Analysing the impact of Enterprise Resource Planning (ERP) in improving business operations of Cooperatives

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Abstract
The purpose of this paper reviews qualitative research on the analyze of impact on such a contingency factor such as the definition of what the ERP (Enterprise Resource planning) originates, analyze the impact on the operations department within corporate, the result of the impact and factors of failure published over 15 years. This paper presents literature for cooperatives to benefit from the ERP system research and recommendations be made on the bases why research is necessary particularly around South Africa.

Keywords: Enterprise resource planning, Information Technology, Cooperative.

1. Introduction
Past years many manufacturing companies made use of the ERP (enterprise resource planning) which is defined as a software solution that ranges an organizations system to gain a holistic view of the business enterprise. It provides one database, one applications for the entire unified interface of the organization. The purpose of the ERP system is to help organizations integrate all the various functions into an integrated process (Ehie and Madsen, 2004). The implementation of the ERP can cause major changes that needs to be properly managed in order for the businesses to reap the benefits later in the stage. Ehie & Madsen (2004) projects that over 70% of fortune 1000 companies have or will soon install the ERP system. A Standish group report states that on the ERP implementation projects it reveals it shows that some projects were on average, 178 probably over budget that took 2.5 times longer than the intended time frame and managed to deliver only 30 percentage of the promised benefit. Many studies have neon made during the last 10 years of (1999-2008) in order to identify factors for the success and failure of ERP.

A cooperative can be described as an organization were by people voluntary form groups with the same common goal that they wish to address jointly or to create employment for themselves (Cipro, n.d). In South Africa, there is a highly developed co-operative sector, which operates mainly in informal, marginalized and unskilled economy, which is widely populated by unemployed and people whom are unemployed within formal sectors. A co-operative Act of 2005 and Co-operative Banks Act of 2007 provided the legislative framework to regulating and promoting cooperatives in South Africa (DTI, n.d).

Hazzen (2000) states that cooperatives play a big role in the development of the country, the creation of job opportunities and continue to alleviate poverty in rural areas. Cooperatives deal with the socio economics of members, which is why it is the type of business that requires concentration. It helps to build the communities and neighboring communities. The use of cooperatives to other business is that cooperatives accumulate their own resources, which in essence enables members to be independently from other sources and compete in the market (Von Ravensburg, 1999). Thus, South Africa’s economic and political has an impact on the transformation on women likelihood strategies to seize opportunities and finding ways to contribute to their social and economic empowerment.

In addition to the study Ifinedo (2008) indicates that no other research effort has considered all the factors in one study hence the consideration for the study. Why has there not been studies investigated for similar contingency factors on IT

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impact not be considered sufficient for ERP system? The main reason is due to the fact that the ERP is different from other IT system as the implementation always includes constructed technological, operational, managerial strategies and organizational components (Markus and Tanis, 2000). It has been tested that approaches used in the implementation of traditional IT may not be adequate for the ERP system an example would be when an organization adopts the ERP they often have to consider the amounts of resources (time, money) o implement the process and made aware of the salient changes that occasionally accompany ERP acquisitions (Davenport, 2000; Krumbholz and Maiden, 2001). They went on to suggesting that when assessing IT in SMME’s (Small Medium Micro Enterprise) the availability of high quality external experts were more important than getting the support of top management. With respect to that contingency factors on ERP system benefits, value or success in the number of insights is based on descriptive interviews which took place at the implementation phase (Bingi, Sharma and Godla, 1999; Davenport, 1998, 2000; Westrup and Knight, 2000). In the following section, the research methodology explains the various studies that have been used through the use of a quantitative method. Journals, books and articles will be used to compare preliminary literature review. Finally recommendation for future development and conclusion.

1.1 Research Problem

Despite the positive role the ERP plays in organization it often fails. It’s usually due to the fact that it’s too costly, too complicated and does not add value to the goods. One of the main reason for failure is because the ERP software does not fit in with other organization (Arik and Somers, 2014). Barton (2001) suggests that there are various factors as to why most organizations fail to implement the system correctly. Some of the reason for the fail is (1) inadequate training from the users whom are meant to operate the system as they are not provided with the right training in order to adapt to the changes of the software, (2) Process risk and process barrier thus there being a significant financial loss or reputation harm due efficiency loss as employees are no focused on trying to improve their technological skills instead of performing on their work. Therefore making the implementation hard for the organization to handle and (3) unrealistic expectations from organizations waiting to see results quick instead of focusing on having an implementation plan to guide the procedure (Barton, 2001). The ERP system has been incorporated in various sectors but it has not been tested within cooperatives operations department. There are not enough researches made on cooperatives and the use of the ERP in the operations of the cooperatives.

1.2 Research goal

The goal of this study firstly, is to define what ERP (enterprise resource planning) is and how it operates. Secondly it’s to identify its level of impact it could have on cooperatives. Thirdly to investigate the success stories. Lastly to evaluate the number of qualitative studies.

1.3 Research Objectives

- Analyze the impact of the ERP in the operations of cooperatives
- Evaluate the outcome of the ERP in the operations of cooperatives

1.4 Research question

How effective will the enterprise resource planning be to cooperatives operating system?
2. Literature Review

Holland, Light & Gibson (1999) describe the Enterprise resource planning as an integrated system that is enterprise-wide with standard information system that conforms all aspects of the organization. The benefits is that it can speed up decision making, help organization reduce costs and allows for control within the management position. An organization needs to be fully processed for a full ERP implementation integration and ensure that all parts adhere to exact process (Holland, et al, 1999). The definition of ERP can be broadened (Barton, 2001) as it includes a software package. It is also a business management tool to link all the facets of a business that include Human resources, sales, stock. The ERP system assists organizations to deal with their supply chain, receive inventory, customer management, have a proper production planning, accounting etc. all activities that take place in an organization. Ragowsky & Somers (2014) identify the implications of the ERP as sweeping changes for organization, business practices and core competencies. Most companies fail to understand the competitive advantage from the ERP implementation which is the attributable to failure of the proper usage of technology in order for changes to be addressed in the form of structure and design of the organization.

ERP facilitates a corporation to be managed to maintain effective and efficient use of resources which provides a solution for the organizations information processing requests a process oriented across the entire organization (Nah, Lau & Kuang, 2001). Multiple benefits have been listed by researcher and practitioners. The ERP system helps businesses managed their business better with potential reaps for improvement in flow process, better data capturing, decision making, improve on operations and offer a better customer service(Nah, et al, 2001). The system runs on a variety of computer component and network configurations. It’s configured by systems integrators that includes direct integration (1) which is the connectivity that is part of the product that offers support for the plant floor equipment their customers operate in, (2) Database integrating is to plant floor data sources through staging tables that includes information into the database (Wikipedia). The ERP system requires crucial support from top management. It’s important that organizations who wish to adopt the enterprise system to include the ERP that is explicitly clear on the leveraged acquired systems goals and objectives (Davenport, 1998, 2000; Somers and Nelson, 2004).
2.1 Analyze the impact of the ERP in the operations of cooperatives

The ERP system is used to diffuse worldwide amongst organizations with the idea of replacing legacy systems, improved inter and intra operational efficiency, gaining strategic advantages etc. (Davenport, 1998; Ifinedo, 2006). Therefore, given the ERP system is a different class system it’s important for a measurement model to be used to measure the impact or success of such a system. (Gable, Sedera and Chan, 2003) has developed a success model for the ERP that redefines the dimensions. Gable, et al (2003) eliminated data collection and statistical analysis and focus on system quality, information quality, individual impact and the impact on organizations. Ehie & Madsen (2005) theorise a five stage implementation process when implementing the ERP system successfully and it will in future create a competitive strategy of an organization. By bringing the ERP into a full function and reaping something from the system is a comprehensive task that requires full attention to the most critical success factors. The process is split into five phases and each phase presents an enquire milestone in the ERP Process. Therefore, management are to constantly review the end of each stage and ensure everyone agrees to the outcome before moving to the next stage. There should be a golden thread to prevent going back and correcting mistakes that could be costlier (Ehie and Madsen, 2005). The process looks at the company’s strategic enterprise change management and business development components.

- Phase (1) it’s the preparation, a comprehensive planning process that involves people who deal with leadership roles, the establishment of budget targets and determine the next plan to be followed.
- Phase (2) deals with blueprint that is the analysis of the process of an existing business which provides a background for system selection before the training and learning on functionality and configuration provides to project teams for a needed insight on the map for process design.
- Phase (3) includes the realization, focus on the technical development foundation whilst testing every process design on a conference room pilot.
- Phase (4) the final preparation, the integration of the entire process design being tested under a fully load data and extreme situations.
- Phase (5) the go live and gain support on process flow optimization and expansion of the system while enjoying the new competitive advantage (Ehie and Madsen, 2005).

The groundwork for the design on the study is first gaining knowledge from the development. The ERP has been an object for researchers in various disciplines and today it’s extensive. Some literatures view ERP system as a technology and discusses implications on various technology designs. Whereas other literatures are concerned with ERP implementation and mostly searches for contingency factors that lead to success. When the ERP is enabled its planned organizational processes into new
desired directions and immediate improves performances (Hald and Mouritsen, 2013). In order to prevent future failures there should be a development of knowledge about consequences of the ERP their enabling and constraint powers to establish relations for research practise, it becomes a platform for the ERP to be identified and discussed.

Yang and Su (2009) emphasis that information and communication technologies have become major for competitive strategy of many business. In the early years the ERP did not improve on supply chain management as an objective. The ERP system is a risky and expensive venture but had always been expected to be an integral components.

2.2 Evaluate the outcome of the ERP in the operations of cooperatives

Nandi and Kumar, (2016) confirms that the use of the ERP system is trending world-wide and many organizations continue to vast resources into it. They continue saying that the benefits associated is a promise from automation and integration however they come with big risks. Some of the reasons included for failure is due to shortcoming in the implementation, lack of facility implementation, the lack of training, commitment from users and technological shortcomings. Several studies have been conducted on the Critical success factor (CSF) which are factors related to the success and/or failure of implementation within various contents (Esteves and Bohorquez, 2007; Esteves and Pastor, 2001; Finney and Corbett, 2007; Ram and Corkindale, 2014; Schlichter and Kraemmergaard, 2010; Shaul and Tauber, 2013). CFS is aimed to assist managers take necessary actions in the areas that have a bearing on the outcome. Ram and Corkindale(2014) suggest 46 CSF that are placed under four broad categories, namely organizational related, technological/ERP related, project related and individual related. In essence the ERP system is a form of innovation which is defined as the generation acceptance and implementation that include new processes, products or services for the very first time within organizational setting with the aim of bringing change. The organizational innovation includes three phases namely the initiation, adoption and the implementation (Rogers, 1983; Zmud, 1982). The first two conceptualize a change idea and enact the decision making process to provide change in resource. The final phase is adopting that idea to be a recognizable behaviour pattern in the organization.
The complexity that characterize information system together with the competence of operating substantial computing systems that could lead to the development of relevant and effective procedures for the support of modelling, adoption and implementation (Zafeiropoulos, Metaxiotis and Askounis, 2005). The ERP instalment is important to project managers and IT. Therefore, an effective method should be installed namely, Goal Directed Project Management which is an inclusive philosophy, procedure and method for controlling projects. A vital process of the project management and goal directed management is risk management in order to avoid problems during projects that could lead to deviation and cost estimations. For an increase in quality of the process for the implementation of an ERP system is expected. With the development of this application the following were achieved goals: A structured process for risk management within the implementation system, stored knowledge on managing risk, certainty for the implementation success and results are expected, completion of project to be on time, resource planning creation and control on reduction cost of implementation (Zafeiropoulos, Metaxiotis and Askounis, 2005).

3. Research Methodology

Sample of articles and data collection. A crucial issue in this investigation was finding journals that specifically deals with cooperatives and the potential use of the ERP system in the cooperatives operations. Therefore two conditions were set for the article that will be included. First, it should mention locations explicitly from any articles fields, namely title, abstract and keywords. Second, it should investigate cooperatives impact and contribution of the economy. Two of the most reputed database from the Library, namely emerald and IR since they included top journals that were references to the study of the ERP were used. Studies that contained quantitative data were selected for the sample. Quantitative studies that included articles, textbooks and literature review. The search yielded a total of 20 articles, 2 of which were published in South Africa’s research-gate. The remaining articles 18 were published in several Information system journals and Business management journals namely, Journal of Enterprise information, International Journal of Production Research, Business Process Management Journal, Management Information Systems etc. The use of preceding from researchers whom attended seminars for discussions on the ERP system.

The literature review of the ERP system of research conducted by Ehie and Madsen (2003) and included the most representative journals for this topic. As a result of their outcome they investigated various solutions for the implementation process. Additionally the main quantitative and qualitative methods of research in emerald gathered from the taxonomy of research methods that were conducted by Gonzalez-Loureiro, Dabic and Furrer (2005) were included. In each case a new variable was made to merge all the respective methods into two single additional keywords: namely quantitative and qualitative. Two additional keywords were mentioned. The qualitative and quantitative methods that are
classified in one variable and the distance of both are computed. A quantitative research is more strongly associated with competitive strategies from strategic approach whereas qualitative is more firmly linked to business owners, Cannon, Higginbotham & Leung (1998) state that qualitative research occasionally involves (1) Face to face interaction between researcher and subject, (2) open ended rather than closed questions, (3) unstructured rather than structured interview scheduled and small samples. Only a few keywords are mentioned which means that those topics are currently under researched and have made use of the quantitative study more rather than the qualitative approach. Yet, qualitative studies may shed intense light when interviewing ERP experts on their opinion on whether the ERP will function proper in cooperatives. Strategy as fit could be an interesting approach.
Figure 1: Quantitative vs Qualitative on strategy.
4. Results

In order to formally gather published studies that quantitatively exam the study of the ERP system incorporates, an extensive literature search using electronic databases such as Google scholar, Emerald, Abstracts, social sciences, journals and academic search was conducted. Searches using the following terms: ERP system outcomes, Cooperatives affect in the Community, Failures of ERP were performed. All the studies that contained literature review were written in English and published between the years 1986 – 2016. Only studies that contained quantitative data were selected for the sample. The final sample included a total of 13 published reporting results of quantitative studies on the failure and success of the ERP system. The present review was not intended to be inclusive and it’s recognizable that other publications were relevant but I did not extend my search. The only materials I was able to access was through university research process were part of the sample; as a result a few older studies in the 1960’ and 70; were excluded for lack of ready availability. I also excluded studies that focused primarily on other sectors that were not related to cooperatives or operations. In general interviewing was the most common method and mostly done with companies who have succeeded or failed with the ERP. Themes were extracted from the review literature. The following discussion is found from the data (1) Success; (2) Connection of the ERP on the business (3) Critical factor (4) Risk management (5) Implementation of ERP (6) Supply chain management. Each study was re-read and code in terms of the 6 themes. In this section I present the findings of my literature review for each decades. Table 1 presents the characteristics and themes of studies during the decade of 1999s. The theme of ERP success characterize Hollard, Light and Gibson (1999) about a success model to be implemented for the success of the ERP in enterprises. The theme of the link between ERP and managers in response to diagnostic delay characteristic by Davenport (1998) to showcase the role of managers in the utilization of the ERP.

5. Recommendation

It is recommended that government support cooperatives as they are influencing the economy by creating jobs etc. government business funding agencies to supply cooperatives with funding in order to implement the ERP system within their businesses. ERP experts to host classes that way cooperatives are able to gain the necessary skills and training that is required in order to sustain the ERP system. The support from top management is invaluable to the success of the implementation, the support will provide strategic direction for active involvement of all parties. The ERP system is not a matter of changing every component (hardware and software) systems, instead it transforms the
company to higher performance through a streamlined business process. Cooperatives can use the factors identified in the study to fully understand and prepare for a successful ERP system implementation. Below are presented on strategies:

a. Project definition – for all users to gain proper understanding of what they will be working with and on. It helps them gain a good working knowledge. A schedule should be in place for certain activities to be done and in essence allow team participation.
b. Project management structure – a formal procedure should be in place for the project. The procedure should be used for all deviations. Team members should participate in regular meetings, develop regular reports and develop knowledge.
c. Expertise of the ERP- the use of experts that will help teams become knowledgeable and experienced in the work. It will put emphasis on clear decision making once everyone has an idea on how things work. Training is to be provided with designed training materials and courses.
d. Performance measurement – performance measurement in order to keep track on the progress and make changes if needed in order to minimize cost of having to go back which will cost more.

6. Conclusion

The major purpose of the paper is to propose the ERP system into cooperatives by identify various keys that could assist them in implementing the system. The cost of implementing the ERP greatly affects the full implementation for the operations condition. Other factors are also mentioned namely the five process implementation and how to ensure its success, the success of ERP and the benefits that organizations get from the whole process. However the paper always focused on areas regarding the different methods of research that past researchers had used to obtain information on the system. A total of 25 secondary sources that included journals, textbooks etc. have been analysed to map out an intellectual structure of research. There are many gaps found in the research and they have been discussed. Ideas presented in the article will encourage researchers interested in conducting research on cooperatives and the utilisation of the ERP into its operations. Langley and Abdallah (2015) suggest that through personal reading and research people might discover, articulate or even invent others. There areas of innovation and creativity around for qualitative studies in this form of a topic.

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Biographies

Khutshelo Mushavanamadi is currently a Lecturer and a Programme Manager in the department of Quality and Operations Management; and conducting a PhD in Engineering Management in the Faculty of Engineering and the built environment at the University of Johannesburg. She holds Certificate in Enterprise Resource Planning, Certificate in Operations Management, National Diploma in Production Management from Technikon Witwatersrand; Bachelor of Technology Degree and Masters of Technology Degree in Operations Management from the University of Johannesburg, Faculty of Engineering and the Built Environment, in South Africa. Her research interests involve Operations Management and Enterprise Resource Planning, and Quality.
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