TOWARDS THE DEVELOPMENT OF A FRAMEWORK FOR THE IMPLEMENTATION OR SELECTION AN ERP SYSTEM FOR INTERNATIONAL MARKETING DEPARTMENT AT NATIONAL OIL CORPORATION OF LIBYA

NASER ANIBA

International Marketing Department, National Oil Corporation, Libya
Department of Computing, Sheffield Hallam University, UK
E-mail: naniba@noc.ly and J.I.Siddiqi@shu.ac.uk

Abstract - The paper reports on ongoing research to prepare for theimplementation of an ERP system for the National Oil Corporation of Libya, having already established and reported on the business requirements as well as the lesson learnt from the literature on the transitions required. In this paper we report on the development of a framework. We develop the characteristics of this framework by considering a historical evolutionperspective that results in focusing on functional and implementation characteristics. The framework is further augmented by focusing on the potential benefits as well as the potential problems.

Keywords - Implementation, Characteristics, ERP, benefits and problems

I. INTRODUCTION

Enterprise Resource Planning (ERP) consists of a suite of integrated software applications for management of the core processes of an organisations business. In simple terms any organisation can through ERP, in an integrated manner, efficiently perform the fundamental functions that it requires namely: collect, store, manage and interpret data from all its business activities.

In essence an ERP system can, and often does, provide an integrated view of the organisations core business activities so that it can track business resources such as raw materials production capacity, cash etc. In our case of an oil company ERP could and should therefore facilitate information flow between the major business functions such as Production Planning, Logistics and Inventory Management, Shipping and Payment, Sales and Marketing etc to share data across these various departments. Additionally, managing connections to outside stakeholders.

This paper represents the third stage in our journey on implementing an ERP system for the International Marketing Department at National Oil Corporation (NOC) of Libya. The first paper focused onreporting on the case enterprise resource planning for NOC of Libya andcontributed to development of a better understanding of the transition required to ERP in this sector [1].
The second paperfocused specifically on the potential business requirement for NOC of Libya[2]The work reported here in the third paper focuses on the development of a framework to enable the selection of an ERP system.

II. CHARACTERISTICS OF ERP SYSTEMS

To arrive at the required characteristics of ERP systems we need to considerhow they were original applied, how they evolved aswell as the relevant stakeholders; this will provide the focus for the characteristicsof our desired ERP system.

A very common view of the original applications of ERP systems lay in the manufacturing sector; they can be seen as extensions and evolutions of Manufacturing Resource Planning (MRP) and Computer Integrated Planning. An alternate view is that they addressed business and management functions such as Human Resources and Financial Management. Certainly, by the mid-nineties many ERP vendors realised the importance of producing systems that addressed all the core enterprise functions.

Initially ERP systems were being deployed in the private sector forlarge enterprises but very quickly they were also being deployed in public sector particularly governments. Furthermore, their presence increased considerably in the small to medium enterprises. In terms of ERP evolution, the question was which of the core activities should we focus ERP systems on? The first phase of deployment, it appearedwas the for back-office functions which do not affect customers but allows the organisation to obtain an integrated view of its activities. In the next phase enterprises integrated its customer centric functions through customer relationship management systems. The third phase was incorporating external partners through supplier relationship management and particularly employing the benefits to be gained through an e-business perspective.

The start of the new millennium heralded the introduction of web–based ERP providing real–time access to ERP systems to both employees and partners (such as suppliers and customers). Traditional ERP expanded to leverage information and resources management to help the enterprise to collaborate with other enterprises more flexibly going beyond corporate walls to interact with other enterprises. Recent evolutions have involved developers making more effort to integrate mobile devices. Moreover, ERP systems have evolved to overcome technical challenges that concern integration—hardware, applications, networking, supply chains. ERP evolution now claims to cover more functions and roles—including decision making, stakeholders' relationships, standardization, and transparency, In summary this evolution of ERP system for enterprises for our purposes can be characterised as resulting in an:integrated view of core business processes operating in real-time over the web so that it can track its resources, manage its back-office functions, and facilitate customer and supplier relationship in an efficient and cost-effectivemanner".

2.1 Functional Characteristics

From what we have presented above we can comprehensively characterise an integrated ERP for an enterprise, provided it can encompass the functions shown below:

Manufacturing/Production:including manufacturing process, manufacturing projects, manufacturing flow, bill of materials, work orders, scheduling, production capacity, workflow management, quality control.

Project management:Project planning, resource planning, project costing, work breakdown structure, billing time and expense, performance units, activity management.

Supply chain management:Supply chain planning, supplier scheduling, purchasing inventory, claim processing, warehousing (receiving, put-away, picking and packing).

Customer relationship management: Sales and marketing, commissions, service, customer contact support – sometimes CRM systems are not considered part of ERP.

Financial accounting: General ledger, fixed asset, payment, receivables cash application and collections, cash management, financial consolidation.

Management accounting: Budgeting, cost management, activity based costing.

Human Resources Management: Recruiting, training, rostering, payroll, benefits, diversity management, retirement, termination of contact.

2. Implementation Characteristics

We next turn out attention the extent or scope to which ERP is implemented becausethis often implies significant changes to staff work processes and practices. Implementation time is highly dependent on size of enterprise, number of modules required, and the level of customization. An ERP system for a medium size enterprise takes upwards of 18 months possibly requiring around 100 staff involved. For large enterprises in some sense the sky is the limit one can be talking in termsof tens of millions of dollars and possibly years to implement. Typically, ERP systems are implemented in stages and there is fine balance between doing it in too many or too few stages.

From the discussion above we can see that an organization's strategic decision concerning an ERP system can have a profound impact on the business and it operational practices. Implementing ERP typically necessitates changes in existing business processes and therefore a sound understanding of these processes is required. It is therefore imperative to clarify What is to be done Who should be involved and finally How it should be done. In what follows we consider some key questions to articulate more clearly the What Who and How:

What is to be done: this requires the Organization to thoroughly analyse business processes before they implement ERP software to identify opportunities for process modernization as well as asses' alignment of current processes with those provided by the ERP system.

Who is to be involved: It is important to note that IT management may have a limited understanding and therefore it is imperative to gain support from all stakeholders. users, developers, and functional managersto define clear goals. This should avoid having: an overly simplistic project plan and unrealistic deadlines and budgets. This should result in setting and managing the expectations on the software product chosen and the deployment process.

How is it to be done: Should the organisation implement in-house or bring in a third party. the first option requires one to be able to determine whether there is sufficient expertise in house. Furthermore, whether we require to purchase a range of modules to match the functions or a single ERP system.

2.3 Benefits and Problems

From the above consideration we can characterise the potential benefits that can accrue and potential problems that might (will) occur.

The benefits are as follows:

Complete visibility for all staff involved, especially for senior management of all the important processes, across various departments of an organization; this enhanced company-wide visibility enables improved collaboration across all the departments.

Automatic and coherent workflow from one department/function to another ensuring a smooth transition and quicker completion of processes as well as all the inter-departmental activities being properly tracked. Additionally, A unified and single reporting system to analyse the statistics/status etc. in real-time, across all functions/departments.

ERP systems can be extended to provide Business Intelligence functionalities, e-commerce integration, web-based order tracking/ processing as well as incorporating mobile applications.

The modular nature of ERP software system means it is possible to implement either a few modules (or) many modules based on the requirements of an organization, integrate to other systems like bar-code reader can be achieved via an API (Application Programming Interface).

ERP systems are more secure because centralized security policies are applied. All enterprise data is centralized storage/back-up via a database management system. These properties enable improve management of globally dispersed enterprises.

Problems that may (will) occur.

The chances of failure in the development of ERP systems are quite high particularly if business processes are not well understood and participation of users is crucial for success – hence, exhaustive user training because are generally difficult to learn and use. Evaluation of ERP system involving experienced technical/business staff prior to implementation is critical otherwise they can (and have) become a failure.

Customization of ERP system must be finely balanced: too little may not integrate with the business process & too much customization may slow down the project. Moreover, organisations become locked-in to a single vendor for further upgrades, customizations etc.

The high cost of the various phases of ERP software development: planning, customization, configuration, testing, implementation, etc., and ERP deployments is highly time-consuming.

The cost savings/return on investment is difficult to measure and may not be realized for some time. Additionally, indirect costs are incurred like new IT infrastructure, upgrading the WAN links, etc.

Migration of existing data to the new ERP systems is difficult (or impossible) to achieve. Integrating ERP systems with other stand-alone software systems is equally difficult (if possible). These activities may consume a lot of time, money & resources, if attempted.

III. CONCLUSION

In conclusionour journey so far the first two papers developed the case for ERP and elicit the business requirements>in this paper, we have developed a generalised framework for the implementation and selection of an ERP system. We developed the characteristics of this framework by considering a historical evolution perspective that resulted in focusing on functional and implementation characteristics. Moreover, the framework is further augmented by focusing on the potential benefits as well as the potential problems. We offer this as a candidate for other partners to use and evaluateand provide feedback tothe ERP community in general. It is intended to apply this framework to the specifics of International Marketing department at NOC of Libya and report on future progress.

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