the business environment. We are not saying that a number of companies in our country have been acquired by companies from abroad, these coming with a type of ERP, adapted to the business environment (Young B. Moon, 2007).

The ERP systems are also considered software packages composed of several modules, such as human resources, sales, finance and production, which ensure the inter-organizational integration of information through integrated processes. This software, ERP, has made its place, step by step, in the way of thinking of the great managers in our country, and in other parts of the globe. They thought of another look at the business, in line with other companies, to see how others do, to be better, to have a different perception of modeling existing processes, to invent others, to find work joint parts, that will be capitalized later (Nemati A.R., et. al., 2010). The ERP system integrates all business processes that improve efficiency on its current functions.

However, contracting and using ERP to organize the business depends on critical factors, strategic value creation efforts, and including the correct implementation and efficient management of its operational performance throughout the life cycle.

3. LITERATURE REVIEW – SAP PP – RPA SOLUTION ADAPTED

In this article we will talk about production, about how companies have decided to implement such IT solutions. Initially no one believed in automating processes using an ERP application - in the production area. This has happened, with a major contribution to the fact that the automated industry, in addition to adapted software, will clearly lead to success. Human errors will disappear, the flow will take place in agreed times, the human contribution will be only in the area of quality assurance (Eslam N. et al., 2012).

In the case study, in accordance with the read articles, a reference will be made to the PP specialization, as well as to its adaptation to the Romanian environment. Perhaps one thing we need to keep in mind, the investment in such an ERP system, is not necessarily insignificant, the results covered any expectations. Many articles have written different aspects encountered in the evolution of ERP - in the world - the author of this article, will bring everything he has encountered throughout the articles, one thing to take into account, namely investment versus performance, benefits. (Elragal, A., and Haddara, M, 2013). Any investment in such a system is intended to be beneficial. Any new implementation is intended to bring a plus, which differentiates the company from other companies in the same area of work. One thing is for sure, investing in a quality ERP will bring a measurable benefit (Elragal, A., and Nazemi Haddara, M, 2012).

4. THE BENEFITS, RISKS AND DIFFICULTIES OF THE RPA ADAPTATION INSIDE ERP SOLUTIONS

In a lot of practical domains the research look promising. One area is ERP education in accordance with RPA, AI, etc. solutions. After several years of active education on ERP systems due to universities sponsored by software providers, a significant amount of experience must be gained - what will be found in the business environment, later (Rashid, M. A, et. al., 2002).

Another interesting field is the evaluation of the current state of ERP in international collaboration. Most articles that have tried to capture the differences between different cultures or nations are limited to one or two of them. Simultaneous surveys generate useful ideas on this topic. The concept of ERP seems to be growing and expanding. It is useful to investigate topics such as how companies using the ERP system perceive these trends, how they will cope with change, what tools, methodologies, models are useful in their expansion efforts (Young B. Moon, 2007). Implementing an ERP system is a challenging and costly task, which not only requires rigorous effort, but also requires a detailed analysis of the critical factors that are essential for adoption or implementation (Weidmann C., Teuber L, 2009). Choosing an RPA solution to help automate existing processes is also a big challenge. The challenges of implementing ERP systems can be viewed from four different perspectives, such as: technology selection; change management, knowledge management, emerging technologies. By taking these perspectives into account in ERP

implementation projects, organizations can achieve several benefits, such as saving time or extra effort (Shree Ranjan, 2016). A number of features were taken into account in order to highlight the importance of implementing an ERP system in a company. These highlighted the fact that any implementation brought a plus: value, performance, reduction of human error, teamwork, innovation, etc., (Amini M. and Savafi, N, 2013). From the experience of the implemented projects, in various areas of competence, resulted a positive score, of satisfaction or desire, for the implemented IT processes to bring success (Stefanou J.C., 2002). Many things have changed, with the implementation of ERP systems, from perception to work mode, from organization to differentiation of work mode, from indicative thinking per object, to complex work mode, visible in various departments, in same time (P.C.G, 2013). Finally, the author analyzed the effect of external factors, which are related to the external environment of the organization, such as widespread competition, strategy, industry concentration, business value, etc. (Young B. Moon, 2007). For this process, certain questionnaires were created, which the author sent to all decision-makers and project makers. Those who were in the business environment were also involved. During this research, were created certain questions, questions, addressed to the business environment, these being the criterion for distinguishing between the final results accepted by the author, and presented in this case study:

- Q1: how do you feel about the ERP - SAP implementation you have had so far - have you been involved? do you see an improvement in the activity you carry out, day by day?
- Q2: how was the work you did before implementing ERP and how is it now?
- Q3: the RPA solutions - which automate a number of processes, helped you?
- Q4: did you spend a lot of time learning these new technologies or was the learning process easy?
- Q5: is it a faster and digital confirmation of machine utilization?
- Q6: the self allocation on needed machine/process/people is faster?
- Q7: the automated response for new requests and route (routings) information will helped you?
- Q8: the reduced time of delivery process and invoice check is visible?

Therefore, the values that ERP systems can generate, aided by RPA-type solutions, are multiple: operational benefits, automation, financial benefits, investor benefits, user satisfaction, and much more (Ha Y. M. and Ahn H. J., 2014). Sometimes, the value can also be measured by observing the reactions on the current market to the simple announcement of the ERP Project. Valuation methods can be numerous and complex. For example, benefits can be measured by cost savings, time, return on investment, asset turnover, return on assets, market perceptions, and so on. In the following, the author, through figure 1, provides an image of the connection between ERP and RPA.

Production location - solution proposed

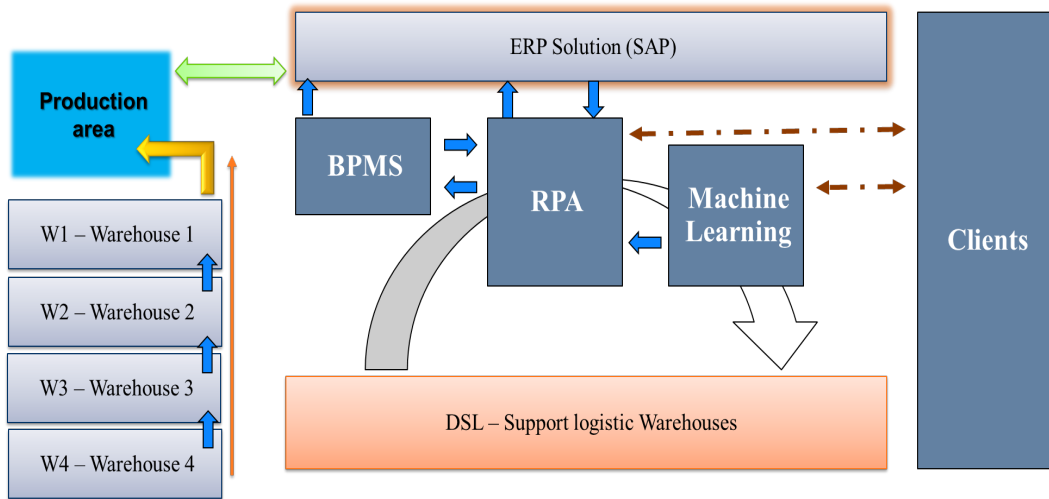


Figure no. 1 – The link between ERP and RPA solution – production view

As can be seen above, the use of all factors participating in the process of implementing the SAP ERP solution (BPMS - Business Process Management Suite) / and RPA solutions, led to the development of an implementation plan beneficial to both parties - company and implementation team.

The answers to the 8 questions were selected by the author according to several criteria: priority, difficulty, complexity, useful, it is a solution with modern methods – ingenuity, stability. The were 43 questionnaires sent, answers were received from 36 participants, the participation rate being 87.80%. Not all the questionnaires had the completed answers, for all the questions.

In the table you will find the code related to the answer with the highest occurrence, ie if there were 36 answers, and most had the answer 1, 1 was used for this paper research. The table below contains data, extracted from research, in accordance with the essence of this scientific paper:

Table 1. The contains results for the existing study

SAP Module	Description / questions	Answers numbers	Priority	Difficulty solution	Complexity solution	Usefull solution	Ingenuity solution	Stability solution
PP	Q1	36	2	3	1	1	1	1
PP	Q2	31	2	2	1	1	2	3
PP	Q3	34	1	1	2	1	1	1
PP	Q4	36	1	1	2	1	1	2
PP	Q5	35	1	1	1	1	3	1
PP	Q6	36	1	2	3	3	1	1
PP	Q7	36	3	2	3	2	1	1
PP	Q8	35	3	2	3	2	1	3

Note: 1 – satisfied; 2: very satisfied; 3: extremely satisfied

Based on the data collected above, we generated a graph to exemplify the relationship between the questions sent and the answers the author had. All these questions were initiated based on the experience of previous projects, as well as the desire to highlight the importance of such an implementation and how it helps to develop the business environment.

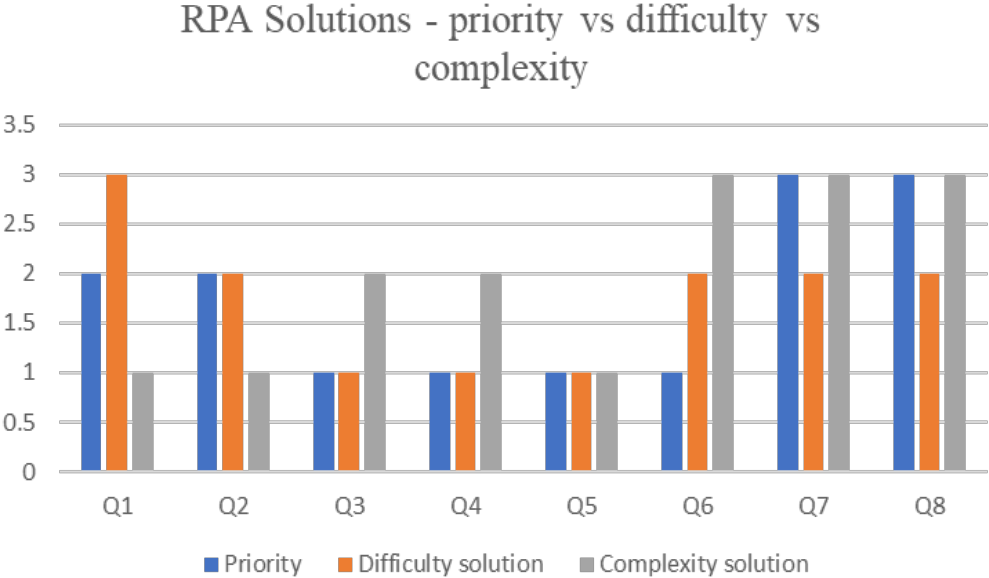


Figure no. 2 – RPA solutions – feedback received

From what can be seen from the graph above, figure 2, the answers provided highlight the fact that these solutions, although not very easy to learn, use, help the business environment a lot, facilitating a lot of new economic process modeling.

6. CONCLUSIONS

Maybe the appearance of ERPs in our country was a big plus, for all of us, those who carry out our activity in this business environment, but the appearance and integration of RPA is a great victory for the business in our country. This research paper wants to highlight how quickly or not, if these solutions have adapted to us, for automotive area, and if this, highlights an increasingly better adaptation of employees to new technologies - even a learning of them as soon as possible. The average age in this company was around 30 years, which is also visible from the answers to the questionnaires.

It is a gratifying fact that in our country new technologies are appearing. They will help us to be competitive, to have the necessary space, time, well-trained people, to the development of beneficial solutions for production. What is gratifying is the fact that the company's management wants more and more, that the adaptation of the economic and production processes, to be done as soon as possible. This would bring

about an increase in productivity, a reduction in human errors, technical errors, the fact that as many products as possible can be made, necessary in the car market.

Perhaps it would be good to mention the fact that the adaptation of these solutions, their implementation, led to the development of new business opportunities, things that previously could not be done, now with the help of RPA solutions, were solved and created new jobs so necessary nowadays. The ERP solutions are increasingly implemented in Romanian companies, the emergence of these process automations through RPA solutions have facilitated an improvement in technological and economic flows.

Processes such as make to order or make to stock have had significant improvements in terms of actors involved in production processes, their response being much faster and errors have decreased significantly.

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