Best-of-Breed of ERP Systems: Pros and Cons

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***Abstract*- To integrate all aspects of a business' operation into one system, enterprise decides to implement Enterprise Resource Planning (ERP) solutions. ERP is business process management software that allows an organization to use a system of integrated applications to manage the business and automate back-office functions. ERP software typically consists of multiple enterprise software modules that are individually purchased, based on what best meets the specific needs and technical capabilities of the organization. There is a wide range of ERP software providers, Most of businesses are heading to deal with well-known ERP vendor to adopt and implement ERP solutions. Does those best-of breed provide enterprise with their magic tools? This paper discusses issues associated with implementing best-of-breed solutions and how to overcome such issues to successfully implement ERP systems. The author conducted an empirical study in the Egyptian context to highlight factors that should be considered prior the implementation. Sharing the experiences for adopting best-of breed solutions and getting valuable lessons will guide the enterprises to choose carefully what is best for their business.**

***Keywords*: ERP, Challenges, Best-of-Breed**

I. INTRODUCTION

ERP are business solutions that supports integration of internal business process within the enterprise [5]. It includes number of modules connected to one centralized database, those modules are: sales; human resources; finance; logistics; manufacturing; order fulfillment; and supplier management. For instance, if an employee wants to update customer information, he doesn't have to amend it in each module individually, one record entry through will update the centralized database which is accessible by the other modules [16]. Moving to ERP integrated solutions will overcome data issues related to standalone applications such as: redundancy, inconsistencies and lack of integrity [5] and enhance timely decision making process [17]. ERP systems can easily facilitate a real time visibility across the enterprise by providing the ability to track product orders and inventory, automate orders and payment, lower setup costs, reduce order cycle time, reduce, improve cash management, [19]; [23]. Most of business implemented ERP systems experience enhanced performance in decision making process and ensure the quality of decision made [18]. The adoption of CRM and SCM modules extends the organizational boundaries to communicate effectively with business partners and reach customer preference individually [15]. Accordingly**,** ERP market researched $47.5 billion in 2011 and expected to reach $67.7 billion by 2017 [10], [13]. The Business Technology Forum (2011) estimated 2011 growth rate of ERP investments with 31% compared to 2010 then it reached 4.5% by 2012 [4] .

II. LITERATURE REVIEW

The ERP literature investigates the key determinants that affect ERP implementation. Most of researchers use survey or case study methods to figure out the factors of success or failure of ERP implementations [22]; [1]. Furthermore, researchers investigated the effect of ERP adoption on organizational performance. For instance, number of studies such as [8],[7] utilize the quantitative measurements to indicate the effect of ERP adoption on organizational performance. Recently, Ajit et al (2014) in [5] conducted a study that discusses the effect of ERP implementation news and its impact on the stock market. It investigates as well factors that affect project outcome from organizational and market perspectives. Other line of research focused on the ERP critical success factors and investigated ERP adoptions process and the assessment of its outcome. Most of those studies rely on empirical evidence to prove ERP positive effects but the authors did not address how to define critical success factors of ERP systems objectively and how related to the implementation process and organizational performance [11]. There are no comparative studies that tackle whether a number of case studies with similar characteristics would experience the same consequences and attained benefit following ERP implementation [21].

Katerattanakul et al studied ERP implementation in [21] approaches and its relations with business characteristics. The study used empirical evidences to examine whether a number manufacturing organizations would experience different business outcomes following ERP adoptions. This study framework referred to organizational configuration theory in order to find out a relationship between business characteristics and ERP implementation approaches. Woosang and Min investigated ERP issues in [4] and concluded the following issues: longer payback of ERP investments, complexity of ERP

systems, integration issues of multiple ERP packages, a lack of ERP assessment metrics and organizational culture.

Most of literature focused on investigating ERP benefits, requirements and issues, few researchers tackle the needs to choose carefully between ready-made or customized packages and the implications of such decision. Therefore, this study will investigates issues related to the adoption of ready-made solutions and verify if those packages can provide the enterprise with business needs. This study contributes to literature with the issue experienced by empirical case studies to implement best-of-breed packages. The empirical evidence will be used to emergence the need for conducting business process re-modeling or package customization in order to match the software capabilities with business process scenario.

III. METHODOLOGY

This study is considered to be an exploratory study. Conducting a case study methodology will enable the authors to drill more in the investigated cases and will enable to capture the different perspectives. Semi structured interviews will be used to learn more about investigated issues and unfold the hidden one. Consequently, further research questions will be proposed for future investigation [2]. The study will attempt as well to figure out why enterprises adopting the same best-of-breed solutions may have different ERP implementation experiences in [15] are define factors that influence ERP successful implementation.

IV. FINDINGS

A well-know cosmetic manufacturer that provides cosmetics, paramedical and hotel amenities to the domestic market. Since this manufacturer faces high volatility in cosmetics products, the business encounter many challenges to meet customer demands and keep an inventory buffer. The manufacturer exploits several measures to assess the business process excellence such as: average timing of production cycle, rate of order fulfilled, accuracy of demand forecasted and planned activities, amount of inventory held and availability of materials for order fulfillment. The management decided to adopt Oracle modules to handle inventory control and planning activities.

The business experience main issues related to planning activities, Although it use a planning module of ERP best-of-breed, there is no accurate dataset for the expected orders and consequently, the production plans are highly defected and could not will not be accurate enough for execution. Usually, unexpected orders are usually received and it overloads the production master to embrace more jobs and results in serve delays in production cycle and order fulfillment. On contradictory manner, sometimes the actual production capacity is not fully utilized since they are dealing with unplanned production execution and inaccurate demand forecast. Often, the business might deal with an express logistic carrier for rapid order delivery to overcome the delay in order processing. Further issues related to administrative tasks pop-up as well and are referred to the use of manual way of sharing PO and invoice with business partners.

To optimize its process, the business is concerned with reducing inventory while providing nesssatiate materials required for production cycle handling. As long the purchased module for planning could not give accurate forecast for the management to rely on, there is no way to reduce the inventory buffer for the time being and lose more orders. For management perspectives, the decision undertaken to adopt ERP was not right and it considered it as un-justified investment but the authors have different view; the management purchased an Oracle planning module without planning the system adoption and implementation phases. The management did not promote the system to their users and they did not even address the user retention and involvement during the implementations phases. System education is not a must from the management perspective and it can be managed by enterprise technical staff. Consequently, the users could not make use of the system to handle their work effectively so they rolled back to excel sheets in order to handle their planning activities using simple equations smoothly. As a result, oracle solutions have not been activated effectively and failed to meet user' expectation. The users stressed that the use of semi-automated tools such as MS Access and MS Excel provides the easiest way to handle business process but it did not ensure quantity of dataset and validity of its forecast. It may take months for the warehouse keepers to update the inventory records and indicate material shortages using such tools. The users highlight the emergence to utilize oracle purchased modules in inventory control and activity planning. This example of un-justified investment of ready-made solutions is not much different than another key player working in the automotive industry.

The second case study is a private automotive producer of trucks, cars and minibus. The producer procures its supplies from the Far East and targets zero lost sales and a rapid vehicle delivery for measuring supply chain excellence performance. For automation purpose, the producer adopted IBM Maximo Asset Management solutions to operate, maintain and dispose of enterprise assets: Plant and production, Infrastructure, Transportation.

The producer uses AS/400 as a mid-size server that works well in the distributed networks. The AS/400 comes with a built-in database and provides the users with a repository for large amounts of enterprise data to which data mining techniques could be used. It provides as well a Web server and applications

that facilitates B2C and B2B e-commerce transactions and handle order fulfillment and partnership collaboration. It incorporates groupware applications by exchanging email, sharing file, using whiteboards and electronic collaboration.

The implementation of asset management and data warehouse applications could not provide the business with real time visibility of held inventory and make it mandatory for manual records updates. The automotive producer encounters deficiencies associated with inventory control and production cycle such as: manual computation of perfect Product mixtures, manual updates for incoming/outgoing inventory transactions, inaccurate Re-order Point for the cycle inventory, cost and time consumed in managing the 3-way check for matching PO with the invoice and incoming shipments.

Although the producer uses IBM applications, it experiences technical difficulties to integrate both IBM applications which had been overcome with a manual feed of inventory transactions from one application to the other. Therefore, it is unworkable to use such standalone applications and it led to distorted inventory records consequently. The producer did not get benefit of the groupware applications. Actually, there is lack of co-ordination with the main distributors which urged the need to collaborate closely to meet unexpected demands and ensure rapid order fulfillment. Moreover, the inaccurate forecasts aggravated the production cycle delay and make it challenging to adopt a continuous production mix.

V. DISCUSSION

The authors conducted an empirical study to figure out the value attained from adopting best-of-breed solutions by different organizational size and if those solutions could manage to optimize their internal business process and enable collaboration with business partners. The empirical study considered both samples of large and SME enterprises to identify the challenges experienced by different organizational size. The findings highlight a number of challenges that interfered to block ERP value-added benefits. The empirical findings highlight the importance of re-configuring business process to match existing system scenario or alternatively, customizing ERP solution to match exiting business cycle prior the adoption.

The study focused on investigating the use of ready-made ERP solutions. The choice of adopting ready-made packages or building your own piece of software is challenging for the managerial level [9]. There are several alternatives to get your own ERP systems, those options comprise best-of breed selections, single integrator, in-house built-in packages or combing in-house development expertise with outsourced functionality [12]. Once the management undertakes a decision to use best-of breed ERP solutions, there is a need to trade-off between the cost of re-configuring the new systems and effort needed for re-structuring existing business scenario.

Business process re-modeling would ensure no more additional cost to be paid but will require as well a change for the way of doing business, that's why it's called "process re-configuring". Sometimes, the managerial levels are reluctant to go for this option as highlighted in our study. Alternatively, ERP modules should be tailored to match business objectives and requirements [21]. It is a mandatory phase listed by [3] to attain the expected benefits of ERP implementation but it was not that essential for the management of our empirical studies, the management attempts to cope with the standard ERP modules and avoided package customization for cost saving issues. Consequently, the users could not perceive such systems as magic tools for automated business handling. Alternatively, they decided either to roll back to the use of semi-automated tools or to handle their business manually.

Both case studies reported that the use of best-of-breed solution was challenging as most of those packages did not meet user requirements and preferences in language, report structure and content. It matches the empirical findings concluded by [14] as well. Somehow, it was the managerial level decision to get a state-of the-art of ERP solutions and plug such modules into day-to-day operations without pre-defined plan. The management of both case studies tried to enforce the use of such applications with their standard business scenario to be deployed by users who are not aware of such software capabilities/functions or were not involved in package/vendor selection decision. From user perspectives, adopting ERP solutions from domestic vendors may convene the user requirements and will not entail huge customization efforts as long most of those solutions consider both local authorities and domestic business requirements. The management of both the large organization and SME one decided to adopt ready-made packages from well-know vendors regardless its appropriateness to existing business functions and scenario. Since most of best-of-breed solutions are developed internationally, there is an emergence to amend such solutions to consider the domestics requirement of each business. The project sponsor may intend to avoid that for cost reduction purpose and may decide to get standard ERP modules without customizing the modules to exiting business scenarios. In that case, alternatively, business process re-modeling is mandatory phase prior ERP adoption. So the project sponsors have to decide which option might fit their business: software customization or business re-configuration. System users should be involved in such decision in order to reach the best alternative that can maximize the benefit gained from adopting such solutions. The management might be bureaucratic about such decision and may see that they are more capable to reach the best alternative for their enterprise regardless the crucial role the users play. User involvement is

critical for the success of ERP adoption and implementation. Dealing with day-to-day operations will enable the system user to define the deficiencies in exiting business scenario and how to overcome such deficiencies with process re-modeling. Getting ready-made solutions that might represent the "best-of-breed" of a well-known ERP vendor cannot ensure the business optimization because it is simply might not be fit organizational objectives and user requirements. Users are familiar with what is realistic and what is not realistic for handling day-to-day operations. Different scale of customization might be urged in that case based on the deviation between the user requirements and the business scenario modeled in the system

Most commonly, large businesses are more interested in best-of-breed packages as long they have IT expertise that can manage the integration issues. On contradictory manner, SMEs will prefer to overcome integration issues by choosing a single integrator. The implementations approaches of ERP solutions were clearly discussed by [3]. They figure out the differences between three approaches and defined factors that interfere to end up with an ERP rollout decision. There are three different approaches:

1. The "big bang" approach – the project manager define go-live dates for the implemented modules
2. The "mini big bang" approach – the project manager set different go-live dates for each group of modules.
3. The "phase implementation" approach – the project manager set dates for each ERP modules individually.

In order to choose between different rollout approaches, different factors should be considered such as number of sites and users, number of ERP modules implemented, complexity of business processes, customized features of ERP software and a consideration should be paid for the capabilities of predecessor systems [21]; Parr and Shanks, 2000). Both case studies decided to choose the "big bang" approach to move to the new system. The management did not pay consideration to the challenges that users could experience while moving to the plugged system rapidly without any customizations services. As a conclusion, the users have been obligated to handle their day-to-day operations using automated systems with diverse business scenario and ended-up with the abandon of using such expensive systems.

VI. CONCLUSION AND FUTURE WORK

Most of business implementing an ERP system targets reducing operational costs and upgrading the technological capabilities, handling business process efficiently and optimizing business process, reducing data redundancy and improve productivity and managerial effectiveness. The management faces with two alternatives to adopt best-of-breed applications or get customized one. The trade-off between package customization and business process re-modeling is a crucial issue that enterprise should consider prior adopting best-of-breed solutions [11]. As long the business is dealing with modular applications, it will be easier to customize certain business scenario that might not meet business requirement and keep other standard modules.

The management should to pay consideration for organizational culture. The user resistance may facilitate or inhibit the integration of ERP systems. Managing change is vital for putting the system in-practice and might be critical to the ERP implementation success [11].

Further researches are needed to investigate issues related ready-made packages implementations, the importance of business process re-modeling for business optimization and factors that might affect ERP adoption choices.

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