THE IMPACT OF THE IMPLEMENTATION OF AI AND RPA TYPE SOLUTIONS IN THE AREA RELATED TO FORECAST AND SEQUENCING IN THE PRODUCTION AREA USING SAP. A CASE STUDY.

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Abstract: An overview, from a multinational company, cannot be made without a ERP (Enterprise Resource Planning) systems, this type of system has grown enormously in use in recent years, and for Romanian companies is the most used. Basically to be competitive, you need such a system. Moreover, in the pandemic context in the country and on the entire planet, the impact of the implementation of AI – Artificial Intelligence and RPA – Robotic Process Automation solutions is increasingly seen. The production areas are the most impacted. In this case study we would like to highlight a series of details regarding the implementation - an implementation project - of these solutions in the area related to Forecast and Sequencing in the production area, the main system in this manufactury being SAP. These two areas, on the production side, of a multinational company, have a key role in the elaboration of the production plans in the company. The pandemic context, this year, highlighted the need to develop a plan to purchase software that can help (here we also discuss the fact that many employees have started working from home). This led to the implementation of Software Robots, which requires hard work in modeling existing economic processes. About the meaning of such an implementation project, the risks and problems encountered will be discussed in this article.

JEL classification: C61, M15, M41, P41

Key words: Project implementation, RPA – Robotic Process Automation, AI – Artificial Intelligence, SAP, ERP, PP – Production Planning

1. INTRODUCTION

Information must flow, it must be integrated, the ERP (Enterprise Resource Planning) systems are an integral part of a company's strategy, that's why the role of ERP is huge. The big companies start, step by step, to bring in such a system, all the information that circulates, from one department to another. Step by step and other existing IT solutions migrate to such a type of system. It is unimaginable today's life, in a company, without such a computer system. It may seem paradoxical, but from a simple calculation, a calculation taken from a company operating in the oil & gas area, and which at the beginning of the ERP implementation, in 2005, has in its portfolio, no less than 378 software applications, which worked separately, consumed separately, was maintained for

them around 1 million EUR. The acquisition of this company, led to the implementation of a robust, large, well-known ERP system - namely SAP. Over the years, the role of this implementation has been to structure the existing processes in the company, economic and not only, to reduce the gap between working with multiple software applications or working in an integrated computer system.

The results were extraordinary, after only 5 years, the maintenance cost dropped by half, and the applications disappeared, integrating into SAP, one by one. Now, in 2020, there are about 65 applications that work independently (purely technical and oil & gas applications), but they are also integrated with SAP, send production data, import necessary data from the common integrated system. The advantages of such a system are numerous, from the collection, storage, distribution, exclusion of data redundancy, to the extremely low costs compared to what this type of system offers.

As can be read from other scientific articles (Fernandez D. et al., 2017), this is evident in everything that means the part of data collected and maintained, access to it being made immediately and without losing useful information. Likewise (O'Leary, D.E., 2000), he mentions this aspect, referring much more to everything that means the organization of the activity, of the people who are in the company and who use such a system, to the exchange of information, to each division belongs to the smooth running of the company that has integrated such a system. This paper has 4 chapters, starting with the literature, literature adapted to the area of sequencing and forecasting in the production area, risks, solutions, benefits collected during the implementation process, study results and conclusions.

2. LITERATURE REVIEW

The implementation of a computer system in a company has been discussed and is still very much, the literature highlights a series of articles, we mention here on (Neubauer, 2009) or (Heilig, et all., 2014), which refer to ERP, its integration, its degree of adaptability, we talk about economic processes, about the step by step of the steps necessary to reach maturity. Also in the literature talks about how to analyze the data to be added to the system, BPM - Business Process Management - about BPM Maturity Models, how they helped to highlight the gaps in the phasing of economic processes related to type systems ERP. All of these are things that everyone needs to think about when deciding, in the company they work for, to implement an ERP-type IT system - especially SAP, which is the world leader in the field.

Also from the specialized literature must be taken into account the component of the team that will implement and manage such a system. They must be of an age that allows them to understand how to work with such a system, to understand how it works, to understand the economic processes in detail, so that its use is easy. Another thing that must be mentioned is the fact that knowing a foreign language will always be an advantage in this close struggle to stay in the payroll of work, more and more diversified.

All articles talk about everything that means the possibility of adapting such a system to the economic conditions in each area of the world, how these data exist in such systems are modeled but also about how the analysis before implementing the system should be done. More recently, in the current pandemic context, we want an integration as assiduous as possible with all the applications that, in one way or another, automate integrated economic processes, totally or partially. It is about the appearance of software

robots, which once by their realization, bring a plus in the automation of repetitive things and those that can be done remotely. The use of BPM in the activity of highlighting the maturity of the existing processes in the companies that have an ERP type system, is highlighted, as steps, in figure 1, which helps enormously in view if a process has reached maturity and can be processed later with the help automatic processors.

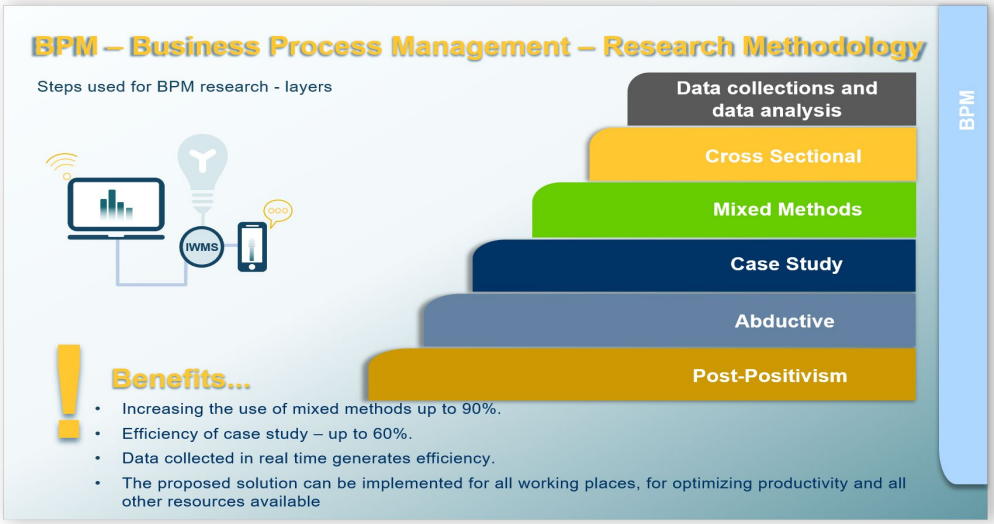

Figure no. 1 – The link between ERP and BPM – production view

As can be seen above, Figure 1, the present research and most of the research done by the author are based on the post-positivist philosophy - that is, in short, the possibility to learn new things, which later to base their decisions. they will take. This research is extremely useful when the desire is to move on to new things, in terms of new technologies, so learning new things is extremely useful.

3. THE FORECAST AND SEQUENCING STEPS – INSIDE ERP SOLUTION

Going further and highlighting what I wrote above, we will go to the production area, namely to a part of it, where the sequencing of the goods to be produced is performed, moreover, by forcasting it is provided shows, based on past data, the future. These steps are necessary in an ERP type system, for the production area, in order to be able to make a correspondence between the production to be made, suppliers, and the company to whom the created subassemblies will be sent. Everything is electronic, meaning that information is received as the parent company, the one that produces the series cars, about which cars will go into production, so that in the Romanian factory, they will enter the series, to be manufactured. Times are calculated based on existing contracts. All this sequencing was done manually, but the introduction of Software Robots created a great image of replicating manual and repetitive work. During the implementation of the automated processes, we had to deal with a series of shortcomings, from an institutional point of view. We had to create a series of interfaces, which did not exist, at the beginning of the project being only SAP and a processing in Excel, ie exported from SAP, processed in Excel, by pivoting, then re-imported into SAP, to be managed to the production module.

These stages were time consuming, stressful, did not create added value at all, so they were replaced by automated processes based on the knowledge existing at that time. As discussed above, the maturity of the implemented processes was quite good, so such a transformation was possible, as is described in the following picture, Figure no. 2:

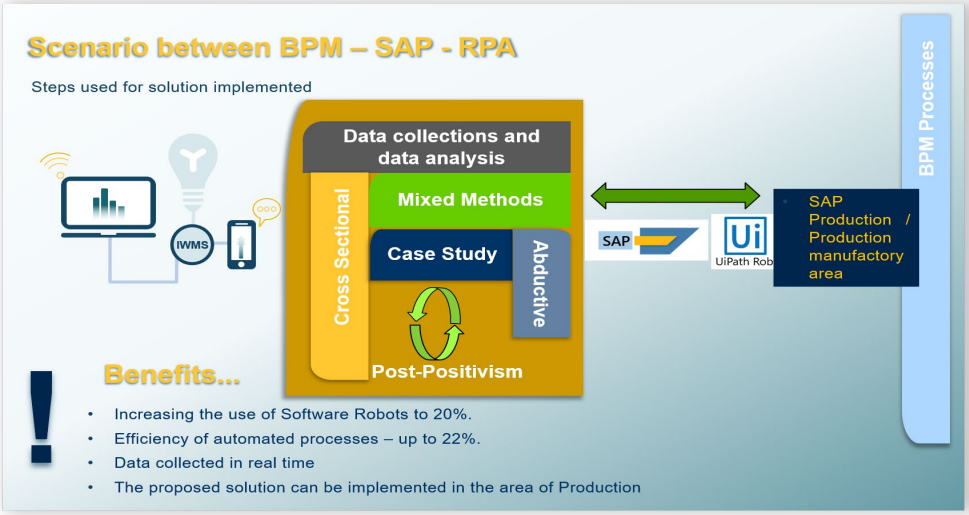

Figure no. 2 – The scenario implemented BPM - SAP ERP - RPA

4. THE RISKS AND DIFFICULTIES OF THE IMPLEMENTATION PROJECT

The implementation project highlighted a number of irregularities, encountered in other projects, but now the case was completely different. The project had a series of video sessions, the pandemic risk, highlighting an unprecedented reality. It is for the first time when the analysis on account of the existing processes was done online, the discussions having a much higher frequency than if they had been carried out on the spot, ie in the company. Another thing to consider was that the time allocated to the project, physically, was over 65% longer, which is again unprecedented.

All the video sessions were recorded, and in order to be able to make all the necessary documentation for the project, the videos had to be reviewed many times, in order to understand what the business environment asked to be done. Among the functional consultants on the project, there was a great deal of frustration, and the work in the questionnaires was double, even better.

Another interesting thing is that every day, but even every day, there were a series of discussions between the functional consultants on the project, with reference to what the business environment wanted. What is to be said is that the understanding, using the video environment, was extremely low. Another aspect again, to be taken into account, was the configuration part, from a distance, here the involvement of the project manager was very important, and this could not be done, as was normal, through a very well done. There were at least two work sessions each day, which involved a great deal of effort and stress for all those involved in the project. Even the involvement of the business environment was extremely weak, they being also in turn, overwhelmed by the current situation from a pandemic point of view. Regarding the analysis made, in this extremely difficult period,

for all the environments involved in the project, 5 questions were thought sent to all the participants in the project, namely:

- RQ1: do you consider that this implementation is opportune in this critical period?
- RQ2: how do you consider the way of working, by videoconference, zoom in this case?
- RQ3: how do you consider the involvement of the functional consultants in the elaboration of the project documentation, how clear and comfortable they were?
- RQ4: how do you consider that the time allocated to this project, from the perspective of the business environment, was enough time?
- RQ5: how do you consider that the times allocated to this project were, from the perspective of the business-consulting-management relationship, was there enough time?

In this survey (Table no. 1), 43 emails were sent, 31 responses were received, meaning a participation of ~ 73%, which was a good thing in terms of results. We have below, the results obtained, we considered the following key points: 1 - 80% satisfied, 2-satisfied from 30% to 80%, 3 unsatisfied:

Table 1. The contains results for the existing study

Description / questions	Over 80% - Satisfied	Between 30%and 80% Satisfied	Unsatisfied
Q1	2	3	1
Q2	1	2	3
Q3	2	3	1
Q4	1	2	3
Q5	1	2	3

Note: 1 – Over 80% - Satisfied; 2: Between 30%and 80% Satisfied; 3: Unsatisfied

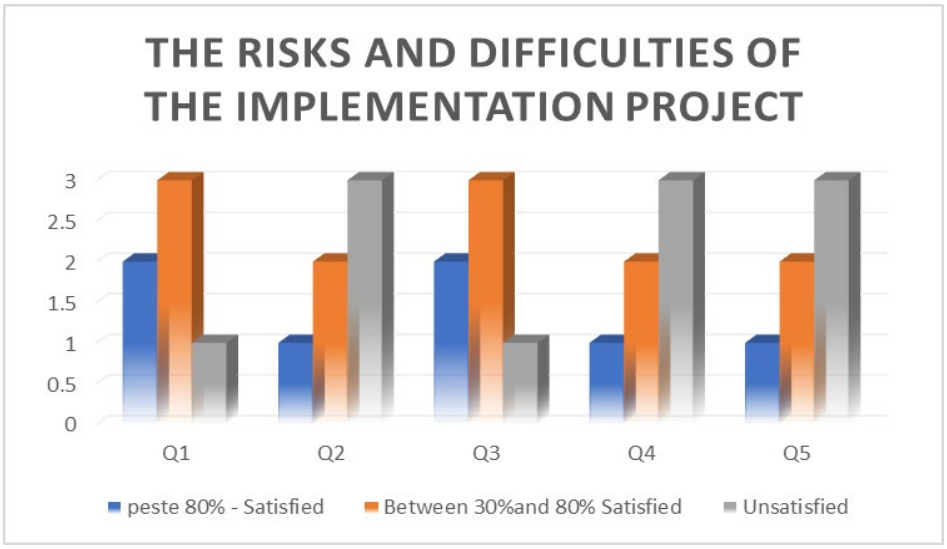

Figure no. 3 – Project implementation – feedback received

Regarding the results obtained, seen in the table above, it is clear a very high degree of dissatisfaction from the three parties involved, management, business environment, consulting firm appointed to implement these changes.

5. CONCLUSIONS

The conclusions of this case study are different from several perspectives, which leads us to put on top, however, the uncertain situation of this year 2020 pandemic and difficult to manage, for all parties involved. Listening to and reading the results obtained from the survey, it is clear that all parties involved did not feel comfortable at all, the work done being very difficult to manage. Everyone was unhappy, the allotted time being double and even triple. Perhaps, this pandemic year, it will have very important repercussions in order to elaborate future projects, the degree of satisfaction being very low. If we look at the three parties involved, we can describe the involvement of the company's management as very low, this being due to the current situation, in the country and around the world. A non-involvement of the management led to endless discussions, no one taking their decision point in their own tomorrow. From the business environment, he wanted to get involved, only there was a very strong ignorance of the existing business processes, here the involvement of functional consultants was over 30% more. Regarding the involvement of the consulting company, it was involved almost twice as much as the work done on a normal implementation project. Thus, although this contract was negotiated in 2019, for the year 2020 it can be considered that the results obtained, from a financial point of view, were extremely poor. The project was successfully implemented, but the satisfaction of a normal implementation was not at all extremely good.

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