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Abstract

Numerous Critical Success Factors (CSFs) have been identified in Enterprise Resource Planning (ERP) projects. Project Management is one of the few CSFs that appear in both large and small business ERP implementation studies. Few studies further investigate project management processes in ERP implementation project in Small and Medium Enterprise (SME) context. Professional bodies like Project Management Institute (PMI) have developed an extensive list of processes at various stages of projects, however, it is not clear whether all recommended processes apply in an SME ERP implementation project. This warrants further investigations to understand how project management processes and activities in various project management knowledge areas would contribute to ERP implementation success in SMEs.

Critical hermeneutics will be used for interpreting the text and making sense of the prevalent contradictory views of various stakeholder groups in SME ERP implementation projects around implementation success, best-fit project management lifecycle approach, and project management practices.

Keywords project management good practices, SME ERP implementation project, SME ERP implementation success, SME ERP project typology, critical hermeneutics.

1 Introduction

Enterprise Resource Planning (ERP) systems are comprehensive information system solutions for integrating various functions in a business such as financials, sales, procurement, inventory, production and materials, service and maintenance, project management, human resources, and etc. (Davenport 1998). ERP systems support recurring business processes (Klaus, Rosemann and Gable 2000), reduce repetitive tasks and decrease redundancy as well as bringing many more benefits to organisations (Davenport 1998). ERP systems have been around for some time now (Bond, Genovese, Miklovic, Wood, Zrimsek and Rayner 2000). Despite their complexity, even small businesses are implementing these information systems to stay competitive (Klaus et al. 2000).

Acquisition and implementation of enterprise information systems could be intricate (Parr and Shanks 2000). The biggest challenges are business problems; companies fail to reconcile the technological imperatives of the enterprise system with the business needs of the enterprise itself (Davenport 1998). ERP implementation project is a complex and resource intensive initiative and entails change in business processes, hence it requires careful management throughout the stages of project lifecycle (Parr and Shanks 2000).

Research suggests there are many differences between large and small businesses in their traits and characteristics (Bhagwat and Sharma 2007). Zach, Munkvold and Olsen (2014) acknowledge the importance of organisational context factors on Information Systems (IS) implementation success and suggest the results obtained from studies of large organisations cannot necessarily be generalised to small organisations.

Much research has been done to determine CSFs of implementing ERP systems in organisations of various size and context (Shaul and Tauber 2013). Yet organisations vary in their ability to assimilate ERP systems and many ERP deployments fail to achieve the expected financial and operational impacts (Mu, Kirsch and Butler 2015). There are some studies specifically investigating various aspects of ERP adoption in small businesses context (Zach et al. 2014). Project management, unequivocally, has been recognised as a critical success factor in SME ERP implementation projects (Doom, Milis, Poelmans and Bloemen 2010; Shashank, Siddhartha and Misra Subhas 2013; Shaul and Tauber 2013; Yulong 2011). Tasevska, Damij and Damij (2014) in their study conclude use of project management practices in SME ERP implementation projects are an important critical success factor and suggest some of these practices have major impacts on ERP implementation success and recommend more efforts to be put into those practices. Robust and sophisticated project management processes improve the likelihood of SME ERP implementation success (Dezdar and Sulaiman 2011). Nevertheless, few studies elaborate on project management activities and processes in these projects.

Extensive research has been done on success and failure of projects (Jugdev and MÜller 2005). The literature mainly describes the activities and processes that increase the likelihood of project success, and the criteria by which the success of a project can be measured (Bredillet 2008a). Recently there has been a shift in focus of project success literature from planning and controlling project schedule, budget, and performance, to projects being means of initiating change and achieving strategic goals of the organisation (Zwikael and Smyrk 2009). In recent studies, scholars recognise that various project stakeholder groups perceive project success differently and much more variables and factors are involved that could impact project success (Bredillet 2008a). Nowadays an outcome-focused definition of projects is widely accepted (Kerzner 2013; Shenhar and Dvir 2007; Turner 2006; Wysocki 2013). . This, applied to the context of SME ERP projects, means the project is not finished until the strategic objectives of the business, which were the rationale for adopting ERP, are realised. We will use the SME ERP CSFs as the structure, and Model of Information Systems (IS) Success as overarching framework to investigate and explain factors influencing perception of success among various stakeholder groups in SME ERP implementation.

One important stream of research or school of thought in project management is the contingency school (Söderlund 2011). The main theme of this school is application of project management to different types of project. The literature in this research stream emphasises how project management processes and leadership style need to commensurate the project type, and considers the best fit project management approach for various project settings (Bredillet 2008b). The idea is different project management approaches and processes are required for each project type. Therefore, the criteria for categorising projects have been devised and based on project type, best fit project management approach can be determined (Niknazar and Bourgault 2017; Turner and Cochrane 1993; Wysocki 2013). It seems this is an under-researched aspect in SME ERP implementation projects. Here using the criteria specified in one of the available project typology methods as structure, different views on SME ERP project type will

be examined to obtain greater understanding of choice of project management lifecycle approach for this type projects.

In this study we look at the project management processes that could influence perceived SME ERP implementation success. In sync with recent project management studies we adopt the outcome-focused definition of project and assume SME ERP project management is more than planning and controlling budget, schedule, and project scope; and all project management processes and activities throughout the project should be in alignment with the goal of project, i.e SME ERP implementation success. The views and perceptions of the participants and their definition of SME ERP implementation success will be described in contrast to SME ERP CSFs and Model of IS Success (DeLone and McLean 2003). Using critical hermeneutics we try to interpret and explain participant's assertions and clear out the ambiguities around the goal of SME ERP implementation project. As the next logical step in planning project management of a SME ERP implementation project, we need to determine the appropriate project management lifecycle approach. In this study we adopt the project typology matrix and project categorisation criteria used by Wysocki (2013) to identify category of SME ERP projects and discuss suitable project management lifecycle approaches for these projects. Finally using PMI's project management knowledge areas (Project Management Institute 2013) as structure, we will look at the various activities and process across different project management knowledge areas and try to offer explanations on how these processes would contribute to SME ERP implementation success. We use critical hermeneutics as mode of analysis to interpret and explain the meaning of participant views.

1.1 Research Questions and Objectives

The main objective of this research is to understand how project management processes and activities in various project management knowledge areas contribute to SME ERP implementation success. Many studies have identified project management as a critical success factor in SME ERP projects, however, it is not clear how project management activities and processes contribute to the success of the project. To lay the foundation for this understanding, the success of SME ERP has to be defined. This study assumes the success of SME ERP project management is achieving the strategic goals of the business from ERP adoption. We will use the IS success dimensions in DeLone and McLean Model of IS Success (2003) as the framework for defining SME ERP success. The assertion that SME ERP "project management success" and SME ERP "implementation success" chase same objectives means project management is the tool for making sure the implementation CSFs will be carried out and completed in order to achieve SME ERP success, hence it seems necessary to investigate the CSFs in SME ERP implementation and the relation of each critical success factor to the Model of IS Success. As an ancillary of main research objective we also need to understand the factors influencing the choice of suitable project management lifecycle approach for SME ERP projects. Following research questions are proposed which will be investigated through this study:

Research Question 1: How do project managers, ERP consultants, and ERP adopters define SME ERP implementation success?

Research Question 2: How the SME ERP implementation team can determine suitable project management lifecycle approach?

Research Question 3: How project management processes and activities contribute to achieving SME ERP implementation success?

2 Literature Review

2.1 Small Businesses: Definition and Characteristics

There are various definitions for small and medium businesses all around the world and there is not a generally accepted definition. These definitions, however, seem to be related to the size of economy in organisation's country of operation. Small businesses are usually categorised based on the number of employees and their sales volume and turnover. The SMEs definition in New Zealand is described as enterprises with 19 or fewer employees (New Zealand Ministry of Economic Development 2011). These businesses cumulatively comprise 97.2% of all enterprises New Zealand wide, a figure that is more or less reflected worldwide.

Potential participants of this study will be amongst project managers, ERP consultants and vendors, and their SME clients. Although most of the experts are based in New Zealand they may have international clients. Therefore we will request participants to reflect on their experiences in ERP implementation projects where the adopting company would be considered an SME in their country of operation.

2.2 ERP Systems in SMEs

SMEs are using ERP systems for some time now. Koh and Simpson (2007) argue implementing ERP systems in SMEs can actually improve their responsiveness to change and agility and as a result create competitive advantage for these companies and improve the chances of their survival. ERP implementation in SMEs could be challenging as the intrinsic characteristics of these organisations (e.g. size, small budget and resources, and etc.) could impact ERP implementation (Malhotra and Temponi 2010; Zach et al. 2014). The costs and risks associated with adoption of these systems has caused scepticism amongst some researchers and practitioners about appropriateness of these systems for SMEs (Olson and Staley 2012). Zach et al. (2014) argue most research done so far is based on findings from large enterprises and research on SME ERP implementation is still limited. This is disproportionate to the share and importance of this sector in global economy and justifies more research on SME ERP implementation success.

2.3 Successful ERP adoption in SMEs

Petter, DeLone and McLean (2012) highlight evaluation of IS success as a very important aspect of information systems with implications for both research and practice. However, success seems to be subjective. Powers (1973) in the study of Management Information Systems (MIS) project management myths and reality defined MIS project success criteria as time, cost, user satisfaction, and computer operations. He highlights user satisfaction as being the most critical of the four criteria and argues MIS projects, for their nature, would be a failure if the final product does not satisfy end-user. He suggests where the project product is not "user-oriented", being on-time and within budget is a slight achievement. Wateridge (1998) argues there has been instances where the three generally known criteria for project success (i.e. time, budget and specifications) were not met, yet the projects have been perceived as success. He acknowledges time, budget and specification as only a small part of criteria for judging success, since they only focus on the "process" whereas "product" has the same or maybe more weight in measuring success.

In an extensive review of previous research DeLone and McLean (2003) introduce a taxonomy of IS success containing six major categories:

- System Quality (i.e. desired characteristics of the information system such as reliability, response time, ease of use, ease of learning and etc.)
- Information Quality (i.e. the information product for desired characteristics such as accuracy, meaningfulness, timeliness and etc.)
- Service Quality (i.e. the quality of IS function services and IS support)
- Use/Intention to Use (i.e. use of system or consumption of information products such as information system reports by users and decision makers)
- User Satisfaction (i.e. satisfaction of users and decision makers of the information product);
- Net Benefits (i.e. influence of information product on management decisions and perceived value of information product by management, the effect of information product on organisational performance).

It is imperative to distinguish "project success" and "successful project management efforts" (de Wit 1988). The objectives of "project" and "project management" are different (Munns and Bjeirmi 1996). Successful project management tends to be restricted to cost, time and quality, however, when measuring project success the objectives of all stakeholders must be considered (de Wit 1988). In this study we take account of all stakeholders regarding successful implementation of ERP and not only success from project management point of view. We will use the Model of IS Success to explain the definition of SME ERP implementation success from stakeholders' perspective.

2.4 SME ERP Project CSFs

CSFs are the key areas in SME ERP implementation that must receive constant and careful attention (Doom et al. 2010). CSFs of ERP implementation in large organisations have been identified and discussed in many studies. Some of these factors apply to small businesses context, however, Doom et al. (2010) in their study of ERP CSFs in SMEs found some of those factors are absent in small businesses. A successful SME ERP implementation requires management of CSFs at each phase of project (Loh and Koh 2004). There have been research and case studies which expanded our understanding of IS success and specifically ERP implementation in SMEs (e.g. Ramdani, Chevers and Williams 2013; Shashank et al. 2013 and etc.; Zach et al. 2014 and etc.). Petter, DeLone and McLean (2013) acknowledge that project

management and IS success have been "inadequately" studied and needs further exploration. To understand the definition of SME ERP implementation success, we will investigate the CSFs of SME ERP implementation projects and their position and significance relative to Model of IS Success (DeLone and McLean 2003).

2.5 SME ERP Project Management

MIS practitioners need to pay greater attention to the role of project management (Tsai, Shaw, Fan, Liu, Lee and Chen 2011). Nelson (2007) in a meta retrospective study of 99 IT projects highlighted mistakes tend to be people and process related as opposed to product or technology-related. He conclude "a proactive and well-informed use of [project management] best practices is the best way to steer clear of classic mistakes … For project managers, best practices are also the prescription for avoiding Einstein's definition of insanity: doing the same thing over and over and expecting different results" (p. 77). Good project management has been identified as a critical success factor in ERP implementation projects in both small and large businesses (Doom et al. 2010; Loh and Koh 2004; Shashank et al. 2013; Shaul and Tauber 2013; Sun, Ni and Lam 2015; Yulong 2011).

2.5.1 SME Project Management

Project management has been around for at least 6 decades and has become a well-established discipline with a few professional associations, commonly accepted methodologies and standards, and a rich research community with few academic journals dedicated to the field (Bredillet 2007).

The definition of project has changed from being a sequential series of activities that have one purpose and must be completed by a specific time, within a pre-set budget, and according to specification to a business focused definition with emphasis on purpose of project (Kerzner 2013; Shenhar and Dvir 2007; Turner 2006; Wysocki 2013). Wysocki (2013) defines project as "a sequence of finite dependent activities whose successful completion results in the delivery of the expected business value that validated doing the project" (p. 7). He also defines project management as "an organised common-sense approach that utilises the appropriate client involvement in order to meet sponsor needs and deliver expected incremental business value" (p. 29). This study adopts this definition of project and project management.

SMEs use projects to manage internal initiatives and development projects such as IS implementation, however, these projects, especially in younger organisations, are predominantely managed by amatures and less formal project management processes are being used (Turner, Ledwith and Kelly 2012). Larger organisations use a wider range of project management practices and tools compared to SMEs (Besner and Hobbs 2006). SMEs require a simple form of project management that would fit their characteristics and can be used by less experienced project managers (Besner and Hobbs 2006; Turner et al. 2012).

Söderlund (2011, pp. 168-169) argues as projects are becoming "multifaceted, involving stakeholders with diverse interests" research in project management should cover different perspectives of the project and therefore in order to explore and explain the challenges of projects and provide a comprehensive view of project processes, researchers need to embrace pluralism and use multiple theories. In this study we investigate the project management practices of SME ERP implementation projects in all identified project management knowledge areas (Project Management Institute 2013) and try to gain deeper understanding of the activities of project team in relation to success factors and Model of IS Success.

2.5.2 Project Type and Best-Fit Project Lifecycle Strategies

Research in project management's contingency school of thought shows different projects require varying project management processes and leadership style (Bredillet 2008b; Söderlund 2011). Many researchers argue project management lifecycle strategy should be tailored to project type (Archibald 2013; Crawford and Pollack 2004; H Payne and Rodney Turner 1999; Shenhar 2001). Turner and Cochrane (1993) proposed assessing projects against two criteria of: how well defined are the goals, and how well defined are the methods; and based on the resulting 2x2 matrix they highlighted four types of projects:

- Type 1 projects where the goals and methods are well defined and they have solid foundation
- Type 2 projects where the goals are well defined but the methods of achieving them are not
- Type 3 projects the goals are not well defined, but the methods are.
- Type 4 neither goals nor the method of achieving them are clear

They conclude based on these project types there are three different breakdown structures and further describe respective methods of project start-up, milestone planning and configuration management for each project type. Similarly Wysocki (2013) argues uniquness of projects warrants using a best-fit model for managing them and that one-size-fits-all approach does not work in project management. In this study we will be using Wysocki's project typology matrix. He uses same concept as Turner and Cochrane (1993) and defines project landscape around two characteristics of the project: goal and solution; and the values of clear or not clear. Wysocki further defines appropriate project management lifecycle for each project type as:

- Traditional Project Management (Linear and Incremental models) in quadrant 1
- Agile Project Management (Iterative and Adaptive models) in quadrant 2
- Extreme Project Management (Extreme model) in quadrant 3
- Emertxe (Extreme model) in quadrant 4.

There are contradictory views on best fit project management lifecycle approach in IS projects among practitioners. Similar debates exist among academics; e.g. change resistant nature of traditional project management approach and lack of client involvement have been deemed as underlying causes of users not using the ERP by Maureen and Michael (2010). They suggests none of the studied approaches fully address ERP-specific issues. This reinforces the need for investigating how organisations can determine the appropriate project management lifecycle approach for they unique conditions.

While many scholars emphasise the importance of taking a suitable project management lifecycle based on project type (Archibald 2013; Crawford and Pollack 2004; H Payne and Rodney Turner 1999; Shenhar 2001) we could not find studies specifically investigating the best fit project management approach in SME ERP implementation projects. In this study we will use Wysocki's criteria for determining project type (i.e. project requirements, project flexibility, project adaptibility, and uncertainty) as the structure for interpreting participant's views on the subject. This could provide clearer understanding about the factors that should be considered for deciding which project management lifecycle approach would suit an organisation's circumstances.

3 Research Method

The purpose of this research is to obtain greater understanding of project management activities and practices that would contribute to success of SME ERP implementation project. As noted earlier, this study adopts the outcome-focused definition of project which means: project success is in fact implementation success rather than successful planning and controlling budget, schedule, and scope of SME ERP implementation project. We also appreciate the definition of implementation success in SME ERP projects is subjective and could be different and even contradictory between various stakeholder groups. ERP projects like many other projects are "complex social settings characterised by tensions between unpredictability, control and collaborative interaction among diverse participants" (Cicmil, Williams, Thomas and Hodgson 2006, p. 676). This research, as a sub-category of management research, is concerned with understanding the SME ERP implementation project as a temporary organisation. In management research, as an "applied" field of study, problems should be set, addressed and disseminated in relation to their social setting (Tranfield and Starkey 1998). This research assumes people create their own subjective meanings as they interact with the world around them (Orlikowski and Baroudi 1991), hence we start with the assumption that access to reality in only through social constructions such as language, consciousness and shared meanings (Myers 1997). We attempt to understand the phenomenon of SME ERP implementation success through accessing the meanings that participants assign to them (Orlikowski and Baroudi 1991). Therefore, this study adopts interpretive research as its underlying research paradigm.

To answer our research questions, views of different participants in this context (individually and collectively) will be the focus and an understanding of their feelings and experiences will be sought. ERPs are complex information systems which their implementation and use involve managers/owners, users and implementation team. To understand what is happening we need to seek human interpretations and meanings. Klein and Myers (1999) suggest that interpretive research has the potential to provide deep insight into information systems management phenomena and can help IS researchers to understand human thought and action in social and organisational context.

It is clear our study has a qualitative approach and therefore to describe, translate, and make sense of meaning, we use interpretive techniques (Klein and Myers 1999). Orlikowski and Baroudi (1991) suggest the research methods appropriate for generating valid interpretive knowledge are field studies. To

understand SME ERP project environments, implementation success factors, and project management practices, we can only get as close as possible to the experts in this field (project managers, ERP consultants, and their SME clients). This enables investigating the phenomenon from inside experts' social setting and observe their interpretation of incidents (symbols) and document how they act upon those symbols. In addition to including these accounts we will offer our interpretations and explanations of these observations. Providing detailed description of observations will enable the reader to appreciate the participants/experts' distinct patterns of thought and action which is the result of their life, culture, and experiences. Case study seem to fit the requirements of this approach. Case studies have been widely used in study of ERP implementation CSFs (e.g. Doom et al. 2010; Olson and Staley 2012; Snider, Giovani and Balakrishnan 2009).

Qualitative interviews are used in all kinds of qualitative research including case studies, and ethnographies (Myers and Newman 2007). The main methods of data collection in this study will be semi-structured interviews. These interviews, mainly with IS project managers, SME ERP consultants, and SME clients, will seek to address our research questions.

Critical hermeneutics will be used as the mode of analysis. Hermeneutics is concerned with meaning of text, or text analogue which in our case is the SME ERP implementation project (Myers 2004). The main objective of hermeneutics as described by Myers (2004, p. 103) is "understanding what people say and do, and why". Critical hermeneutics has been used in IS research (Boland, Newman and Pentland 2010; Melissa and David 2007; Myers 1994). Myers (1994) used critical hermeneutics to examine case study of The New Zealand Education Department centralised payroll system implementation in which the contributors to implementation problems were determined, but none of the identified factors on their own could explain the results of the implementation project, and only by considering the bigger picture and the broader social context of the project, system failure could be understood. Critical hermeneutics assumes reality is socially constructed, and there are different and sometimes contradictory interpretations, but disagrees with the idea that all interpretations are valid and asserts some interpretations are better (Myers 1994). Using this mode of hermeneutics the analysis can assess interpretations in contrast to the broader context (e.g. political and economic interests of actors). By utilising hermeneutics analysis techniques (e.g. hermeneutics circle) researcher can make sense of prevalent contradictory views while at same time provide a rich description of the events which would allow other interpretations to be made (Myers 2004). In this study we use critical hermeneutics to explain the views of participants around good project management practices in SME ERP implementation and describe how and why those practices could contribute to implementation success.

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