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Role of ERP in Management

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ABSTRACT

As an enterprise information technology, ERP (Enterprise Resource Planning) demonstrated the rapid spread and development across the World from the 1990s to now. In this process, the system that meets the specific needs of different users (in particular to increase the effectiveness and profitability of resources) and has become a complex set of computer application which integrates all processes and functions in the company and offers a holistic and integrated view by using a common database sharing. Because ERP makes data sharing in to an accurate and real-time form, operational processes are also automated in whole business. In this context, the nature of the accounting practices in this context has changed radically. With the change, the operational coordination between departments has got easier, and thus efficiency has obtained in areas such as strategic planning and management control. Efficiency is observed as increased flexibility in providing information, increased integration in accounting practices, and increased quality of financial status report and also seen as quick decision-making process, the harmonization of conflicting objectives and to standardize business processes (Colmenares, 2009: 5-6); and finally seen in areas such as an increased efficiency in commercial enterprises, facilitating the access to information, increased quality of information and supporting temporary reporting (Booth, 2000: 2).

Keywords: ERP, Advanced Managerial Accounting Techniques, Managerial Accounting Systems

I. RELATIONSHIP BETWEEN ERP AND MANAGERIAL ACCOUNTING

Managerial accounting, which fundamentally focuses on historical cost reporting, has become unresponsive to companies' needs primarily because technological development changes production style and management and organization structure. Consequently, fundamental enterprise notions such as cost structure and performance become multidimensional and complex.The firm environment, which affects the processes of all management applications (planning, control, decision making and communication), has inevitably expanded the mission of MASs. A MAS is a system not only to generate enterprise-wide financial control but also to realize cost reduction in line with value creation. Hence, MAS is a process of defining, measuring, obtaining, analyzing, preparing, interpreting and transmitting information. This information is used by management (both financial and operational) for planning, evaluating and controlling processes, ensuring accountability and the effective and efficient use of resources in the enterprise (IFAC). Based on the definition, management accounting should offer a systematic and structural point of view to managers, supporting the understanding of related costs and increasing operational efficiency. Management accounting also should support the forecasting of costs, opportunities and resources before making a decision. Thus, a MAS should support fundamental functions such as the correct determination of product cost, effective control and clearing the way for the innovation of identified goals, ensuring employees' productive work, improvement of processes, elimination of waste, and the planning, managing and controlling of operations for establishing strategies.
ERP can offer important contributions to MASs for fulfilling these functions. In our opinion, MASs' effectiveness has increased dramatically by ensuring interdepartmental integration, thus facilitating budgeting applications and tracking responsibility on prepared reports. However, based on the literature, this effect is scarce (Booth, 2000: 4; Granlund and Malmi, 2002: 299; Scapens and Jayazeri, 2003: 201). This article examines how advanced managerial accounting applications (total quality/quality cost, just in time production, activity based costing, balanced scorecard, business process reengineering, benchmarking, product life cycle costing, value engineering, target costing) become effective and productive with the support of an ERP system and how this interaction increases firm performance.

II. RELATIONSHIP BETWEEN ERP AND TOTAL QUALITY/QUALITY COST

Companies should establish an optimum balance between quality and low cost. Total management quality is a management philosophy for achieving this goal. Enterprises which embrace this philosophy understand the need to bring employee participation in all stages, teamwork and continuous improvement to the forefront to increase product

or service quality, eliminate waste, decrease cost, and raise productivity and customer satisfaction (Zbaracki, 1998: 602).

ERP, which is an important tool of Total Quality Management (TQM), addresses not only a product-based quality concept but also enterprise-wide successful organizational operation.

The second principal of TQM is the control and improvement of process. Companies should remain open to innovation and track their operational processes well for quality durability. ERP helps managers display innovative/progressive behavior within the total quality philosophy by obtaining real-time financial (e.g., field service expense, prevention costs and other quality cost factors) and operational (failure rates, productivity, malfunction time, and idle capacity) data from all departments, from the manufacturing of products to service and delivery. The harmony of ERP and TQM can be seen in areas such as estimation of raw material quality, determination of defects and momentarily specifying invalid production (Gupta and Kohli, 2006: 693).

The third principle is employee participation-based management. The purpose of TQM is ensuring that employees perceive the enterprise as a whole, focusing on quality. Thus, employees' sense of empathy, loyalty to the company and working motivation should be increased by educating them. Enterprise-wide procurement facilitates improved plans and effective change management. ERP's effective and instant communication through departments is a good context for transforming TQM philosophy into reality. In this context, all departments understand better their needs and potential solutions. Additionally, accounting, management, marketing and production departments completely support quality management strategy at the same time.

TQM facilitates the application of ERP systems. TQM is a management philosophy that includes all dimensions of an enterprise's aims to accomplish problem-solving techniques and continuous improvement. With the support of employee and upper management, TQM has increased the chance of a successful ERP application within the enterprise. Moreover, TQM can decrease the ERP application cost by generating desired and adequate human resource requirements. When an organizational culture is established based on quality, not only are resources used at an optimal level but also it is possible to improve operational processes by building upon a qualified workforce. As seen, these systems harmoniously process together, and they positively affect firm performance (Schniederjans and Kim, 2003: 422-423). Without such TQM culture and its methods, the chance for an ERP system to succeed is very slim (Jha and Joshi, 2015: 11).

III. RELATIONSHIP BETWEEN ERP AND JUST IN TIME PRODUCTION

Just in time production (JIT), which was initially used by the Japanese, is a production system based on required quantity when needed. The aim of this system is production with minimum stock, which naturally requires an overall evaluation of the design, production and supply chain. Thus, the success of this system is based on elimination of operations that do not add value and that focus on quality, efficient and instant communication with suppliers and making correct moves and decisions. ERP is considered a catalyst for JIT applications because it creates an updated database with real time information for planning, controlling and stock management (Powell et al., 2013: 324). ERP makes it easier to standardize continuous integration of enterprise functions, which is the system's main goal, and to apply a JIT system with advanced data flow. In fact, the most important change of JIT is the simplification of production processes (Foster and Horngren, 1987: 19).

The importance of simplification can be seen in the timely inclusion of different parts and ingredients into a production process that is based on demand diversification. For instance, manual Kanban is sufficient for zero stock if demand is predictable and stable, but use of an ERP system is essential if the demand is diversified and changeable. ERP can automate this process by creating a self-regulated traction system and thereby accelerating elimination of stock (Halgeri et al., 2010: 64-65).

The support of ERP to a supply chain is not limited to internal processes. This support includes partners who are components outside of the company. ERP can help improve the stock management process, ensure instant and effective receiving of customer orders, accelerate the payment cycle, and provide cost savings by means of facilitating information sharing with partners about orders. Consequently, communication becomes easy between all links of the supply chain, and stock management is accomplished quickly and efficiently.

With efficiency of stock management, perfection of the production flow is an indicator that a JIT system's suppression of waste principle has been transformed into practice. Traditionally, value stream mapping[2] has been used to specific the disposition of waste in design, planning, production and distribution departments. ERP can make important contributions to these maps, enabling them to be more accurate (Halgeri, et.al., 2010: 65; Riezebos et al., 2009: 242; Tenhiälä and Helkiö, 2015: 147-148). In conclusion, ERP and JIT can work harmoniously, and this situation positively affects firm performance.

IV. ERP's EFFECT ON FINANCIAL PERFORMANCE

An ERP system can create a significant cost advantage by decreasing stops at work, creating instant data flow and enabling general control of operational processes. This advantage naturally means increased enterprise-wide workforce productivity, an increase in profit and increased evaluation of new investment opportunities (Shen et al., 2016: 131). The functionality of ERP, which is a real time and reliable critical information provider, can be seen explicitly when considering answers to vital questions that are fundamental for enterprises, particularly on the process of searching for new investment opportunities such as the following: which products and services are the most profitable? Which products are the most work-intensive, and which products can be sold together? ERP is one of the most important corporate-level logistic tools for developing enterprises' performance.

ERP's effect on customer performance

Financial success is closely associated with customer satisfaction (Cebeci, 2009: 8901). Therefore, it is important to ensure a precise information flow that directs customer needs to firms, completely gathering pleasures and complaints about products and services whenever making contact with customers. Thus, the entire relationship structure should be based on communication. Building and sustaining such a structure becomes easier via ERP. In fact, it is possible to acquire correct and timely detailed information on every process of a sales order (confirmation, stocking and en route) with the use of ERP. It is possible to see ERP's positive effect on customer performance when comparing ERP with a traditional system. Four to five weeks are required to collect quality control and customer satisfaction reports and prepare a cause-and-effect analysis. However, with the use of ERP, reports and analyses about quality control and customer satisfaction are generated on a daily basis. On the one hand, this change makes it possible to react to customer relations management and market opportunities; on the other hand, the change increases market share and the sales growth ratio (Shen et al., 2016: 132).

ERP effect on internal business processes

An ERP system has an important effect, particularly on BSC internal business processes (Fang and Lin, 2006: 260-261). It is difficult to make decisions reliably based on data that are weeks old and based on experience and predictions concerning the current production environment. An ERP system's transparent, fast and easy information flow about production processes makes it possible to make more-effective strategic, operational and tactical decisions.

ERP effect on learning and growth

Employee training and the harmonizing of their abilities with companies' goals become important to allow benefiting from maximal technological development. An ERP system brings employees into one piece of a company's vision and points them in the direction of what must be done as part of this vision (Edwards, 2001: 7). Employees who obtain information about completed products and services via this system can correct systematic errors and have a chance to practice or maintain development programs to eliminate wastes of time and over/unnecessary cost in the value creation process (Srivardhana and Pawlowski, 2007: 52).

V. RELATIONSHIP BETWEEN ERP AND BUSINESS PROCESS REENGINEERING (BPR)

In the 21st century, enterprises should assign importance to quality, cost, customer satisfaction and information technologies (IT) to survive under tough economic circumstances. Many IT systems exist where globalization and technological advancement are experienced intensely. Many studies in the literature about the relationship between ERP and BPR show these systems' strong correlation. According to Hammer (1990), 'We should ''reengineer'' our businesses: use the power of modern information technology to radically redesign our business processes in order to achieve dramatic improvements in their performance. Also he said that reengineering is a tremendous effort that mandates change in many areas of the organization. According to Komiya et al. (2000), the introduction of an ERP package would be a type of BPR because work habits are tuned to the functions of the ERP package. Therefore, the ERP package must be selected to meet the company's BPR themes. They proposed the method of setting BPR themes by using Business Sheets. In this method, project members can discuss the management environment and the reality of business functions in a short period. After discussing, they can easily extract the BPR themes from the Business Sheets (Komiya et al., 2000: 2109).

Cheng and Wang (2006) used a research model that shows the relationship between BPR process assessment and ERP benefits. They divide BPR process assessments into three phases, including the organization's decision to pursue reengineering, the situation of new process development and project implementation and results. ERP includes operational, managerial, strategic, IT infrastructure and organizational benefits. The authors reported that if an organization wants to implement BPR effectively to increase ERP benefits, applying Business Process Management tools might help. They also suggest that companies adopt advanced Business Process Management Systems to implement BPR rather than using the traditional BPR approach because doing so most likely would also bring potential ERP benefits.

Another study done by Jiang and Ruan (2008) showed the strong interaction of the systems. They report, 'To ensure successful application of ERP and achieve the desired effect, we must first redesign our business processes.' Conversely, the successful implementation of BPR and the improvement of enterprise management performance systems must lie in ERP systems as technology means and management tools. This study shows the relationship between BPR and ERP in the implementation process, interacting and supporting one another. In the implementation process, each is a prerequisite for the success of the other. The realization of transforming BPR from thought to reality is inseparable from ERP systems, and only through ERP can we support and solidify new business processes. Only under the guidance of BPR will it be easy to apply ERP to achieve expected results. Through the integration, implementation and applications of BPR and ERP, enterprises can be effective in optimizing their resources and processes (Jiang and Ruan, 2008: 5).

Subramoniam et al.(2009) found that simultaneous implementation of BPR and ERP is the most effective method in redesigning business processes. Bac and Erkan's (2013) research also demonstrates the ERP and BPR connection in Supply Chain Management (SCM). Their findings show that using either BPR or ERP strategies has positive effects on SCM's overall performance; it has been found that successful implementation of ERP has a greater probability of improving performance. On the literature there studies showed that why ERP fail and what are the connections of these failures with BPR.One major reason why the ERP system has not been implemented successfully is the inappropriate use of the design and implementation methodology employing the modern BPR concept (Ng et al., 1999: 2093). Ng et al. (1999) propose a Hierarchical Design Pyramid (HDP) model to design and implement an ERP system under the macroscopic context of business process re-engineering with a total quality approach.

Paper et al.'s (2003) research shed light on the relationship between ERP and BPR and why the examined project failed. In their case study, top management based the software investment decision solely on vendor promises, market share of the software in its market niche, name recognition, and CEO endorsement. No effort was made to obtain opinions and/or feedback from employees at the process level or those engaged in existing systems development and maintenance. Moreover, the state of legacy systems and processes was never considered as a factor in the decision. Additionally, management did not attempt to analyze existing processes and systems to see whether they were fluid. That is, they failed to obtain feedback and opinions from people along the process path and from legacy system experts (Paper et. al., 2003: 57).

In 2005, Bosilj-Vuksic and Spremic investigated a pharmaceutical company in Croatia. Overcoming employee resistance can be a critical factor for the successful completion of a project. Top management must provide leadership for all changes, efforts, objections and disagreements that arise in the process of reengineering and ERP implementation. Indifference and a lack of support from top management, in addition to the high cost of a BPR Project implementation, are considered the major barriers to the initiation of BPR or business process innovation projects. They concluded that 'the implementation of a new ERP system will not bring the expected benefits if it is not accompanied by a change in human behavior and in organizational regulations.' Their case study shows that successful implementation of the ERP system must be accompanied by an appropriate BRP project (Bosilj-Vukšić and Spremić, 2005: 20). During the implementation process, ERP would enable business reengineering and a BPR initiative's commencement. BPR is supposed to be done as a required preceding step for the implementation of ERP.

As seen in the literature, using both ERP and BPR at the same time has a positive effect on management's and systems' success. However, initiating ERP systems is not sufficient to achieve the desired goals. In order to achieve the desired benefits of ERP, companies should reengineer their business processes.

CONCLUSION

ERP is a system providing effective communication and integration by using necessary data and information, for modern management accounting applications. Thanks to ERP system, elimination of non-value creation activities, definition of process improvement opportunities, increasing product and customer profitability and getting easier the work of decision-makers is possible. In other words, timely and effective analysis of the activities, monitoring down to the origin of facts and events, rational distribution of limited resources, faster and fewer errors process management and sustainable cost reductions are important earnings providing by ERP. In short, we can see ERP as a democratizing factor for cost management, as it opens management process to all employees. ERP presents opportunities for all firm's members to share easily their individual interpretations of cost information and find their best consensus. So, ERP is compatible with all advanced managerial accounting techniques (Eker and Aytaç; 2016: 187). It can be expressed theoretically that high interaction between ERP and advanced managerial accounting techniques is associated with high financial and non-financial performance.

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