Return of investment initiatives in business process management

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Abstract: This study aims to verify the perception of business process management (BPM), namely benefits, maturity, budget in the company and qualitative factors that make it difficult to measure and to understand the relevance of return on investment (ROI). It is also intended to create a conceptual model that makes it possible to evaluate the valorisation of BPM within an organisation. The results indicate that BPM has gained higher relevance and maturity in organisations, being noticed through the high range of budget that is allocated to BPM initiatives, as well as the higher outsourcing services and internal teams. Regarding the barriers of ROI’s implementation, the one which is the most common one was the top managers. This study had limitations at the sample level and for future research these limitations should be overcome with the study of the dependency between economic value added and earnings per share and BPM budget variables using ROI.

Keywords: business process management; BPM; return on investment; ROI; model ROI; business process management notation; BPMN; maturity of BPM; investment valuation metrics.


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1 Introduction

The business process management (BPM) has become more important within organisational structures of companies (Harmon, 2016). BPM is the field of management that has gain its relevance in the business world, with growing concern about processes, reengineering, and continued efficiency and effectiveness (Cull and Eldabi, 2010). This concern has changed the focus of the companies in the control of the processes in force (Ravesteyn et al., 2012; Alotaibi, 2016), seeking to understand which mechanisms should be used to make them more efficient, effective and client-centric (Janssen and Revesteyn, 2015). It is important to mention the contexts for BPM application are highly diverse and are determined by various contextual factors (Brocke et al., 2010). There are different types of industries and different types of organisation in which BPM should be applied in order to exploit and explore different applications systems (Andersson, 2018). The exploitation and exploration can be calculated in terms of absolute difference and tested the imbalance between them was negatively related to firm performance (Cembrero and Sáenz, 2018). These two concepts are also influenced by knowledge collecting which influences it positively (Agostini et al., 2017), thus BPM is also linked with the concept of knowledge collecting.

The aim of BPM in an organisation significantly optimise and increase productivity while reducing costs (Dumitriu, 2018), thus it needs to be measured properly. One method to measure these mechanisms that organisation usually and the efficiency of an investment is using a performance measure designated as return on investment (ROI). This measure (ROI) is used to measure the ratio of benefit to cost (Kristjansdottir et al., 2018). The application of ROI in BPM is not a straight line since it is needed to take into account the entire BPM life cycle through its multiple dimensions, thus it is not a simple task. Although it is possible to know the amount of the investment of a BPM implementation inside a company, it is more difficult to estimate the benefits in the investment made inside the same company and understand the impact on it. Similar to BPM, ROI has undergone evolution throughout its history, in order to meet the company’s needs. At the beginning of its application, only monetary values were used and analysed. Over time, qualitative questions have been introduced in order to provide different metrics of measurements. In fact, ROI is applied, not only to financial attractiveness of investments but also in the evaluation of the performance of competing investment opportunities and projects (De Risi et al., 2018).

The remainder of the paper is structured as follows. Initially, it is presented the literature review, secondly, it described the methodology used in this study and presented the data analysis. Based in these processes, it presented the final results based in the
showcase with an illustrative example. In conclusions, it discussed our framework and suggests a future research.

This led us to the development of two research questions:

H1 What is the perception of BPM and its components that make it difficult to be measured?

H2 Is it possible to evaluate the valorisation of BPM within an organisation?

2 Literature review

2.1 Business process management

With the market environment becoming increasingly complex, competitive, with greater volatility and at the same time increasing customer demand, it is imperative to try to keep-up with that pace (Janssen and Revesteyn, 2015; Antonucci and Goeke, 2011) of the so-called globalisation of markets (Wittmann, 2014) and avoid paradoxical processes (Heraus et al., 2016). In this way, BPM has evolved as one of the most important management capabilities today (Vom Brocke et al., 2016) and it becomes crucial to know how to manage and adapt (Tbaishat, 2017) the business processes and to identify the opportunities to be able to meet the challenges of the market (Vallejo et al., 2012). In order for companies to ‘evolve’ and become more efficient, both short-term and long-term (Cull and Eldabi, 2010) need to meet the needs that end-customers seek (Alotaibi, 2016), added value. That is why BPM itself has been increasingly applied and has the aim of covering organisational, cultural and IT-related methodologies and several variety of BPM adaptations (Rosemann et al., 2004). Like the definition of process, BPM is not governed by a universally accepted definition (Houy et al., 2010), so there is no reference (Smart et al., 2009). BPM is a holistic approach to management practice (Jeston and Nelis, 2006), where the definition of rules, ‘adjustment techniques’, culture change, employee development for business processes is defined through understanding and involvement of top management (Morais et al., 2014). The main idea of BPM is to develop a process-oriented organisation, eliminating activities that do not add value and improving process fluency (Morais et al., 2014). Since BPM has increased in corporate budgets (Harmon, 2016), it is vital that the investment made will bring the expected return.

BPM’s maturity in a company is measured by the measurement of capabilities to achieve a particular goal through its processes (Bruin and Rosemann, 2005). The BPM maturity model (Janssen and Revesteyn, 2015) bases the success of processes, and consequently of business, on six key factors: strategic alignment, culture, people, control, methods and information technology. The greater the maturity of these factors, the greater the success of the BPM initiatives (which will ultimately be translated into business success). A correct strategic alignment or orientation has a positive significant effect on knowledge management, organisational capabilities and manufacturing innovation (Akbariyeh and Seddigh, 2017).

BPM use several standards for process design, deployment, execution, maintenance and optimisation of processes that can be divided into a structure, semi-structured and non-structured processes (Gromoff et al., 2017). One of the standards used to facilitate BPM is achieved by the BPM, which is specialised on describing how activities interact
and relate with each other (Martins and Zacarias, 2017). Ravesteyn et al. (2012) in his study of the dependence of process maturity, and their performance concluded that there is a linear correlation between maturity and performance since the improvement of process performance can only be completed by increasing the overall BPM maturity in all dimensions of different organisations.

It is important to mention, that the current structure of organisations led to the application of new capabilities, for instance, Weber et al. (2016) proposed some new organisational processes through blockchain technology for companies in order to decentralised and transactional data sharing across a network. The capabilities of blockchain processes in the optimisation of BPM demonstrate how it possible to help organisations to implement execute business processes across organisational boundaries even if they cannot agree on a trusted third party (Mendling et al., 2018).

2.2 Return on investment

For the evaluation of an investment project to be analysed, companies turn to ROI to understand the positive or negative return that a certain investment brings to the organisation, the best way to take advantage of the resources that the companies have and/or collect data to improve certain projects/processes (Zamfir et al., 2016; Philips, 2007). ROI can be defined as a performance concept in any form of investment (Zamfir et al., 2016) and investments are considered resources implanted with the aim of achieving benefits over a long period of time (Zamfir et al., 2016). This feedback can be interpreted in a number of ways. Over time, the focus of analysis has been changed (Philips, 2007). Once the activity of a given function was measured in ‘raw’ terms (for example: number of workers, resources to be used). More recently, the ‘technique’ of analysis has shifted to the actual costs of activities (Philips, 2007). Although the value of a particular ROI analysis has different audiences, its outcome is always expressed through a monetary value of a given investment (Philips, 2007). To find out the percentage related to the return of an investment, subtract the revenues after the investment with the amount invested and divide by itself, eventually multiplying that figure by 100. In order for the ROI to be analysed, it is necessary to know the resources spent for investment and pre-tax operating income and taxes (Zamfir et al., 2016). The result of this formula has two interpretations. If the ROI is negative it means that the project is not sustainable. This means that the higher the percentage of ROI, the greater the return associated with the processes (Zamfir et al., 2016). It should be carefully analysed the risk associated with a given project since the ROI may be high although it may not be the safest to invest. Thus, it can be calculated at any time of the project, it is important that economic longevity is always respected. One of the main assumptions of ROI is the fact its only focuses its analysis on the financial aspect, so that qualitative benefits are not considered (for example, employee satisfaction and motivation, brand image development in the market) (Zamfir et al., 2016). Philips (2007) points out many investment projects fail because of several factors: lack of alignment between objectives and strategy; the real need for a certain project; the monitoring that is done and the collection of information. It is necessary to understand the needs (both performance and learning) of a given project in an organisation, define its objectives to ensure that they are being fulfilled and ensure their interconnection in other departments (Philips, 2007).
To build a solid foundation using ROI analysis, data collection and data availability during project implementation is critical and a suitable indicator (Lotfi et al., 2016). Philips (2007) describes a table of levels and priorities that should be taken into account when collecting information. This table have five levels. Beginning at level 0, it is associated with activities that are related to the activity itself (for example, the number of people). Level 1, relates to the rationale of the project, measuring its use and relevance. At level 2, all information related to learning is considered, focusing on skills, knowledge and skills. The third level deals with data related progress after project implementation. The performance of the proposed tasks, the barriers that have hindered the process and the use of the new skills, are analysed. Level 4 measures the success of the new process, i.e., the outputs (profit, productivity, time, quality and customer satisfaction), but it is necessary to isolate these results so that alignment with the business is possible. In the fifth level, the ROI demonstrates the monetary benefits of the project. Currently, its been adopted, due to the ROI nature, the inclusion of sustainability issues in the assessment and prioritisation of process improvement projects in order to make informed decisions regarding the viability of the projects and their impact on sustainability (El-Halwagi, 2017). A ROI-based metric that incorporates safety and sustainability and can be used during the conceptual design stage (Guillen-Cuevas et al., 2017).

3 Methodology

During the implementation of this study, it has been applied an inductive methodology to validate the research questions. The use of an inductive approach aims to generate new theory. It has been conducted several interviews, in order to reply to the research questions, in the industries of telecommunications, banking and financial services and ‘other mixed services’.

3.1 Sample characterisation

The sample selection was made in two phases. The first phase consisted in identifying the major companies in the field of telecommunications, banking and financial services and other companies which can be coupled as a mix of several different types of companies from different industries selected randomly in public directory from 2018/2019.

The second phase consisted in sending the survey by e-mail to the head of departments from those companies, namely management, sustainable and IT department. After this, it has been asked to each head of department, which have replied, to take a bottom down approach, which means, to forward the same survey to their department consultants. A total of 70 surveys (Table 1) were obtained, from which 19 were considered invalid. Thus, 51 questionnaires were accepted as valid and further analysed.

From an initial sample of 70 individuals, it was observed that 11 do not know BPM (15.7%), while 59 know what it is (84.3%). In 59 individuals considered, eight did not participate in BPM (13.6%) and 51 participated (86.4%). There are 11 missing values (15.7%) corresponding to the 11 individuals who do not know what BPM is and the eight individuals who do not work or participate in BPM. The ‘other mixed services’ area (37.3%), followed by ‘telecommunications’ (11.8%) and ‘banking and financial services’ (9.8%) are described here with the highest percentage of positive replies.
Table 1  Total amount of replies by industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of replies</th>
<th>Valid answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Banking and financial services</td>
<td>43</td>
<td>34</td>
</tr>
<tr>
<td>Mixed companies</td>
<td>15</td>
<td>8</td>
</tr>
</tbody>
</table>

3.2 Data sources

The data were collected over a period ranging from 2018 to 2019. This time range was considered to be sufficient for investigating the long-term impact of BPM adoption or not inside organisations. It has been ensured our findings by drawing data from the survey. The survey was developed with five main questions based in a qualitative reply and a quantitative measure from 1 to 10.

3.3 Model development

The model used to measure the association degree between the dependent and independent variables was the correlation analysis available in the statistical software R. As mentioned before, this survey has developed in a quantitative and qualitative basis. The quantitative approach consisted in a range value between 1 and 10 where 10 represent the highest connection between the reply and the main question. To measure the correlations between the variables, it has been used the replies obtained in the questionnaire based in the qualitative answer. To evaluate the correlations, it has been used Pearson correlation where it has defined the initial criteria where the variables with less than .70 where not representative, thus they have to be removed. The dependent variables were the benefits (y1) and ROI (y2) which are linked with the BPM methodology.

Starting from the correlations between the variables of benefits, the results show that the highest links are among the variables ‘ensure best practices and processes to be used’ and ‘add value to the final customer’, between ‘ensure data management and its procedures’ and ‘ensuring best practices and processes to be used’, between ‘ensuring data management and its procedures’ and ‘ability to visualise, simulate, identify key points in processes’ and finally, by ‘add value to the end customer’.

In the case of ROI relevance, there are higher correlations between the variables increasing the involvement of top managers and increasing the number of BPM initiatives between project expenditure control and designing the necessary investment. In the ROI implementation barriers, the highest correlations are between the variables ‘data consolidation’ and ‘data collection of qualitative factors’, between ‘data collection methodology’ and ‘top managers’, between ‘lack of support information credibility’ and ‘data credibility’ and between ‘data credibility’ and ‘data consolidation’.

3.4 ROI

Regarding the qualitative information available in the questionnaire and linked with ROI use, the respondents defined as common practice the use of ROI throughout the project to
analyse the evolutionary trend; the use of ROI in advance to justify the costs of initiatives and use of the ROI at the end of the project to do a global analysis. The two metrics most used by BPM professionals in addition to ROI are the cost performance index and the return on assets. According to the respondent’s responses, the companies they work with mature through a specialised BPM team, use of process mapping software and a BPM methodology to be implemented.

4 Results

The results derived from the questionnaire and related with the qualitative factors affirm that respondents selected the lack of methodology, the lack of strategic alignment and the interconnection between departments as the main factors that make BPM measurement difficult. The lack of methodology is effectively one of the most observed problems due to the difficulty in measuring the qualitative factors, which replies to the Research question H1.

In terms of BPM budget, 50% of answers did not reveal the amount of budget allocated to BPM in the organisation, it was possible to verify that the most chosen intervals are: between 100 k and 250 k, 30.8% is < 100 k and the interval exceeds a budget of 1.1 million. Although many respondents have not provided the budget spent by the organisation, it is important to realise the budgetary weight that BPM has in organisations. Through the obtained results, it is possible to perceive some weight of the BPM in the organisations, where even one of the three chosen intervals is bigger than EUR 1.1 m.

A relevant fact is that only 18 respondents responded that ROI is not used, the remaining BPM professionals use at different project heights, and continuous evaluation is the most frequent. These results reveal an interest in studying and evaluating the return of BPM initiatives in the company which replies to the Research question (H2). The analysed answers are clear regarding of the importance of ROI in BPM. The most selected answer is ‘essential’, representing a percentage of 56.9%. Considering that only one individual chose a ‘negative’ option regarding the importance of ROI in BPM, it is possible to see that the majority attributes a great relevance of ROI to BPM. Among the variables studied, it was possible to investigate some dependencies, namely the fact that BPM budget is dependent on the use of ROI at the end of the project to do a global analysis, the importance of ROI in BPM is dependent on economic value added (EVA) and the importance of ROI in BPM is dependent on earnings per share. Through the analysis, it was possible to determine the main BPM implementation barriers. Respondents defined top managers and departmental interconnection as the two main barriers to implementation. In fact, top management is the barrier with greater implication in the company and its departments, since they have the power to decide on the allocation of budget for the various areas, as well as decide on the changes/implementations of BPM measures in the organisation.
Figure 1: Conceptual model – value based on justification and control

Notes: r: Coefficient of Pearson’s linear correlation.
$R^2$: Determination coefficient.
$\hat{\beta}$: Beta standardised estimate.
Regarding the model quality (Figure 1) based on the conceptual model, mentioned previously, the overall model value it has been identified four variables used to explain the variation of the variable justification and two for the variable control. These two variables have been used for explaining the variation of the independent variable value with a coefficient of determination \(R^2 = 0.782\) more properly 78.2%. This variable is also explained by the dependent variables which have been used to validate the statistical contribution to the variable value. In terms of internal consistency, the three factors present ‘good’ internal consistency being visible through their Cronbach’s alpha: value (0.897), justification (0.853) and control (0.848).

4.1 ACP in evaluation scales

The evaluation scales from the three factors are described as follow:

- **Value** groups the items: ability to visualise, simulate, identify key points in processes, ensure data management and its procedures, add value to final customer, ensure best practices and processes to be used and speed process times, automating tasks.

- **Justification** groups items: increases the number of BPM initiatives, increases top managers involvement, revenue increases, and basis of justification for BPM projects.

- **Control**, group the items: design the necessary investment and control of project expenses.

5 Conclusions

Regarding the benefits associated with BPM, it should be emphasised that there is no hierarchy of the same, so that all of them end-up being linked with the ultimate goal of making the company more efficient and consequently adding value to the final customer. So, ensure the data management and its procedures; ability to visualise, simulate and identify key points in processes; and add value to the end customer are the most observed benefits of BPM professionals. With these results, there is clear evidence that the final customer is targeted, as improving the organisation efficiently can add value. The option with less agreement among respondents is precisely the change of rules and management logic to be a resource for information technologies. This dispersion is related to the difficulty of changing company rules and the difficulty in analysing the processes without using technology.

Regarding the capital gains in the application of an investment valuation methodology, it is relevant to understand what they are. Thus, the respondents chose to consider the projected investment required as one of the main measures of the implementation of the investment measurement. Control of project expenditures appears as an equally important measure as well as increasing the involvement of top managers. Curiously, this methodology is not a justification for the increase of BPM initiatives, since it presents a greater dispersion among the respondents.

Since one of the parts of the study, finding out if there is ROI usage and how often it is used is relevant, it helps to understand whether there is an opportunity to introduce
and/or focus attention on BPM initiatives. The maturity of the BPM is relevant to perceive the level of BPM’s presence in the organisation and the independence of the other departments. The collected answers indicate that there is some presence of BPM in the companies, because there is a team specialised in BPM. An important observation to note is that the use of outsourcing is less than the existence of an internal team, which reveals not only some maturity but also interest and investment in BPM. A very important phase in evaluating BPM is to measure qualitative factors that are not easily measurable. Connecting to the barrier, most observed by professionals is perceptible that the lack of strategic alignment is inextricably linked to the decision-making power of top managers. The feedback of the BPM professionals reveals the agreement of the BPM valorisation qualitatively and quantitatively. However, the opinion of one respondent should be emphasised, arguing that changing the internal process is often the most difficult barrier to overcome. The results point to a clear importance in relation to the measurement of BPM through ROI, which demonstrates the importance of the study in question. Through the results of the study, it is possible to conclude that the BPM has gained greater relevance and maturity in organisations, this is noticeable through the high budget range that is allocated to the BPM initiatives, as well as the greater existence of teams specialised in BPM in relation to the use of outsourcing services alone translates an increase in maturity and investment in BPM. Regarding the ROI implementation barriers, the most outstanding are top managers. This barrier is the one that has the greatest impact on business changes, as well as the budget allocated to BPM. It is important to emphasise that the results point out that BPM is valued both qualitatively and quantitatively and that its presence in a company is seen as a sign of change.

In terms of future research is important to understand how companies pretend to overcome the problems they have in measuring BPM across different departments and if these problems have or not crucial impact in budget applications. Another important fact is related with the lack of measurement instruments, such as ROI, to measure BPM success since a typical BPM can be leveraged for a variety of purposes. In companies without applying the ROI concept, it would be interesting to evaluate the effectiveness of the implementation of such concepts connected with BPM. At least, it will be interesting in measuring the return value of the company and comparing it with the value of the company by EVA.

6 Limitations of the study

This study presented several limitations which should be suppressed in future studies, namely in terms of sample size, which means that can be obtained less conclusive results since the sample data depends ultimately on the size of the effect of it, and the number of replies associated to each industry. Another fact is the dependency between EVA, earnings per share and BPM budget variables using ROI which can provide bias in this measurement instrument besides the fact that calculating ROI on BPM can be challenging due to the multiple frameworks of a BPM.
References


