

Business Information Systems: The ERP Road Ahead

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Abstract: Business Information systems (BIS) play a major role in improving the competitiveness of many enterprises. Enterprise resource planning (ERP) systems are the major BIS systems in use today and will continue to be going into the future. ERP systems are highly complex systems which are meant to provide several integration benefits. Implementation of these ERP systems in enterprises encounters numerous implementation risks with some of them including the possibility of operating losses, drop in profits, increased inventories, loss of customers, to mention but a few. Therefore implementing enterprises need to be aware of the critical success factors (CSFs) in order to reduce the risks of failures of these very costly projects. This study therefore firstly reviews the benefits, potential risks and CSFs of implementing ERP systems, based on previous literature. Secondly, documents the experiences of one of the ERP implementation projects, done by one of the pioneering enterprises in Botswana. The objective of the case study research being to evaluate how this pioneering enterprise avoided the major implementation pitfalls reported in the vast literature. In overall, the main purpose of this study, is to increase awareness of what enterprises in developing countries like Botswana need to be aware of when implementing ERP systems

Keywords: Business Information Systems; Enterprise Resource Planning Systems; ERP Implementation Benefits and Risks; Critical Success Factors

I. INTRODUCTION

Economic globalization and internationalization of operations are essential factors in integration of suppliers, partners and customers within and across national borders. The main objective of these integrations being to tighten up supply chains [1]. Of the major business information systems being used to achieve this seamless integration is the enterprise resource planning (ERP) systems. ERP systems are enterprise-wide on-line interactive systems that support cross-functional processes using a common database [2]. These ERP systems evolved from the 1970's from what was called material resource planning (MRP) systems which were only used to manage and reduce large inventories in manufacturing organizations. The original MRP system later developed to manufacturing resource planning (MRP II) in the 1980's which linked inventory management to financial planning [1]. First generation ERP systems were later born, following the technological development of MRP II systems around the early 1990's. These ERP systems were now able to incorporate all resource planning functions for the entire enterprise, which included product design, information warehousing, materials planning, capacity planning, communication systems, human resources, finance and project management [1]. With the recent developments the technology has since developed further to what is now termed ERP II (second generation) ERP and ERP III (third generation ERP). The second generation ERP has moved beyond the basic ERP system of an enterprise-wide system to integrate the customers and suppliers of the enterprise, with the third generation integrating marketplace customers. These latest developments have increased the appetite of ERP systems particularly for global supply chains and have made the use of ERP systems indispensable to enterprises competing within the global market.

Though the ERP technology has rapidly developed from the early 1990's to date, it is still fairly a new technology for many enterprises particularly the ones from developing countries like Botswana. In recent years, many of these enterprises are only now beginning to be exposed to these new business information technologies like ERPs through their international supply chain partners, who are demanding that they gravitate towards them in order to facilitate the ease of doing business in the global village. SAP and Oracle, the two major players in the ERP market, have also been increasing their interest in these developing markets, partly being a strategy to increase their market share and also in a bid to support their international clients who are doing business in these regions and need these systems to support their business integrations. Hence many of these enterprises whilst grappling with understanding what these systems are and how they work, they now have to move quickly to implement them in order to stay competitive in the global marketplace of today. Apart from the numerous benefits that can be expected from implementing ERP systems, their implementations can be highly catastrophic to the implementing enterprises if not managed well, because of the high complexity of these projects.

Hence given that going forward, one of the major ways to stay competitive and relevant in the tough global marketplace is the use of these ERP systems, the authors' saw this research as a vital piece of work that had to be done in order to help pave the way for many enterprises that will be following suite. The study intentions were then to review how one of the pioneering enterprises managed to avoid the implementation risks that are widely spread in the literature on ERP implementation catastrophes. Hence this work, through the literature review and the case study, the authors tried to illuminate all major risk factors that other enterprises that are considering this road ahead will have to avoid in order to also be successful in their implementations.

II. LITERATURE REVIEW

At first, the literature review will present all the major benefits that have been reported so far of why enterprises have continuously found these ERP systems beneficial. Then all the major implementation risks that other companies have come across will be presented. Lastly risk management strategies that have been used to mitigate these risks will also be presented.

ERP Implementation Benefits

The major benefits that enterprises implementing an ERP system can expect as obtained from the reviewed literature are presented in Table I below. Enterprises implementing an ERP system have been reported to expect operational efficiencies and productivity improvements from their investments [2, 3]. Employee productivity has also been reported to be one of the major benefits enterprises can expect [4]. Several authors also reported that the implementation of an ERP system can significantly improve the competitive advantage of an enterprise and make it more lean [5, 6]. Another implementation benefit enterprises can expect from an ERP system is the possibility to be able to quickly get products to their customers and also tightened supply chains which also allows them to significantly reduce the need for keeping huge inventories [1, 5]. Though some of the early adopting enterprises did so because they wanted to get rid of their legacy systems which were not Y2K compliant during the lead to the Year 2000, now many adopting enterprises do so for integration benefits and overall reduction of IT costs [1, 5]. ERP systems allow enterprises to get rid of redundant IT systems and the cost of having to link many different functional IT systems together, since an ERP itself is an enterprise wide system. Perhaps one of the major benefit enterprises can get from implementing an ERP system is that they always have to do a reengineering of their business processes and practices and the entire culture of the organization [5]. The reengineering process though it can be both a major benefit and a major risk to successful implementation of the system. Its benefit stems from that it can lead to adoption of world class business practices and productivity improvement, its risk will be discussed in the next section.

Table I: ERP Implementation Benefits

Benefit	Evidence
Productivity improvement	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Mandal, P and Gunasekaran, A (2003); Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002)
Streamlining of operations	Hakim and Hakim (2010); Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003)
Competitive advantage	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003)
Product configurations	Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003)
Inventory reduction	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Umble, E, J., Haft, R, R., and Umble, M, M (2003)
Tightening of supply chain	Umble, E, J., Haft, R, R., and Umble, M, M (2003)
Reduction of operating costs	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Mandal, P and Gunasekaran, A (2003); Umble, E, J., Haft, R, R., and Umble, M, M (2003); Holland, C, P and Light, B (1999)
Lead time reduction	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Umble, E, J., Haft, R, R., and Umble, M, M (2003)

Improved management information	Umble, E., Haft, R., R., and Umble, M., M (2003); Holland, C., P and Light, B (1999)
Improved customer service	Bingi, P., Sharma, M., K., and Godla, J., K (2006); Mandal, P and Gunasekaran, A (2003); Umble, E., J., Haft, R., R., and Umble, M., M (2003);
Improved information on production orders	Bingi, P., Sharma, M., K., and Godla, J., K (2006); Umble, E., J., Haft, R., R., and Umble, M., M (2003)
Improved enterprise view visibility	Bingi, P., Sharma, M., K., and Godla, J., K (2006); Bingi, P., Sharma, M., K., and Godla, J., K (2006); Holland, C., P and Light, B (1999)
Reengineering of business processes	Bingi, P., Sharma, M., K., and Godla, J., K (2006)
Get rid of legacy systems	Bingi, P., Sharma, M., K., and Godla, J., K (2006)
Lean Manufacturing	Mabert, V., A., Soni, A., and Venkatramanan, M., A (2003)
Improved materials management and sourcing	Umble, E., J., Haft, R., R., and Umble, M., M (2003); Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002)
Reduction in personnel requirements	Umble, E., J., Haft, R., R., and Umble, M., M (2003)
Reduction in IT costs	Umble, E., J., Haft, R., R., and Umble, M., M (2003)
Improvement in Project Management	Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002)

ERP Implementation Risks

Table II below shows the major risks that enterprises can anticipate from their ERP implementation projects as covered in the reviewed literature. One of the major ERP implementation risk factors is the risk of uncertainty [2]. This uncertainty according to Rajnoha and his colleagues, stem from several factors including which hardware and software to choose, telecommunication cost and losing their trained personnel. Personnel turnovers can be very expensive more especially since ERP skills are in high demand but very scarce in many regions. Fortunately ERP vendors like SAP has been trying to reduce the lack of skilled personnel through rolling out several initiatives like their ESEFA (Enterprise Systems Education for Africa) and the SAP skills for Africa programs. Under these initiatives, ESEFA for example, SAP funded many universities within the Africa region so they can train many fully tertiary registered students in the use of ERP systems, particularly the SAP system. This initiative meant to reduce the lack of SAP ERP skilled manpower in Africa. That still being the case, noted that another major concern related to this one, is the lack of competent consultants within many regions [5]. Hence the SAP Skills for Africa program, was conceived with the hope of ultimately addressing this problem. This initiative attempts to address this, by offering fully registered tertiary students a Dual Study Program which is meant to allow students in certain chosen countries, firstly from South Africa, Kenya and Nigeria, to graduate from their studies not only with their university degree but together with an SAP Associate Consultant certificate. Another risk factor has been labelled as the lack of ERP skills and management competencies in implementing enterprises to carry out successfully these complex ERP implementation projects [2, 5]. Most enterprises have been reported to be also not aware that implementing these ERP systems is definitely going to cause enterprise disruptions in many areas particularly the enterprise culture [1]. With a possibility of changing the way the enterprise had initially carried out certain tasks and who carried them out. Some roles that had been the prerogative of managers end up being done by front-line staff [5]. This enterprise disruption is also made worse by the integration risk [4, 5]. With some decisions that were only reserved for management, now carried out by front line people, any mistakes being done can have a huge catastrophic effect by being multiplied in several different business functions or units immediately. Enterprises should also be made aware that there could be several unexpected costs in addition to the budget they had made [1, 2, 5, and 7]. With these costs ranging from system configuration costs, customization costs, extensive training costs, consultants' fees etc. The more the customization, the greater the implementation costs.

Table II: ERP Implementation Risks

Risk	Evidence
Uncertainty risks	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014)
Unexpected costs	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Bingi, P., Sharma, M, K., and Godla, J, K (2006); Umble, E, J., Haft, R, R., and Umble, M, M (2003); Holland, C, P and Light, B (1999);
Unforeseeable user resistance	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Hakim and Hakim (2010)
Management competency	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Bingi, P., Sharma, M, K., and Godla, J, K (2006)
Risk of commitment escalation	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014)
Operating losses	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002);
Integration risks	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002);
Scarcity consultant resources	Bingi, P., Sharma, M, K., and Godla, J, K (2006)
Extensive training requirements	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Umble, E, J., Haft, R, R., and Umble, M, M (2003)
Loss of employee morale	Bingi, P., Sharma, M, K., and Godla, J, K (2006)
Disruption of organizational status quo	Umble, E, J., Haft, R, R., and Umble, M, M (2003)
Productivity dips	Umble, E, J., Haft, R, R., and Umble, M, M (2003)

ERP Implementation CSFs

Table III below discusses the critical success factors (CSFs) that have been captured in the reviewed literature as vital to be observed in order to increase the chances of a successful implementation. One of the major CSF is that there should be a strong and committed leadership which can provide strategic direction on why the enterprise needs an ERP system, and how it's forecasted to solve the enterprise's informational needs [1, 3]. To put it in plain terms, a thorough project appraisal just like any other investment project should be carried out. Another CSF is open and honest communication done regularly with all the key stakeholders including customers and suppliers [1, 6]. In their econometric study, Mabert and colleagues however, found out that extensive communication, even though it favoured a successful project implementation, it actually increased the likelihood of cost overruns. This startling result actually meant that more communication affected the project implementation negatively, since project cost overruns are also used as an evaluation of project success. Their study however did not allow them to find out why more communication showed a counter-intuitive outcome to what could be expected.

Table III: ERP Implementation CSFs

CSFs	Evidence
Leadership	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003); Mandal, P and Gunasekaran, A (2003); Holland, C, P and Light, B (1999)
Communication	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003)
Implementation team	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Hakim and Hakim (2010); Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003);

Project Management skills	Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G (2014); Mandal, P and Gunasekaran, A (2003); Umble, E. J., Haft, R. R., and Umble, M, M (2003)
Top management involvement	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Mandal, P and Gunasekaran, A (2003); Mandal, P and Gunasekaran, A (2003)
Change management	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003); Mandal, P and Gunasekaran, A (2003); Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002)
Organizational commitment	Bingi, P., Sharma, M, K., and Godla, J, K (2006); Mandal, P and Gunasekaran, A (2003)
Certified vendors	Bingi, P., Sharma, M, K., and Godla, J, K (2006)
Industry specific solution	Bingi, P., Sharma, M, K., and Godla, J, K (2006)
Implementation strategy	Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003); Mandal, P and Gunasekaran, A (2003)
Modifications to the ERP source should be kept minimum	Mabert, V, A., Soni, A., and Venkatramanan, M, A (2003); Holland, C, P and Light, B (1999)
Constant watch of budget	Holland, C, P and Light, B (1999)
Implementation process	Mandal, P and Gunasekaran, A (2003); Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002)
Selection of right software	Umble, E, J., Haft, R, R., and Umble, M, M (2003)
Network relationships	Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002)
Organizational readiness	Motwani, J., Mirchandani, D., Madan, M., and Gunasekaran, A (2002); Holland, C, P and Light, B (1999)

Their speculation however was that more communication could actually cause reexamination of processes and increase chances of customization, which increased the money spent on the project over the budgeted cost.

The composition of the implementation team has also been noted by other authors as vital for project success. Many researchers argue that for a successful implementation, you need an empowered cross-functional team led by senior executives and managers [1, 6 and 8]. Mabert et al., goes further to say in some large enterprises this implementation team was fully dedicated to the implementation project and nothing else, and they even had their own war room [6]. Perhaps it should be stated here that Bingi et al., warns that employees charged with implementing ERP projects have to put in very long hours in the regions of 20 hrs per day sometimes going into weekends and holidays, and this has a high possibility of rapidly decreasing their employee morale [5]. Hence there should be very good project management skills that will be able to discern team motivation and morale and have targeted interventions towards it [1, 3 and 5]. Umble et al., talks about excellent project management skills, with clear definition of project objectives and constant watch of scope creep which all too common jeopardizes project progress and complicate implementation [1]. Mabert et al., and Mandal and Gunasekaran reinforce this by advocating for a clear implementation strategy [3, 6]. Mandal and Gunasekaran, give a thorough advise on what needs to be considered under the implementation strategy; advising that enterprises needs to have a pre-implementation strategy, an implementation strategy and post-implementation strategy [3]. But perhaps one the biggest CSF for a project of this magnitude and complexity is a change management strategy [3-6]. With a clear and robust change management strategy, driven from top other CSFs like organizational readiness and organizational commitment will easily follow suit since everyone will be brought on board and will realize their importance in helping to make the project a success[3, 4, 5 and 7]. Lastly other authors give advice about how to go about selecting the right ERP software provider for the enterprise, selecting implementing partners and the implementation process. Umble et al., differentiates between the different ERP vendors in terms of their software [1]. Their argument being that if an enterprise is ready to adopt standardized processes, SAP will be the better choice, on the other hand if the enterprise needs more accommodating ERP software that could allow them to tailor the software to their existing processes Oracle would then be a better choice. The selection of ERP software is a very important decision when implementing an ERP system, because attempting to customize an ERP system to an enterprise process can be very costly, hence there should be very minimal customization for a successful implementation. Bingi et al., advise that in order to avoid many headaches implementing enterprises should only use certified third-party vendors as their implementing partners since they will be directly linked to the ERP vendor and this could assist going forward with maintenance and upgrades [5]. Implementing enterprises are also advised to not implement the ERP in the whole organization at

once, but follow a phased in, cautious, evolutionary implementation process since this will allow them to learn from their first mistakes and be ready to implement successfully in the next phase [3, 4]. Organizations normally start from non-critical functions like Marketing and Finance before they move to critical functions like Operations and Logistics [4].

III. CASE STUDY BACKGROUND

The authors took up a study that examined the implementation strategy of one of the pioneering enterprises that implemented an SAP ERP system around the early 2000's. In this study the authors were also interested in exploring the availability of the critical success factors (CSFs) as argued by other authors around the world as vital in ensuring a successful project implementation. This company which is based in Gaborone, Botswana it is in the business of manufacturing food products and it currently employs around 720 people in their whole Botswana operations, and it is part of a larger international multinational corporation. There were several reasons that led to the SAP ERP system being implemented in Botswana. With some of them being that, an executive decision was taken to replace all old legacy systems in their international plants, to achieve an international integration solution, to enhance operational efficiency, for competitive advantage, improve on time data accuracy, and to assist in producing financial reports required by top level managers easily and quickly. It is quite evident from the list that their reasons resonated very well with other enterprises in other parts of the world.

IV. METHODOLOGY

The research followed a couple of methods in order to collect the data needed to analyze and answer the research study's objectives. These methods included oral interviews and questionnaires. With the targeted responses from senior managers and the employees who used the system on a day-to-day basis. Another method of data collection was observations of how the enterprise used the system, and triangulation with project implementation reports that were created during the implementation process. The choice of respondents was also based upon the selection of the people who were involved in the adoption and implementation of the SAP ERP system. That is those who were part of the implementation process. The data collection centered around three key areas, user related variables, critical success factors and the implementation process that the organization followed. The user related variables were used to gather data from the users in how they perceived the importance and use of the system within their roles and the enterprise. Table IV below gives an appreciation of the distribution of the respondents. Through the triangulation method, the authors were mainly interested in unearthing the CSFs that were employed during the implementation process and how the implementation process was actually carried out. The following section discusses the results and findings of the study.

Table IV: Distribution of Respondents

Age	Frequency	%	Qualifications	Frequency	%	Gender	Frequency	%
<20	0	0	Diploma	4	20	Male	12	60
21-39	9	45	Degree	10	50	Female	8	40
40-49	6	30	Masters	4	20			
50-59	3	15	PhD	2	10			
>60	2	10						
Total	20	100		20	100		20	100
					0			

V. RESULTS AND DISCUSSION

User Related Variables

Figure 1 below gives a summary of the results that were obtained pertaining to users' perceptions of the system. These results can give important clues about what the users thought about the success of the ERP project and its life going forward.

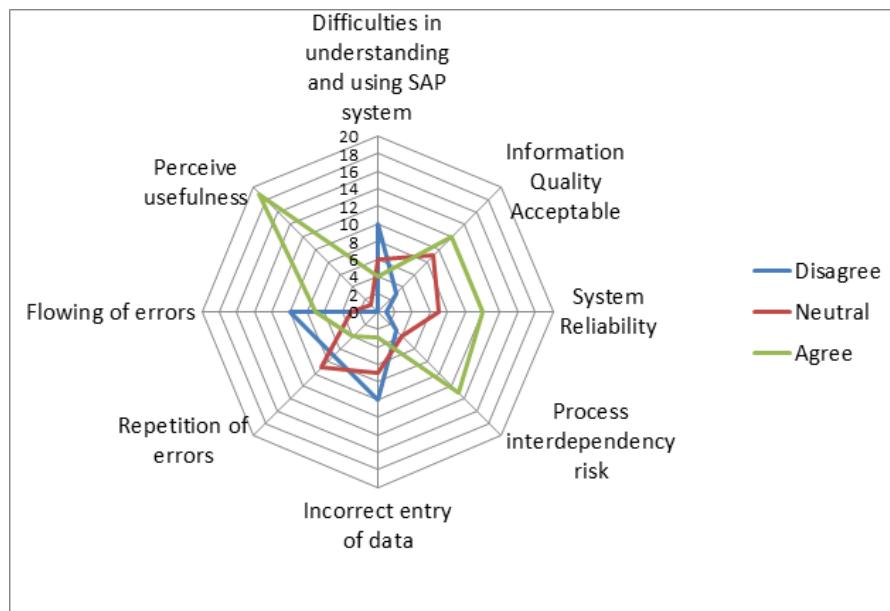


Figure 1: User Related Variables

Difficulties in understanding and using SAP ERP system

The statistical results show that 20% of respondents found ERP systems complex and difficult to understand. They believed that employees find it difficult to get the ERP system to do what they want it to do and said that learning to use the ERP system had been difficult for employees. On the other hand, half of the respondents 50% did not find difficulties in understanding and using ERP systems. While 30% being neutral about what they think about the difficulty of using the ERP system. What can be deduced from the results is that even after many years of use of the ERP, the enterprise still had to do some continual training of users in order for them to appreciate how to use the system. There should be continual training more especially that knowledgeable workers could be leaving the employ of the enterprise to join other enterprises since there is still scarcity of employees skilled in using ERP systems locally. Risk of employee turnover is not surprising since it was reported by Rajnoha et al., and the need for post-implementation training will always be necessary to allow continued proper use of the system [1, 2].

Information quality acceptable

The results show that few respondents 15% believed that the output information provided by the SAP ERP system is often inaccurate, too late to be useful, inconsistent, and incomplete. On the other hand about 60% of respondents considered the output information provided by SAP ERP system to be often accurate, not too late to be useful, consistent and complete. Clearly the results also confirms the need for continual post-implementation training so that everyone can understand that with proper use of the system, the information on the ERP system should always be accurate, in time, consistent and complete.

System Reliability

The results indicate that 60% respondents believe that the SAP ERP system that the company is using is reliable as they indicated that they never experienced any data loss or system errors. While 5% disagreed that the system is reliable, claiming they were often data losses in the system and system errors making the system not reliable. Generally SAP systems are known to be very reliable as compared to other ERP systems; hence this result is quiet surprising.

Incorrect entry of data

Only 15% of the respondents understood the importance of maintain accurate data in the ERP system, and how incorrect data could compromise confidence in the integrity of the data in the system. While 50% of the respondents did not perceive that incorrect entry of data could cause major problems in the company. This finding is linked to the next one on repetition of errors, with only 4% understanding that system integrity and master data information correctness are crucial in the avoidance of errors, while 35% did not see why that is

important for the correct functioning and usage of the ERP system. This result is absolutely important in arguing for continual post-implementation training of front-line users of ERP systems. Like Bingi et al., put it, some of the decisions that had all this time been done by managers, after ERP installation could be done by front-line personnel who needs to be thoroughly trained on how ERP systems work and the importance of system and master data integrity [5]. It can also be seen from figure 1 above that only 7% of the respondents agreed that there could be a quick flow of errors from one section of the business to the next given an incorrect entry somewhere, while 50% disagreed on that.

Perceived Usefulness

Ninety-five (95%) percent the respondents believed however that their SAP system was very useful as it improved their performance, productivity and effectiveness, with only 1 respondent giving a contradictory view, that it was just average or neutral on the improvement of their performance, productivity and effectiveness.

Critical Success Factors and Implementation Process

The enterprise appears to have followed a thorough implementation process and employed all the major critical success factors as discussed below.

The implementation process was led by a cross-functional team, which had a mixture of fully dedicated employees to the project and some that also had some of their earlier day-to-day responsibilities to deal with. This team was given its own ‘war room’ called the pilot room. As part of their first initial stage, the pre-implementation stage, the team reviewed how other sister plants particularly the Namibian plant within the multinational group implemented their system. They then approached an implementing partner called NTT Data Business to help with an evaluation and demonstrate how the enterprise could go about their implementation process. Several steps were then followed afterwards which involved the following; installing and testing new hardware needed to run the system and installing the new software and performing the war room pilot. Then enterprise rolled out training to anticipated system users both off and on the system in the war room. Before giving the users the system to use, several security and necessary permission rights to view and change certain information on the system were set up. This ensured not everyone can see everything even information they are not privy to see, and set controls on who can change master data on the system. After all that was done, the next step was to verify all master data accuracy before transportation from the old legacy systems. The company then chose to follow a phased in approach, with Finance being the first module to be implemented and brought live in 2003. Following the go live stage, in 2004, a post-implementation audit was carried out. The objective was to determine what areas needed additional assistance in order to more effectively utilize the SAP system. The audit was based on intensive interviews with managers, supervisors, and key employees across different functional areas. The audit results indicated that the majority of employees felt that the implementation process was not over. The general belief being that there was still much to learn about how to use the SAP system and continual training was still needed.

Most of the CSFs argued in the literature were employed by the enterprise. Before the implementation could begin a clear understanding of the strategic goal of the implementation was devised, led by the CEO, who issued a directive that it was of paramount importance to move to the new system. Then the enterprise set up a project management office with the mandate of coordinating all resources and communication of the stages of the project. One major effective tool was the establishment of an intranet web site for the consolidation of project information. One of the major CSFs has been noted as organizational readiness and it could be argued the enterprise was always ready for a change [4, 8]. This is because for several years, the company had embraced a program of monthly “kaizen breakthrough events” in the pursuit of lean manufacturing. These events occupy teams— composed of six to ten shop floor employees, local and corporate executives, customers, and suppliers—who are charged with the analysis, redesign, and implementation of improvements in specific business processes. Teams frequently install, move, or modify equipment, rewrite procedures, change work assignments, set local operations policy, and otherwise make changes as required to achieve their designated goals. In addition, to this the enterprise already had numerous self-directed, permanent cross-functional teams that are charged with continuous improvement in a variety of areas. Hence this meant the enterprise already had resilience and mechanisms in place dealing of dealing with change, which has been cited to be of significant importance in projects of this complexity and magnitude [3-6]. This ability to deal with change and always ready for change and the implementation process, together with the critical success factors that the enterprise employed, could be attributed to the reason as to why the enterprise was able to successfully implement their ERP system in a very short period of time without major disruptions to their business.

VI. CONCLUSIONS AND RECOMMENDATIONS

In conclusion we could say the objectives of the study has been met, being to review the ERP implementation benefits, potential risks to look out for when implementing an ERP system and the critical success factors to be observed to increase the chances of the implementation project success. From the reviewed literature, several ERP implementation benefits, potentials risks and CSFs have been noted which any enterprise deciding to go the ERP road should consider carefully in order to build a business case for the project, and avoid major pitfalls that other enterprises have been reported to have fallen into. Our case study also reveals some interesting factors like organizational readiness that has to be there in order to increase the chances of success. Enterprises should build a culture of embracing change through continuous improvement initiatives like kaizen, which come handy when attempting to implement complex initiatives like ERP systems. Our case study's implementation process was also consistent with the literature reviewed. This is because they actually chose to follow a phased in approach instead of an all at once implementation, which has been argued to be very risky [3, 4].

The recommendation that can be given is that continual post-implementation training is of paramount importance since the effective use of an ERP system depends on the front-line staff who are the key users of the system. High staff turnover of ERP skilled personnel cannot be avoidable currently because these skills are still in high demand and many employees do not understand ERP systems and how they work. So skilled employees will always be moving around enterprises leaving a gap of skills where they left. This will always continuously necessitate the importance of continual post-implementation training, rather than just training employees during the implementation process or just some months after, then no more training. ERP vendors like SAP and Oracle, the biggest market shareholders should also continue to assist organizations in this cost by funding training of tertiary university students while studying so they can graduate with the requisite ERP skills. Training is normally very costly and enterprises are always short of financial resources to periodically train all employees. In addition to just the cost of training, they may also not have the financial resources to have a training system since they cannot actually afford to train people in the live system, since they might actually jeopardize the integrity of the system as well.

REFERENCES

- [1]. Umble, E., Haft, R., R., and Umble, M., M. "Enterprise resource planning: Implementation procedures and critical success factors." *European Journal of Operational Research* 146, 2003, pp241 – 257.
- [2]. Rajnoha, R., Kadarova, J., Sujova, A., and Kadar, G. "Business information systems: research study and methodological proposals for ERP implementation process improvement." *Procedia – Social and Behavioural Sciences* 109, 2014, pp165 – 170.
- [3]. Mandal, P., and Gunasekaran, A. "Issues in implementing ERP: A case study." *European Journal of Operational Research* 146, 2003, pp274 – 283.
- [4]. Motwani, J., Mirchandani, D., Madan, M., Gunasekaran, A. "Successful implementation of ERP projects: Evidence from two case studies." *International Journal of Production Economics* 75, 2002, pp83 – 96.
- [5]. Bingi, P.,Sharma, M., K., and Godla, J. "Critical Issues Affecting an ERP Implementation." *Information Systems Management* 16, 2006, pp7 -14.
- [6]. Mabert, V., A., Soni, A., and Venkataraman, M., A. "Enterprise resource planning: Managing the implementation process." *European Journal of Operational Research* 146, 2003, pp302 – 314
- [7]. Holland, C., P., and Light, B. "A critical success factors model for ERP Implementation." *IEEE Software* May/June1999, pp30 – 36.
- [8]. Hakim, A., and Hakim, H. "A practical model on controlling the ERP implementation risks." *Information Systems* 35, 2010, pp204 – 214.