Power/knowledge of consultants and project management office in enterprise system implementation: Case study of a Saudi Arabian university

By

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Abstract

This thesis explores the power/knowledge of consultants and the project management office (PMO) in the implementation of an Enterprise Resource Planning (ERP) system and its subsequent development. The research followed a qualitative approach involving an interpretive in-depth case study. The study was conducted at a Saudi Arabian university and explored the power of consultants and the PMO in the implementation of enterprise systems in order to better understand the interaction of power and knowledge in the implementation and development process. A theoretical framework was developed by applying Clegg's (1989) Circuits of Power, Absorptive Capacity, Agency theory, Structuration theory, and Neo-institutional theory. This theoretical framework was used to guide data collection and analysis. A total of 34 interviews with senior management, consultants, technical staff, project managers, and end users were conducted. Data were analysed following Creswell's (2013) approach, and the principles of interpretive research in information systems (IS) proposed by Klein and Myers (1999) were applied. This study found that PMO and associated consultants have become powerful in ERP implementation and can mobilize power/knowledge by speaking for both the technology and the organization. This study contributes to research addressing ERP by investigating the power/knowledge of highly influential actors (consultants and PMOs) in the adoption and implementation of ERP. It also contributes to the literature on ERP and power, which has not extensively explored the context of developing nations such as Saudi Arabia.

Keywords: ERP, power/knowledge, user resistance, interpretive case study, consultants, project management office (PMO)

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Chapter One: Introduction

> Power considerations for information systems implementation are important in avoiding implementation failure (Setterstrom & Pearson, 2013, p. 88).

1.0 Overview of the Thesis

Enterprise Resources Planning (ERP) is a business management system that integrates most business activities into one IT system and, if implemented well, helps with the handling of most organisational activities, such as financial accounting, sales and distribution, materials management, human resources, production planning, supply chain, and customer information. ERP systems can control the flow of information between supply chain processes, whether inside or outside the organization. ERP systems can also help improve the performance of the organisation by minimising working cycle times. A number of industries have implemented ERP systems, such as the manufacturing, construction, aerospace, defence, finance, health care, hotel, education, insurance, retail, and telecommunications sectors (Shehab, Sharp, Supramaniam & Spedding, 2004).

The benefits ERP implementation offers an organisation have long been a research topic for business scholars (e.g., Davenport, 1998; Chung & Snyder, 1999; Markus et al., 2000; Klaus et al., 2000). Research has examined the powerful actors distributed throughout the implementation and post-implementation processes, including vendors, organizational management personnel, IT department personnel, consultants, and project management office (PMO) personnel. Of these, the PMO at one of the largest universities in Saudi Arabia is responsible for overseeing the implementation and development of the university's ERP systems. Consultants also play a major role

in the implementation and development of ERP. These two actors have not received the research attention they deserve.

However, the implementation of ERP systems is complex and challenging for organisations. Due to the complexities of ERP implementation, a high percentage (60% to 90%) of institutions fail to successfully deploy ERP (Al-Shamlan & Al-Mudimigh, 2011). The two main reasons for this failure are the lack of in-house expertise and poor employee retention, which make it challenging for the organisation to deal with changing technologies. Due to the difficulties of ERP implementing, organisations have turned to consultants for help with executing and adapting ERP (Ko, Kirsch & King, 2005). In addition, over 90% of ERP implementations are late and exceed their budgets (Al-Mashari, Al-Mudimigh, & Zairi, 2003). The reasons for untimely implementation include poor cost control, inaccurate schedule estimation, and changes in project scope, but not project failure. Because of these difficulties, we recognise the value of project management and the successful completion of the project. Project managers need to understand strategic and tactical management techniques. The key strategic factors include project mission, top management support, and project plan, while the key tactical factors include client consultation, personnel recruitment, technical tasks, client acceptance, monitoring and feedback, and communication and troubleshooting (Al-Mashari, Al-Mudimigh & Zairi, 2003).

When a new technology is employed, it is crucial to involve external expertise and vendor support to ensure a successful transition. These external aids help with ERP selection, business processes planning and reengineering, ERP implementation, ERP training, and ERP maintenance support. Due to the growing ERP market, the need for good consultants, which the market lacks, has become important. These kinds of projects require a range of skills, including functional, technical, and interpersonal

aptitudes. For this reason, the organisation needs to manage its consultants (Al-Mashari, Al-Mudimigh, & Zairi, 2003).

The main characteristics of ERP are that it is an integrated system that assimilates all core functionalities in the organization into one IT system. This one system includes the finances, human resources, and manufacturing functionalities. The human resources application deals with issues such as employee benefit programs and payroll management. The financial application deals with the organisation's financial management. The manufacturing application deals with inventory control and production management. The ERP system is software designed to automate business processes and incorporate information through all functions of an organisation (Yen, Chou, & Chang, 2002).

In the last few years, universities worldwide have been affected by global trends and government requests that they improve their performance and efficiency. Stakeholders, especially students and governments, also hope that they can provide quality services and respond to a competitive education environment. These desires coincide with the reduced financial support being provided by governments to universities worldwide. As a result, universities feel pressured to implement strategies for dealing with these challenges and enhancing and streamlining their performance (Abugabah & Sanzogni, 2010). ERP emerged as an aid for dealing with these changing and challenging environments. It has allowed universities to switch from legacy systems to a single integrated system that provides the required efficiency and develops user performance by offering better management tools (Abugabah & Sanzogni, 2010).

Implementing ERP involves many challenges, including selecting consultants and team members with the skills needed for cross-functional and multi-skilled project planning, training for customization, and upgrading the infrastructure to support the ERP (Kumar, Maheshwari & Kumar, 2003). Momoh, Roy and Shehab (2010) have identified a number of challenges for ERP implementation, such as excessive customization, internal integration dilemmas, a poor understanding of business implications and requirements, lack of change management, poor data quality, misalignment of IT with business, hidden costs, limited training, and lack of top management support. Developing countries face additional difficulties in implementing ERP. Most of these are economic, cultural, and issues of basic infrastructure (Huang & Palvia, 2001). Other challenges include power, politics, and user resistance to ERP (Allen & Kern, 2001). Thus, consultants, project managers, power, and politics, among other elements, are involved in the ERP implementation process and, if not managed carefully, can lead to implementation failure. One of the biggest challenges in initiating ERP is user resistance, which can lead to increased project duration, budget overruns, and the underuse of the new system. Although previous research has explored the reasons for user resistance, there are gaps in our understanding of how users evaluate change related to a new information system and decide to resist it. Several theoretical explanations of user resistance have appeared in the literature (Kim & Kankanhalli, 2009; Klaus & Blanton, 2010).

1.1 Area of concern

This research highlights the importance of understanding the power/knowledge of two chief players – consultants and PMOs – in the implementation of ERP. This thesis begins by providing a context for understanding the organisation of the university before and after the implementation of the new ERP system. It reveals how

technology was used before implementation by looking at change in the university. In discussing ERP implementation, the thesis shows how the new technology influenced the university by shifting its operations from a computerised record-keeping approach to a workflow process approach, as well as by providing opportunities for deskilling. The thesis then details the process of ERP implementation, its initiation, and the justifications for purchasing the ERP system. All of the above issues are considered in seeking to understand the context of ERP implementation at a Saudi university.

The resulting theoretical framework can improve the understanding of end-user resistance and how user resistance can be used to institutionalise consultants' and project managers' power/knowledge using Clegg's (1989) concept of 'circuits of power' as well as absorptive capacity, agency theory, mimetic and normative isomorphism, and the concept of 'legitimacy' from the theory of structuration.

Since understanding the power/knowledge of consultants and PMOs in ERP development and implementation is critical, this thesis aims to bring readers as close as possible to an appreciation of both major actors' involvement in the process.

1.2 Aim

This thesis seeks to develop an explanatory framework for the power/knowledge of consultants and project management in ERP implementation.

1.3 Objectives

1. To review the relevant literature in order to identify ERP system implementation in both organizations and higher education and to examine the roles of consultants, PMOs, and power/knowledge politics in IS.

2. To develop a theoretical framework based on Clegg's circuits of power, absorptive capacity, agency theory, neo-institutional theory, and structuration theory.

3. To explain the research methodology used in this research, which includes a social constructive paradigm, a qualitative approach, a case study strategy, semi-structured interviews, and the Creswell (2013) qualitative data analysis technique.

4. To identify the context of ERP implementation in the university.

5. To produce a theoretical framework for how user resistance was used to institutionalize the power/knowledge of consultants and a PMO in ERP implementation.

1.4 Background: Research context

Little research has focused on ERP implementation in higher education, particularly in developing countries. ERP systems for universities are used for academic reasons, not for the typical business reasons (Abugabah & Sanzogni, 2010). Rico (2004) has defined an ERP system for universities as 'an information technology solution that integrates and automates recruitment, admissions, financial aid, student records, and most academic and administrative services' (p. 2).

Universities are turning to ERP systems; implementing a type of ERP system has become a trend. This shift toward ERP is intended to help universities worldwide face a number of challenges, such as declining government spending, globalization, global competition, an increase in student numbers, changing academic work, increased competition between universities, the need to improve performance and efficiency

due to government pressure, and a desire to improve administrative operations (Rabaa'i, Bandara & Gable, 2009).

ERP systems help universities improve access to information, improve workflow processes and efficiency, increase control, and to program alerts. It usually has an easy Web interface, making it easy to use (Swartz & Orgill, 2001). The university studied in this thesis has the vision of achieving a paperless organization, to be made possible in part by the implementation of ERP. The ERP system offers effective control, time-saving mechanisms, computerized systematic activities, and the unification and connection of eight departments (AL-Hudhaif, 2012). The ERP system integrates all the functionalities of the university's departments into a single system to perform departmental tasks and provide easier access to information (Al-Mudimigh, Saleem & Ullah, 2009). ERP also leads to competitive advantage by integrating all business processes into a shared central database that allows for more effective business performance. It also enables ERP to integrate with other systems, such as Customer Relationship Management (CRM), Knowledge Management systems (KM), and Decision Support Systems. However, the process of implementing ERP is complex and challenging, as it is time consuming, expensive, and resource intensive (Aldayel, Aldayel & Al-Mudimigh, 2011).

Aldayel, Aldayel and Al-Mudimigh (2011) determined that project management is a critical success factor in the implementation of ERP at a university in Saudi Arabia. Thus, focusing on the roles of important actors such as PMO personnel as well as consultants will add to ERP knowledge. The research also indicates that a central reason for ERP failure is user resistance to the new systems (Al-Shamlan & Al-Mudimigh, 2011). Identifying how user resistance is perceived and handled is one of the aims of this study.

1.5 Research questions

The key research question is the following: How did the power/knowledge of consultants and the PMO in the context of an ERP system implementation and development become institutionalized at the university?

1.6 Research sub-questions

To answer the key question, a number of sub-questions are needed:

1. What are the relevant studies that discuss knowledge management, the role of consultants in IS, PMOs, and power politics in IS and ERP implementation, and how is the higher education sector different from other sectors?

2. How can Clegg's circuits of power, absorptive capacity, agency theory, neo-institutional theory, and structuration theory be used to understand the power/knowledge of consultants and PMOs?

3. How are social constructivism, a qualitative approach, a case study, semi-structured interviews, and Creswell's (2013) qualitative data analysis technique helpful in answering how power/knowledge is institutionalized in ERP implementation?

4. What is the context for ERP implementation in the university?

5. How is user resistance used to establish the power/knowledge of project managers and consultants?

1.7 Research motivations and significance

Higher education institutions are in need of IT systems that can help them manage their concerns. This management of different activities, such as financial functions or human resources, through ERP systems can improve performance and efficiency.

Additionally, the researcher tries to address gaps in the literature, such as research seeking to understand the implementation of ERP in the higher education sector, especially in developing countries.

This research aims generally to provide a theoretical framework for the power/knowledge of consultants and the PMO in the implementation and enhancement of government resources planning, or GRP (a kind of ERP), in a Saudi Arabian institution of higher education. Examining how user resistance functions in the power establishment is important in the implementation and development of ERP, an aspect that this research explores. The literature on user resistance and IS has ignored how user resistance is used in the establishment of power for certain actors, focusing only on the various facets of how to overcome resistance (Almatrodi & Cornford, 2013). The theoretical framework functions mainly to explain the power/knowledge of consultants and the PMO and to assess how the technology is implemented and developed.

Few studies have examined user resistance and power in the IS literature, encouraging the researcher to explore the role of user resistance in the formation of power for two important actors: PMO personnel and consultants. The focus on the consultants and project managers is due to their central role in overcoming many challenges, including resistance to implementing and developing the ERP. This is the theoretical framework.

The university will benefit from this research in several ways. First, the university will be better able to develop the job descriptions of the two actors in terms of what to avoid in the instigation and development of ERP. For example, when consultants and project managers know the rules and norms of the institution, this knowledge increases their legitimacy and fosters successful ERP implementation. Second, other IS practitioners from other organizations can learn from these lessons about how to deal with user resistance and how the technology has been developed successfully in this type of higher education institution. For researchers, the study provides a theoretical framework for the application and expansion of ERP and provides an explanation of various themes; the results of this research can be further developed by either supporting its findings or providing new insights relating to different organisations, such as private-sector organisations that use consultant and PMO services.

The literature review covers a number of themes related to consultants and project managers in the implementation and enhancement of ERP systems in organisations. These themes have links to ERP systems and their implementation, knowledge, the role of consultants in IS, PMO, and power and politics in ERP implementation and in higher education.

These themes focus on certain topics. For example, in the ERP implementation literature, critical success factors have been given a great deal of attention while, in the consultant literature, researchers have focused on themes ranging from innovation to consultant roles. Since consultants and project managers mainly supply knowledge, there is a need to focus on knowledge, knowledge management, and innovation as well as to define the project, project management, and the PMO. The various strands of the literature in this review are all necessary to cover as there is a need to identify

their importance. Accordingly, identifying the power/knowledge of the two actors, consultants and project managers, fills a significant gap in the literature as has been emphasised in the final section of the literature review.

This study supports the use of the case study method in research. Different methods use strategies ranging from survey to interviews. This study has focused on using interviews, especially semi structured interviews, due to their potential in producing rich data that help with exploring consultants' and project managers' power structures.

The research here is motivated by a desire to identify the challenges that project managers and consultants face in the implementation of ERP in higher education. The researcher also studies how the two actors face and react to user resistance as a challenge. These aims help in improving the consultants' and project managers' involvement in the ERP experience.

Thus, the researcher has identified a limited studies in the literature that addresses the ERP implementation in higher education in developing countries. Furthermore, there is a lack of studies in the literature on how user resistance is used in the institutionalisation of power/knowledge for project management and consultants. This gap is identified because resistance in the use of ERP at the university was a challenge to consultants and project managers at the university the researcher is studying. Also, the gap is in agreement with what Rivard and Lapointe (2012) state about a gap in the user resistance literature, which centers on implementers responses to user resistance and the effects when resistance occurs.

1.8 Overview of Research Methodology

Research methods are the ways in which knowledge is gained within a certain subject. In terms of ontology, a study adopts an interpretive position, which in reality is subjective and socially constructed. A research approach involves the ideas that link the research philosophy to the methods of data collection, analysis, and interpretation. This study features a qualitative approach, which is an approach that makes the study of social and culture issues more possible, and, in our case, an ERP implementation and development context and power/knowledge issues within that context more feasible. Within the qualitative approach, the researcher adopts a strategy that is the general plan the research will develop to answer the research questions. This research adopts an in-depth, interpretive case study. Interpretive case study is an investigation of a single social setting at a specific site on a related context. Thus, interpretive case study enables, for example, the study of power/knowledge issues in the context of ERP implementation at the university. The main data collection used in this research is a semi-structured interview, which provides the main source of information for the research. Interviewers aim to ask open-ended questions that might be found in everyday conversations, but which, in this case, relate to the topic of power/knowledge in ERP implementation and development. The purpose of this research is to understand as much as possible about the context of implementing and developing the ERP at a university and to investigate the power/knowledge of consultants and project managers.

1.9 Overview of the Thesis Chapters

This study explains the implementation and improvement of ERP in a Saudi higher education institution, providing the context for understanding the power/knowledge of consultants and the PMO in overcoming user resistance. The central aim of the study

is to explore the power/knowledge of consultants and project managers in overcoming challenges such as user resistance. This research adopts a qualitative approach – specifically, an interpretive case study – and gathers data using semi-structured interviews.

The first chapter introduces the thesis' aims, objectives, research questions, research motivations, and significance and then reviews the literature.

The second chapter introduces and defines concepts such as the role of consultants with special regard to IS, knowledge, knowledge management, the PMO, and power politics in IS, ERP systems, ERP implementation and higher education.

The third chapter introduces the theoretical framework developed from agency theory, neo-institutional theory, structuration theory, Clegg's circuits of power, and absorptive capacity. The researcher introduces each theory and provides the reasoning behind its adoption as well as why all the theories have been combined in this study.

The fourth chapter introduces the research methodology adopted in this research by discussing several research philosophies. It also provides the reasoning behind the adoption of a qualitative, interpretive case study and semi-structured interviews.

The fifth chapter mainly covers the data collection methods and analytical techniques available in the literature on research methodology. It also provides the reasoning behind the adoption of semi-structured interviews as the main data collection method and Creswell (2013) as the main data analyses technique.

The sixth chapter offers background information on Saudi Arabia, the university under study, and GRP.

The seventh chapter introduces the pilot study, describing what the researcher did, the results of the pilot study, and how it informed the main study.

The eighth chapter introduces the first portion of the results and discussion of the findings to provide a context for ERP implementation at the university. In this chapter, the researcher explains the changes at the university. The chapter also covers how technology was used before ERP implementation and how the technology has changed the university. The final section of this chapter provides information about the types of ERP used (i.e. the GRP), how they were bought, the justification for the purchase, and how they have been implemented.

The ninth chapter introduces the theoretical framework for the power/knowledge of consultants and project managers in ERP implementation. The researcher explains how the power/knowledge of consultants and project managers is solidified.

The tenth chapter, the concluding chapter, provides a summary of the main findings, research contributions, theoretical contributions, practical contributions, the limitations of the study, and possible future research directions.

1.10 Summary

This introductory chapter provides the aims, objectives, and research questions of this thesis. Additionally, it provides an overview of the literature, research motivation, and significance of the project. It concludes by introducing the research methods used in this thesis and reviewing the thesis chapters.

Chapter Two: Literature Review

> A complete review covers relevant literature on the topic and is not confined to one research methodology, one set of journals, or one geographic region (Webster & Watson, 2002, xv).

2.0 Introduction

This chapter addresses the first research objective/question– to review the relevant literature by identifying the relevant studies on knowledge, knowledge management, the role of consultants in IS, the PMO, power politics in IS, ERP implementation, and how higher education differs from other sectors. It also provides the justification for researching consultants and the PMO and explains why the research focuses on power politics. This will cover the literature regarding the institutionalization of power/knowledge for the PMO and its consultants during the implementation and development of ERP in universities

This literature review is intended to identify the gaps in the literature, help with the selection of research methods, and provide a better understanding of the research topic (Levy & Ellis, 2006).

This research focuses on the institutionalization of power for consultants and the PMO. This topic represents a valuable area of research because of the limited number of studies on the internal and external actors exerting power during the implementation and development of ERP at institutions of higher education. This research is practical since it provides a detailed explanation of two important actors – one internal and one external – and identifies their use of power/knowledge. This analysis will be useful for improving the effectiveness of the work performed by these actors.

2.1 Knowledge

Because the implementation and development of ERP is complex, it requires knowledge. As consultants and the PMO have the mission of delivering knowledge and helping with the management of ERP projects, there is a need to define and explain knowledge, knowledge management, and innovation in order to provide a comprehensive picture of their role.

Philosophically, knowledge is 'justified true belief' or 'universal truth'. According to the Oxford English Dictionary, knowledge comprises 'facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject' (2012).

Many scholars (e.g. Davenport & Prusak 1998) have defined 'knowledge' by explaining data and information. Data comprise '*se*t of discrete, objective facts about events' (p. 2), and information is a 'message, usually in the form of document or an audible or visible communication' (p. 3). Therefore, knowledge can be understood as the total sum of experience, values, and information held at the individual and social levels and used by individual members of an organization that leads to new experiences. Knowledge resides inside the knowers but can also be found in documents, IT systems, and organizational procedures and culture (Davenport & Prusak 1998; Alavi et al., 2001). Nonaka and Takeuchi (1994) define knowledge as 'dynamic human process of justifying personal belief toward the "truth"' (p. 58). Thus, knowledge is reflected by the experience of actors in the organization and results in a power to be used in front of actors who need their knowledge for solutions to the problems the organization faces. Knowledge can thus also result in authority, which is another face of power.

Why is knowledge extremely important in contemporary organizations? To answer this question, we need to examine knowledge on the individual and social levels as a resource for identifying the culture, gaining the new skills, and learning the new information that will lead to or create a competitive advantage. Sharing new knowledge within an organization to improve existing procedures or products will help the organization gain competence and strengthen its position in the market (Liao et al., 2007). Moreover, this knowledge or intellectual capital should be generated through careful management of the knowledge process. This process must be organized systematically to create ideas to help organizations move forward (Wiig, 1997).

In order to understand knowledge, scholars from many disciplines have divided it into two forms: tacit and explicit. There is a consensus that social knowledge is the result of the interaction of these two dimensions (Polanyi, 1962; Nonaka & Takeuchi 1994). Tacit knowledge includes actions, experience, context, and technical (e.g. know-how, craft, skills) and cognitive (e.g. mental maps, beliefs, paradigms, viewpoints) knowledge. Explicit knowledge comprises all knowledge that can be articulated, codified, and communicated (Alavi et al., 2001).

In addition to studying the divide and interaction between tacit and explicit knowledge, knowledge management scholars such as Nonaka and Takeuchi (1994) have identified four modes of knowledge conversion that are built with an emphasis on the kind of knowledge (epistemology): socialization (from tacit to tacit), externalization (from tacit to explicit), combination (from explicit to explicit), and internalization (from explicit to tacit). Socialization refers to the way experience is shared, leading (for example) to tacit knowledge in technical skills. Externalization is the process of identifying and transferring tacit knowledge to explicit concepts.

Combination refers to the way explicit concepts are organized and put into a knowledge system, and internalization is the process of transferring explicit knowledge to tacit knowledge.

However, Nonaka and Takeuchi (1994) have posited that four conditions are necessary for this knowledge conversion to succeed: intention, the profound commitment of the organization to its aims; autonomy, as an independent environment is required; fluctuation and creative chaos, which allows communication with the outside environment (but without chaos or disorder); and redundancy, the presence of information that goes beyond the direct operational requirements of the organizational members. As Blackler (1995) explains, Nonaka wanted to create knowledge through 'language and communication, requiring the creative use of metaphors, analogies and models, and a resolution of conflict and disagreements that new approaches may provoke' (p. 1033).

Blackler (1995) later extended previous explanations of knowledge, stating that it is 'multi-faceted and complex, being both situated and abstract, implicit and explicit, distributed and individual, physical and mental, developing and static, verbal and encoded'(p. 1040). He also stated the importance of focusing on the process of knowing and defined knowledge as 'situated, distributed and material' (p. 1035).

Spender (1996) provided a framework, as explained by Newell et al. (2009), establishing that knowledge can be identified by looking at its location (ontology) or where the knowledge resides. It also distinguishes between the individual and social, whereby knowledge can exist beyond the individual, leading to four different types of knowledge: individual/explicit, individual/implicit, social/explicit, and social/implicit. Spender posited a theory whereby firms can have any of four kinds of knowledge –

conscious, objectified, automatic, or collective – which work together at the individual and social levels. The objectified and conscious kinds of knowledge exist at the social level, independently of the individual.

Sociologists of science used to study knowledge ‘by studying knowledge creation as a cultural process and by emphasising conventional distinctions between people and technology’ (Blackler, 1995, p. 1034). For example, the actor network theory explained knowledge as a ‘social product rather than something generated through by through the operation of a privileged scientific method’. (Law, 1992, p. 381).

Davenport and Prusak (1998) contributed to research on knowledge management with their book *Working Knowledge*, which explained how companies create knowledge and provided examples of such practices in the West. They also showed that knowledge exists in what is called the ‘knowledge market’. Davenport and Prusak (1998) said that the knowledge market consists of ‘buyers’ and ‘sellers’ who engage in talks to obtain an equal price for providing the necessary knowledge to the customer. There are also ‘brokers’ and ‘entrepreneurs’, who bring knowledge from the buyers to the sellers. This knowledge benefits both the buyers and sellers, and its users can use it in beneficial ways.

Therefore, there is a need to manage this huge amount of knowledge in organizations. A number of activities, skills, and roles are required to manage knowledge in organizations, such as knowledge generation, knowledge codification and coordination, and knowledge transfer. Furthermore, there is a need for certain knowledge roles, skills, and technologies for knowledge management (Davenport & Prusak, 1998).

Davenport and Prusak (1998) argued that the best way to generate or create knowledge is to buy this knowledge from outside. Knowledge codification and coordination help make an organization's knowledge achievable to the employees, who can use it in their daily work in a way that is understandable by the users of the new knowledge. Knowledge transfer has both hard aspects (e.g. electronic communication systems) and soft aspects (e.g. verbal discussions); the soft aspects are emphasized as a primary resource for knowledge transfer. Knowledge requires specific roles and skills, the first of which comprise knowledge workers. Organizations require people who will obtain knowledge from those who hold it, place it in organized forms, and preserve or refine it over time (Davenport & Prusak 1998). Managers of knowledge projects develop project objectives, assemble and manage teams, determine and manage customer expectations, monitor project budgets and schedules, and identify and resolve project problems (Davenport & Prusak 1998). A chief knowledge officer must 'advocate for knowledge and learning from it, design, implement, and oversee a firms knowledge infrastructure, manage relationships with external providers of information and knowledge and negotiate contracts with them'. (Davenport & Prusak, 1998, pp. 114–115). Technology is part of knowledge management. The availability of certain new technologies, such as Lotus Notes, the Internet, and the ERP system, has become critical for organizations (Davenport & Prusak, 1998).

As a result, the main aim of knowledge management is to enhance and communicate ideas and information that leads to innovation. This process includes '*idea generation*', '*absorptive capacity*', and '*networking*' (Adams et al., 2006). Knowledge is central for innovation; a knowledge repository is a way to recognize the knowledge that has built up in organizations for ages. This kind of innovation tries to identify the

external and internal knowledge in an organization. Innovation and high performance can be attained along with high efficiency if the organization is capable of producing high absorptive capacity (Adams et al., 2006).

Absorptive capacity (AC) is defined as 'the firm's ability to recognize the value of new, external information, assimilate it and apply it to commercial ends' (Cohen & Levinthal, 1990, p. 128). Others have defined AC as 'dynamic capability pertaining to knowledge creation and utilization that enhances a firm's ability to gain and sustain a competitive advantage' (Zhara & George, 2002, p. 185). Mowary and Oxley (1995) described AC as the different skills necessary to transfer knowledge and use it according to organizational needs. Kim (1997, 1998) stated that AC is an organization's ability to learn and solve its problems. Liao et al. (2007) argued that AC is the organizational capability and enthusiasm to innovate by using and obtaining internal and external knowledge. Absorptive capacity is generated through, for example, research and development (R&D) and production experience (Cohen & Levinthal, 1989, 1990). AC is best achieved if organizations take a central network position to access new knowledge. This position will lead to better performance, but it depends heavily on how the organization uses its new knowledge (Tsai, 2001).

However, AC requires other actions from an organization. The four organizational capabilities related to knowledge are knowledge acquisition, assimilation, transformation, and exploitation, which lead to the creation of absorptive capabilities and a competitive advantage (Zhara & George 2002). First, acquisition relates to an organization's ability to gain the external knowledge necessary to run a businesses or organization. Second, assimilation relates to the everyday procedures organizations use to understand external knowledge. Third, transformation relates to an organization's ability to create new knowledge from its existing procedures. Fourth,

exploitation is the ability of an organization to develop procedures that allows it to use this newly created knowledge in its everyday activities (Zhara & George, 2002).

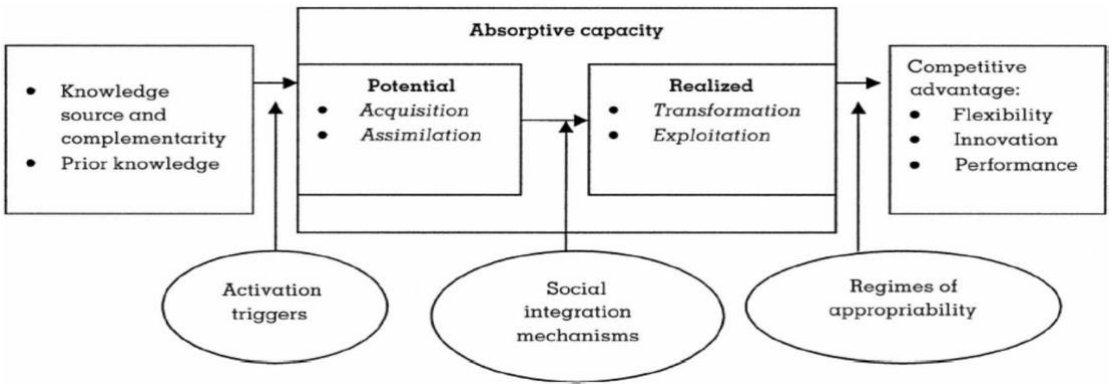

Figure 1 Absorptive Capacity (Zhara & George, 2002)

Innovation is achieved by adding information and dispensing with unnecessary knowledge. Absorptive capacity is important here because a high level can help a firm manage external knowledge flows, which results in innovative outcomes (Escribano et al., 2009). However, this depends on knowledge bases, organizational structure and compensation polices, and the dominant logics (Lane & Lubatkin, 1998).

Therefore, organizations that apply knowledge management techniques successfully will be capable of identifying and using their current resources productively. These methods will lead to innovations, and new products and resources will eventually improve performance. Successful innovation depends on the successful application of the knowledge management practices that will increase responsiveness (Darroch, 2005).

Other factors that affect the innovation process include organizational complexity and ambiguity, which influence the process of managing innovations. The more coherent the relationship within and between these factors, the better positioned the

organization is to achieve its goals and vision (Tidd, 2001). Other elements of organizational culture, such as norms and values, influence innovation and creativity to a great degree. At the centre of this strategy is the organizational structure and behaviours, which can make the innovation successful or not (Martins and Terblance, 2003). Some studies in fields such as biotechnology have indicated that managers with the necessary skills and expertise to make fast decisions will create a competitive advantage; knowledge workers are very important in such industries (Terziovski and Morgans, 2006). Bharadwaj and Menon (2000) showed that individual and organizational creativity at its highest level will result in good innovation and performance. Thus, using knowledge with the necessary skills and experience and considering organizational complexity and ambiguity, organizational culture, and organizational structure and behaviours can help in achieving a successful implementation and development of ERP.

As Lawson and Samson (2001) showed, this innovation capability has a clear dependence on seven fundamentals: vision and strategy, joining the foundations of capabilities, organizational intelligence, creativity and idea management, organizational structure and systems, culture and climate, and management of technology. Other authors such as Bessant (2003) have identified eight challenges for innovation management projects:

1. Organizations have to understand that innovation is essential for surviving in today's environment and understand why change is important.

2. Organizations have to identify what requires change.

3. Organizations and their members must understand the term 'innovation' correctly.

4. Organizations have to create an environment and routines that encourage innovation by ‘building an innovation culture’.

5. Organizations have to create an environment that enhances ‘continuous learning’.

6. Innovations have to be highly involved in the organization and its members’ minds.

7. Organizations have to be ready to ‘deal with discontinuity’.

8. Organizations have to ‘manage connections’ between its parts to create innovation.

Therefore, to apply knowledge management and innovation, organizations have to understand that knowledge interacts with many aspects within the organization and outside it. If applied successfully, knowledge can produce innovation and lead to successful implementation of technology and help organizations use their internal knowledge productively. This will also help organizations avoid the confusion and difficulty of identifying the different parts of knowledge.

This section of the literature review has examined how knowledge management became essential to organizations in different sectors and how it can be used in the implementation and development of ERP in institutions. Knowledge creation, sharing, and transfer became a source of innovation that will put organizations in a good position to compete and perform better.

Organizations have become complex. The implementation of enterprise systems is complex as well; it requires knowledge and successful knowledge management as well as the intervention of actors, such as consultants and the PMO, who have

knowledge in implementing these kinds of systems and have experience developed from previous ERP implementations.

2.2 The role of consultants in information systems (IS)

As consultants play a major role in ERP implementation and development and are thus a focus of this research (and this literature review), there is a need to understand their role in IS projects in order to describe their influence and power in implementing and developing enterprise systems.

Experienced consultants are an important element (along with many other factors) in ensuring a successful implementation of new technology such as ERP systems (Bingi et al., 1999). Typically, organizations look for help from information technology (IT) consultants when developing systems projects because some organizations lack the experience needed to ensure successful IT implementation (Thong et al., 1994). Moreover, few senior IT jobs exist due to financial limitations, requiring organizations to call in consultants for their IT projects (Gable, 1991). Typically, consultants promise support, expertise, and knowledge to help their clients achieve a successful implementation and keep the system working without the need for later intervention (Ko et al., 2005).

Before and after the clients and consultants have signed their contract, consultants influence organizational decision making, which may take many forms. For instance, in organizations identified by Willcocks et al. (2000), most of the important heavy IT work is handed to external consultants and suppliers rather than internal IT personnel. Additionally, consultants have a huge influence on and more access to senior management regarding insuring and negotiating ERP and IT systems. This influence covers certain stages of IT development, implementation, and contracts with

consultants or other vendors. Organizations often believe that the consultant has more experience in these types of projects than they do (e.g. Bloomfield et al., 1995).

Some studies have explained how consultants' knowledge is transferred. According to a theoretical model based on an ERP implementation sample of 96 firms developed by Ko, Kirsch and King (2005, p. 59), consultants' knowledge transfer can be a result of 'knowledge related, motivational, and communication related factors'. All of these factors control the kind of information the organization receives. However, without the careful selection of external expertise, including consultants who can provide the skills needed by the organization, the use of consultants can lead to project failure and loss of organizational investment (Sumner, 1999).

Gradually, this influence leads consultants to have more power than any other actor in the organization. There is an understanding among the IS community (e.g. Howcroft & Light 2006) that consultants are seen as being among the most powerful actors in today's organizations, but to what extent are consultants really influential? To understand this influence, it is important to draw attention to a number of social and political scientists who have tried to show that there are some similarities between expert power (e.g. consultants) and state power and explain how it is difficult for organizational actors to interact in organizations to achieve a fair exchange of knowledge and experience.

Consultants' power can be linked to their 'experience'. Experience is an essential aspect that consultants always claim to have. They use certain expressions for increasing trust or 'self-belief' in their advice. Experience is what makes them attractive to clients. Primarily, they provide knowledge around technology implementation and their experience with similar projects, which are both essential

and important for clients (Jones, 2003). However, for this relationship to be successful, a kind of ‘expertise coordination’ is needed, which has a significant influence on team performance. This includes ‘team input characteristics, presence of expertise, and administrative coordination’ (Faraj et al., 2000).

Consultants often use concepts (e.g. Business Process Reengineering, or BPR) as a way of marketing their knowledge and skills to make themselves more attractive to clients (Benders et al., 1998). However, clients cannot really be sure that the consultants can provide the expertise they need; because of their experience, however, they can produce trust in their abilities. This trust, combined with a good reputation, will encourage the organization to involve consultants in their projects (Glückler & Armbrüster, 2003).

This form of ‘expertise’ has been presented differently by the public and the private sector. In particular, their style and engagement differ between the sectors. An empirical study of 114 small businesses showed that external IS experts were more important in successful information systems implementation than even top management support (Thong et al., 1996). This intervention aims to minimise the knowledge gap between small businesses and their knowledge of IT systems implementation (Thong, 2001). Yap et al. (1992), in their descriptive model of computer-based information systems (CBIS), found that consultants played an influential role in the success and effectiveness of CBIS in small businesses. Small organizations hire consultants for advice about the kind of software and hardware that will best suit their company. The client’s involvement in this process is central for project success, but clients overestimate the impact of consultants and vendor support (Gable, 1991).

In both sectors, a kind of relationship exists between the client and consultant that, in a way, influences the type of IT systems that organization choose. Consultants' practices can provide managers with tools for controlling the organization and its identity, and managers are striving for managerial solutions of this kind. At the same time, however, there are insecurities in this relationship (Sturdy, 1997). This relationship is best defined as an overall administrative arrangement and a conditional exchange that takes different forms. Both parties may have similar powers, or power may be transferred to one party more than the other due to conditional issues (Fincham, 1999). Agency theory has been used to explain the client–consultant relationship; it posits that consultants are 'the agent of management, which is itself the agent of capital' (Fincham, 2002, p. 67). Consultants influence organizations by (for example) shaping organizational processes and views (Pellegrinelli, 2002). If there is an excellent interaction of knowledge and experience between clients and consultants, it will benefit organizational members and increase their 'individual learning' (Werr, 2005, p. 1).

Understanding the role of consultants and how they work together is essential. Clients' work with consultants is a very difficult process. A study by Ram describes it as a 'fragile cooperation' and further indicates that there are 'tensions' between these two parties (1999, p. 875). All of this comes as a result of organizational ambition for better performance and the search for organizational staff creativity from organizational administration (Ram, 1999). An example of such cooperation and the tension it can involve can be found by looking at the methods used in purchasing IT systems. The securing of such systems is influenced mainly by the consultants and vendors but also depends on the interest of senior management, which puts aside user requirements and needs (Howcroft & Light, 2008). Thus, consultants have been seen

as very influential in technology implementation, but consultants and other internal actors are part of this process, where power and knowledge are clearly seen and reflected (Pozzebon et al., 2005).

The consultant's role can be understood as helping organizations achieve the changes they pursue. Their role, according to Bessant et al., (1995), is centred, first, on providing knowledge to clients, which (according to the authors) is the traditional role of consultants. The second role of consultants is sharing their experience by bringing their past information from previous technological implementation projects to the current projects. Third, consultants help users determine alternative methods for obtaining information regarding specialist services if needed later or during the implementation of technology. Fourth, they can help organizations identify problems with their IT systems.

A number of theories, including Attewell's technology diffusion theory, explain that consultants, together with other external expertise actors, are essential for transferring the needed skills to insure the successful implementation of new IT systems (Attewell, 1992). Their main duties, according to Thong (2001), are to provide help with implementation, requirements analysis, advice on the type of IT systems needed, and help with managing the implementation process. Usually, IS consultants view themselves as change agents (Thong, 2001). This is in agreement with a model developed by Markus and Benjamin (1996), in which IS specialists view themselves as having three change agent roles: the traditional, the facilitator, and the advocator.

Accordingly, consultants act as a kind of a supportive change agent across the implementation process. They tend to bring solutions they have used in previous

implementations, which will lead to the promise of seamless implementation, but the kind of advice and resolution provided is not absolute (Swanson, 2010).

Their involvement and knowledge play a central role in many other factors of ERP implementation success (Ifinedo, 2008). A survey of 85 ERP implementation projects in Taiwanese factories indicated that consultants can help end conflicts through their good communication, which helps achieve the necessary ERP quality (Wang and Chen, 2006). Another survey showed that ERP consultants tended to be more influential in the configuration and integration phase of ERP implementation than in any other phase (Metrejean & Stocks, 2011). Good consultants with reasonable experience can assist organizations in achieving their organizational aims in implementing ERP if the client lacks knowledge and expertise in these areas. If all of this happens successfully, it will lead to user satisfaction (Wu & Wang, 2007). High-quality consultant services will have a positive influence on systems quality, user satisfaction, and information quality (Tsai et al., 2010). Overall, consultants play a leading role in the analysis stage, in determining what type of IT systems businesses should use, as well as in the installation of such systems. In other phases, many systems such as ERP require the involvement of many people in the organization, who play a role in helping the systems be implemented and used successfully (Volkoff & Sawyer, 2001).

In summary, this study of the literature related to the role of IT consultants in IS projects found that the two most popular research strategies used were case studies (10 studies) and surveys (nine studies). The remaining studies used one of the following strategies:

- Action research methodology.

- Case study, non-participative and documentary analysis.
- Survey, open-ended interviews, and quantitative organizational data.
- Grounded theory study.
- Developing and testing a model on a number of companies.
- Participative observation.

The study •	Research strategy
Howcroft and Light (2008)	A longitudinal qualitative field study (action research)
Helo (2008)	Small survey
Ko, Kirsch and King (2005)	Testing of certain hypotheses developed from previous models through a survey.
Wang and Chen (2005)	Survey
Bloomfield and Danieli (1995)	Documentary sources, case study and non-participative observation.
Turner (2001)	Discussion paper (discussing expertise within the political theory)
Gable (1991)	Case study on small businesses in Singapore.
Fincham (1999)	Case study
Sturdy (1997)	Survey (a mail questionnaire)
Jones (2003)	Participant observation for six months
Hislop (2002)	Case study
Thong, Yap and Raman (1994)	A study focused on small businesses, data collected through a survey (questionnaire), open-ended interviews, and quantitative organizational data.
Cheng, Wang, Jiang and Klein (2011)	A multiple case study
Winston (2002)	A multiple case study

Metrejean (2004)	A quantitative study (survey)
Lapsle and Oldfield (2001)	Interviews with consultants regarding their activities in the public sector.
Tsai, Chou, Lee, Lin, Kuo, and Hsu (2010)	Questionnaire (survey)
Ram (1999)	Case study
Pozzebon and Pinsonneault (2005)	In-depth case study
Pellegrinelli (2002)	Case study
Chen, Sun, Helms, and Jih (2008),	Grounded theory methodology
Werr (2005)	Case study
Lfinedo (2008)	Survey
Faraj and Sproull (2000)	Large survey
Benders, Berg, and Bijsterveld (1998)	Interviews and secondary sources
Willcocks and Sykes (2000)	Case studies
Yap, Soh, and Raman (1992)	Survey
Thong (2000)	Developing a model and testing it on 114 small businesses.
Summer (1999)	Case studies

Table 1 Research strategies in the IS consultants literature

The complex process of ERP implementation and development requires knowledgeable actors with the experience and skills required to perform the jobs needed by the organization. This part of the literature review examines the role of consultants as a central actor in the implementation and development of IS.

2.3 PMO

Another actor who can help with the complexity of ERP systems implementation and development is the PMO, which, alongside the consultants, plays an important role in the implementation and development of ERP in many organizations, including the higher education institution at which the researcher is studying. Reviewing their role is essential, and summarising the most important studies is essential to provide a comprehensive picture of project definitions, project management, and the PMO.

Schwalbe (2013) defined a project as a 'temporary endeavour undertaken to create a unique product, service, or result' (p. 4) and project management as the 'application of knowledge, skills, tools and techniques to project activities to meet the project requirements' (p. 10). Aubry, Hobbs, Müller, and Blomquist (2010) described the PMO as a dynamic organizational entity that is often in transition from one charter and structure to the next. Research has demonstrated that project managers enable cross-project improvements by implanting accumulated knowledge from previous project experiences into current project management procedures used across numerous projects (Julian, 2008). Other important reasons for introducing a PMO include improving project delivery, enabling the involvement of experts, and prompting the adoption of techniques and processes that can help overcome resistance (O'Leary & Williams, 2008). All of these goals require strong leadership and sufficient resources. Project management enables project management oversight, control, and support, the purpose of which is to assist the project manager in integrating business interests with project management efforts (Hill, 2004).

Generally, however, project failure is common; because the PMO improves performance, it has become a frequent tool for avoiding these failures (Curlee, 2008). When an organization adopts a PMO, it faces a number of challenges, such as an

inflexible organizational culture resistant to changes in the organization, a shortage of experts in project management, and a lack of suitable change management strategies (Singh, Keil, & Kasi, 2009). To overcome these challenges, an organization adopting a PMO needs a strong PMO champion who can begin with small tasks, show the value of the PMO, and ask for support from opinion leaders within the organization. Further, the PMO should be led by an experienced project manager, employ a talented team using a flexible management strategy, and standardize the process before PMO implementation (Singh, Keil, & Kasi, 2009).

The main aim of establishing a PMO is to centralize information and build a knowledge base (Desouza and Evaristo, 2006). Hobbs, Aubry, and Thuillier (2008) demonstrated that organizational tensions are a critical reason for introducing a PMO into an organization. Organizational politics can play a central role in these tensions, and the PMO is intended to become a part of an improved political system in the organization. Considering that a PMO can develop contentiously as a response to internal tensions, Aubry, Hobbs, and Thuillier (2009) explained that a PMO should not be implemented into an organization as a separate entity but as part of the organization.

PMO designs differ significantly from one organization to the next, but these designs can feature similar characteristics, responsibilities, and tasks. An effective PMO handles different project functions, including training, developing shared methodologies to perform the necessary project tasks, presenting new projects, and providing quality assurance for these tasks. The success of the PMO depends on the authority, credibility, and support of upper management. The PMO must ultimately meet the requirements of the organization (Andersen, Henriksen, & Aarseth, 2007). Hobbs and Aubry (2008) demonstrated that a PMO characterized by a strong

decision-making authority and an encouraging organizational culture will perform better than a PMO without these qualities. Successful project management is a continuous effort that requires qualified, visionary, and capable leadership (Hurt & Thomas, 2009).

Project management has been more successful in higher education than it has been in the construction and health industries (Austin, Browne, Haas, Kenyatta, & Zulueta, 2013). This failure is largely due to turnover, resource restrictions, competing interests, and higher operational costs (Austin, Browne, Haas et al., 2013). However, introducing a PMO can help to reduce redundancy, prioritize projects, provide personal development, and open lines of communication between sponsors, stakeholders, and the relevant departments (Austin, Browne, Haas, Kenyatta, & Zulueta, 2013). Lavoie-Tremblay, Richer, Marchionni, Cyr et al. (2012) also pointed out that PMO staff are central to the improvement of everyday work practices, which can lead to dramatic changes for the customer, especially in fields such as health care, where patients can reap the benefits of higher-quality health care.

Research on the influence of a PMO on organizational performance has found that the PMO plays a significant role in improving organizational performance by applying a multidimensional perspective to investigate the wisdom of competing value networks, including (among other perspectives) the financial side of performance. Aubry, and Hobbs (2011) found that the PMO was at the heart of many perspectives on organizational performance.

Additionally, Martin, Pearson, and Furumo (2005) explained that the size of an IS project has an impact on budget and project quality, although project complexity also

has an impact on the application of project management practices. Ultimately, the PMO has been found to be intimately linked with the project budget.

Some research, such as Pemsel and Wiewiora (2013), has found that organizations should acquire multiple knowledge capabilities to deal with the knowledge sharing behaviours of project managers. First, these capabilities enable the strategic development of the project manager's relationships with different actors within the organization. Second, this allows organizations to better control project management in their efforts to assure an effective flow of knowledge through different departments within the organization. Third, organizations should become more adept at understanding and training employees in the roles necessary to assure the effective development of core competencies.

Different methods and theoretical frameworks have been used in the research on PMOs. For example, Aubry, Hobbs, and Thuillier (2008) found that adopting a historical process within the organizational context is more beneficial than other approaches when investigating PMOs. Other researchers, such as Aubry, Müller, and Glückler (2011), explored the effectiveness of PMOs by applying practice theory and found that PMO communities were at the centre of the learning process for PMOs.

Given the complexities of implementing ERP systems, it was essential to provide a comprehensive overview of the studies related to the two actors – consultants and PMO – who can help significantly in the implementation and development of ERP.

2.4 Why ERP consultants and PMO?

In Saudi Arabia, the implementation of ERP systems has captured the attention of many large and medium-sized organizations (Al-Turki, 2011; Al-Jabri & Al-Hadab, 2008). Research has shown (Al-Fawaz et al., 2008; Bhatti, 2005) that ERP systems

bring huge benefits to organizations, but certain critical success factors have to be taken onto consideration or a high level of failure can be expected. Those benefits include an improvement of information flow across different departments in the organization, functional practice in those departments, and supply chain activities, along with reductions in the time needed to carry out tasks.

However, ERP systems are very costly and take a lot of time, effort, and money to implement successfully (Bhatti, 2005). ERP systems require top management support, awareness of the current technological infrastructure, flexible management initiatives, an appropriate business plan, effective project management, user involvement, communication, teamwork, consultant involvement, clear goals and objectives, and user education and training. In addition, Soh et al. (2000) explain that ERP systems have the problem of 'misfits' between Asian organizations' culture and needs and organizations in the West, for whom the system was developed. This suggests that there are risks of failure in implementing systems in those areas.

One critical success factor is that that senior IT and organizational executives must have a strong relationship with suppliers and consultants (Willcocks et al., 2000). Various actors are internally and externally involved in helping get the new system implemented and used successfully (Bingi et al., 1999). As Brigham and Hayes (2013) suggest, it is important to study the different actors and alignments that support different information system implementation projects. Private sector consultants are key actors, and understanding their influence is useful. In addition, Hayes and Westrup (2012) have explained how macro actors are essential in understanding the implementation, use, and development of IS.

Thus, ERP systems are established through an extensive development of an integrated system that compounds the needed organizational functions into a single system (e.g. Orlicky 1975; Sheer 1994; Yusuf & Little 1998; Chung et al., 1999; Markus & Tanis 2000; Klaus et al., 2000; Meyr et al., 2002; Kobayashia et al., 2003; Kumar & Reinartz 2005; Al-Turki et al., 2006). Since the introduction of ERP systems, IS researchers have studied a range of themes, including ERP implementation challenges and critical success factors. The complexity of implementing these integrated systems lies in the large number of actors involved, as well as other organizational and technical difficulties. Organizations usually face serious problems in matching the new system with current organizational structures or business processes. This has led to suggestions for improving organizational structures or re-engineering current business processes (e.g. Davenport 1998; Hanseth & Braa 2001; Somers & Nelson 2004). Many ERP studies have worked to identify the critical success factors in IS implementation in order to streamline this complex process. These critical success factors include communication, compatibility, shared understanding, time, and project management (e.g. Skok et al., 2002; King, 2005). Though vast, the ERP literature lacks studies on the influence of the PMO on ERP implementation and use. Ifinedo has noted that 'research on the effect of in-house computer and information (IT) knowledge and expertise on the success of such packages is rare' (2011, p. 1).

In their effort to understand IS consultants' involvement in contemporary IS projects, researchers have focused on many factors, including consultants' influence on organizational decision-making (e.g. Bloomfield et al., 1995, 1992; Willcocks et al., 2000); the power of consultants (e.g. Faraj et al., 2000; Jones, 2003; Glucker & Armbruster, 2003; Howcroft & Light, 2006); consulting practices in both the public and private sector (e.g. Gable, 1991; Thong et al., 1996; Thong, 2001; Lapslay, 2001;

Yap et al., 1992); the consultant–client relationship (e.g. Sturdy, 1997; Fincham, 1999; Fincham, 2002; Werr, 2005); and the roles played by consultants (e.g Bessant et al., 1995; Pozzebon et al., 2005; Howcroft & Light, 2008; Swanson, 2010). Experts and consultants have been shown to have power in the form of knowledge of IT/IS implementation and of the entire organization. The rich literature on consultants has generally identified their role and influence but lacks detail about how consultants are influential.

The relevant knowledge management literature has worked to develop an understanding of the importance of knowledge for organizations (e.g. Wiig 1997; Liao et al., 2007), defining knowledge and how it is generated (e.g. Polyani, 1962; Law, 1992; Nonaka & Takeuch, 1994; Blackler, 1995; Spender, 1996; Davenport & Prusak, 1998; Alavi et al., 2001; Adams et al., 2006); how it is moved between organizations (e.g. Choen & Levinthal, 1990; Mowary & Oxley, 1995; Kim, 1997, 1998; Tsai, 2001; Zhara & George, 2002; Liao et al., 2007); and its role in innovation (e.g. Darroch, 2005; Lane & Lubatkin ,1998; Tidd, 2001; Martins & Terblance, 2003; Bessant, 2003; Glot & Terziovki, 2004; Escribano et al., 2009). The literature has not considered the mechanisms IT experts such as consultants and the PMO use in response to organizational challenges (e.g. user resistance) to institutionalize their power/knowledge. Rivard and Lapointe (2012) state that, 'although the literature recognizes the importance of user resistance, it has paid little attention to implementer responses and their effect when resistance occurs' (p. 897).

Where the researcher is studying, the consultants and PMO play a leading role in the university's implementation and development of ERP. The study has explored how consultants and the PMO have come to exercise power over the ERP adoption and implementation process by applying Clegg's (1989) concepts of circuits of power and

the concept of absorptive capacity as the main theoretical framework, supported by concepts from other theories such as agency theory, neo-institutional theory, and structuration theory.

2.5 Power and politics in IS

Examining politics in IS projects has a long tradition in IS studies. That organisations are political coalitions competing for resources was first pointed out by Bariff and Galbraith (1978) while explaining that accountants and management of information systems (MIS) staff may control the distribution of information and, in turn, influence the distribution of power inside organisations. Though MIS implementation and development are understood to constitute rational processes, Keen (1981) has guided the attention of IS researchers and developers toward recognising that IS requires coalition building and the consideration of politics in the organisation adopting the IS. In examining politics and power in greater detail, Markus (1983) has identified reasons for user resistance, including users' personal issues, poor systems design, and the interaction between particular system design features and the system's use. Franz and Robey (1984) have added that both a political process and a rational process of system development and implementation are reflected in many projects.

In explaining that power relations have become a primary focus of IS practitioners and researchers, Markus and Bjørn-Andersen (1987) have emphasised that, if both IS practitioners and users understand the different types of power, the quality of the systems developed and successfully implemented will improve. Grover, Lederer, and Sabherwal (1988) have found that, in IS communities, MIS implementation and development constitute a highly political process in which users and systems developers are more concerned with their self-interest than with benefitting the organisation. At the same time, systems developers have been told that they were

unaware of the political processes of MIS implementation and development, chiefly by failing to learn the causes of their users' behaviour. Examining the politics of IS implementation and development as a system of games has shown that IS developers can recognise these games and react accordingly.

The political processes of IT implementation investigated earlier have shown that political chaos can result from IT implementation, including competition and confusion that ended with wasted efforts and dismal productivity. Other struggles with resource distribution and career progression among managers can end in political actions leading to painful outcomes in terms of power identity relations (Knight & Murray, 1992). Bloomfield and Coombs (1992) have scrutinised the conceptualisation of power in using IS and found that IS can help with either the centralisation or decentralisation of power and control and promote symbolic, disciplinary views of power. That same year, Bloomfield and Best (1992) investigated the use of power in IS development and implementation by applying the concept of translation drawn from actor network theory and other theories of power to the presentation of IS in order to solve certain problems in organisations. Bloomfield and Best (1992) probed the power relations among external consultants and users to identify the important issues concerning the power of consultants with access to knowledge and skills and to show how managerial discourse can reveal that power.

However, research on power politics and IS has been criticised for putting forward only structural, functional accounts of politics, power, and control strategies. According to Levine and Rossmoore (1994), studies of IS and power showed the importance, nature and complexity of politics in IT implementation but 'are constrained by the lack of both a general theory of human behaviour as well as a model of power that bridges the individual actor and the wider

interpersonal/organisation setting' (p. 115). By extension, Webster (1995) has applied concepts taken from the sociology of technology to highlight that IS is not only made to solve problems but also involves economic and political activities, including reflecting interests, building coalitions, and fighting for results. Webster (1995) examined how implementing different types of IS reflects the interests of powerful actors and how they use strategies for control, concluding that the design and implementation of IS are linked more closely to the dimensions of the competing environment than to the latest management concepts. Later, Myers and Young (1997) applied the critical social theory of Jürgen Habermas to show that the actors involved in IS implementation in mental health institutions can have hidden agendas encompassing power struggles. Moreover, Robey and Boudreau (1999) have called for a political theory in IS and organisational transformation that weighs the interests of managers against those of the personnel who oppose them in order to reach an understanding of the political dynamics underlying such change. For example, Sia, Tang, Soh, and Boh (2002) have explained that ERP systems can enable both empowerment and panoptic control for users but that management has resisted empowerment by recovering the power lost due to ERP implementation, though panoptic visibility remained and was applied in the organisation.

Little research has explored IS implementation in higher education, particularly of ERP systems and power and politics in developing countries. It is clear, however, that power, politics, and resistance can result in a complicated ERP implementation process at universities (Allen & Kern, 2001). Koch (2001) has explained that technology plays a complicated political role that directly affects negotiability, resources, and social and geographical distances. In studying power and resistance in IS implementation at a New Zealand hospital, Doolin (2004) found that IS

implementation at the hospital encountered resistance from doctors, who challenged the validity of the information provided by the system or used the system to summon more resources. In response, the system, created to minimise such resistance, was given a less important role to play in the hospital.

Different theoretical frameworks, including Clegg's (1989) circuits of power, have been adopted to study power and IS by researchers such as Silva and Backhouse (2003), who have explained how the concepts are useful tools for analysing the complex issue of power in organisations. Backhouse et al. (2006) also applied Clegg's (1989) circuits of power to study the role of power and politics in standardisation processes, particularly the interaction of external contingencies, powerful agents, resources, meaning, and the membership of related social groups in achieving successful political outcomes. The study demonstrated how institutionalising unplanned development processes depends on the power interaction among the actors involved. Silva and Fulk (2012) have more recently shown that many ERP implementation projects fail because of power struggles; they applied Clegg's (1989) circuits of power to paint a comprehensive picture of how power struggles arise and thicken during ERP implementation projects.

In short, organisations face enormous challenges in adopting ERP systems (Alvarez, 2008), and the IS research has made great efforts toward understanding political strategies. Nevertheless, few studies have provided an understanding of the process that underlies these politics (Sabherwal & Grover, 2010). As Sheu et al. (2004) have shown, politics, along with several other factors, influence the implementation of ERP in many countries, while other studies of power and technology have revealed that a culture's political form might determine the effectiveness of ERP systems.

Understanding power relations can help in achieving a successful implementation of a new technology. Failure in managing ERP operations can result in power imbalances and disproportionate control in monitoring the flow of information (Ignatiadis et al., 2007). Fowler and Gilfillan (2003) have explained that an ERP project's management framework, which identifies the sources of stakeholders' power, can shape the outcome of ERP systems in institutions. According to Boonstra and Govers (2009), 'it is essential to analyse stakeholders and to understand their expectations and attitudes toward the system. Such an understanding will help implementers to address stakeholders' interests and to encourage acceptance' (p. 177). In another study, Boonstra (2006) has shown that ERP implementation can reflect the interests of the actors involved and operate in greater agreement with their interests.

2.6 ERP

2.6.1 ERP systems

> ERP systems are commercial software packages that enable the integration of transactions oriented data and business processes throughout an organization. (Markus & Tanis 2000, p. 245)

ERP systems are software packages resulting from long development for a number of IT companies around the world such as SAP and Oracle. This new type of system aims to achieve a meaningful integration of different functionalities in organizations into one IT system (e.g. Klaus et al., 2000).

The development of ERP was the result of the development of previously integrated systems such as materials requirement planning (MRP) and computer integrated manufacturing (CIM; e.g. Chung et al., 1999). The development of MRP systems began in the 1950s to support management in the gathering of materials (Orlicky, 1975). In the 1960s and 1970s, more functionalities and modules were added, such as

sales and planning, which resulted in these systems being called 'MRP II' (Klaus et al., 2000; Yusuf & Little, 1998). In the 1980s, CIM was introduced; it included modules designed to deal with the management activities of organizations (Sheer, 1994). In the 1990s, ERP systems resulted from the development of the earlier systems (Markus et al., 2000). In the 1990s and early 2000s, organizations in both developed and developing countries began implementing ERP (Al-Turki et al., 2006). Later, other advanced enterprise systems emerged, such as advance planning scheduling (APS), supply chain management (SCM), and customer relationship management (CRM; e.g. Meyr et al., 2002; Kobayashia et al., 2003; Kumar & Reinartz, 2005).

2.6.2 ERP implementation

In a fundamental way, ERP systems assume that organizations have to be in agreement with the ERP architecture because they have the general functionalities that most organizations need. ERP implementation is a very complex process that requires the intervention of many actors and poses challenges that organizations need to confront. However, the idea that ERP systems have to fit all organizations due to their universal standards has been criticized by some, including Hanseth and Braa (2001), who argue that the standards – or what they call 'universal standards' – for enterprise systems are not universal.

Technological change in organizations is taking place today through ERP implementation, which is replacing many IT systems in the organization with this one integrated system. Some believe that this is a social process rather than a technical one (e.g. Hanseth et al., 2001; Clausen & Koch, 1999). However, when ERP was first introduced, a number of IS scholars (e.g. Davenport, 1998) suggested that the ERP implementation phase in an organization needed to be compatible with the enterprise

systems; this presents the most difficult issue that organizations face. He also stated that the implementation process costs much money and time and requires the involvement of many actors within and outside the organization to make the implementation successful. However, others from a different school of IS thought have provided a deeper explanation of what ERP implementation can bring to institutions (e.g. Hanseth & Ciborra et al., 2001b). Hanseth and Braa (2001) argued that these integrated systems can threaten different organizational actors' sources of power and that people (for example, the managers in the adopting organization) might lose control, which will result in resistance from these actors to this promised technological change. The main point is that the implementation and development of ERP in today's organizations is very complex and poses many challenges, including power/knowledge issues and resistance.

In this process of ERP implementation, a number of actors from within and outside the organization contribute to make the system work. Somers and Nelson (2004) identify those who are involved in ERP implementation: top management, steering committee, inter-departmental cooperation, vendors, consultants, and other skilled workers inside and outside the organization who will be involved in training, business process reengineering (BPR), and change management. Other studies, such as Howcroft and Light (2006), have identified a number of powerful actors, such as IT consultants, who are central in terms of engaging in discussions between the providers or vendors and the implementing organization and its employees. Other influential actors include IT personnel, who today are less focused on producing software and are instead more involved in discussing the needs and modules these systems bring with them, thus participating in the process of change management (Howcroft & Light

2006). Thus, IT personnel are involved in identifying the needs of the organization, the capability of the modules, costs and prices, and change management.

A large survey of several companies by Robey et al. (2002) found that organizations adopted two methods of implementing ERP. Some organizations tended to focus on the new system and what it could bring to the organization but avoided modifying organizational structured and processes for the new ERP. Other organizations, however, focused on both. Some case studies, such as Berchet and Habchi (2005), have shown that ERP can be successfully integrated into organizations when there is top management support and outstanding project planning and teamwork. The point that business process re-engineering is an essential part of ERP implementation has been raised; for that reason, organizations should have a strategy for change and implementation. Organizations should focus on the correct processes and project management, as well as be aware of the importance of integrating the different software systems held in organizations with a new ERP and take into consideration the technical, architectural, and strategic issues in ERP implementation (Al-Mashari et al., 2003). Other studies have focused on the consequence of including strategic organizational goals as a focus, aside from the goal of achieving technical advantages to meet the current needs; however, this software system should help organizations achieve a competitive advantage in addition to technical advantages (Stefanou, 2001).

A number of critical success factors help ensure the successful implementation of these kinds of software packages. These include communication, compatibility, shared understanding, time and project management, the proper management of client–consultant relationships, and the selection of the right people for this process (King, 2005). Skok et al. (2002) have identified similar factors, including cultural and business change, managing consultants, managing conflicts, and staff retention. In

addition, project management, a good organizational culture, and internal organizational readiness are other key factors (Gargeya & Brady, 2005). These critical success factors may not be appropriate for all organizations.

On the other hand, ERP implementation also involves some difficulties that organizations should be aware of. Kumar et al. (2000) and Soh et al. (2003) found in research on ERP that there is usually a 'mismatch' between the structure and the way ERP is designed; many organizations' structures differ across areas and sectors. Moreover, the problems surrounding transferring data from previous databases to new versions of ERP and the information requirements for certain companies can differ from those in ERPs (Kumar et al., 2000). Kumar (2003) is a detailed study of the problems posed by the management of ERP. He identifies lack of user acceptance and of support for the change that ERPs bring to organizations by organizational employees as challenges and cites training and project management issues and technical skills as essential factors in making ERP work. One of the key factors in ERP implementation failure is, according to Gargeya and Brady (2005, p. 501), the lack of what they call, 'corporate culture and organizational (internal) readiness'. All of these challenges are good examples of the difficulties that ERP implementation faces.

Research on ERP implementation has taken different directions. The software architecture of ERP has made these systems more suitable for private companies, but the public sector (e.g. higher education) has also begun taking notice of the importance of implementing ERP (e.g. Scott & Wagner, 2003; Rabaa'I et al., 2009).

However, as explained by Wagner and Newell (2004), there is a conflict between the 'best practice' that ERP promises and universities' organizational structure and needs.

As suggested by Davenport (1998), to have a better discussion of what new functionalities of enterprises should be included in the new (E2) system, understanding how universities add more functionalities to this enterprise system through their different working environment is critical. It seems that ERP systems will have to be more adaptable to different institutions' requirements in different sectors. ERP systems are complex integrated systems that are difficult to implement, despite their critical success factors.

Usually, business and technological alignment are centred on the level of the information technology mission, objectives, and plans within the business strategy, so that the IT strategy agrees with them. This also includes the fit and integration among the business strategy, IT strategy, business infrastructure, and IT structure. There is no clear definition of what technological and business alignment is, how to achieve it, or how to identify the right alignment (Aversano, Grasso & Tortorella, 2012). In addition, strategic alignment is concentrated on the actions management takes to achieve consistent objectives throughout the IT and other functional organizations. Thus, alignment concerns both how IT is in agreement with the business and vice versa. Realizing an alignment strategy is evolutionary and dynamic (Luftman, 2004). The achievement of ERP alignment within an organization is a complex matter, and there is pressure on organizations to align their ERP systems with the organization (Grant, 2003).

ERP systems are usually not aligned with the organization. Some researchers (e.g. Soh, Kien Sia et al., 2003) have examined the sources of misalignment due to the significant implications a misalignment has on organizations. These sources of misalignment include the result of opposing forces embedded in the structure of the ERP and the organization. When there is a distance between the organizational

characteristics and the ERP system characteristics, the organization will face difficulty in implementing the ERP due to the joint evolution of organizational requirements and system capabilities that occurs during ERP implementation (Rosemann, Vessey & Weber, 2004).

Most organizations miss the essential differences between their organizational context and the context understood by ERP developers. This limits the benefits received from the ERP implementation and results in misalignment, which may lead to failure. Soh et al. (2003) have studied the misalignment between the organizational structure embedded in the organization and the structure embedded in the ERP system. They found that enforced structures were fixed by ERP customization while the rest of the acquired structures were fixed by the organizational adaptation. In addition, Madapusi and D'Souza (2005) explained that a misalignment of the ERP with the international strategy of the organization may lead to system implementation failure and thus suboptimal business performance. A misalignment of ERP with the organization also occurs when there is a misfit between the pre-loaded business modules in the ERP system and the business requirements of an organization (Yen, Idrus & Yusof, 2011). Mullick (2011) also argued that both ERP customization and organizational changes are needed to overcome the misalignment challenge. Implementing ERP in developing countries also fails due to a misfit between the ERP systems and the organization caused by a gap between the business practices and legal and governmental regulations and the requirements of the business and the designed ERP (Bitsini, 2015).

Chen (2009) has shown that ERP implementation should take into consideration the firm's growth stage, unique industrial characteristics, influence felt from the business

group, alignment of internal control and audit function, corporate governance, and information technology governance. In addition, many researchers have identified strategies for alignment with the organization when adopting ERP systems. For example, Sumner (2009) has identified a number of alignment strategies for achieving a fit with the organization. These strategies include functional expertise, knowledge integration, liaison mechanisms, project governance, and the level of integration of enterprise-wide processes. It is also important to align the ERP with the firm's operational requirements in order to obtain the needed capability to deliver orders on time and to achieve satisfaction with the ERP (Bendoly & Jacobs, 2004). Aligning the ERP requires robust support from upper management, effective working relationships, effective leadership, appropriate prioritization, trust, and successful communication, as well as an understanding of the organization and technical settings (Luftman, 2004).

2.6.3 ERP and Higher Education

Universities are turning to ERP systems to replace existing management and administrative IT systems (Pollock & Cornford 2001; ALdayel, Aldayel, & Al-Mudimigh, 2011). This move towards ERP systems has led universities to encounter new concepts and practices (Scott & Wagner, 2003). Universities are implementing ERP systems because governments have asked universities to be more efficient (Allen & Kern, 2001; Katz, Beecher, Caruso, & King, 2002); to reduce duplication of resources and improve processes (Allen & Kern, 2001), to enable universities to deal with the changing environment of the higher education sector (McCredie & Updegrove, 1999); to enable all users to access information and improve performance since ERP can also provide a better management tool (Kvavik, Katz, Beecher et al., 2002); to improve teaching and research so that benefits are reasonable relative to

costs (Watson & Schneider, 1999); to improve business performance by improving services offered to students, faculty, and staff (Judith 2005); to enable organizational change and effectiveness (Nielsen, 2002); to enable students and staff to access information, such as student information, academic records, and other data necessary to their work (Davis & Huang, 2007); to improve business processes and services to students and faculty (King, Kvavik, & John, 2002); and to replace old systems, modernize campus IT environments, increase customer satisfaction, provide better information for management and planning, and utilize an ERP that can lead them to implement advanced applications (Vathanophas & Stuart, 2009).

Allen and Kern (2001) studied ERP implementation in UK universities and found that factors such as organizational culture and communication have significant effects on the implementation results of ERP systems. Another study, on Saudi Arabia, also found that project management is the most important critical success factor in universities (ALdayel, Aldayel, & Al-Mudimigh, 2011). Abugabah, Sanzogni, and Alfarraj (2015) studied the impact of ERP in higher education and found that system quality, task technology fit, and information quality are the most important factors in better end-user performance.

Universities differ from other organizations in other sectors, and these differences influence ERP implementation. Universities differ in terms of structure, function, form, complexity of purpose, limited measurability of output, diffuse structure of authority and internal fragmentation, and decision-making process (Pollock & Cornford, 2004). Furthermore, universities use ERP systems for academic and non-profit purposes, whereas other organizations use it for business purposes (ALdayel, Aldayel, & Al-Mudimigh, 2011). An example of the ERP differences between universities and other organizations is noted in Sabau, Munten, Bologa et al. (2009),

where ERP systems are linked to international standards; this will require universities to align themselves with these standards, reengineering university business processes and customization to the requirements of the university. ERP providers claim that ERP can bring best practices to an organization. Wagner and Newell (2004) have explained how the 'best practice claims' that ERP systems bring to organizations led one Ivy League university to radically customize the university's business processes, organizational structure with the ERP to meet the requirements of the administration and academic culture. Wagner, Scott and Galliers (2006) showed that the notion of 'best practice' is a key concept for vendors of ERP; they showed how the design of ERP changed the kind of work that universities do, and how such practices were abandoned and modified. The differences between universities and other organizations increase the complexity of implementing ERP in universities.

2.7 Summary

This chapter introduced studies relevant to this research project on the power/knowledge of consultants and the PMO in ERP implementation. It started by introducing knowledge, knowledge management and innovation in contemporary organizations, then examined the role of consultants in IS and the role of the PMO, then explained why the study's focus is on the consultants, PMO, and power politics in IS. It concluded by considering the literature on ERP systems implementation.

Chapter Three: Theoretical Framework

> Theories are formulated to explain, predict and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critical bounding assumptions. The theoretical framework is the structure that can hold or support a theory of a research study. The theoretical framework introduces and describes the theory that explains why the research problem under study exists. (USC, 2015)

> A theory is 'an organised and systematic set of interrelated statements (concepts) that specify the nature of relationships between two or more variables, with the purpose of understanding a problem or the nature of things'; concepts are 'symbolic statements describing a phenomenon or a class of phenomena'; and, 'where a framework is based on concepts, the framework should be called a conceptual framework, and where it is based on theories, it should be called a theoretical framework'. (Green, 2014, pp. 34–35)

3.0 Introduction

This chapter addresses the second research objective/question– to develop a theoretical framework adopted from social science, economics, and organizational sciences based on Clegg's circuits of power, absorptive capacity, agency theory, neo-institutional theory, and structuration theory and to explain how they are helpful in understanding power/knowledge in ERP implementation. This chapter explains the theoretical framework adopted to guide the data collection and analysis. The theoretical framework developed in this chapter aims to show why and how it integrates all these theories to understand the interaction of the power/knowledge of consultants and PMOs in ERP implementation. It also describes the characteristics of each and explains how they have been applied in the study of IS in organizations, along with the potential and limitations of these approaches.

Frameworks are useful instruments because they help arrange and combine the different fundamentals of a phenomenon in a format that makes it easy to obtain the proper results for a study (Montagna, 2005). In addition, theories are adopted to help researchers understand the topic of research and include all the relevant angles. Theories also set the boundaries of data collection by concentrating the variables the study needs to collect, analyse and interpret (USC, 2015).

These theories have been chosen because they help explain the power/knowledge of consultants and PMOs in ERP implementation. Clegg's circuits of power theory helps explain the institutionalization of the power of consultants and PMOs in ERP implementation. Absorptive capacity theory explains the ability of the PMO and consultants to recognize the value of new external information, assimilate it, and apply it for ERP implementation. Agency theory explains how the incentives of the university administration, users, consultants, and PMO are used to align the interests of those actors and how that can contribute to one of the circuits of Clegg's circuits of power and to one of the absorptive capacity components. Structuration theory, especially the concept of 'legitimacy', which is manifested through the norms and rules of the university and which must be reflected in ERP system design and implementation, can explain the legitimacy of consultants and the PMO and contribute to certain circuits of power and to one of the absorptive capacity components. Finally, neo-institutional theory, especially the concepts of 'mimetic forces' (i.e. imitating or copying other organizations' practices in order to avoid failure) and 'normative isomorphism' (concerning the professionalization of PMOs and consultants), help explain contributions to certain components of Clegg's circuits of power and to absorptive capacity. This theoretical framework aims to show how Clegg's circuits of power – which include contributions from the other theories –

contribute to each component of absorptive capacity. Finally, it helps to explain how user resistance has been used to institutionalize the power/knowledge of consultants and the PMO in a case study of a university that implemented and developed an ERP system called the *Government Resources Planning* (GRP).

3.1 Theoretical considerations

For this study, the researcher reviewed a range of theories used in IS research, most borrowed from other disciplines. Such a review can help explain issues of power/knowledge. These concepts were borrowed from Clegg's circuits of power, absorptive capacity, agency theory, neo-institutional theory, and structuration theory to help explain the study's general objective – to examine how the power/knowledge of a PMO and consultants is institutionalized.

This study adopted Clegg's circuits of power (1989) and Todorova and Durisin's absorptive capacity model (2007) to explain the institutionalizing of power/knowledge for consultants of ERP system. Other theories were used to contribute to components of Clegg's circuits of power and influence several components of absorptive capacity. Agency theory has been used to understand the agency problem – whether there is an alignment of goals between the agents (project management officers and consultants) and principals (the university administration) or not. It also contributes to understanding the system integration circuit of Clegg's circuits of power and to the knowledge exploitation component of absorptive capacity. Neo-institutional theory has been used to examine mimetic and normative isomorphism and foster an understanding of how these two notions affect the purchase of the ERP system, selection of company, and selection of the PMO and consultants. It also contributes to understanding the episodic circuit of Clegg's circuits of power and to the first two components of absorptive capacity – recognizing the

value of external knowledge and acquiring knowledge. Structuration theory's understanding of legitimacy has been applied to evaluate the legitimacy of consultants and the PMO built by implementing the ERP; it also contributes to understanding the social integration circuit of Clegg's circuit of power and the knowledge assimilation and transformation components of absorptive capacity. All these theories – especially agency theory, neo-institutional theory, and structuration – will be explained to show how they contribute to circuits of power and influence absorptive capacity components.

3.1.1 Clegg's Circuits of Power

> For Clegg, power is a force like electricity, which circulates through social relations, working practices, and techniques of discipline. (Backhouse, Hsu, & Silva, 2006, p. 415)

To apply this framework, the researcher must understand the power of agents or the process of 'translation'. Clegg (1989) explained that the institutionalizing of power depends on the power of agents and illustrated by applying the 'translation' concept adopted from actor network theory. Callon (1986) claimed that translation consists of four moments: problematization, interessment, enrolment, and mobilization. Problematization occurs when an actor engages other actors in such a way that the focal actor's own participation is indispensable to the others. In turn, the other actors force additional actors to follow the original actor. Next, interessment occurs when the main actor tries to force the other actors to place themselves between those actors and their alternatives to form an authority without their choice. Third, enrolment defines the roles played by the powerful actors who arose during the interessment. Fourth, mobilization refers to the main actor's mobilization of other actors by acting as the spokesperson for their interests. Hence, this translation will produce an

obligatory passage point (OPP) – a network of alignments – that explains the power created by the network. Using these ideas, Latour (1986) and others have analysed power as an outcome of previous alignments or translations.

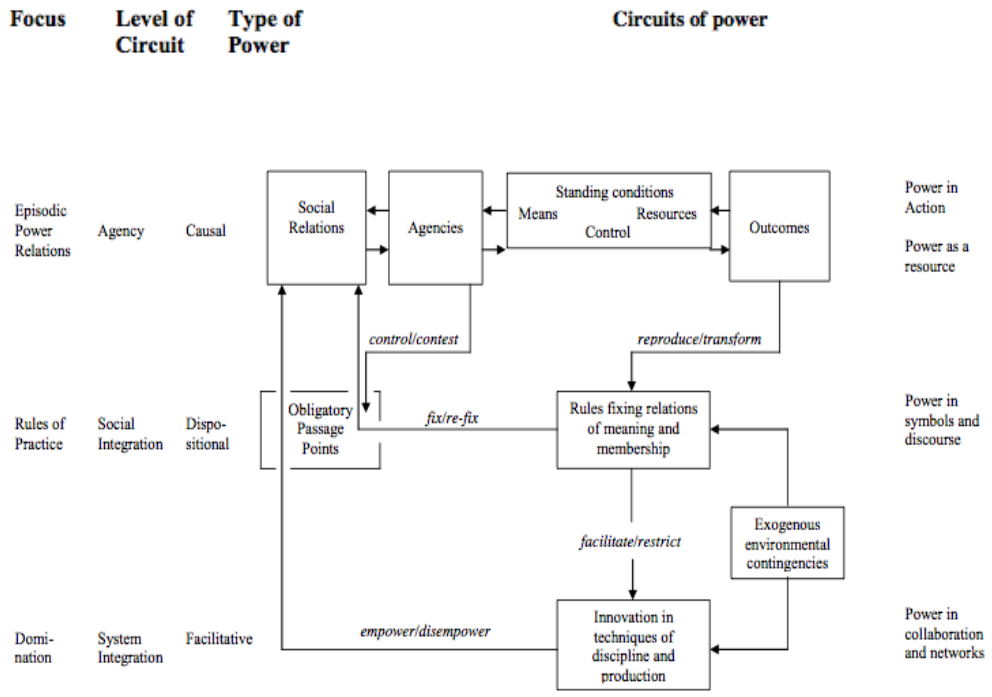

Figure 2 Clegg's framework of power, adopted from Rosness et al. (2011)

According to Clegg (1989), circuits of power arise in three forms: episodic circuits, social circuits, and system integration circuits. The episodic circuit is the causal power that focuses on the agents' interests and aims to explain them. Achieving episodic power will depend on enrolling other agencies and the relationship between these agencies, such as the coalition that results from stabilising the network, setting and common sense of meaning (ideological) and membership (political) between the different agencies. In essence, the main focus of the episodic circuit is 'how A makes B do something that B otherwise would not do'. The second circuit, social integration or dispositional power, follows the dominant purpose of establishing and re-

establishing the relations of meaning (ideological) and membership (political). In one way, social integration can be linked to how legitimacy, authority, and rules can lead to realizing and using resources to empower A's and disempower B's. Specifically, social integration requires agencies to secure the resources that will enable them to do certain things by following certain practices. Finally, the system integration circuit concerns the techniques of production (economic) and discipline (military). In the system integration circuit, power is practiced through discipline and production; it concerns how disciplining agencies can be guaranteed by applying methods such as contractual agreements. System integration incorporates many practices; its main target is to stop authorities from becoming potential powers and ensure their obedience. This final circuit's main focus is expanding the organization's capability to construct and accomplish shared aims (Clegg, 1989; Backhouse et al., 2006; Silva, 2007; Rosness et al., 2011).

In episodic power, the existence of social relationships defines the identity of the agents involved. The outcome of the agents' power will depend on standing conditions, which require various agents to use accessible means and resources and to manage these resources that control the future effect. Resistance can be seen at this level of episodic power. This level of the framework has a more obvious delineation than the other circuits. The rules of practice play a significant role in stabilising or changing this circuit. On this level, power will be partly achieved if the necessary outcome has been guaranteed (Clegg, 1989; Rosness et al., 2011).

The social and system integration circuits are the routes or pathways that stabilize an OPP in the circuits of power. The making or construction of an OPP is partly an achievement of power as a result of episodic power. However, achieving power on all levels of the circuits of power requires a substantial rationale, comprising the

conditions that explain the strategies adopted in different circuits. Understanding the different strategies on the social integration level depends on exogenous environmental contingencies; this understanding is achieved by fixing the rules of practice that control meaning and membership. This requires agencies such as users to show an acceptance or 'isomorphism' for adopting the use of new innovations and realizing the rules and practices that lead to the agencies' acceptance of this new innovation. The next circuit is the system integration, whose main concern is domination. The system integration circuit cannot ignore the relationship between meaning and membership; it must also be fixed in the OPP to produce the needed effect or power. Additionally, it can be a potential source of resistance, if, for example, users resist new information systems. Finally, the system integration level is very dynamic and more unstable than other circuits. Agencies at this level have to be able to control the OPP. The focus here is on constructing a network of alignments that creates new standing conditions that redefine the agencies' social relations. The main target is to ensure obedience and restrict any future actions that could lead to the establishment of a power that threatens the central authorities (Clegg, 1989; Rosness et al., 2011).

There are a number of limitations to the theory of the circuits of power: they are complex, are interpretive in nature, and require a lot of data to interpret them properly. Its use also requires an understanding of the social and organizational context (Backhouse, Hsu & Silva, 2006). Furthermore, Clegg does not include data in the theory, which creates problems in analysing data (Silva & Backhouse, 2003).

However, the circuits of power model was adopted for this research because it provides a detailed tool for studying power in organizations in relation to IS, which other similar theories lack. It also integrates most of the contributions of theories of

power, from Machiavelli's to the actor network theory. It can also help determine how the power of PMOs and consultants is institutionalized in the context of ERP implementation in a higher education institution.

3.1.2 Absorptive Capacity

Cohen and Levinthal (1990) defined absorptive capacity as 'the ability of the firms to recognize the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities' (p. 128). Zahra and George (2002) provided the second important contribution to the theory by clarifying the construct of absorptive capacity after Cohen and Levinthal (1990), explaining that the research on absorptive capacity was complex because of the concept's various definitions, antecedents, and outcomes. They divided absorptive capacity into two elements – potential and realized. Potential absorptive capacity includes both knowledge acquisition and assimilation capabilities. Realized absorptive capacity consists of knowledge transformation and exploitation. The third important contributor to absorptive capacity theorizing is Lane et al. (2006), who proposed that absorptive capacity occurs in three phases: exploratory learning (recognizing and understanding new external knowledge), transformative learning (assimilating valuable external knowledge), and exploitative learning (applying assimilated external knowledge).

This thesis adopted the Todorova and Durisin (2007) model of absorptive capacity, as shown in Figure 2. Knowledge source and prior knowledge are the first elements in producing absorptive capacity; these depend on the appropriability regimes that affect the innovation outcome of the organization. Appropriability regimes moderate the antecedents of absorptive capacity. Power relationships and activation triggers play a moderating role in prior knowledge and knowledge source.

The first dimension of absorptive capacity is recognizing the value of new knowledge, which must be done before the acquisition of the knowledge. First, knowledge acquisition is related to the organization's ability to recognize and obtain the external knowledge that is central to its operations. Second, knowledge assimilation is related to the organizational routines and processes that enable the organization to analyse, process, interpret, and realize information generated from outside the organization. Third, knowledge transformation represents the organization's ability to develop and improve the integration of current knowledge. Fourth, knowledge exploitation is an organizational capability based on routines; it allows an organization to improve, lengthen, and influence its current abilities by adding new knowledge to its operations and applying it (Zahra & George, 2002).

It is important to note that, without past knowledge, firms cannot evaluate new information or absorb it, which can affect the organization's existence. After its value is recognized, knowledge is acquired, and the generation of new knowledge is focused on the intensity, speed, and effort of the knowledge collection. The transformation process of knowledge then starts. In this process, firms need to understand their routines and ideas to verify why and how they can modify their cognitive schemes to use the new knowledge to match previous knowledge. Next, the assimilation dimension concerns the knowledge the firm can interpret and understand within its current cognitive structure.

Social integration mechanisms in the model affect the social interactions and knowledge processes among members of the firm. Within the social interaction mechanisms, connections – comprising shared meanings – are built, affecting knowledge absorption (Todorova & Durisin, 2007).

An important moderating effect of this model (which was not available in the previous models of absorptive capacity) is that power relationships are related to cognitive processes, learning, and capabilities in the firm. This moderating effect explains how organizations can use outside knowledge more effectively. Powerful members of the firm may affect the knowledge absorption processes to attain their aims. Power relationships are defined as those relationships that include the use of power to achieve goals. There are two forms of power relationship: internal, within the organization, and external, such as with clients and stakeholders. Internal power relationships affect the use of new knowledge through the resource allocation process. However, external power relationships can allow or prevent the exploitation of new knowledge. Power relationships also serve as a moderating effect between absorptive capacity and competitive advantage (Todorova & Durisin, 2007). This model produces feedback links and loops within components of absorptive capacity.

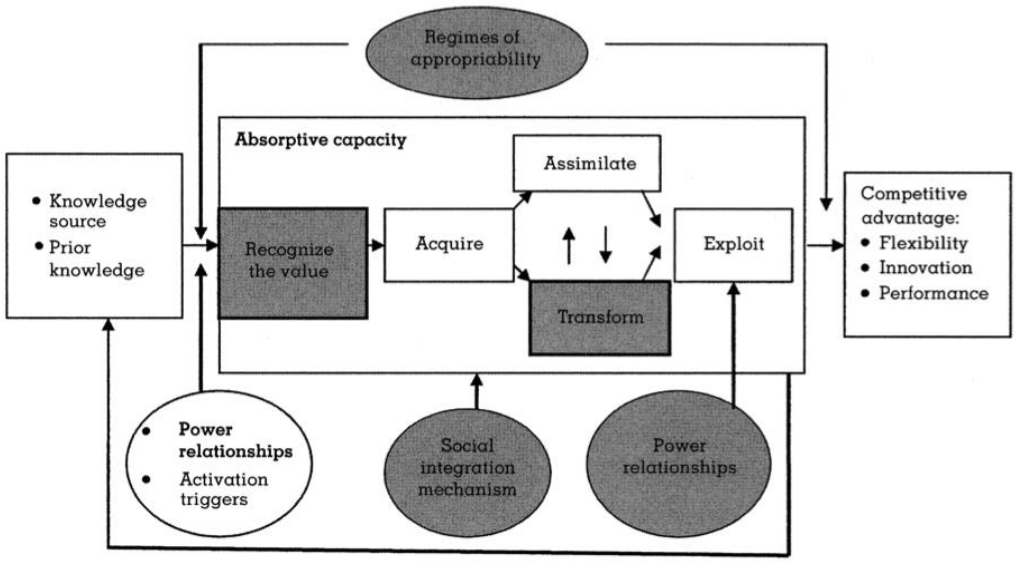

Figure 3 Absorptive capacity, adopted from Todorova and Durisin (2007)

Critiques of absorptive capacity have been advanced. Previous studies have viewed absorptive capacity as an asset, but Roberts, Galluch, Dinger and Grover (2012) argued that this view fails to capture the process by which organizations absorb knowledge. Some have preferred to view absorptive capacity as a capability. Moreover, researchers have tended to focus on the individual level, whereas it is better to look at the level of the collective construct of absorptive capacity. According to Roberts et al. (2012), 'confusion surrounds how absorptive capacity should be conceptualized, its appropriate level of analysis, and how it can be measured' (p. 625).

Todorova and Durisin's model (2007) was adopted here because it helps explain whether higher education institutions transfer knowledge and if they are capable of performing absorptive capacity and reaching ERP innovation or implementation in the organization. It plays an important role, along with agency theory, neo-institutional theory, structuration theory, and Clegg's circuits of power, in explaining the power/knowledge operations in ERP implementation in a higher education institution.

3.1.3 Neo-institutional theory

Neo-institutionalism is a relatively new theory in the IS field (Currie, 2009). It investigates organizational environmental relations (Kraatz & Zajac, 1996). The literature on institutional and neo-institutional theory is complicated and various. The theory is used in disciplines such as economics, political science, and history. Institutional theory focuses on the effects and processes of institutionalization (Currie, 2009) and argues that organizational structures are formed as a response to their members' obligations and influences from the external environment (Hu, Hart & Cooke, 2007).

Over the past few decades, neo-institutionalization has moved from the old institutional theory to the new theory. The old theory used to focus on stability and persistence in organizations. The main notions of the theory focused on the institution, institutionalization, deinstitutionalization, and reinstitutionalization (Currie, 2009). According to Scott (1995), institutions are 'multi-faceted, durable, social structures, made up of symbolic elements, social activities, and material resources' (p. 49). Institutionalization is a process in which an organization reaches a steady and strong status. Deinstitutionalization is a status in which an organization's legitimacy corrodes. Reinstitutionalization occurs when an organization moves from one institutionalization to another institutional system with diverse institutional values or procedures (Currie, 2009). Articles published over the past few decades have introduced new institutionalization concepts, including rationalized myths, legitimacy, de-coupling, cultural persistence, isomorphism, and the organizational field (Currie, 2009).

Neo-institutional theory explains a range of concepts concerning how institutions strive for political power and institutional legitimacy in terms of economic and social aspects. Two of the most important concepts in neo-institutional theory are the institutionalizing process and institutional isomorphism (Hu, Hart & Cooke, 2007). One concept used in neo-institutional theory is institutional isomorphism, a suitable instrument for understanding the politics that occur in institutions (DiMaggio & Powell, 1983). This concept, unique to neo-institutional theory, posits that institutions are organized by phenomena in their organizational settings and regularly become similar to other organizations (Hu, Hart & Cooke, 2007). This concept of institutional isomorphism apprehends the course of homogenization, in which one component of a population begins to look like other components in similar environmental settings. On

the population level, this approach proposes that institutional features are altered to become similar to environmental conditions. There are two sorts of isomorphism – competitive and institutional. Competitive isomorphism accepts a system rationality that stresses market competition, niche change, and fitness measures that explain issues such as bureaucratization. Institutional isomorphism, which explains institutional change and the process of homogenization, has three types. The first is coercive isomorphism, which is developed from political effects and troubles concerning legitimacy and is the result of official and unofficial pressures on organizations and managers to adopt definite institutional rules and practices that other organizations have adopted. The second, mimetic isomorphism, is a normal reaction to uncertainty, as when organizations seek to imitate other organizations in order to achieve best practices and limit potential risks, thus reducing the cost of finding risk solutions because organizations are faced with similar problems. The third type is normative isomorphism, which is related to issues of the professionalization of members of an organization; for example, managers and administrators have similar qualifications and experience, and thus usually adopt similar solutions **(**DiMaggio & Powell, 1983; Macfarlane, Barton-Sweeney, Woodard & Greenhalgh, 2013).

Mimetic and normative isomorphism can contribute to the understanding of power/knowledge because they can be linked to the episodic circuit of Clegg's circuits of power: imitating (copying) other organizations' practices (mimetic isomorphism) and the issues of professionalization of actors when they have similar qualifications and experience (normative isomorphism) can, for example, lead A (systems implementers, project managers and consultants) to make B (the university administration and users) do something that B would otherwise not do. Mimetic and

normative isomorphism also influence the process of recognizing the value of new knowledge and the knowledge-acquisition component of absorptive capacity because they influence the organizational ability to recognize and obtain the external knowledge that is necessary to operations, as well as the intensity, speed, and effort of collecting that knowledge. This links to the episodic circuit of Clegg's circuit of power and recognizing the value of new knowledge and knowledge acquisition from absorptive capacity, as illustrated by the fact that an organization implementing an ERP system would look for other organizations' practices in a successful ERP implementation and might adopt a PMO that was helpful in the implementation of ERP in another organization (mimetic isomorphism). Adopting a PMO because it was successful in past ERP implementations in other organizations influences the concept of what constitutes 'successful practices' and the power of the managers overseeing the implementation. An experienced PMO can change managers' views regarding the right decision to take for a successful implementation. A successful search for successful practices influences the recognition of the value of new knowledge and knowledge acquisition because copying other organizational practices to reduce the risk of failure helps realize the needed new knowledge and knowledge acquisition by influencing the intensity, speed, and effort of collecting the knowledge that is important for operations in ERP systems implementation. While recruiting actors such as consultants and project managers for the implementation of ERP, the university looks for certain qualifications and experience in order to acquire the right members for the organization (normative isomorphism). The qualifications and experience that the organization looks for when recruiting the consultants and project managers can be linked to Clegg's episodic circuit, because these qualifications and experience influence the decisions of managers concerning ERP implementation challenges; the advice and input of these consultants and project managers, based on their

qualifications and experience, is what makes their input and advice acceptable to and influential on the university's administration. This normative isomorphism also influences the recognition of new knowledge needed by the organization implementing the ERP (pertaining to the actors with acceptable qualifications and experience), thus influencing the ability to recognize and obtain the external knowledge that is central to its operations. As an example of the last point, the organization implementing the ERP system looks for members with qualifications and experience in ERP implementation; the appointment of those actors will be based on these qualifications and experience. Within this recruitment process, the organization is also looking for external knowledge about successful ERP implementation, which will be included in its operations.

In another clear example, when the consultants advise the organization to imitate other organizational practices such as adopting a PMO to help in implementing the ERP system, the consultant makes the manager decide to adopt the PMO for its various benefits; this is an integration of mimetic isomorphism and falls along the episodic circuit of Clegg's circuits of power. At the same time, from an absorptive capacity point of view, when the organization imitates (copies) other organizations' practices, this helps in recognizing the needed knowledge and acquiring the knowledge for ERP implementation by influencing the intensity, speed, and efforts of collecting the knowledge.

An episodic circuit of Clegg's circuits of power occurs when the organization implementing the ERP system recruits consultants and project managers (requiring certain standards through specific qualifications and experience), who make the organization managers accept other consultants' and project managers' solutions and advice. Through project managers' and consultants' experiences, the organization

implementing the ERP system can recognize the needed knowledge and acquire it in while implementing the ERP system.

Neo-institutional theory has been used in IS research and has become a major theoretical framework for studying organizations and information systems (Hu, Hart & Cooke, 2007). Many researchers, such as Tingling and Parent (2002), have adopted neo-institutional theory and shown that mimetic isomorphism plays a significant role in executives' choice of IS. In addition, Teo et al. (2003) showed that all three types of institutional isomorphism are important elements of an inter-organizational connection between technology use by institutions and that the existence of institutions affects the setting of information technology use. Currie (2009) has observed that there are few IS studies on the process of institutionalization and that there are more on the effects of institutionalism. Orlikowski and Barley (2001) suggested that IS researchers could apply institutional theory to examine how institutions influence the design, use, and consequences of IS.

A number of critiques of neo-institutionalism theory have appeared. According to Hasselbladh and Kallinikos (2000), neo-institutionalism provides little information about how an area of action is understood and how the guidelines, performance principles, and instruments for control are framed; its main concern is investigating the form of diffusion of technology. According to Currie (2009), neo-institutional theory can be challenging for researchers because it is not a single theory and lacks theoretical clarity. It offers different accounts for organizational fields, structural isomorphism, and institutional logics.

Nevertheless, this theory is a useful tool, especially in its notions of mimetic and normative isomorphism, which foster an understanding of the power/knowledge of consultants and PMOs in ERP implementation.

3.1.4 Structuration theory

Structuration theory was introduced by Antony Giddens (1984), who claimed in *The Constitution of Society* that social practice constitutes individuals and society. Structuration is a theory of social systems (Kouroubali, 2002). This social practice is achieved by knowledgeable agents who have 'causal power' to create an effect. Social practice is merely voluntaristic; it becomes ordered and stable through space and time. Actors who are involved in the implementation and development of ERP through structural properties, for example – which is based on rules and resources – make social practices. A structure is the result and a medium of the process of structuration, which is the production and reproduction of practices across time and space (Rose, 1998).

The main issue of structuration theory is the relationship between the individual and society. Giddens (1984) argued that social phenomena are not the result of objective social structure, which is the result of society or human agents. Instead, Giddens proposed that agency and structure both create social phenomena. He also identified three elements of structure – signification, domination, and legitimation (Jones & Karsten, 2008). The structure of signification increases our understanding of the role of the person. The structure of domination informs us of the power that person has because the structure of signification doesn't provide details such as the identity of the person (Jones & Karsten, 2008). Finally, legitimation is a process in which legitimacy is the result (Buhr, 2002). According to Dowling and Pfeffer (1975), legitimacy occurs when there is 'congruence between the social values associated with or implied

by their activities and the norms of acceptable behavior in the larger social system of which they are a part' (p. 122).

Giddens (1979) argued that structuration theory has two elements. The first includes action, intention, reasons, and motives. The second combines the analysis of both actions and institutions. Power is seen as part of an agency, whereby power is the capacity of an individual to achieve an outcome. It is because of the duality of structuration theory that power can be made and allowed at the same time. Power can be a method for liberation or control. This duality of power is demonstrated in terms of the domination of resources. Silva (2007) argues the following:

> [There are] two types of resources: allocative and authorative. Allocative resources are divided in three categories: (1) raw materials (for production); (2) production means and technologies; and (3) artefacts that are the result of the interaction between the previous two. Authorative resources are also divided into three categories: (1) the organization of time and space; (2) the production and reproduction of the body (bringing populations under administrative order); and (3) the organizations of life chances (resources for human expression such as cultural goods). These resources, Giddens argues, are fundamental for coordination in social systems. (p. 173).

Giddens' structuration theory is a general theory of social organization and not an IS theory. Giddens does not discuss IS. However, Walsham (1993, 2002) has extended structuration theory and added the dimension of technology to structuration analysis. Structuration theory has also been used in IS research to analyse case studies and the development of theories (Kouroubali, 2002). Gidden's central aim was to discuss the ontology of human society. Giddens' structuration theory examined social phenomena at a high level of generalization not specific to any context – for example,

that of IS. Thus, it is a social theory, and applying structuration theory to study the relationship between any topic in IS and organizations is possible (Jones & Karsten, 2008).

The fundamental focus of structuration theory is the relationship between individuals and society. Giddens explained that 'agency and structure are mutually constitutive duality. Thus social phenomena are not the product of either structure or agency, but of both. Social structure is not independent of agency, nor is agency independent of structure' (Jones & Karsten, 2008, p. 29).

Giddens insists that human interaction consists of structures of meaning, power, and moral frameworks and that human interaction should be analysed in terms of these structures. According to Orlikowski and Robey (1991), Giddens states that there are three modalities that connect the realm of action with the realm of social structures:

1. Interpretive schemes, aimed mainly at achieving a reasonable interaction through common typical knowledge that intends to interpret behaviour and events.

2. Resources 'are the means through which intentions are realized, goals are accomplished, and power is exercised" (Orlikowski & Robey, 1991, p. 148).

3. Norms are the rules that manage certain behaviour and which explain the legitimacy of interaction within a certain moral order. Codes of legitimate behaviour are shaped via sanctions by people as they cooperate. The mechanism of interaction for norms is the result of relationships between the rights and obligations of the people interacting. Thus, norms play an effective role in the making of institutional ideas of legitimate behaviour. Human action

is directed through the cultural idea of legitimacy as reflected in these norms. Norms communicate and support the structure of legitimacy (Orlikowski & Robey, 1991). This research adopts structuration theory's understanding of legitimacy; thus, the rules define the legitimacy of actors in the implementation and development of ERP.

4. These three modalities explain how institutional properties of social systems facilitate human action and how human action establishes social structure. This connection among the realms of social structure and human action is called a 'process of structuration' (Orlikowski & Robey, 1991).

The link between the legitimacy concept of structuration theory and Clegg's circuits of power and absorptive capacity contributes to the understanding of power/knowledge in ERP implementation. Rules and norms, when reflected and written into the design (programming) and implementation of ERP systems, increase the legitimacy of consultants, systems implementers, and project managers. While including all the rules and norms the organization requires will increase the legitimacy of, for example, the planners in the organization implementing the ERP, failure of the ERP system to reflect all the rules and norms required will result in the need for improved interfaces, which will require further programming, decreasing the legitimacy of system implementers, project managers, and consultants, thus making them less powerful and incapable of empowering the class of users and managers. This legitimacy and reflection of the rules and norms of the organization in the design of ERP and implementation can allow the use of resources to empower the class of systems implementers, project managers, and consultants. This is a link to the social integration circuit of Clegg's circuit of power. Further, this legitimacy influences knowledge assimilation and transformation, or absorptive capacity. Legitimacy (e.g.

the reflection of the norms and rules of the organization in ERP design and implementation) can influence knowledge assimilation in a way that influences the organizational routines and processes that enable the organization to analyse, process, interpret, and realize information that comes from outside the organization. For example, when a legitimate consultant with experience in implementing ERP for public organizations advises an organization that introducing a PMO will make the implementation successful, this advice from the external consultant leads to influence on the routines and processes in the ERP implementation in the organization; a new PMO will communicate with internal actors (e.g. the university department implementing ERP) and external actors (e.g. vendors and consultants) and make the organization capable of analysing, processing, interpreting, and realizing information from outside the organization (i.e. knowledge assimilation). Legitimacy also influences knowledge transformation in that the organization implementing the ERP becomes capable of developing and improving the integration of current knowledge into the implementation of ERP.

The use of structuration theory in IS research is wide and diverse. Research on structuration theory and IS has attracted the attention of many researchers since the publication of Giddens' work on the constitution of society (1984). Jones et al. (2008) reviewed more than 300 papers in the field, demonstrating how popular the theory has become in the IS field. Orlikowski (1992) provided an account of the interaction of technology and organizations as well as a model inspired by structuration theory, called the 'structuration model of technology'. She investigated power and information and provided an account of how the implementation of information technology can increase managerial control over users and introduce elements that institutionalize technology (Silva, 2007). Walsham (1993) used structuration theory to

study how context influences process, using the element of the duality of structure. He concluded that information systems and organizations are both controlled by context and that context can modify the process (Silva, 2007).

This structuration theory has faced a number of critiques. For example, Walsham (1993) and Pozzebon and Pinsonneault (2005) argued that structuration theory was too detailed and complex for empirical analysis and that it is difficult to link the theory with data. Clegg (1979) criticized structuration theory for ignoring the importance of power relations in determining structure. Clegg (1989) further argued that agency is both human and non-human, while structuration theory views agency as being only human, causing problems in studying IS in organizations and the role of IS in power relations (Silva, 2007). However this research adopts the notion of legitimacy in structuration theory because it provides a rich explanation of how agents – especially consultants and PMOs – have and build legitimacy while implementing and developing ERP systems.

The usefulness of structuration theory to IS research is its offering to IS researchers a theoretical approach that aids them in appreciating 'how users interaction with IT evolve, what the implications of these interactions are and how we can try to deal with their intended and unintended consequences' (Pozzebon & Pinsonneault, 2005, p. 1356).

The theoretical framework relates to how the power/knowledge of consultants and PMOs in ERP implementation is institutionalized. Structuration theory's understanding of legitimacy can be linked to Clegg's circuits of power and absorptive capacity, enabling a rich understanding of the power/knowledge of consultants and PMOs in ERP implementation.

3.1.5 Agency theory

Agency theory has been widely adopted in industrial economics and can explain IS implementation and use (Bakos & Treacy, 1986). It can provide a rich theory of organization that earlier economic and social sciences research lacked (Hill & Jones, 1992). It also aims to overcome the agency problem, as will be explained later in this section. Agency theory explains the political nature of organizations, positing that agents and principals have various interests, the solution to which is matching those objectives and pay incentives for agents (Eisenhardt, 1988).

In their book on the modern corporation and private prosperity, Berle and Means (1932) introduced agency theory to explain the conduct of agents and principals and the contracts that manage these relationships. In the 1960s and 1970s, researchers focused on risk sharing between individuals and groups. Research on risk sharing focused on the different competing parties that have dissimilar approaches to risk (Eisenhardt, 1989). The agency theory has been used to examine risk sharing and the different interests of actors, principals, and agents. The theory aims to describe the relationship when principals (i.e. shareholders) give authority to agents such as the CEO or CIO to perform certain tasks. This theory focuses on the problems that can occur during this relationship and provides solutions. For example, agents can act according to their interests without recognizing that their behaviours and attitudes concerning risk are – in agency theory terminology – 'agency costs' (Eisenhardt, 1989; Gurbaxani & Whang, 1991). Possible solutions to agency costs include information systems, which can be used in budgeting or supervision and come with the best contract (Eisenhardt, 1989) and activate the role of the board of directors, with the aim of reducing the agents' opportunistic behaviour (Miller, 2002; Hill & Jones, 1992). There are two kinds of opportunism in agency theory: adverse selection

and moral hazard. Adverse selection is the misrepresentation of the capability of an agent, and moral hazard occurs when the agent exerts less effort than is required (Basu & Lederer, 2004).

One of the main elements of agency theory is the preparation of contracts; this is the unit of analysis concerning the management of this relationship and shows whether a behaviour-oriented contract is preferred, wherein the principal knows what the agents are doing, including what their salaries and hierarchal governance are like. However, when the principal does not know what the agents are doing or if they behave differently from what was agreed, the principal can either invest in information or prepare an outcome-oriented contract that includes commissions and associates the interests of the principal with those of the agents to reduce financial risk (Eisenhardt, 1988).

In this relationship between principal and agents, the principal gives the agents control. It is assumed that the agent will behave in a way that does not contradict the principal's interests (Jensen & Meckling, 1976). For example, boards of directors may ensure that the behaviour of executives is aligned with the organization's interests and goals (Fligstein & Freeland, 1995). The agency problem occurs when the agents act in a way that contradicts the interests of the principals.

Agency theory can contribute to the understanding of power/knowledge because it can be linked to the system integration of Clegg's circuits of power and the knowledge exploitation component of absorptive capacity. It especially holds for the alignment of interests and introduced incentives between the university administration on the one hand and consultants and the PMO on the other. This is because the university administration, the 'A' in the system integration as illustrated in Clegg's

circuits of power, ensures the compliance of the 'B', the consultants, PMO, and users in ERP implementation through these incentives. The idea of incentive alignment in agency theory can be linked to the knowledge exploitation component of absorptive capacity, as incentive alignment influences the routines that add new knowledge or improve current knowledge in operations (i.e. for application in ERP implementation). For example, the university implementing the ERP can give users incentives to complete ERP system training, which can lead to a successful implementation of the new information system. This not only ensures the compliance of users in the implementation of ERP in the university but also encourages the users to make the implementation successful. The university can also align the interests of the university administration on one side with the consultants and PMO on the other by providing them with incentives to comply with the aims of ERP implementation. This influences the knowledge exploitation component of absorptive capacity in ERP implementation: the university aligns the interests of the administration, consultants, PMO, and users – all of whom follow certain routines with the university – through incentives to improve those routines or develop new ones to affect ERP implementation. Another example of an alignment of interests is the production of an error-free ERP system by the university administration and users. By giving incentives to the PMO and consultants, the university will achieve this aim by generating the compliance of the PMO and consultants (system integration circuit of Clegg's circuits of power); this incentive alignment influences the routines of ERP design and implementation in such a way that the design and implementation will reflect that the ERP system has no errors. Incentive alignment influences the organizational capability of producing, improving, and applying current and new knowledge and ensuring that the ERP system has no errors. This integration of agency theory with Clegg's circuits of power and absorptive capacity furthers an

understanding of the power/knowledge of consultants and PMO in ERP implementation.

The basics of the theory are simple and easy to apply in social research. The theory also provides a language for analysing concepts such as incentives, rewards, and effort (MIT, 2015). However, one of the main critiques of agency theory is that it is not generalizable and unrealistic when it says that performance outcomes result only from the jobs of individual contributors, which are influenced by the contractual design of the work. Agency theory pays a lot of attention to the idea that individuals' interests diverge from those of the principals. It also focuses on the quantity of work instead of its quality or teamwork (Nilakant & Rao, 1994). Another criticism of agency theory is that it is difficult to apply empirically and is one-sided due to its neglect of the possible exploitation of employees; it is seen as limited and as having few testable implications (Eisenhardt, 1989).

Agency theory studies have focused on the study of private sectors for some time (Golden-Biddle & Rao, 1997). They have provided valuable information on two main actors – principals and agents – and on how agents work for the interests of the principal, positing that there should be an alignment of goals between agents and principals. The theory can be used in the analysis of the power/knowledge of consultants and PMO by integrating it into Clegg's circuits of power; agency theory can also be studied for its influence on absorptive capacity.

3.1.6 Understanding power/knowledge theoretically in ERP implementation

Clegg's Circuits of Power
Episodic circuit: How A makes B do something that B would otherwise not do.
Social integration circuit: Social integration can be linked to how legitimacy, authority, and rules can lead to realizing and using resources to empower A's and disempower B's.
System integration circuit: How disciplining agencies can be guaranteed by applying methods such as contractual agreements.

Absorptive Capacity
The first dimension of absorptive capacity is recognizing the value of new knowledge, which must be done before the acquisition of knowledge.
Knowledge acquisition is related to the organization's ability to recognize and obtain the external knowledge central to its operations.
Knowledge assimilation is related to the organizational routines and processes that enable the organization to analyse, process, interpret, and realize information generated from outside the organization.
Knowledge transformation represents the organization's ability to develop and

improve the integration of current knowledge.
Knowledge exploitation is an organizational capability based on routines; it allows an organization to improve, expand, and influence its current abilities by adding new knowledge into its operations and applying it (Zahra & George, 2002).

Agency Theory
Agency theory explains the political nature of organizations, whereby agents and principals have different interests, and the solution is the matching of their objectives and pay incentives for agents (Eisenhardt, 1988).

Neo-institutional Theory
Mimetic isomorphism is a normal reaction to uncertainty, as when organizations seek to imitate other organizations in order to achieve best practices, to limit the potential of risks and reduce risk costs of finding solutions because organizations are faced with similar problems.
Normative isomorphism is related to the professionalization of members of the organization, managers, and administrators, in such a way as to change the expectations of what is acceptable for members; when organizations have similar qualifications and experience, they usually adopt similar solutions (DiMaggio & Powell, 1983; Macfarlane, Barton-Sweeney, Woodard & Greenhalgh, 2013).

Structuration Theory
This research adopts the structuration theory's understanding of legitimacy. Consequently, the reflection of rules and laws in the ERP system define the legitimacy of actors in the implementation of an ERP system.

Applying agency theory, neo-institutional theory, and structuration theory to Clegg's concepts of circuits of power and absorptive capacity can help explain the operations of power and knowledge in organizations. Understanding the operations of power and politics affecting internal ERP project managers and consultants requires a theoretical framework such as the circuits of power to explain the process (Backhouse et al., 2006). Clegg's circuits of power concept (1989) is an organized framework that provides a detailed and insightful analytical tool for understanding and explaining the institutionalization of power/politics, which justifies its choice. According to Clegg (1989), 'this issue of what is institutionalised is the central issue for the circuit framework…what becomes institutionalised depends precisely on the power of agents' "translation" [and] the circuits framework seeks to depict how this is accomplished' (p. 227). Clegg (1989) divided agency into human, non-human, and organizational types. The framework recognizes that organizations and IT systems such as the ERP have the capacity to act as powerful agents, just as humans do. The concept of absorptive capacity can increase the understanding of project managers and consultants' power/knowledge if applied along with the circuits of power approach, because absorptive capacity refers to how knowledge is used, transferred, and learned from, allowing the organization to deal with ERP implementation

challenges. Since consultants mainly offer knowledge and understanding, considering the power exerted by project managers and consultants without considering absorptive capacity would neglect an additional perspective that can clarify the use and transformation of such knowledge, while the circuits of power framework offers a perspective on power/politics. Thus, combining these theoretical frameworks provides a good foundation for determining how the power/knowledge of ERP consultants and project managers is institutionalized.

According to Clegg (1989), circuits of power have three main levels: episodic circuits, social circuits, and system integration circuits. The episodic circuit, the first and clearest circuit, addresses the question of how A makes B do something that B would otherwise not do. Episodic power helps the researcher understand how consultants and project managers convince either users or administrators to accept and apply their advice. This level of analysis focuses on the creation of an alignment between different actors and helps secure the necessary resources. The second circuit, social integration, helps researchers understand how legitimacy, authority, and rules can gather and use resources to empower A's and disempower B's. Thus, social integration analysis is useful because it helps describe the process of building the credibility and legitimacy project managers and consultants in organizations follow for the successful use of resources. Finally, system integration focuses on discipline and production; it facilitates an awareness of how disciplining agents can be guaranteed through methods such as contractual agreements and control. This final system integration circuit helps explain how project managers and consultants' knowledge and advice can act as a source of power for disciplining users and enable consultants to achieve full control of the IS environment (Clegg, 1989; Backhouse et al., 2006; Silva, 2007; Rosness et al., 2011).

Absorptive capacity is the 'firm's ability to recognize the value of new external information, assimilate it, and apply it to commercial ends' (Cohen & Levinthal, 1990, p. 128). Absorptive capacity helps researchers discover the actions that are required within organizations to transfer knowledge to innovate and obtain a competitive advantage. This study seeks to understand how the organization under examination uses, transforms, and exploits knowledge, with a focus on absorptive capacity in the process of ERP implementation and development carried out by project managers and consultants. Identifying the knowledge source and prior knowledge is essential and a preliminary step for absorptive capacity. Power relationships and regimes play a moderating role in moving knowledge to start the process of absorptive capacity. Therefore, investigating power relationships, the trigger knowledge used, and appropriability regimes is essential before the process of absorptive capacity starts. The organizational capacities that produce absorptive capacity are knowledge acquisition, assimilation, transformation, and exploitation. Acquisition refers to an organization's ability to gain the external knowledge necessary to run a businesses or organization. This level of analysis is useful because it enables the researcher to identify how and where organizations recognize the need for knowledge. Second, assimilation refers to the everyday procedures that organizations use to understand external knowledge. This focus allows the researcher to determine how such knowledge is integrated within the organization, which can occur through the use of technical staff and experts or project managers and consultants. Third, transformation refers to an organization's ability to produce new knowledge from existing procedures. This helps describe how the implementation and development of ERP affect the ability to produce new knowledge in the university being researched. Fourth, exploitation is an organization's ability to develop procedures that allow it to use its newly created knowledge in its everyday activities.

This final capacity describes project managers' and consultants' ability to develop new processes or new structures. Absorptive capacity's acquire, transform, assimilate, and exploit components operate in feedback loops in order to achieve competitive advantage as well as to innovate and improve performance and flexibility (Todorova & Durisin, 2007; Zhara & George, 2002; Robert et al., 2012). Absorptive capacity and circuits of power, along with agency theory, neo-institutional theory, and structuration theory, are useful for achieving an understanding of power/knowledge in ERP implementation.

Figure 6 shows how agency theory, neo-institutional theory, structuration theory, and circuits of power have been integrated with absorptive capacity to explain how the power/knowledge of consultants and project management is institutionalized. Episodic circuits play a moderating role for absorptive capacity by influencing the recognition of the value of new knowledge and how the organization acquires new knowledge. An 'A' (such as consultants or PMOs) makes a 'B' (users or managers) do something that the B would otherwise not do through the B actors' recognition of the value of the new knowledge, which then allows knowledge to be gained or acquired. Social circuits play a moderating role in influencing how the knowledge is assimilated and transformed. In this stage of absorptive capacity and circuits of power, knowledge is assimilated and transformed as a resource to empower class A and disempower class B. Class A includes consultants and PMOs, while Class B includes users. This last circuit of system integration plays a moderating role and enables knowledge to be exploited. The system integration circuit helps produce absorptive capacity because it enables Class A to achieve outcomes such as problem-solving in ERP implementation.

The concepts of agency theory, normative and mimetic isomorphism from neo-institutional theory, and the legitimacy concept from structuration theory were linked in this chapter to show the relations to power/knowledge (Clegg's circuits of power and absorptive capacity) and how they contribute to provide a rich understanding of power/knowledge. Agency theory helps in understanding the nature of the alignment between principals and agents and how incentive alignment can be used to ensure the compliance of users and managers in ERP implementation (it links to power, especially the system integration circuit from Clegg's circuits of power). It can further be linked to knowledge exploitation by ensuring the creation of new knowledge (it links to absorptive capacity). Applying agency theory helps an understanding of the interests of consultants and project management as well as an understanding of how paying incentives to users, consultants, and project managers leads to an understanding of power and the creation and application of new knowledge, such as problem-solving in ERP implementation. The concepts of normative and mimetic isomorphism, taken from neo-institutional theory, describe how the organization imitates (copies) other organizational practices in ERP systems implementation, which can further the understanding of power/knowledge, as copying other organizational practices can lead to the adoption of practices to reduce the risk of failure and achieve best practices. This makes the decision to buy a certain application or the selection of vendors, consultants, or project managers similar to other organizations' decisions and likewise leads to the adoption of similar practices (this links to power, especially the episodic circuit of Clegg's circuits of power). It allows the organization to know what knowledge is needed and how to acquire it for successful ERP implementation. The other type of institutional isomorphism, normative isomorphism, is related to the professionalization of certain actors; for example, in ERP implementation, the selection of consultants and a PMO with certain

experience and qualifications leads the organization to adopt the decisions of those actors as filtered through their experience and qualifications. Through these qualifications and experience (or professionalization), the organization is led to realize the needed knowledge and acquires external knowledge (this links to absorptive capacity, especially recognizing the value of external knowledge and acquiring knowledge). Finally, the structuration concept of legitimacy, especially concerning the rules and norms being reflected well in the ERP implementation, increase power and legitimacy, which leads to the use of resources to empower the class of project managers and consultants and disempower the class of users and managers (this links to the social integration circuit of Clegg's circuits of power). The legitimacy concept also influences the knowledge assimilation and transformation of absorptive capacity. It influences the routines and processes in ERP implementation which make the organization analyse, process, interpret and realized the external information needed (this is a link to the knowledge assimilation of absorptive capacity). Legitimacy is also linked to knowledge transformation, which influences the development and integration of external knowledge (this links to knowledge transformation from absorptive capacity). All the above can foster the understanding of the power/knowledge of consultants and PMOs in ERP implementation at a Saudi university.

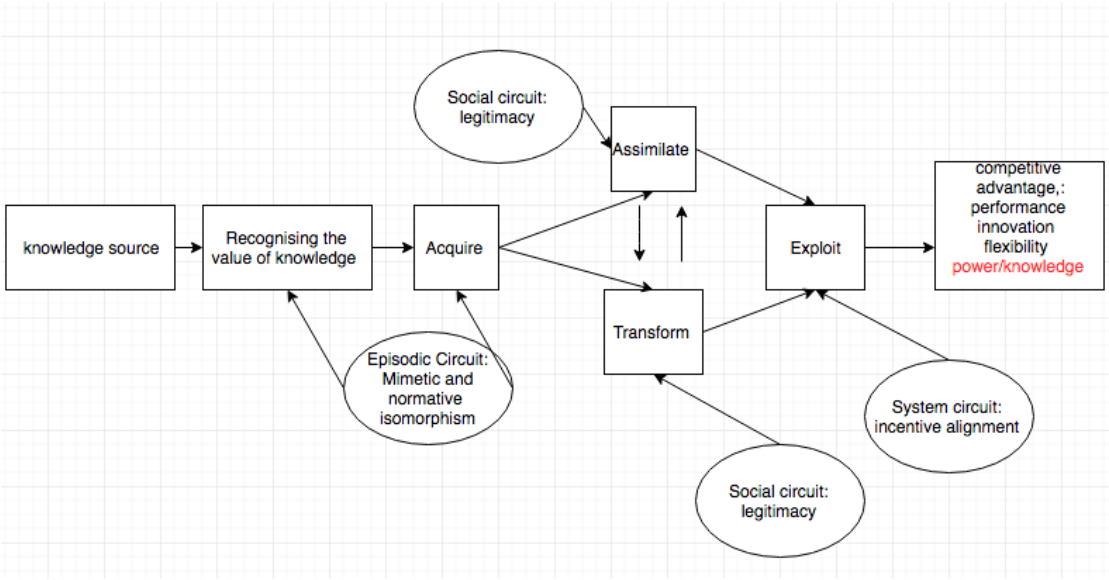

Figure 6. Absorptive capacity, circuits of power, neo-institutional theory, structuration theory, and agency theory
Source: author's own work, adapted from Todorova et al. (2007) and Clegg (1989)

If researchers wish to adopt these two theoretical frameworks to explain the power/knowledge dynamics of ERP consultants and project managers, they should focus on qualitative terms and questions related to power, because it is difficult to comprehend the subtle details of power relations using quantitative measures (Silva, 2007). As Clegg (1989) explained, 'the quantitative problem [in measuring power-related concepts] is simply that, as we have seen, such terms as "scope" are difficult to quantify in ways that do not leave the comparative ranking vulnerable to weighty matters of qualitative considerations which cannot be easily quantified and compared in terms of any single unit of value' (p. 218). Therefore, this researcher expects to encounter difficulty in satisfying all the objectives of the study using quantitative methods. The researcher can apply qualitative methods to reveal rich answers that explain the alliances formed, the role of authority, the regulations created, and the content of the advice. The researcher believes that this advantage justifies the decision to use qualitative methods.

4.0 Summary

This chapter introduced the theoretical framework used in this research, which is adopted from agency theory, neo-institutional theory, structuration theory, Clegg's circuits of power, and absorptive capacity. These theories provided a foundation for explaining the power/knowledge of consultants and PMOs. They help provide a framework that integrates elements of each theory to determine how the power/knowledge of consultants and project management has been institutionalized.

Chapter Four: Research Methodology

> Research methods are the means by which knowledge is acquired and constructed within a discipline. (Harvey & Myers, 1995, p. 13)

4.0 Introduction

This chapter addresses the third research objective/question, which is to explain and identify how the social constructivism paradigm, qualitative approach, and case study strategy are helpful in understanding the power/knowledge of consultants and PMOs. This chapter aims to shed light on research methodology, primarily by addressing research philosophies, approaches, and strategies. The focus is on the philosophies established in the discipline of IS management, including positivism, interpretivism (social constructivism), and critical theory. A discussion of these paradigms and the rationale for adopting interpretivism are presented. The research approaches available to researchers are the qualitative, quantitative, and mixed methods. This thesis follows the qualitative tradition and discusses strategies such as action research, grounded theory, ethnography, and uses a case study strategy. The discussion concludes by presenting the reasons for adopting a case study approach.

4.1 Research paradigm

A research paradigm is a framework that directs the research; it builds on the philosophical underpinning regarding the nature of the world and knowledge (Collis & Hussey, 2013). There are three main research paradigms or philosophies: positivism, social constructivism, and critical philosophies.

First, positivism was introduced in the natural sciences. Social reality for positivists is singular and objective and has no influence on the way research is conducted. Its research process is deductive and usually aims to produce explanatory theories to

make sense of social phenomena. Social reality for positivists is objective and separate from the researcher. All phenomena must be measured and observed in order to be referred to as 'knowledge' (Collis & Hussey, 2013; Myers & Avison, 2002; Bryman, 2012). Positivism focuses on numbers rather than views. This theory puts forward a set of propositions with the aim of generalizing findings (Easterby-Smith et al., 2012). The focus is on testing theories in order to be more predictive in understanding the social setting (Myers & Avison, 2002). The value of theory is in determining the hypotheses that enable the testing of laws (Bryman, 2012). As shown by Orlikowski and Baroudi, (1991), positivist studies in IS usually include formal propositions, quantifiable measures of variables, and hypothesis testing.

Second, the social constructivism paradigm (interpretivism) developed as a response to criticisms of positivism. The methods of positivism or the natural sciences are not appropriate when dealing with humans, because different people will have different interpretations of a situation (Braa & Vidgen, 1999). Interpretivism has a different understanding of reality than positivism and maintains that reality is subjective and multiple. Interpretive studies are usually inductive and aim to understand issues in a specific context; the aim is to reduce the distance between the researcher and the phenomena through different methods of participative inquiry (Collis & Hussey, 2013). Thus, interpretive studies highlight the value of subjective meaning and socio-political and symbolic actions in the way people construct realities (Orlikowski & Baroudi, 1991). Interpretivists believe that ontology is subjective and socially constructed, and its access to reality is through languages, shared meaning, and consciousness, which means that every person has a reality and that there are multiple realties (Collis & Hussey, 2013; Myers & Avison, 2002). Social phenomena meanings are accomplished by social actors (Bryman, 2012). Meanings are diverse and

multiple, which requires the researcher to look at the complexity of opinions gathered from participants rather than reducing it to a set of ideas or categories. Often the meaning is achieved by looking at social and historical aspects. To the extent possible, there is a focus on participant views of the phenomena under study. There is also a recognition that the researchers' experiences influence their conclusions and interpretations. Therefore, they do not start with a theory or a set of hypotheses, as in positivism; rather, intpretivists inductively develop a theory or pattern of meaning (Creswell, 2013). Thus, positive measures cannot capture organizations, groups, or social systems because they cannot exist without humans. Therefore, it is difficult to measure this objectively and universally. Interpretive researchers believe that any social reality can only be interpreted (Orlikowski & Baroudi, 1991). In terms of epistemology, a social process is hard to capture by producing hypotheses or covariances, but it can be captured by becoming involved in the process of a particular social world (Orlikowski & Baroudi 1991). Interpretivists do not begin their research with clear hypotheses or theories; they start by using general open-ended questions, which they do not clearly understand, and they usually look in-depth at one organization. They achieve results that are not generalizable as in the generalizability of positivism. Typically, they compare the results of this in-depth study with other studies from other organizations to determine if the results are likely to take place in different types of organizations (Easterby-Smith et al., 2012; Creswell, 2013). Therefore, interpretivism aims mainly at understanding phenomena through the meaning held and expressed by the participants and to understand the context of a particular information system by which the systems are influenced (Walsham, 1993; Myers & Avison, 2002). The aim of interpretive studies is to understand the '*deep structure of phenomena*' instead of producing generalization. Therefore, the results of

this study can help in examining similar situations in different contexts (Orlikowski & Baroudi, 1991).

Thirdly, critical philosophy as a research paradigm aims to criticize and help change the norms within a social setting. Critical research on IS identifies the studies that have been established in terms of assumptions regarding IS and organizations, and identifies the historical, ideological, and inconsistent nature of social practices (Orlikowski & Baroudi, 1991). In terms of social reality or ontology, critical researchers believe that current reality is historically established, produced, and reproduced by humans. With respect to knowledge or epistemology, critical research views knowledge as caused and built by historical and social practices. Critical researchers focus on the need to critique and challenge what is normal and the understanding of the participants. In their view, there is a need to critically analyse with the help of certain theoretical frameworks.

4.1.1 Why social constructivism?

The positivism paradigm has not been chosen for this research because studying the power/knowledge of PMOs and consultants in ERP implementation is difficult using numerical measures or by producing hypotheses or propositions, as power/knowledge is a difficult concept to quantify (Clegg, 1989). Orlikowski and Baroudi (1991) have explained the limitation of positivism and indicate that the search for general laws can miss the historical context influencing human action. According to positivism, people are not capable of changing their physical and social realities, and this creates a number of limitations in studying the power/knowledge of consultants and PMOs in ERP implementation. Also, the goal of this research does not require a critique of power/knowledge by adopting a critical philosophy; it instead requires an understanding of how it is processed and of the role of user resistance to such

processes. This research will adhere to interpretivism because this way of building knowledge assumes that individuals have different understandings of the power/knowledge of consultants and PMOs in ERP implementation, which can be described only through interpretation (Saunders et al., 2011). Conducting semi-structured interviews with the members of a PMO, consultants, and users can help in understanding the power/knowledge process (how the selection of consultants and PMO occurred and the influence of the PMO and consultants in organizational issues) and the context (how ERP was implemented and developed). These different understandings of power/knowledge require an understanding of the realities of the different actors in the social settings (i.e. the university) and how the meanings are built (Klein & Myers, 1999; Orlikowski & Baroudi, 1991). This research aims to understand the implementation of an ERP – specifically a GRP – and the power/knowledge of PMOs and consultants. The methods of natural science cannot satisfy the research questions on how user resistance is used to institutionalize the power/knowledge of consultants and project management. It is difficult to establish hypotheses and follow a deductive procedure due to the complexity of power/knowledge and user resistance. Following social constructivism or interpretivism in order to understand power/knowledge and user resistance, rather than the forces that underpin them, and inductively building a meaning or theory can help in achieving the goals of this research.

4.2 Research approach

Research approaches bridge the steps from wide traditions to detailed methods of data collection, analysis, and interpretation (Creswell, 2013). There are three main research approaches: qualitative, quantitative, and mixed methods. Within these approaches, there is a range of strategies and methods for collecting data.

First, the qualitative research strategy is established in the social sciences to enable the study of social and cultural phenomena (Myers & Avison, 2002). It considers the context in which phenomena are understood (Harvey & Myers, 1995). Qualitative research uses words rather than numbers in both the collection and analysis of data. Its process is inductive in the processing of relationships between theory and research, which is the overall aim of producing theories. Its view of reality is continually changing and is developed from individuals. The main difference between quantitative and qualitative methods is the different epistemological and ontological positions for viewing reality and knowledge. In terms of ontology or reality, it is subjective and socially constructed. Epistemology (or knowledge) is not, however, based on producing and testing hypotheses but knowledge that is produced through living in the social world via different qualitative methods (Bryman, 2012; Harvey & Myers, 1995; Orlikowski & Baroudi, 1991). Qualitative research aims to understand, describe, explain, and explore people or social issues from inside the social world. Its purpose is to interpret meaning and explain phenomena to enable viewing the social world in the same social setting. Usually, data are collected in the same social setting in which the incident takes place by developing questions in interviews, unlike in quantitative approaches, which study social phenomena in laboratories. Data are analysed by linking them to general themes, which are interpreted by researchers (Flick, 2008; Creswell, 2013; Myers & Avison, 2002). According to Flick (2008), there are three characteristics of qualitative research: analysing experience, interactions, and analyses of documents to trace experience or interaction.

Second, the quantitative approach uses the methods of natural sciences; it uses numbers more than words in data collection and analysis. Quantitative methods include survey methods, laboratory experiments, and numerical methods such as

mathematical modelling (Myers & Avison, 2002). It is a deductive process, with emphasis on testing theories. It views reality as objective and outside the subjectivity of the researcher (Bryman, 2012). It mainly aims to test theories by investigating and measuring the relationships between different variables and produces numbers that are analysed through statistical techniques (Creswell, 2013). The context for quantitative methods is viewed differently from that of qualitative methods in that the context is observed as a set of interfering variables that require controlling. They produce relationships among variables to determine cause and effect, while meaning in context is geared toward qualitative studies (Harvey & Myers, 1995).

Third, the mixed method approach integrates both quantitative and qualitative styles in a single study. It uses both approaches to strengthen them in the collecting and analysing of data (Bryman, 2012). This approach is both emerging and predetermined and includes open- and closed-ended questions. It uses multiple forms of data collection and employs statistical and text analysis to interpret the data (Creswell, 2013).

4.2.1 Why use a qualitative approach?

In qualitative studies, there is a greater focus on understanding social behaviour (e.g. the power/knowledge of consultants and PMOs in ERP implementation). As this research seeks to understand the power/knowledge of actors in technology implementation, the inductive approach, which usually concurs with the qualitative approach, is appropriate (Bryman, 2012). This research adopts a qualitative strategy because it helps in answering the research questions of how the power/knowledge of consultants and the PMO in a university are institutionalized and how user resistance is used in such processes. There is a need to understand the context and process for

such concerns, which it is difficult to achieve through quantitative methods. This research is an exploratory study, which fits the characteristics of a qualitative approach better than a quantitative approach. The main criticism of quantitative research is that its researchers cannot differentiate among humans, social organizations, and the natural world. Their measurements take the form of an artificial logic of precision and accuracy, and their dependence on instruments and procedures impedes the link between the research and everyday life. Analyses of the variable relationships construct a fixed view of social life that is autonomous from people's lives (Bryman, 2012). This approach has not been chosen for these reasons, as well as because of its weak capacity to explore and explain the institutionalization of power and the role of user resistance in such processes. It is more appropriate to adopt a qualitative approach because its ontology is subjective and socially constructed and its epistemology is seen by living in the social world. Thus, it is more capable of producing and exploring power/knowledge. It would be difficult to produce an instrument and variables for measuring power and answering the research questions. This research has rejected the mixed method because the value of adopting one of the quantitative methods applies to the researcher, and, based on the previously mentioned criticisms, this approach has not been chosen. This research does not focus on quantification. Power/knowledge and resistance to PMOs and consultants are concepts that are difficult to quantify.

4.3 Research strategy

Saunders et al. (2011, p. 600) defined research strategy as the 'general plan of how the researcher will go about answering the research questions'. A research strategy for positivists is a quantitative strategy, which includes experimental studies, surveys, cross-sectional studies, and longitudinal studies. Interpretivism, however, matches

qualitative methods, including hermeneutics, ethnography, participative enquiry, action research, case study, grounded theory, and feminist, gender, and ethnicity studies (Collis & Hussey, 2013; Myers & Avison, 2002). This section will discuss research strategy examples in qualitative research and indicate the reasons for this thesis' adoption of a case study strategy.

Action research is an example of a research strategy. Its key purpose is to make changes and observe the results. Action research provides solutions to the problems of organizations and to the aims of social science research in an appropriate ethical background by participating in the problem studied or the implementation of IS, while simultaneously evaluating certain methods. The emphasis is on change and learning, and it adds to knowledge through involvement in organizational IS projects. In IS research, action researchers have two objectives: solving a problem, and adding to system development concepts. Usually, these studies perform an in-depth examination of the research, which also reflects an understanding. The philosophical background for action research is that the social world is continually shifting and the researcher is part of this change. Thus, it aims to use theories and descriptions based on the perspective of practice. Theories are verified through intervention in organizations by testing hypotheses and effecting a change in the organizations. Action research is usually performed in one organization and is similar to case study principles (Collis & Hussey, 2013; Gill & Johnson, 2010; Myers & Avison, 2002; Braa & Vidgen, 1999; Benbasat et al., 1987).

Another example is grounded theory, which was developed by Anselm Strauss and Barney Glaser in 1967 as part of their sociological research. This approach has become widely used in the IS community, where studies provide a context-based, process-oriented approach for explaining and describing phenomena. It uses a

systematic procedure to inductively develop and produce an emergent theory grounded in the views of participants. It is created from the data without the need for any previous theoretical framework or defined ideas to be used or forced into the data collection. Furthermore, analysis need not be verified or falsified. In addition, there is continuous interaction among the data collection, analysis, and interrelationships of categories of information. Continuous comparisons create categories and matches in information. This is aimed at understanding and determining process laws or protocols. The grounded theory can be compared to the literature or other theoretical frameworks. Its research strategies concur with the interpretive tradition, and its methodology offers a means of conducting qualitative data analysis. Its overall result determines concepts and hypotheses in the phenomena. Grounded theory is most useful for small social settings where minimal research has been conducted. Its main difference to other approaches or methods is its approach to theory development (Collis & Hussey, 2013; Grbich, 2012; Glaser, 1992; Myers & Avison, 2002; Creswell, 2013).

Another example is ethnography, which is related to intrepretivsm and was first developed in social and cultural anthropology. It consists of three schools of thought: holistic, semiotic, and behaviouristic. The holistic approach requires living as the people do in the social setting studied. In the second method, the semiotic approach, the ethnographer must analyse symbolic forms such as words, images, and institutions, along with their relations to one another and to the context. It is also the study of people in the field through access to their activities gained by using different data collection methods in order to understand the social meaning and regular events. It requires close links with and the processes of seeing and understanding the field. The ethnographic researcher uses socially learned joint knowledge to understand

certain social settings. The aim of ethnography is to explain and interpret the world in ways similar to the members of the social world being studied. It follows an inductive framework. Data are collected systematically but without imposing external meanings. Ethnographers believe that, to reach an understanding of certain phenomena or social group actions, it is essential to reach an understanding of the culture and subculture of the social setting by living inside the specific social group. Adapting the interpretation to the right cultural and social context is essential. This does not always require actual participation in the field or becoming a member of the social world or group, which usually takes many months. It includes different methods, such as in-depth interviews, discourse analysis, observation, and visual methods like videos and the Internet. Triangulation is usually applied by using multiple data collection methods. It has become a valid research strategy for IS in organizations (Brewer, 2004; Collis & Hussey, 2013; Gill & Johnson, 2010; Holzblatt & Beyer, 1993; Harvey & Myers, 1995; Creswell, 2013).

This thesis adopts an empirical approach – an interpretive in-depth case study – consistent with Walsham (1993, 1995, 2006) and Orlikowski and Baroudi (1991). Case studies in IS tend to be positivist (e.g. Franz & Robey, 1984; Benbasat et al., 1987) or interpretivist (Walsham, 1993; Orlikowski & Baroudi, 1991). They aim to describe the process and context of the power/knowledge of consultants and PMOs in ERP implementation by concentrating on actors' behaviours and meanings (Creswell, 2013; Walsham, 1993). Case studies are the most widely used qualitative strategy in IS. The case study involves a comprehensive examination of a single social setting (the university in this case) with data collected throughout a period of time (three months) within a certain context (ERP implementation). It examines a social setting (the university) inside its real-world location, and there is no evident boundary

between the context (ERP implementation) and the phenomena studied. The overall goal is to provide in-depth knowledge and an understanding of a process or context (time and activity) of the power/knowledge of consultants and PMOs in ERP implementation, which sheds light on the dynamics of the phenomena studied. In addition, it is important to understand how behaviour and/or processes are influenced by and influence the context. There are three features of case studies, according to Yin (2008). First, this method aims to understand phenomena, not merely explore them. Second, the study does not begin with a number of research hypotheses. Third, the research can apply different data collection methods. Usually, the researcher in interpretive in-depth case studies does not have ready constructs but reaches this point through work in the field. Theory in case studies is used as a lens with which to examine the social setting (Hartley, 2004; Collis & Hussey, 2013; Creswell, 2013; Sarker, Xiao & Beaulieu, 2013; Myers & Avison, 2002; Benbasat et al., 1987). Quantitative or qualitative methods, or both, can be used to collect data. It is important that the researcher use theory as an introduction to the study and develop a theoretical framework during the research in order to understand the phenomena, thus enabling an organized examination throughout the case study. This usually follows an inductive framework. Case design is flexible and focuses on how the organization and contexts impact and influence and are, in turn, influenced by the social process. There are five stages in case studies: selecting the case, preliminary investigation, data collection, data analysis, and, finally, writing the report (Hartley, 2004; Collis & Hussey, 2013; Creswell, 2013).

4.3.1 Why use a case study strategy?

Action research strategy aims to use theories and descriptions based on practice, which can influence the study of power/knowledge from the perspective of practice

only. Understanding the power/knowledge of consultants and PMOs in ERP implementation requires understanding theoretically, not just practically. Action research strategy has not been chosen due to the difficulty of participating in IS implementation in the organization researched. Grounded theory strategy has not been chosen because there is a potential for methodological errors for beginners. Another disadvantage is that one must review the literature without developing assumptions. There are several approaches for grounded theory, but all allow for limited generalizability (El Hussein, Hirst, Slayers, & Osuji, 2014). The main criticism of ethnography is that it requires a thorough, in-depth understanding of the context and situation studied. Additionally, it is difficult to generalize from a single ethnographic study, such as a case study (Harvey & Myers, 1995; Yin, 2008; Klein & Myers, 1999; Myers, 1999). There are difficulties in observing how the power/knowledge of PMOs and consultants is institutionalized. This research adopts the case study strategy. The main criticism of interpretive case studies is that they tend to 'focus on the non-representativeness and lack of statistical generalizability arising from the work' (Walsham, 1993, p. 14). This criticism of interpretive case studies has been made because it is assumed that interpretive case studies have an epistemological view similar to positivism, where statistical generalizability is the aim of the study (Walsham, 1993, 1995). However, the validity of interpretive case studies is not built on statistical generalizability but on the plausibility and strength of the logical reasoning used in writing the findings and the benefits it can provide for other institutions and other contexts (Walsham, 1993, 1995). Despite some scepticism in the field, case studies represent an appropriate strategy, since they allow researchers to study a theory in detail and practice, albeit for a single circumstance (Orlikowski & Baroudi, 1991). A case study (Creswell, 2013) allows this research to study power/knowledge and ERP implementation in detail by studying the data in its

context and in the process of ERP implementation. Case studies are typically conducted in the location of the study (in this instance, a university). They allow for an understanding of the entire process (how the power of ERP consultants and PMOs is institutionalized). Case studies also enable researchers to focus on the experience of certain actors, groups or individuals; in this study, the power/knowledge of consultants and the PMO is the unit of analysis. The case is restricted to the time after the ERP implementation ends and to the activities pertaining to the power of consultants and the PMO. It is a retrospective study. In case studies, researchers can collect data using various means, such as consultant job descriptions, meeting minutes, and semi-structured interviews (Benbasat et al., 1987). All these factors of case studies serve the purposes of this research.

4.3.2 Case selection

This investigation requires an organization that has a PMO in its structure and uses consultants in its implementation and development of GRP. The nature of the topic and research questions requires an organization with actors involved in a type of integrated system implementation. The sample mainly consists of project managers and consultants. King Saud University provided the researcher access for this study on the power/knowledge of consultants and the PMO in ERP system implementation.

This study focuses on the higher education sector. Twelve institutions in Saudi Arabia have a similar ERP (Aldayel et al., 2011). The university studied is one of the largest universities in the country in terms of number of students and employees; it also has the largest budget. The study was located on one site that employs almost 5,000 people. It is located in Riyadh, the capital of Saudi Arabia. Few studies address the power/knowledge of PMOs and consultants during the implementation of ERP in organizations or regions similar to those this thesis examines.

The university was willing to help and provide data for this project, whereas other organizations refused access. The university's GRP implementation has several special characteristics, and they introduced a PMO into their structure, meaning that they implemented the system differently than have other universities. All these factors supported the selection of this university as the main venue for this study.

4.4 Summary

This chapter aimed to explain the selected research methodology and discuss research philosophies (positivism, interpretivism, critical philosophy), research approaches (qualitative, quantitative, mixed methods), and research strategies (action research, grounded theory, ethnography, and case study). The researcher also provided the reasons for selecting the case of a university in Saudi Arabia that is adopting the GRP type of ERP system.

Chapter Five: Data collection methods and analysis

5.0 Introduction

This chapter address the third research objective/question about how semi-structured interviews and the Creswell (2013) qualitative analysis technique help in understanding the power/knowledge of consultants and PMOs in ERP implementation and development. It also provides an overview of data collection methods and data analysis. It starts by defining data collection and the different data collection methods, such as interviewing, focus groups, observation and questionnaires. This section ends be explaining the rationale for adopting interviewing as the primary data collection method for the research. The second section discusses the proposed research design for data collection. The chapter ends with information regarding the qualitative analytical technique used in this research, which is adopted from Creswell (2013) and Klein and Myers (1999).

5.1 Data collection methods

Data collection methods provide the information needed to carry out any research. Creswell (2013) explained that this includes the stages needed for gathering information after first identifying the borders of the research. Data in qualitative research are gathered through semi-structured interviews, observations, and documents and visual materials and includes identifying the protocol needed for gathering information.

The aim of this research is to identify the power/knowledge of the PMO and consultants during the implementation and development of an ERP system at a university. To explain their roles, it was essential to understand the context by

understanding how the system was implemented and the justification given for purchasing the system. It is important to provide an overview for the history of technology at the university to set the context of and process for implementing the ERP there. This research required information-gathering primarily through semi-structured interviews with key informants as a major source for the case study. This was also the only available source of information, as other qualitative sources, such as observation and documents, were not made available.

5.1.1 Focus group

The focus group is a group interview and data collection method whereby the interviewer collectively questions a group of participants about a topic of interest. There is an emphasis on understanding the group meaning given to a topic instead of an individual's meaning (Bryman, 2012). Focus groups occasionally overlap between structured and unstructured interviewing. They are commonly used in marketing research, where the aim is to generate answers regarding products or advertising. In this kind of method, the researcher or the interviewer guides the group interview by asking structured or unstructured questions (Fontana & Frey, 2008).

In this research, a focus group of four people from the university's financial department was assembled and asked about their experiences in using and implementing the ERP systems at the university and the power/knowledge of consultants and the PMO in ERP implementation. It was not possible to arrange another group interview due to the busy schedules of the participants; however, it was possible to interview the individual participants separately.

5.1.2 Documents

Documents are materials related to the aims of the research that are available for reading and analysing; however, the researcher did not have access to documents that were appropriate for the goals of this study (Bryman, 2012) due to the refusal of the director of the PMO to provide access to documents such as the consultants' and PMO's job descriptions and contracts.

The researcher did not have access to the meeting minutes or important documents used in the implementation and development process of the ERP. These could have provided in-depth information on the role of the consultants and PMO, which would have helped with understanding the power/knowledge of those two important actors. They could have provided angles of information different from the kind obtained from the interviews and provided direction for the questions asked.

5.1.3 Observation

Participant observation is the main method of ethnography. In this data collection method, the observer engages in a group for a specified length of time. This observation includes talking with people and listening to their views regarding the observer's questions (Bryman, 2012). In participant observation, the researcher makes social contact with the participants in the same social setting in order to observe the everyday experiences and behaviour of the participants in specific situations and to have conversations with them regarding their feelings and interpretations (Waddington, 2004).

This research avoided the observation method because the implementation of the ERP started six years ago. There was a need to understand the history of the implementation, which the observation method could not provide. There was also

difficulty in arranging access to observe the use of the ERP system at the university and power issues such as user resistance to the implementation of ERP against the PMO and the consultants. All these factors helped rule out observation as a method for this research.

5.1.4 Questionnaire

A questionnaire is a data collection method whereby respondents answer questions presented on a form. In this method, the interviewer is not available to ask questions, and the respondents have to read and answer the questions independently. This method usually has fewer open-ended questions that are simpler to answer than in structured interviewing (Bryman, 2012).

This data collection method was rejected because of the difficulty of designing a questionnaire that answers the objectives of this research. The aim is to generate rich answers and explanations about the power/knowledge of consultants and the PMO, how the system was implemented, and how the technology was used before and after the implementation of the ERP. For these kinds of questions, it was better to adopt the interviewing method in order to generate responses about, for example, how user resistance is used to institutionalize the power of consultants and the PMO in ERP system implementation and development.

5.1.5 Interviews

Interviewing is the most common method of qualitative research. There are three forms of qualitative interviewing: semi-structured, structured, and unstructured (Bryman, 2012). Qualitative interviewing involves a dialogue with the participants in which the researcher directs the conversation toward a discussion of a certain topic. The interviews have to be in-depth and provide details relating to the topic of the

research. In semi-structured interviews, questions vary for each interview, and they have to match the experience, knowledge, and readiness of the interviewee. The interview does not have a fixed set of questions and can start from any point in the topic guide. Thus, interviews are flexible and can change according to the circumstances. Interviews usually concentrate on a certain topic intended to shed light on certain processes or events. There is a focus on the interviewee's opinions regarding the phenomena being researched. It is important to determine which parts of the participants' views are significant. The goal is to collect rich data on the topic being researched (Rubin & Rubin, 2011; Bryman, 2012). In structured interviewing, the interviewer has a number of questions and asks the same ones to each participant. It is highly structured to ensure validity and reliability in quantitative research. The interviews must be related to the research topic, and there is less opportunity for the interviewee to offer opinions and views. It's not as flexible as the semi-structured interviews, and open-ended questions are rare. The aim is to garner exact data so that behaviour can be explained (Fontana & Frey, 2008; Bryman, 2012).

The interview method is subjective because it aims to understand the world from the participants' views by focusing on the meaning they give to the research topic. Therefore, an interview records the views of the participants and the interchanges between the interviewer and interviewee regarding a certain research topic (Kvale & Brinkmann, 2009). The key elements of these interviews are that they are not based on specific questions; they are open-ended and focus on a specific situation or action, not just on the views of the interviewee (King, 2004). Interviewing a small number of participants is typically a key characteristic of a successful interview (Silverman, 2013).

Interviews are a key source of information in interpretive case studies because they provide access to the participants' interpretations (Walsham, 2006; Walsham, 1995). In interpretive case studies, the aim is to provide information regarding what happened, why it happened, and what it generally means (Rubin & Rubin, 2011). Moreover, interviews are the most common method of gathering information regarding individuals, groups, or organizations (Fontana & Frey, 2008). There are four types of interviews according to Creswell (2013): face-to-face, telephone, focus group, and email.

Interviews have qualities that surveys, analyses of official data, and experiments cannot provide. In surveys, it is difficult to tell a straightforward story within a context. In interviews, information is provided in a rich and realistic manner through the details provided by the participants' discussions of their experiences. This method is useful in providing the details of social and political processes and reveals much of the history of the research subject (Rubin and Rubin 2011; Bryman 2012). Interviews are flexible, answering many questions about the broad or narrow contexts of organizational life, and they are useful for understanding meaning. Additionally, this method is accepted by many participants (King, 2004). It is an effective method for investigating issues that cannot be researched with the observation method, and it can cover a wider range of the events under study (Bryman, 2012).

The disadvantages of the interview method are that it is time-consuming to develop, conduct, and analyse. It is an exhausting process and contains much data that can be difficult to analyse and interpret (King, 2004; Bryman, 2012).

This research used interviewing as the primary source of information. It developed a topic guide for its semi-structured interviews. In this topic guide, questions concerned,

for example, how the ERP systems were implemented, the role of consultants and the PMO, and how user resistance was used to institutionalize their power/knowledge.

5.2 Proposed research design for data collection

5.2.1 Semi-structured interviews

Semi-structured interviewing is a data collection method used to generate qualitative data. The interviewer has to establish the situation and give the respondent the opportunity, time, and space to relate their views and experiences. The researcher decides on the emphasis of the interview, and the aim is to understand the opinions of the respondents and to avoid generalizations. It is usually conducted by asking open-ended questions to participants in a manner similar to a conversation. The questions can be prepared or can emerge during the interview (Sociological Research Skills, 2014). Thus, semi-structured interviews are not highly structured discussions. They lie between structured and unstructured interviews, concentrating on a number of topics that seek to recognize meaning in the conversation (Kvale, 1983).

The semi-structured interview is a useful method for gathering information regarding topics that cannot be easily observed. An interviewee can speak about the focus of the research in an in-depth way, which can help the researcher to realize their meaning more easily. It is a good method for collecting data regarding complex issues, which are easy to save through video or audio recording (Sociological Research Skills, 2014).

Semi-structured interviewing has a number of disadvantages. It requires skill to recognize the questions that need to be asked. The interviewer can influence an interviewee by guiding him or her to potential answers, and it can be a time-consuming and expensive process to perform. It is also difficult to analyse qualitative,

semi-structured interviews because they usually contain many details. It is also hard to generalize and recognize if the interviewee is telling the truth, so validity can become an issue (Sociological Research Skills, 2014).

The design of a semi-structured interview provides a way of understanding a short history of the university, revealing how the ERP system was implemented, the standards for recruiting consultants and the PMO, and how their advice influences the organizational culture and the power/knowledge of the PMO and consultants. The interview began by identifying the background and the education of the participants. Second, it asked for a short history of the university and the changes that occurred in the last five years. Similar questions were asked of users regarding the recent developments in the university, recent changes at the university from a technological point of view, how the shift to the ERP system occurred, how the ERP changed the way employees work, how the ERP was purchased, why the university chose this particular ERP system, and how the ERP was implemented. These questions were important for understanding the general context. Third, it asked about the nature of the participant's job and responsibilities. Fourth, it asked how the selection of the PMO and consultants was made. A number of prompts asking about the university's standards for recruitment were used, such as the experience and knowledge of the consultants and the PMO and recommendations from other experts. Fifth, the interview questioned the reasons for selecting the consultants and the PMO. Through this question, the researcher wanted to learn about the problems that required the intervention of the PMO and consultants and how they helped in dealing with those problems. Sixth, it asked about how their advice influenced organizational issues such as, norms, values, behaviour, and attitudes and if any conflicts occurred during the implementation and how they were resolved. Seventh, it asked how the consultants

and the PMO influenced the organizational culture of the university. Eighth, it questioned the nature of the relationship between organizational members and the PMO or consultants. These questions were prepared before the interviews for use as a general guide.

However, more questions were added after the pilot study, as the researcher realized that there were more important topics to focus on and understand. Questions of power/knowledge and user resistance were asked after the researcher found that the consultants and PMO had power in ERP implementation and development and there was a resistance to implementing the ERP. Most of the questions were added after the analysis of the pilot study. The researcher further elaborated the main questions mentioned above with questions related to power/knowledge and user resistance. The additional questions included topics such as the goals of different actors participating in ERP implementation and development and how incentives were applied in ERP implementation and development. Other interview questions asked how the university chose a particular ERP system and introduced a PMO to its structure. Questions were then asked about how the norms and rules of the university are reflected in the ERP system. More questions were asked about power/knowledge, such as about the selection and recruitment of the PMO and consultants and how that influenced their power/knowledge, how the founding of the PMO demonstrates power/knowledge, the role of the PMO and consultants and how that demonstrated power/knowledge, how the training in ERP implementation occurred and reflected the power of consultants and the PMO, and how user resistance became a source of power for the consultants and the PMO. All the questions were adopted from the literature, the theoretical framework, and the results of initial interviews to help in understanding the power/knowledge of the PMO and the consultants. These questions were added

because the researcher became interested in understanding the power/knowledge of consultants and the PMO, and few studies in the literature on ERP, power, and higher education have focused on such topics. The interviews took from 45 to 90 minutes.

The interviews started with the researcher explaining the protocol and ensuring the participants that their names would not appear in the published findings of the research. All participants consented to having their interviews recorded.

During data collection, the researcher started by interviewing the head of the ERP PMO. It was essential to listen to his views regarding the current status of the system, how the system was implemented, the role of consultants, and the role of the PMO. A portion of the interview related to user resistance. The head of the PMO suggested the names of a project manager and a consultant for later interviews. The researcher then used snowball sampling in which he asked every participant to suggest a name for an interview, and this was repeated for the system users in each department. For example, the researcher interviewed the manager of Electronic Services in Human Resources, who suggested four people for interviews. The same process occurred with the departments of Budgeting and Planning, Finance, Administrative Communication, Purchasing, Warehouses, and Warehouse Auditing. The only problem with snowball sampling is that it is less representative of the whole sample (Bryman, 2012). The researcher eventually interviewed 34 participants from all departments using this system. This was done to understand the implementation and development of ERP, the challenges faced, and the role and power/knowledge of consultants and the PMO in ERP implementation and development. Understanding ERP implementation, the previous development of the university and the power/knowledge of consultants and PMO in ERP implementation required interviewing various actors, including the vice rector, senior managers, consultants, PMO staff, and administrators as users. This was

mainly to listen to the different views, which the researcher felt necessary to build an understanding of the power/knowledge of consultants and PMO in ERP implementation. This was done by interviewing a sample from each department, who currently or previously interacting with the consultants and PMO in ERP implementation at the university. The researcher tried to interview participants from each department using the GRP with also interviewing a sample of consultants and PMO. All interviews were recorded and transcribed by the researcher and translated into English from Arabic. The researcher ensured that the translations maintained the meaning expressed by the participants.

Participant Number	Participant Role	Department	Code Name
P1	Dean of Electronic Services	Deanship of Electronic Services	PM1
P2	Project Manager	PMO	PM2
P3	Project Manager	PMO	PM3
P4	Project Manager	PMO	PM4
P5	Project Manager	PMO	PM5
P6	Project Manager	PMO	PM6
P7	Project Manager	PMO	PM7
P8	Project Manager	PMO	PM8
P9	Project Manager	PMO	PM9
P10	Consultant	Consultancy firm	C1
P11	Consultant	Computer and Information Science College	C2
P12	Consultant	Computer and Information Science College	C3
P13	Consultant	Computer and Information Science College	C4
P14	Senior Manager	Electronic Services in Human Resources	SM1
P15	Assistant Manager	Human Resources Department	SM2
P16	Senior Manager	Purchasing Department	SM3

P17	Senior Manager	Warehouse	SM4
P18	Senior Manager	Warehouse Audit	SM5
P19	Senior Manager	Administrative Communication	SM6
P20	Senior Manager	Finance Department	SM7
P21	Senior Manager	Planning and Budget	SM7
P22	Administrator	Human Resources	A1
P23	Administrator	Human Resources	A2
P24	Administrator	Human Resources	A3
P25	Administrator	Human Resources	A4
P26	Administrator	Finance Department	A5
P27	Administrator	Finance Department	A6
P28	Administrator	Finance Department	A7
P23	Administrator	Finance department	A8
P24	Administrator	Purchases Department	A9
P25	Administrator	Purchases department	A10
P26	Administrator	Warehouse	A11
P27	Administrator	Warehouse	A12
P28	Administrator	Warehouses Audit	A13
P29	Administrator	Administrative Communication	A14
P30	Administrator	Administrative Communication	A15
P31	Administrator	Planning and Budget	A16
P32	Administrator	Planning and Budget	A17
P33	Vice Rector	University administration	VR1
P34	Rector	Dar Al Uloom University	R1

Table 2 Research sampling

The interview outcomes helped in understanding change at the university, technology (especially the increasing significance of technology over time), the shift from a

computerized record approach to a workflow approach, automation, and opportunities for deskilling. They helped in understanding the ERP system procurement, the justification for buying the system, and how the university implemented it. Finally, the power/knowledge of the PMO and consultants was explored by looking at the recruitment process used for them and the users' resistance.

Although this research adopted a semi-structured interview technique for its advantages, some issues related to power cannot be easily observed. It is easier to talk in-depth about how the ERP system was implemented and how user resistance played a role in institutionalizing power for the PMO and consultants. This kind of focus is difficult to analyse through observation because the system was implemented five years ago. There is also a need to look at the university's history. Thus, it is difficult to observe the system. It is also challenging to ask questions related to power and influence in a questionnaire because it is a sensitive topic that can be discussed more effectively in a semi-structured interview, which gives the respondent the opportunity to freely discuss what he or she feels is important. This is not possible with observation or a questionnaire.

Research Question	Research Method
How is user resistance used to institutionalize power in system implementation?	Semi-structured interview

5.2.2 Selection of the research site

The research site is a Saudi university that has implemented GRP. It was chosen because it implemented this type of ERP system more than five years ago and has experience of working with a PMO and consultants. Its members can describe the role of those two actors in detail, whereas other higher education institutions either do not

have an ERP or implemented the system by using consultants instead of a PMO. Thus, it is a unique case and can elaborate on the implementation and development of an ERP and the role of user resistance in the institutionalizing of power at the university.

Access was obtained by sending an overview of the research, including its aims and objectives, and a related literature review with a letter from the research student supervisor. The university looked at the research document and agreed to collect data from the university in the summer of 2013 for a period of three months. Gaining access was not difficult, but it took about three months.

The university acquired information from the study about the status of the system, the nature of the role of the PMO and the consultants, and how their roles could be improved.

5.3 Data analysis

The goal of the data analysis was to explain the meaning of the text of the interviews. The data were first arranged for analysis; then, they were analysed in depth; finally, they were written. It also included activities aimed at interpreting the huge amount of qualitative data (Creswell, 2013). There are many data analysis techniques, such as data display and analysis, analytic induction, grounded theory, hermeneutics, narrative analysis, template analysis, discourse analysis, and Creswell's (2013) qualitative data analysis.

There are differences among describing, analysing, and interpreting data. The description of data mainly tackles the question, "What is going on here?" Analysing data highlights the interrelationships among data and asks "How do things work?"

Interpreting data answers questions related to meaning and context such as “What does it all mean?” and “What is to be made of it all?” (Wolcott, 1994).

5.3.1 Factors to consider in qualitative analysis

5.3.1.1 Validity

Qualitative validity seeks to determine the correctness or confidence of the data reported in a study by applying a number of steps (Creswell, 2013; Parikh, 2002). These steps include triangulating dissimilar sources of data, sending the findings to the participants to test the accuracy and truth of the results, and writing the findings in a way that presents the full description and rich data of the study. It also explains the bias that the researcher brings to the study and puts forward the negative information; the researcher remains a considerable time in the field of study and sends the full body of work to an external reviewer to evaluate (Creswell, 2013). Thus, it seeks to reduce errors in the research design and data analysis so that the findings are precise and applicable (Parikh, 2002).

This research has been tested for validity. Transcripts and interpretations were sent to the participants to determine the accuracy of the interpretations. The findings were written to show the full descriptions and rich data; this was done by providing as many citations as possible and by remaining in the field for approximately three months, which is considered an appropriate amount of time relative to the timeline of the study. In terms of triangulation, there was an attempt to use another source of information such as a focus group, but it was difficult to arrange more group interviews at the university during the data collection period due to the busy schedules of the participants.

5.3.1.2 Reliability

Reliability refers to the consistency of the research approach between diverse researchers and diverse subjects so that it repeatedly results in the same findings. Reliability procedures start by assuring that the transcripts are accurate and that there has not been a change in the meaning of the codes. Achieving reliability in research of an organization is difficult due to the changing nature of organizations, but working according to the case study protocol and research-design processes can assist in achieving high reliability (Creswell, 2013; Parikh, 2002).

The researcher ensured that the transcripts were clear by sending them to the participants to determine their correctness. The researcher ensured that the codes were consistent with the transcripts and held the same meaning when employed. The researcher also followed the interview protocol and analytical procedures set out in Creswell (2013) and Klein and Myers (1999), which helped to achieve high reliability.

5.3.1.3 Ethical consideration

Ethics is related to the correctness of the researcher's behaviour toward the participants in the study. There are moral principles that direct our conduct and rapport with others. These are related to how we conduct our research from start to finish and include research design, data collection, data analysis, and data interpretations in morally acceptable ways (Saunders, Lewis, & Thornhill, 2011).

Ethical principles apply in conducting the interviews and publishing the findings, such as protecting the privacy of the participants; allowing people to refuse to participate in the study; avoiding deception; ensuring that the names and data are withheld and remain confidential; avoiding causing stress, discomfort, pain, and harm; making sure

not to negatively affect participants in the writing of the research; exhibiting good behaviour; and making sure the researchers are objective (Saunders, Lewis, & Thornhill 2011). An ethics form was submitted to the university, as required of research students before data collection begins.

5.4 Qualitative data analysis techniques

There are two ways of approaching research: deductively and inductively. In the deductive approach, the researcher uses an existing theory to design the research for both data collection and data analysis; this can be viewed as moving from the general to the specific. On the other hand, when the researcher constructs a theory from specific to general based on the data collected, it is known an inductive research (Saunders, Lewis, & Thornhill 2011). This thesis has used the inductive method by using the data to build a theoretical framework for how user resistance is used to institutionalize the power of consultants and the PMO. This study used Clegg's circuit of power and the absorptive capacity model of Todorova and Durisin (2007) along with agency theory (to understand the alignment of interests between agents and principals), neo-institutional theory (to understand mimetic and normative isomorphism), and structuration theory (to understand the legitimacy concept). Other data emerged that were not based in the theoretical framework but were used because they answered important questions regarding the use of technology in the university through an inductive procedure.

Data analysis seeks to explain the data at hand. It includes many steps such as arranging the data for analysis, running different analysis techniques, going deeper in the data to make sense of them, demonstrating the data by writing the research, and interpreting the overall meaning of the data (Creswell, 2013). It can be defined as the overall strategy that directs the data analysis (Bryman, 2012).

The literature on research methods reports several analytical techniques, such as data display and analysis (e.g. Saunders, Lewis, & Thornhill 2011), analytic induction (e.g. Johnson, 2004), grounded theory (e.g. Ryan & Bernard, 2008), hermeneutics (e.g. Kvale, 1983), semiotics (e.g. Grbich, 2012), narrative analysis (e.g. Saunders, Lewis, & Thornhill, 2011), template analysis (King, 2004b), discourse analysis (e.g. Saunders, Lewis, & Thornhill, 2011), Creswell's (2013) qualitative analytical procedure, and Klein and Myers' (1999) principles for conducting and evaluating interpretive studies in IS.

First, data display involves arranging data to show the information visually or in diagrams. It is an iterative process used to develop the data into visual materials. It aims to identify the relationships within the data and explain conclusions with the aid of displays (Saunders, Lewis, & Thornhill, 2011). This thesis explored the implementation and development of an ERP system and the development of the data into visual materials, but it was difficult due to the nature of the topic. Thus, this analytical technique does not fit all research aims; some topics require verbal rather than visual explanations.

Second, analytic induction is a concentrated investigation of particular cases to define the reasons for phenomena. This is produced from the observation of the social setting, and it usually follows a deductive approach to research insofar as a theoretical and conceptual framework is made before the data collection and is examined by determining whether or not the findings can be verified (Johnson, 2004). Thus, in analytic induction, the researcher is looking for general clarifications of certain research problems by continuing to collect data until no negative cases are discovered (Bryman, 2012). This study avoided the analytical induction method due to the

difficulty it poses in determining when negative cases are eliminated. It also has no clear procedures to follow.

Third, grounded theory is generated from the data, systematically collected and analysed during the research procedure. In this analytical method, the research process includes data collection and analysis, and the resultant theories occur in relationship with one another. It is an iterative process that aims at generating a theory from the data, meaning that data collection and analysis frequently refer to each other (Bryman, 2012; Ryan & Bernard, 2008). The researcher becomes grounded in the data and seeks to generate concepts and answers for what the research problem really looks like (Ryan & Bernard, 2008). This study rejected grounded theory as an analytical technique due to the importance of the relevant literature, which the researcher felt needed to be read and understood prior to the data collection, especially as it pertains to issues of power/knowledge, resistance, and the role of consultants and PMOs in IS. It is an inductive study, but the literature plays a role in shaping the questions asked during the data collection and analysis.

Fourth, in the hermeneutics mode of analysis, understanding the meaning of a text is achieved by examining its overall meaning, which can be demonstrated by the implications of the separate parts of the text. The significance of these separate parts can change the overall meaning of the text. Thus, it is important to understand the entire meaning of a certain text in relation to details and vice versa. This is done to achieve a correct understanding, which is a principle of hermeneutics. This process has no end and is an iterative process, but the researcher can stop once a certain valid meaning without flaws has been achieved (Kvale, 1983; McAuley, 2004). This study used the hermeneutics circle from Klein and Myers' (1999) principles for conducting

and evaluating interpretive field studies in IS research. The application of this process is described in detail at the end of this chapter.

Fifth, the semiotics approach of analysis involves revealing hidden information that has a relation to language and its cultural context. It mainly seeks to understand signs and symbols in language, which are very important in this mode of analysis, and it enables a recognition of the original elements of language and tends to build arguments that would be difficult to discover without this analytical mode (Grbich, 2012). This approach was avoided due to the apparently limited use of semiotics in IS research and the absence of clear methodological steps to follow. It is a very good method for studying language, but it is not clear how it can be used in studying power/knowledge and resistance in the organizational implementation and development of IS.

Sixth, narrative analysis is generally described as an explanation of an experience told in a time frame. Representing a story by linking actions is highly important for the researcher because it delivers meaning. This is achieved by gaining an understanding the related events in their original form, not just by conducting the processes of coding and categorization, as in other analytical techniques. Each story has a beginning, middle, and end and aims to describe participants' lives and the world around them, the events of the story, the consequences, the meaning, and the overall result of the story (Saunders, Lewis, & Thornhill 2011). This study rejected using a narrative analysis even though it can provide a powerful and rich explanation, as the researcher was looking for a method that follows a systematic procedure for data analysis.

Seventh, a template is defined as the number of codes or categories that demonstrate the themes taken from the gathered data. Template analysis joins both the deductive and inductive approaches to qualitative data analysis so that codes will be pre-arranged and then corrected or included with the data during collection and analysis. A template analysis provides a flexible technique for data analysis, which can be used to fit the needs of the researcher and the research. Its process includes categorizing and combining data. The aim of the analysis is to recognize themes, patterns, and relationships. Data are usually represented hierarchically to assist with the analysis (Saunders, Lewis, & Thornhill, 2011). This approach was avoided due to the scant literature on how to produce templates (relative to the grounded theory literature, for example). There is also a risk of being descriptive and of failing to introduce the participants' voices in the analysis of themes (King, 2004b). All these factors supported the decision to not apply template analysis in this research.

Finally, discourse analysis is the analysis of language that seeks to answer questions about how and why language is used in a particular context. It aims to identify how discourse not only explains the social world but also constructs or changes it (Saunders, Lewis, & Thornhill, 2011). This technique was also rejected because the nature of discourse analysis does not fit with the aims and objectives of this research, which require a firm understanding of power/knowledge, resistance, and the implementation of an ERP at the university.

5.4.1 Creswell's (2013) qualitative analysis

Creswell (2013) provided a systematic technique for data analysis that includes six steps. It starts by organizing and preparing the data for analysis. This step includes activities that involve writing the gathered textual data, such as transcribing interviews. Second, the researcher reads the data and seeks to discern the overall idea

of what the interviewee was saying. Third, the analysis stage is started by coding the data. Creswell (2013) explained coding as the process of arranging and putting the data into sections of text before explaining the meaning of these sections. These sections of information have to be grouped into categories and named with a label given by the participants. Fourth, the coding produces themes for analysis. Descriptions include details about the significance of technology at the university under study. Fifth, it produces a narrative that explains the descriptions and the themes in a way that describes the timeline of events. Finally, it produces an interpretation of the data's meaning (e.g. by comparing the findings with existing literature).

This analytical technique explained by Creswell (2013) is an in-depth description of how qualitative analysis is performed. It is easy to follow, flexible, and includes many details encountered by the qualitative researcher during the data analysis. All these factors supported the researcher's decision to follow and apply this technique in the qualitative data analysis.

Data Analysis	
6. Interpreting the meaning of themes/descriptions	
5. Interrelating themes/descriptions (in-depth data)	
4. Description	Themes
3. Coding data for analysis (in vivo)	
2. Organizing and preparing data for analysis	

1. Reading through all the data

Table 3 Data analysis in qualitative research, adopted from Creswell (2003, p. 185)

The data were analysed following the procedure shown in Table 3. It applied agency theory, neo-institutional theory, structuration theory, the circuits of power framework and absorptive capacity by linking the data to the theory as a 'sensitising device to view the world in a certain way'; it used the theories as an analysis tool for the interviews (Klein & Myers, 1999, p. 75; Walsham, 1993). The analysis follows the principles concerning evaluating interpretive research in the IS literature developed by Klein and Myers (1999) and recommended by Walsham (2005).

The analysis of this research began when the researcher first read the interview scripts to grasp the overall meaning of the data. Next, the data were coded by dividing them into sections, such as ERP implementation and the power/knowledge of consultants and PMOs before explaining the meaning of the data. Themes were then derived; these aimed to understand the context by understanding the implementation and development of ERP and the power/knowledge of consultants and PMOs. These themes and sub-themes are increasingly significant in technology at the university and include the shift from a computerized record approach to work flow process approach, automation and opportunities for deskilling, GRP procurement, the justification for GRP, how the GRP was implemented, power/knowledge (recruitment of consultants and PMO, and resistance of end users and managers.) Then, the themes were described by determining the majority and minority for each argument and theme. Themes and sub-themes were interpreted by using the theories to examine the results and interpret them. This was done by linking the data into three circuits of power

(episodic, social, and system integration circuits) and to different stages of absorptive capacity (recognizing the value of new knowledge, acquisition, assimilation, transformation, and exploitation) to explain the power/knowledge of consultants and PMOs. Clegg's circuits of power theory considers the institutionalisation of power for the consultants and PMOs. Absorptive capacity was applied to determine how consultants and PMOs recognize, assimilate, and apply external information.

All these theories were used to interpret the themes and sub-themes in this research. Subsequently, a narrative was produced to describe the implementation and development of ERP and the power/knowledge of consultants and PMOs. A comparison of the results of this study with the literature was performed to see if they could apply to other organizations. This analysis considered the adopted principles of evaluating and conducting interpretive research in IS. First, the researcher applied the principle of the hermeneutic circle, which required an understanding of the full meaning of the sentences and phrases. Second, the principle of contextualization was applied, requiring the researcher to consider the social and historical contexts to foster logical reasoning. Third, the researcher applied the principle of abstraction and generalization; the fruitfulness of following this principle depends on the plausibility and logical reasoning the researcher achieved during analysis. Fourth, the principle of dialogical reasoning was followed, wherein the researcher's biases were recognized and challenged. Fifth, the principle of suspicion was applied whereby the researcher remained open-minded to various possible meanings in the text and exercised critical thinking throughout the analysis (Klein & Myers, 1999).

5.5 Summary

This chapter discussed data collection methods and the proposed research design and data analysis techniques. Different data collection methods were discussed, such as

interviews, observation, questionnaires and documents. The reasons for using semi-structured interviews as the main data collection method were provided. This was followed by a discussion of different analytical techniques, such as data display and analysis, analytic induction, grounded theory, template analysis, narrative analysis, discourse analysis, and semiotic analysis. All these analytical techniques were introduced with a definition, and the reasons for rejecting or adopting them for this research were given. Finally, the chapter concluded with a description of Creswell's (2013) qualitative analytical technique, its advantages (Klein & Myers, 1999), and the reasons for adopting it in this research.

Chapter Six: Background Information on Saudi Arabia, the university, and GRP

6.0 Introduction

This chapter provides background information related to Saudi Arabia, the university under study, and the ERP application it uses. Regarding Saudi Arabia, specific information is provided on when the country was established, how the country is managed, its culture, and how it influences management. Concerning the university, the chapter describes when the university was established, its development, how it is managed, and the power of government over it (e.g. from state-appointed university officials). Finally, information is given on GRP, the ERP application used by the university. This information mainly relates to the departments that the GRP serve and the benefits of the GRP.

6.1 Saudi Arabia

Saudi Arabia is located in the Arabian Peninsula, southeast of Asia. Its land area is 2,149,690 sq. km. Its population is 27,345,986 (Infoplease, 2016; The Saudi, 2016), and its capital city is Riyadh (UNDP, 2016). Saudi Arabian history can be traced back to the first Saudi state, which was established in 1744 and collapsed in 1817. Some years later, the second Saudi state was established in 1824 and collapsed in 1891 (The Saudi, 2016). The current Kingdom was established in 1932 by King Abdul-Aziz Al Saud (BBC, 2016). Saudi Arabia is a monarchy, and the Quran and the Sunnah (the saying and teaching of Prophet Mohammed) form the constitution of the country. The country follows the Saudi basic law that was presented by King Fahd in 1992. This basic law indicates that the country is a monarchy and that Islam is the principle of all laws and this particular basic law. It also explains the elements of Saudi society,

economic principles, the rights and duties of citizens, the state authorities, financial issues, and audits (Shura, 2016). There are more than 22 minsters on the Council of Ministers, which runs all government departments. This council is headed by the king, who is also the prime minister. The king appoints a crown prince, who is also the deputy prime minister, to assist him in running the government. There is also a crown prince deputy, who is also the second deputy of the prime minister (Saudi Embassy, 2016). The king is advised by a legislative council, which is appointed by the king; this is called the 'Consultative Council'. This council's main role is to suggest new laws and improve current laws. The country consists of 13 provinces, which are headed by a governor and deputy governor. Each province consists of governorates and sub-governorates. The judicial branch of government is based on Islam (Saudi Embassy, 2016). Saudi culture is rooted in and influenced by Islamic principles and nomadic roots influenced by those teachings (Marshall Hunt & At-Twaijri, 1996). Managers are influenced by the nation's social structures and the values, norms, and views of its people (Bjerke & Al-Meer, 1993). Oil was discovered in 1936 (Infoplease, 2016) and became the main source of income for the country. Saudi Arabia is the world's largest oil producer and exporter and has the largest oil reserve in the world (Saudi Embassy, 2016). Since its establishment, the state has undergone development plans to improve education, standards of living, health, and environmental conditions (UNDP, 2016). Education was provided before the founding of the official school in Kutab, a Quranic school that teaches the Quran and writing (Saleh, 1986). The government started building schools after its establishment in 1932. The first college established in the country was the college of Sharia and Arabic Language in 1950 (UM Alqura University, 2016). At the time of the establishment of the kingdom, education was available only to wealthy families, but now education is available to all people free of charge. There are now more than

30,000 schools and 50 public and private universities in the country (Saudi Embassy, 2016).

6.2 The university

King Saud University was established in 1957 and is located in the capital city of Riyadh. It was the first Saudi university. The development of the university has included new colleges and improved education and research. The College of Arts, the first college, was established in 1957–58. More colleges opened between 1958 and 1960, including the Colleges of Business, Pharmacy and Science. In 1961, the government granted the university independent status and its own budget responsible for promoting higher education and research. In 1965, the university opened the College of Agriculture. The Colleges of Engineering and Education opened in 1965 and were run in collaboration with UNESCO and the Ministry of Education. The College of Medicine was established in 1969. More institutes opened afterwards, such as the Arabic Language Institute for non-Arabic speakers and the assistant deanships of admission and registration and student affairs and libraries in 1974. The College of Dentistry and College of Applied Medical Sciences opened to students in 1976. The university established a graduate deanship in 1978, whose main role is to supervise all graduate programs in the university. More colleges were opened in 1984, including the College of Computer and Information Sciences and the College of Architecture and Planning. In 1991, the university opened the Institute of Languages and Translation, which became a college in 1995. The university has branches in Qassim (Qassaim University established in 2004) and Abha (King Khalid University established in 1998), which have recently become independent universities (KSU, 2016).

The university is managed by a rector, vice rectors, deans of colleges, vice deans, and chairman of academic departments. The university has a council, the most prestigious administrative authority, which oversees all university activities that affect faculty, students, and staff. It provides recommendations to the rector in relation to the development and evaluation of university programs and policies (KSU, 2016). There is also a scientific council, which recommends faculty appointments and promotions and encourages scientific research. College councils consist of deans, vice deans, and chairmen of departments. The main duties include appointing faculty in the college, proposing changes in the curriculum and syllabus of academic programs in the college, encouraging scientific research, suggesting exam times, overseeing the internal system of the college, and proposing training and scholarship programs. Every academic department has a council, and every council has authority over scientific, administrative and financial issues (The Higher Education and University Council Law, 1994).

Administrative departments include the following:

1. Academic publishing and printing presses
2. Administrative affairs and employment
3. Budget and quality assurance
4. Campus safety and security
5. Financial management
6. Housing and recreational facilities
7. Housing maintenance management

8. Information technology and communications centre

9. International cooperation and scientific societies

10. Landscaping management and support

11. A legal department

12. Management and development studies

13. Operation and support services

14. Procurement

15. Warehouse management

16. Property management

17. Public administration and media relations

18. Public services and utilities

19. Quality assurance management

20. Recreational space for faculty and staff

21. Statistics and information

22. Strategic plan 2030

23. Transportation

24. Warehouse control management (KSU, 2016).

The Saudi King appoints the rectors of all universities based on the recommendation of the Minster of Education. The rector is responsible for managing scientific, administrative, and financial issues and supervising the implementation of educational laws throughout the university system (The Higher Education and University Council Law, 1994). The deans are appointed by the Minister of Education at the recommendation of the rector. The vice-deans are appointed by the rector of the university for two years. A temporary committer position was recently established and given the authority of the former Higher Education Council; one of its many duties is appointing vice-rectors, studying the yearly reports from the universities, restructuring colleges, and changing the names of colleges and departments (Riyadh, 2015).

6.3 GRP

Government resources planning is a type of enterprise integrated system that was implemented at the university in 2007–08 (Althonayan & Papazafeiropoulou, 2013) with a single database that mainly serves seven departments: Finance, Human Resources/Payroll, Warehouses, Warehouses Audit, Administrative Communication, Purchases, and Budget and Planning. Its benefits, according to the House of Expertise webpage, include the fact that it provides exact information from a single provider, integrates all procedures in the systems for the university, increases productivity, and, thus, provides faster services (KSU, 2016). It is managed by a PMO, whose main role is to manage the implementation of GRP in the university (Al-nafjan and Al-mudmigh, 2011). Few universities of a similar size and structure have applied GRP; thus, this study provides insight and rich information currently lacking in the literature.

6.4 Summary

Saudi Arabia has gone through many stages of development since its establishment in 1932, such as providing education for all its citizens free of charge. The state has built many universities since 1957, and today has 26 public universities. The government appoints rectors, deputy rectors, and deans of universities. It also provides the finances needed for the universities through its budgets. The universities need new types of information systems, such as GRP or ERP, to help them manage administrative and financial tasks.

Chapter Seven: Pilot Study

7.0 Introduction

A pilot study was conducted in the summer of 2012 to study the influence of ERP consultants on the organizational culture of a Saudi Arabian university. During the pilot study, the researcher interviewed three people: one consultant, one project manager, and an administrator. This section of the thesis describes what the researcher did in the pilot study, the results of the pilot study, and how it influenced the main study.

7.1 What the researcher did in the pilot study

The researcher interviewed three people. For the consultant, questions were asked concerning the background and education of the participant, a short history of the consultancy firm, the changes that occurred during the last five years in the consultancy firm, the role of consultants, how other organizations select the consultants and the reasons for hiring them, how consultants help organizations in their ERP implementation problems, how their advice influenced organizational issues such as ERP implementation, behaviour, and norms, any conflicts that occurred during the ERP implementation and how they were overcome, the nature of the relationship with old and young people and with certain departments such as HR and Finance, and what the consultants brought to and took away from the organization. During this interview, the participant explained how user resistance was a challenge and how it became a source of power for top management and consultants. For the project manager, questions were asked concerning the background and education of the project manager, the history of the university, what changes occurred in the university in the last five years, how they chose the consultants, the difficulties faced

during the implementation that required the intervention of consultants, whether resistance in the university is from top management or within the employees in these departments, how user resistance become a source of power, the influence of consultants on the norms of employees, the influence of consultants on the behaviour of employees, how the consultants dealt with conflict, the nature of the relationship with the employees in HR and Finance, and the consultants' relationship with young and old employees. An administrator were asked questions concerning the background and education of the administrator, the university and its history, changes that happened in the last five years, whether the new system reduced the use of paperwork, the nature of their work, their responsibilities, how the university chose MADAR (the ERP system), the difficulties faced during the implementation of the system, whether the consultants and the external company helped in overcoming the implementation problems, disagreements and conflict that occurred with the consultants, how the company that implemented the ERP system and the consultants influenced the employees' norms and behaviour, user resistance to the university's implementation of ERP, how people from outside and inside dealt with this resistance, how the conflicts and disagreements with MADAR or the company implementing the system and consultants were overcome, how the relationships with consultants develop with the PMO, how were the consultants' relationships with old and young people, and what the PMO and consultants left with concerning the implementation and use of the ERP.

7.2 The results of the pilot study

The first participant is an external consultant who holds a bachelor degree in computer science from an Egyptian university. His consultancy firm has been providing expertise in enterprise resources planning for public sector organizations for

10 years. In the last five years, the firm has been expanding by employing women as well as men and expanding its client base. The consultant's role is providing advice in critical matters that are complex for public organizations in implementing ERP systems, such as tender preparations and negotiating the needs and prices of ERP systems with vendors. The consultant also assesses the plans and risks of the ERP project. The university selected and recruited its consultants based on their expertise and reputation in dealing with ERP systems such as GRP implementation in public organizations. The consultants also provide advice on dealing with the size and number of users, such as for providing the infrastructure needed in such projects. The consultants dealt with many problems, such as resistance to the change to the new system and provided advice on how to deal with this. This was used as a source of power for consultants. The external consultant also dealt with issues before implementation, such as the training of users, and during the implementation, such as how to implement the system successfully in the university. The consultants influenced behaviour concerning using the system, such as dealing with resistance to the ERP. They also influenced the norms of employees by providing training and making the system easy to use and used in all activities at the university. There were few conflicts with managers, systems implementers, and the PMO because they only provided advice, and the university decided to accept it or not. The participant explained that relationships with old and young employees and with HR and Finance were normal. The consultants gave advice on how to overcome challenges in ERP implementation, and this gave them experience that they had lacked.

The second participant holds a bachelor degree in computer information systems from a Jordanian university and is a project manager in the PMO at the university. The participant said that the previous administration has worked to develop the university

in all areas, and especially via the ERP project, over the last five years. During this ERP project, there was resistance to the change it was bringing. The university, and especially the top management, provided all the support needed. This resistance became a source of power according to the project manager and was used by the top management, consultants, and project managers. This resistance led the top management to change the employees who resisted the system, not the system, an example of support for system implementation. Change management required the involvement of consultants because of the resistance faced during the ERP implementation. The resistance came more from employees than from managers. The main reason for resistance was that users and managers didn't like the changed working conditions and rules. The consultants helped in overcoming this resistance by talking with resistors; they could convince users because they were external, according to the participant. Financial support for the ERP project was given via bonuses for people who completed training. The university used consultants because it lacked the expertise needed for the challenges faced during ERP implementation. Most of the difficulties that required the intervention of consultants occurred at the planning and implementation stages and involved purely technical matters; they helped ensure that the implementation and planning stages were performed correctly. The consultants influenced the norms of the employees because the advice and involvement of the PMO influenced how the change happened. The consultants influenced the content of the training and the overcoming of resistance by advising of the need to give bonuses and certificates to employees who completed training; this influenced norms and behaviour, as the PMO trained the employees. The consultants and PMO influenced the behaviour of employees because the implementation and use of ERP influenced the transfer of knowledge and the way the employees worked. Previously, knowledge of work rules and laws was in the hands of only a few

employees at the university; under the ERP system, that knowledge is provided for everyone. There were conflicts during ERP implementation because consultants sometimes gave incorrect advice, which was overcome through knowledge and expertise. The consultants and PMO members worked on ERP implementation at the level of the university administration, and they also worked with other managers such as in HR and Finance, so they had a working relationship and communicated with them on committees. The PMO also communicated with the university departments to manage the implementation of ERP, ensuring that the system was implemented successfully and studying the modification requests made by the departments. Because they are usually academics, the administrators, users, and administrators are very sensitive about the involvement and doctrine of the consultants. The consultants' and PMO's relationship with young employees was good because they accepted the consultants' and PMO's involvement due to their limited experience. The relationship with old people was sensitive because old people did not accept the change led by the consultants and PMO. The consultants left the university with the idea of accepting the change that the university had needed for a long time. Thus, they influenced working procedures and conditions.

The third participant is an administrator in the HR department. He has been working for the university for more than 10 years. He holds a diploma in business administration from the Institute of Public Administration in Riyadh. He mentioned that work at the university was done on paper until the university implemented an integrated system, the GRP, which enables the university to have a shared database and work electronically. After Professor Alothman, the previous rector of the university, took office, he developed the university on all levels. He mentioned that his department faced many difficulties during the ERP implementation such as

changing procedures and the structure of the university. There were also challenges in implementing the system from a technical point of view. The quality of the services the system provided was questioned due to the fast implementation of the system. Another difficulty was the huge number of users across university departments. The differences in working conditions among university departments also created difficulties. The system has been implemented for other public organizations, and the implementer thought that the university had similar functionalities, but the university differed in terms of rules, laws, and working procedures. The university changed the system to fit its needs and working procedures. The consultants helped the university in requirement analysis by understanding its needs and chose the system for the university. The PMO helped the university by studying its modification requests such as improving the rules and laws to fit the system and improving the interfaces. They also helped by following the ERP project implementation with them and the vendor. There were disagreements during the ERP implementation; for example, the university needed to identify where the work was in the GRP, and the vendor didn't provide this initially. The university convinced the ERP vendor and the PMO of the need to solve problems by explaining the need for a solution and how it could improve the work and fit the rules and laws. The consultants and PMO influenced the norms of employees when they agreed with users about the need to know where the work was and that the system had to provide this functionality. In terms of the influence of the consultants and PMO on the behaviours of employees, there was resistance, which was overcome through top management support for the solutions and the advice of the consultants and PMO to provide training, bonuses, and promotions for people who supported the system implementation. In terms of conflict with the managers and users, there was resistance because the system is not easy to use. This was overcome through the support of top management and by implementing

the advice of consultants and follow-up from the PMO. This relationship developed from the beginning, as there was a committee made up of all the departments as well as the PMO and managers. This was a business working relationship, and the users worked with them through meetings with the PMO and the vendor. The relationship with old people was difficult because they didn't know how to use the system. The PMO and HR tried to simplify the system and make it easy to use. The relationship with young people was normal, and they used the system despite its difficulties. The PMO and consultants helped by providing a system with a shared database, knowing where the work was, and improving the working styles at the university.

7.3 How it informed the main study

The pilot study results influenced the questions asked in the main study and provided an understanding of the influence of consultants on the organizational culture during ERP implementation at the university. It also shows that user resistance was a challenge and was overcome by using resistance as a source of power by the PMO, consultants, and top management. Thus, the pilot study showed that the PMO and consultants influenced the organizational culture during ERP implementation at the university by influencing the norms, rules and laws, and behaviour of users. The questions of organizational culture were asked in the main study to understand this influence. The researcher decided to focus on the power/knowledge of consultants and the PMO after he realised that the PMO and consultants have power and that there was a need to understand this power after it was demonstrated in the pilot study results, along with understanding how external knowledge was recognized, assimilated, transformed, and applied to solve ERP challenges. The pilot study helped develop an explanatory framework for the influence of consultants on organizational culture during ERP implementation at the university. The aim became to develop an

explanatory framework for the power/knowledge of consultants and the PMO in ERP implementation at the university. This happened after the pilot study showed that the power/knowledge of consultants and the PMO influenced EPR implementation. The objectives were changed to include more topics in the review of the literature, including the role consultants in IS, knowledge, the PMO, ERP and ERP implementation in universities, and power politics in IS. Another objective was to develop a theoretical framework for studying power/knowledge based on agency theory, structuration theory, neo-institutional theory, Clegg's circuits of power, and absorptive capacity. The pilot study had no theoretical framework, but, during the preparation of the main study, the researcher realised the need to develop a theoretical framework to study the power/knowledge of consultants and the PMO in ERP implementation at the university. An understanding of the context was needed, as the pilot study showed the history of the university and how the system was implemented, which influenced the understanding of the influence of consultants on organizational culture during ERP implementation and led the researcher to ask more questions in order to understand the context for the power/knowledge of consultants and the PMO in ERP implementation. Because the pilot study showed that the PMO and consultants used resistance as a source of power, the researcher decided to investigate this issue in the main study to find out how the consultants and the PMO used resistance to institutionalise their power/knowledge at the university. The pilot study led to more questions about the context and the power/knowledge of consultants and the PMO in ERP implementation at the university. First, a question asked about the background and the education of the participants. Another asked for a short history of the university and the changes that occurred in the last five years. Similar questions were asked – especially for users, PMO, and consultants – regarding recent developments at the university, recent changes in the university from a technological point of view,

how the shift to the ERP system occurred, how the ERP changed the way employees work, how the ERP was purchased, why the university chose this particular ERP system, and how the ERP was implemented. These questions were important for understanding the general context for the power/knowledge of consultants and the PMO in ERP implementation at the university. Third, a question asked about the nature of the participant's job and responsibilities. Fourth, a question asked how the selection of the PMO and consultants was made. There were a number of prompts asking about the university's standards for recruitment, such as the experience and knowledge of the consultants and the PMO and the recommendations from other experts. Fifth, the interview asked about the reasons for selecting the consultants and the PMO; the researcher wanted to know about the problems that required the intervention of the PMO and consultants and how they helped in dealing with those problems to understand their influence. Sixth, a question asked about how their advice influenced organizational issues such as norms and behaviour and if any conflicts occurred during the implementation and how they were resolved. Seventh, a question asked how the consultants and the PMO influenced the organizational culture in the university. Eighth, a question asked about the nature of the relationship between organizational members and the PMO and consultants. Additional questions asked about topics such as the goals of different actors participating in ERP implementation and development and how incentives were applied. Other questions included how the university chose a particular ERP system and how it introduced a PMO to its structure. Questions were also asked about how the norms and rules of the university are reflected in the ERP system. More questions were asked related to power/knowledge, such as how the PMO and consultants were selected and recruited and how that influenced their power/knowledge, how the founding of the PMO demonstrated power/knowledge, how the role of the PMO and consultants

demonstrated power/knowledge, how the training in ERP implementation occurred, and how it reflected the power of consultants and the PMO, and, finally, how user resistance became a source of power for the consultants and PMO.

7.4 Summary

The chapter described what the researcher did in the pilot study, the results of the pilot study, and how it informed and influenced the main study. The pilot study changed the focus of the study from one on the influence of consultants on organizational culture in ERP implementation to one on the power/knowledge of consultants and PMO in the ERP implementation at the university. It influenced the topics covered in the review of the literature and the theoretical framework developed for analysing the main study. Finally, the research question about how user resistance was used to institutionalise the power/knowledge of consultants and the PMO was developed based on the results of the pilot study.

Chapter Eight: The university and technology

> It is of crucial importance that information systems (IS) research and practice associates technology innovation with the context within which it is embedded (Avgerou, 2001, p.43).

8.0 Introduction

This chapter addresses the fourth research objective/question – to explain the context for implementing ERP at the university. This chapter covers the first part of the discussion and the findings of the 34 semi-structured interviews collected in the summer of 2013 with senior managers, project managers, PMO employees, consultants, and end users, the main data for this research. Its aim is to explain the context of where the ERP system was implemented. It covers changes in the university, including the role of technology, especially its increasing significance, the shift from a computerized record approach to a processes/workflow approach, automation, and opportunities for deskilling. It also covers the GRP (ERP), GRP (ERP) procurement, the justification for GRP (ERP), and how it was implemented. The aim of this chapter is to provide a context and to set the scene for the main theoretical framework developed in chapter nine, which aims to answer the main research question on how the power/knowledge of consultants and the PMO is institutionalized.

8.1 Change at the university

How change at the university in terms of technology and other factors has happened over the last five years is the focus of this section. In the last few years, there have been changes of administration, which influenced other changes at the university. Most interviewees said that the university has changed in terms of research, teaching, and budget in the right direction in comparison with the previous administration.

During the previous administration, the university developed its capabilities and changed its way of dealing with developers and constructors in terms of the return the university expected from each project. It has also produced a strategic plan, to be achieved by 2030. The development of the administrative departments has happened alongside the development of the academic departments' procedures. Only three administrators and one project manager claimed that the huge change has not been in the right direction, saying that there was a need to restructure the whole university and improve working procedures and set new rules in line with the administration's ambition but that the administration wanted to improve and develop the university quickly, which influenced the quality of the relevant projects.

Most interviewees said that the previous rector was given all the support needed to develop the university in the last five years. Support was given to administrative departments, academic departments, and to research. That the university has moved from an old system to a new ERP system reflects this support. This development didn't stop after the new rector was appointed. He has continued the development of the university. Most of the interviewees agree that, in the last five years, there has been a tremendous improvement in all activities at the university. An example of the majority is expressed in this view:

> In the last five years, there was tremendous development in all stages. In the last three years before [the previous rector], the university was normal, no challenges, nothing new. The work [that] is running in two days or seven is the same. When [the previous rector] came, the university started to have research, development from a scientific research point of view. Before, we used to have a system work in the mainframe, [and] the system developed into [ERP]. There is a difference between the old system and the new one. With collaboration with the company [vendor] implementing

> the system, we have reached the level we are on today, and we are still developing the system. Development, as you know, does not stop at any point. However, even when [the previous rector] left the university, [the new rector] continued the development. But he [also] has set rules [as] to what used to happen during [the previous rector] time in research; for example, [the new rector] has set rules so everyone gets the same benefits. (Head of a unit in HR)

According to the majority of interviewees, this change was reflected in improved salaries for employees and increased budgets for research. Furthermore, the university has created academic jobs and administrative jobs and has focused on developing employee skills by providing scholarships for people who want to study. Thus, changes have influenced the students, the employees, and all members of the university. Only a minority of five administrators disagree, saying that improved salaries and rising budgets are available to few staff and personnel.

8.2 Technology

8.2.1 Increasing significance of technology at the university

This section highlights the increasing significance of technology at the university and explains it. According to most interviewees, there was a lack of modern information technology at the university, but technology became central to its activities. One of the important changes is that electronic systems can ensure that work can be done electronically. An example of the majority of interviewees, the Dean of Electronic Services explains how the university demonstrates this understanding:

> There are many changes on so many levels. Let's say the moving toward the e-services; in this, there was a huge change moving toward [changing] the portal of the whole university, [now] considered one of the best quantitative and qualitative because there [are] a lot of pages [representing] all bodies of the university. And,

> at the same time, the way it was done was in every way good. Other things [are] moving toward e-services [so that] most of the things done at the university [will be done] electronically. (Dean of Electronic Services)

The majority also said that the university has applied technology to its work in almost all activities in order to automate them, a goal of the university. The university has new systems for various purposes, and this has changed its culture from one of learning how to use technology to one of affecting the speed of work. The goal is to eliminate centrality (to decentralise authority) in such a way that the system guides the process of all work in the GRP, not people. Under centrality, the work of an organizational department had to go through certain people and was controlled by them. For example, in HR, only certain people have authority and know the required processes, and all others lack this experience and knowledge, making the former central to their colleagues and to the organization. An example of the majority view is that of the assistant manager of the PMO:

> Now the university has [made] an excellent move forward after it moved to the new systems. Let me speak on the level of end users. Before, most of them didn't know [about] or hear of technology [much]. Now [everyone] knows about technology. For old employees, centrality exists, and knowledge moves from person to person. Now the new system has [incorporated] all procedures and the governmental laws; for example, if you like to take a holiday, it gives you an error if you exceed your time limits. Before, the work used to be on paper, and any mistake [could] happen. In the current situation, the entry of data takes more time than in the previous system, but at the end you get verified and accurate data. If a certain department asks for certain reports on the level of the university [or the] the government, you get it in a short time, not like [the] six months or a year it [took before]. Before, the decision used to be in

> the hands of certain people in university departments, but now the system guides you. The second thing, now the all university employees work on the computer. Before, some people didn't know how to use the mouse; now you find him hold[ing] the mouse, mak[ing] a decision, and follow[ing] procedures. (Assistant project manager of PMO)

However, a minority of interviewees (one consultant and four administrators) said that the university realised that there was a need to change its current situation such as avoiding centrality but that the university still faces this problem and is trying to automate all activities and avoid centrality. This also explains the heavy ERP customization the university required; the university has added many interfaces, including different working procedures and rules:

> I think the ERP system enables the business change required toward the automation required and to avoid centrality, but currently still many working procedures are done on paper, and still the ERP system does not cover all rules and working procedures of the university. We are still far from automating all activities of the university. (Assistant manager of purchases)

The majority also believe the university has changed technologically from a situation in which computers were not involved in the working activities of employees to a situation in which work can't be done without IT. Before, there were 200 people working in HR, and only 20 people had PCs on their desktops. This shows how unimportant IT was for the working activities of the university. A previous manager of PMO expressed this view:

> You can imagine that 20 people don't use the university systems, and they are using the PCs for browsing the internet; they used the system for social networking and checking emails. They don't practice their work on PCs. It's natural with this environment that

> asking employees to work in systems is difficult, and we knew from the implementation that the employees don't know the university rules. Now the system became central to the role of administrators of the university, and the users knew with the system the university rules. (Former PMO supervisor)

A minority of interviewees (six administrators) believed that the university had IT systems before the ERP that were meeting the minimum needs of the university and agreed with the university's rules, unlike the new ERP system, which required a lot of customization because it did not fit many of the university's rules and laws. This made the administrators believe that the previous systems, which worked for many years, was more useful than the new GRP system.

In summary, most believe that there is an increasing significance of technology, in that the university would like to achieve a level at which all activities of the university are automated, unlike the prior situation, when technology use in university administrative departments was lacking. A minority believe that there is an increasing significance of technology at the university but that it is far from automating all activities.

8.2.2 Shift from computerised record approach to a workflow/process approach

This section discusses the shift from a computerised record approach to a workflow approach using technology at the university. According to the majority, before ERP was implemented, employees used IT for data storage only. Now, the system guides the user according to the rules governing work at the university. The university moved from a computerized-record approach toward a process-based system. An example of the majority is this opinion:

> It's natural [to] face resistance in the implementation. Before, the employee used to [make a] decision in the moment and send it to the computer department, although the IT is only for entering data as the storage holder, not [as a] processes-based [system]. The current system has processes, and the HR assistant manager said, 'I'm proud now. With the GRP [ERP], the employees started to know the work rules.' (Former PMO supervisor)

However, a minority of six administrators believe that this move was not successful, as the university's rules and laws were not available in the system, which led to the system not being successful as a process based system. The literature agrees with the minority belief that this move was not always successful: a large number of organizations have failed to achieve this goal (Gargeya & Brady, 2005).

The university has different systems for different purposes, but, in terms of administration and finance, they used a system called 'BMS', which worked in the mainframe and was very different to the ERP. Most interviewees believe that the previous IT systems were used for recording data. The assistant manager of HR explains:

> We used to work in a different system. The previous system used to be a limited system, an executive system on the mainframe, which means [that] what you enter in the system is the outcome, especially [with] the financial matters and other matters [that do not] exist in the system. But [the ERP] is a work flow system [that] has certain rules for each procedure. If you enter something [that] does not agree with [the] rules, you will receive a message that this illegal. (Assistant Manager of HR)

However, a minority of interviewees (five administrators) believe that the main difference with the previous system is the recording of data; they say that the new ERP system is used as a data recording machine and that few procedures are included

in the new ERP system. They see no huge difference before and after the use of the ERP system at the university.

A majority of the administrators, consultants, and PMO staff said that the new system has a different structure and architecture than the old systems. The previous system was not an integrated system like the ERP, and there is a fundamental difference in the functionalities that the system provides. The primary functional difference is that the enterprise system controls and guides the processes, not the user. These systems differ from the ERP in that control of data entry is not available in the old systems, which shows what the IT infrastructure looked like before the ERP implementation. An example of the majority expressed this view:

> In IT, there were old systems, not like the current systems. There was, in the university, a system called 'BMS', an old system. The screen's black and the operating systems were working, but its databases are not similar to the new system. I'm talking about 15 to 20 years as operating systems and databases. You can't verify the data or the field; for example, if you enter the nationality of an employee, you can enter [anything] instead [of] the date of birth into the same field, [and] you won't face any verification. (Assistant PMO Project Manager)

The majority believe that the data transfer from the old systems to the new ERP systems was a challenge because the university didn't deal with data entry in a strict way before. The fields were filled in mistakenly by the employees and users. This caused a problem in the implementation of the ERP. The university used to have systems that worked on the mainframe; they still work on those systems because they contain all the old data. This time-consuming data transfer from the old systems points to the difficulties in implementing the ERP system for different departments at the university. However, a minority of five administrators believed that data transfer

is not a major problem and should be dealt with before the implementation to make sure that the university uses and implements the ERP successfully. An example of this minority is an opinion of an assistant manager of audit:

> Yes, they argued that data transfer is a major problem in the implementation of GRP. It would not be a problem if the vendor has dealt with it before the implementation and use of GRP. (Assistant manager of warehouse audit)

8.2.3 Automation and opportunities for deskilling

Automation is one of the goals of the GRP implementation but it may have caused a deskilling at the university. The majority believed that the university's move from the old systems to ERP has changed the way employees work. For example, the new ERP has reduced the need for the involvement of key people, as everyone can do the work, unlike the situation prior to the ERP. This is consistent with the literature indicating opportunities for deskilling in certain jobs in the process of ERP implementation (Hall, 2002). The ERP system includes all procedures and rules for the organizational functionalities and guides the process, with no need for the involvement or knowledge of any actors; they are not needed because the system has all the applicable rules and laws. This deskilling is demonstrated by the fact that employees knew the previous systems and work processes very well, but there is no longer a real need for their skills or knowledge in the current use of the ERP (Staehr, Shanks & Seddon, 2002; Maas, Fenema & Soeters, 2014). An example of the majority opinion is the following:

> The systems that they had used to be working in the mainframe on the black screen, and they [were] using it to transfer the data they have on it now. So, if they need data, they return to the old systems. The programmers are now working on the mainframe. They used to work on the computers. Very few people who you can consider the

> key people in financial, human resources, etc. [worked on those systems]. If those experts [were] not there, the whole working cycle stopped. This situation has stopped in the new system; it is easy to issue the salaries. In the new systems, the departments are [also] now entering the leaves (breaks). The work started to arrive at the HR ready and quickly. There is no control from anyone as [there] used to be before. If someone takes a break, anyone can take his place; he doesn't need to be an expert. (Project Management Office Employee B)

However, a minority of two consultants and two PMO employees believe that the system implementation did not lead to deskilling in the implementation of ERP because the managers and administrators still follow the procedures and make sure that the rules and laws are met in any work in the ERP. Their approval is needed due to their knowledge and experience in the university departments. The university has employed more people, and the managers with the relevant knowledge have supported the system implementation because it increased the quality of the service provided for employees; for example, the work is faster and easier.

8.3 GRP

8.3.1 GRP Procurement

A consultant said that GRP is an enterprise IT system developed by a local Saudi company that had previously implemented the same system for different public organizations. It is similar to the architecture of ERP. It contains governmental procedures and rules for seven departments: Human Resources, Finance, Planning and Budgeting, Warehouses, Warehouse Audits, Purchases, and Administrative Communications.

A PMO director said that the university GRP implementation is a huge project because it has a links to most of the activities the university performs. Because GRP is an integrated system, it is central to the running of the university.

The dean of Electronic Services said that the university bought the system from a local company for 14 million riyals. This includes technical support with its basic functionality and additional customization for the university. The local company HASAB secured this implementation after a competition against companies such as ORACLE.

The majority of the interviewees believe that GRP is working in all departments but is not achieving its potential. This is because the university didn't activate all uses of the GRP such as workflow processes for all administrative and financial work in the university. This is consistent with the literature that indicates that 70% of organizations fail to implement ERP successfully, even after three years of implementation (Gargeya & Brady, 2005; Amid, Moalagh, & Zare Ravasan, 2012):

> Look, the system is stable but not completed. It didn't even reach 100, 90, or 80. You can say it reached 70%. The ambition was that the system [would] make the work a lot easier. The system enabled the electronic use to cover all the requirements of the university because it enabled archiving the executive orders and letters. I won't need to send papers to each department, because once it [is] entered on the system, I will need to deal only with the papers that come from outside the university. The idea was if the employee was asking for a leave, the college [could] start an electronic request that reaches here, and we approve it. Then it goes to the salaries department and also the financial department and finally to archive [to] get saved. This was the general idea. What is happening now [is] the official procedures [are] still on paper, a request of leave comes from the college, and we work on it, and [then it is] saved on

> the system. I get another paper for the salaries. So [it is] still a lot of work. (Assistant Manager of HR)

However, a minority of two consultants, one PMO employee, and three administrators believe that the system has reached its potential and a successful implementation that covers most needs of the university. This is because the GRP system has included most university laws and rules during the last five years, even if the system didn't achieve its full potential; the situation is better than before the GRP system.

8.3.2 What was the justification for the GRP?

The majority believe that, due to the separation of systems before the GRP, the university reached a point that required it to buy an integrated system and database. Before, the situation was messy. Every department had its own systems, which created difficulty in gathering information and data. The aim of the system is to provide information, and the GRP can help provide information and data in an accurate way. An example of the majority view is that of the vice rector and head of Budget and Planning regarding the need for a system that provides information and help with university activities such as budgeting:

> [When you] feed information, you are looking for accurate information. If it doesn't give correct information, it has no value. If the information has been provided is the most important thing. (Vice Rector)
>
> ……..
>
> I can't do the budget without the system now. (Head of Budget and Planning)

Only a minority of three administrators believe that the new GRP system didn't provide accurate information due to the lack of many rules and laws included in the

GRP, which makes the system not usable and makes them wish to return to the previous systems, which covered the minimum needs of the university.

The previous director of the PMO explained how the university selected the system that meet the university's requirements. In the beginning, a committee for selecting the system was formed and started its work by identifying the needs, writing the needs in one document, and sending this document to every department with the expectation of approval or disapproval. This document is normally used to identify and meet customer requirements (Mandal & Gunasekaran, 2003). Other studies mention tasks for ERP customer requirement planning, including needs assessment, choosing the right ERP, matching business processes with the ERP, understanding the organizational requirements, and having an economic and strategic justification (Chen, 2001). This process aims to identify the needs and then select the best system that meets the university's requirements. The literature on identifying and matching customer requirements with the ERP and the organization notes the difficulty of such action and indicates that poor planning for customer requirements is a reason for failure (Chen, 2001). The majority believe that user requirements were identified accurately to avoid the risk of failure. Only a minority of two PMO employees and three administrators disagree. Most requirements identified for ERP aim to select the best system that fits the organization and to customise the system to carry out the tasks required. The majority say that this needs requirement aimed to select an appropriate system. A business engineering process is important to match the ERP requirements and organizational processes, to identify how closely the needs are reflected in the current ERP and what the data requirements are (Rolland & Prakash, 2001; Daneva 2004). The majority believe that the university has conducted business process engineering on its working procedures to help them agree with the new GRP.

Only a minority of three administrators and two PMO employees said that business process engineering was not done in a good way, influencing the implementation of the new system:

> When we implemented the system, I was on the committee for selecting the system required by the university. The first thing we did was identify our needs in HR, Finance, Administrative Communication, Budgeting, and Warehouse Audit. [From] ten systems, we identified all of them. Direct purchases or indirect, we identified all of them and put them in one document. We sent this document to the colleagues in HR, Finance, Administrative Communication, Budgeting, Warehouse Audit, and Purchases. We told them that [these are] the functions; if you [would] like to add anything, please do. (Former PMO supervisor)

One of the majority tells how the system was selected. The selection committee continued its work by identifying the universities that had similar systems and by visiting them. It was found that none of the systems used in these universities fit the university's needs. The universities thus asked the external companies to present their systems and offers. The university chose its GRP from HASAB, a local company, after finding that ORACLE was not able to meet its minimum requirements, which included the job description in HR (according to an interviewee, the most important element in any GRP). HASAB was able to do this. The university has many types of employee, such as health care employees, administrators, professors, and foreign employees, and each type follows different rules and laws. HASAB was able to handle this. Only a minority of six administrators said that, when the system was first implemented, its rules and laws included only administrative staff and temporary staff, while other types of employees (such as teachers, health care staff, and foreign staff) were not included, influencing the successful use of the system at the university.

The majority believe that the selection was based on the needs, not on the name of the software or quality in the market. The alignment of needs with the software seemed to be the most important element for the selection committee. This is highly important in the selection of the right ERP because a failure to select the right system could lead to low organizational performance (Liao, Li & Lu, 2007). The literature mentions many methods and models for selecting the best ERP. One method is a comprehensive one mentioned in Wei, Chien and Wang (2005), who pointed out that the selection process should consider costs, implementation time, complete functionality, user friendly interface, system flexibility, and system reliability. A good reputation, good technical capability, and a supply of ongoing service are also important elements to consider when selecting ERP vendors (Wei, Chien & Wang, 2005). Another study explained that the most important element in selecting any ERP is the fit with the organizational systems; other factors include cross module integration, compatibility between other systems, and the references of the vendor (Baki & Çakar, 2005). Thus, the selection of the ERP systems is based on requirements such as the vendor's financial stability, size, and ability to meet current and future organizational requirements (Verville & Halingten, 2003):

> Sometimes the software available in the market [is] not necessarily the best thing for you; it can be a world-class software such as SAP, an international system. Eighty percent of companies in the US and Europe are implementing SAP. But what defines the best for you is your needs. It [is only] when you define your needs and document your processes based on this [that] you can recognize the best software for you, not [that] the best thing in the market is the best for you. (Former PMO supervisor)

However, a minority of four administrators believe that the selection was not based on the needs of the university for GRP implementation but was made because the vendor director had a good working relationship with the university administration.

Nevertheless, the majority believe that moving from the previous systems to the new system was based on real needs and on IT functions that agreed with the university's requirements. This project was a strategic project due to the balance between the needs and the technology. The purpose of this implementation was to meet the requirements of e-government and the e-university in Saudi Arabia, which was asking public sector institutions to move toward e-services:

> The problem was that you need a system that works in the university environment rules, and the system that looked closer to our requirements was [GRP]. So the committee responsible for the selection has approved the choice. (HR Electronic Services)

8.3.3 How it was implemented?

The research on ERP implementation is vast, but it has focused on investigating several themes, such as critical success factors, change management strategies, enablers and disablers for implementation, and strategic alignment (e.g. Holland et al., 1999; Aladwani, 2001; Velcu, 2010; Bingi, Sharma & Godla, 1999). For example, Aladwani pointed out that change strategy, development and deployment techniques, project management, organizational structure and resources, management style and ideology, communication and coordination, and IS function characteristics are all critical factors to consider while implementing ERP (2001). Others have pointed to similar successful ERP implementation issues, including top management support, reengineering business processes, integration with other systems, selection and

management of consultants and employees, and training (Bingi, Sharma & Godla, 1999).

The latest research on ERP implementation has focused on areas such as the identification of critical success factors (e.g. Chauhan, Dwivedi & Sherry, 2012), the selection of ERP systems (e.g. Findik & Kusakci, 2012), ERP implementation methodologies (e.g. Erkan, 2011), ERP implementation evaluation (e.g. Sarfaraz, Jenab & D'Souza, 2012), and the importance of management innovation and consulting services for the success of ERP implementation (Lapiedra, Alegre & Chiva, 2011). This study is different in that it presents an in-depth case of a university by looking at the context of its ERP implementation and the power/knowledge of consultants and the PMO. To understand the context, the researcher studied recent changes at the university, the selection of the system, how the customers' requirements were matched with the system, and the details of how it was implemented. The research provides a theoretical framework for the power/knowledge of the PMO) and its consultants by examining their power and production of absorptive capacity. It provides a comprehensive picture of the ERP implementation, development, and use through in-depth information on the case.

According to the majority, when the moment of ERP implementation came, the university implemented the system by considering the following factors:

- Top-management support
- Training
- Business-process reengineering
- Project management

- Consultant involvement
- ERP package selection
- Performance evaluation.

However, a minority of three administrators and one consultant mentioned other factors: leadership, legacy system management, system testing and cultural change, process management, and communication.

In this case of ERP implementation, development, and use, the majority believe that the university bought the system with its minimum requirements and that the implementers used a gap analysis to identify gaps and what remained to be developed. When the system began operating, the PMO visited each department every two weeks to identify problems and to follow up.

The majority also believe that, during the implementation and development of this case, top management support played a central role in ending resistance and making the system operate. This top management support was reflected in the steering of committee meetings and in responses to the departments' complaints about the system's faults. Forming a committee headed by the rector and following the system implementation were two of many important factors that helped with implementation:

> The management administration actually, especially [the previous rector]—when I talked to him, he formed a guidance committee and became its chairman. I used to communicate with him directly. I think there was huge support, and I think without his support the system would have failed to be implemented. The HR tried to stop the implementation of the system. They sent a letter [that was] three pages to the rector trying to stop the implementation. Most problems were solved. The rector [reiterated that] the university had

> no options except implementing the system. If most modifications got refused, there was a need to work with the supervisor of the project to overcome [such] problems. There was a huge top management support. (former PMO supervisor)

A minority of five administrators believe that the top management's pressure to implement the GRP system quickly negatively influenced its implementation and use, claiming that the top management didn't listen to HR complaints about the system before implementation and that the system did not include all of the rules and needs of the university.

During implementation, the implementers and the ERP faced enormous resistance for various reasons, including psychological factors (e.g. uncertainty), economic factors (e.g. switching costs from the old system to the new system), technical factors (e.g. training), and organizational change factors (e.g. losing control) reasons, all of which may explain why resistance occurred at the university (e.g. Hirscheim & Newman, 1988; Krovi, 1993; Lapointe & Rivard, 2005; Jiang, Muhanna, & Klein, 2000; Klaus, Wingreen & Blanton, 2007). The majority believe that the older generation's resistance occurred due to the possibility of losing control and power under the new ERP system:

> However, what caused the system's implementation delay is the older generation's resistance. (Purchases employee responsible for ERP)

A minority of seven administrators believe that there was no real resistance but that the system didn't meet the needs of the university and required a heavy customization; they claim that, when the system was customized and met some of the needs of the university departments, they started using the system directly.

Some of the interviewees discussed the implementation strategy. The director of Electronic Services in HR said that there were two opinions regarding the best ERP implementation strategy and about when to stop using the old system and begin using the new one. The IT people in HR decided to work on both systems until they achieved a successful implementation of the new system. Some of the ERP implementation cases reported in the literature indicate that there are two main implementation strategies: a parallel strategy and cutover strategy. Employees prefer to either stop using the old system and work straight away on the new system (the cutover strategy) or work in parallel with their old systems until they are ready to stop using them (parallel strategy). One study reported that 36% of the ERP implementation cases examined adopted a parallel strategy and 26% adopted a cutover strategy (Umble, Haft & Umble, 2003; Ehie & Madsen, 2005). In this case, the university adopted a parallel strategy.

The system faced problems when it was first implemented. These problems were faced by returning to the PMO to deal with the problems that occurred during the implementation stage. The university agreed on a procedure that started by explaining the problems perceived by the users, which then had to be signed by the manager. Then, the problem was analysed through the PMO. If there was a real issue, it was sent to the company for modification:

> The relationship used to be hot because there used to be serious problems at the beginning. But the role they play is helping in assisting or solving problems in using the system in HR. We had to go back to the Project Management Office because they [were] responsible [for] following up with any problem faced by the departments, and [we couldn't] deal with the company directly. Their role used to be central [when we were] operating the system

> for [the] first time, but the system now is stable, but still necessary. (Assistant Manager of HR)

A majority in some departments believe that the implementation went faster than in other departments due to the users', the PMO's, and consultants' active communication with top management and the providing of rewards for users. However, a minority of five administrators believe that top management communicated only with powerful people in the university and that they influenced the implementation. Those powerful people include HR, which plays a central role in the university, to which the university provided financial support such as by allowing more than two system implementers to be based in the HR to follow up with the implementation and make sure that the system was used according to the needs of HR, while other departments didn't have this support, influencing the success and use of the GRP at the university:

> HR [is] strong. They have communication with the Rector. They asked them to implement the system. They asked for implementers to be based in HR because of the nature of HR work. They have employee leaves, salaries, [and] promotions, so the deputy rector said, 'OK'. And in one year, they succeeded. They gave 100% bonuses [for making sure] the system was implemented successfully. (Employee in the Purchases department)

The majority also believe that consultants and top management played a central role in the implementation. Wang and Chen (2006) found that external consultants help with communication and conflict resolution and that top-management support helps with the quality of the system. In our case, the majority believe that the PMO plays the role of communicator between the internal and external bodies, the vendor, and consultants, which improves communication and reduces conflicts. We found that this agrees with prior research indicating that top-management support played a role in

implementing the system and having it accepted as a new reality at the university. However, a minority of seven administrators said that the consultants, PMO, and top management played a limited role in the implementation and that system implementers, programmers, and system analysts played a central role because they are the ones who implemented the users' needs and requirements. For example, in the early days of implementation, the company provided implementers to various departments to follow up with any problems. Every department had one implementer or more (up to six implementers in HR on one day). Their role was to overcome any problems that were faced by the users, but, if there were central or core problems, they had to be sent to the company for the required analysis and programing:

> During the implementation, the company used to send implementers from time to time to make sure that the system was used and [that] there were no serious problems. The implementer [who] usually came here didn't have the authority to enter the source in a way to deal with its code. They had programmers, and they brought us programmers and systems analysts to understand the requirement and needs of the users. (Assistant Manager of HR)

The majority believe that there is a problem with incomplete rules in the system. The university had to start from the beginning by entering the rules and establishing new interfaces. One interviewee gave an example:

> The biggest problem we faced while implementing the system at the beginning was [that] the screens [interfaces] were not completed, which meant that the rules were not available in the system. The company used to have ready-made software implemented to other ministries with fewer requirements. The university had university staff, teacher staff, health employee staff, the foreign staff, etc., [and] each kind of those categories had different rules for everything. Once the system came to us, they seemed used to

> dealing with two kinds of staff, or three in the maximum, the general staff, users' staff, and the temp staff. The staff that did not exist in the system were the health staff, the foreign staff, [and] the teachers' staff. So, [they asked] the company to provide these kinds of staff in its system with all rules and procedures. These things depend on the kind of description provided. When this description arrives, the development stage starts, and sometimes it gets done or requires further development. What was needed was the implementation of our needs. (Assistant Manager of HR)

However, a minority of three project management office employees and one consultant believe that the software has the minimum rules and procedures and it's the available in the market in terms of comparison with other systems. Because the system was implemented in other public organizations meant the system has the minimum procedures and rules required and it used successfully from those organizations.

According to majority of the interviewees believed that the contract was a major problem that affected the implementation, as the company had to return to the contract for modification, and if it was not available in the contract, they would estimate high costs, which stopped the process of the implementation and development of the system. As has been showed in Wu, Ding & Hitt's (2004) study, many outsourcing contractual agreements with vendors and implementers reached a level that was less than satisfactory. In addition, as Robey, Coney and Sommer (2006) explained, traditional contracts do not match with ERP implementation methodologies. Usually, contracts are process oriented, and ERP implementation methodologies are dependent on the outcome. This situation leads to many problems in ERP implementation, development and use, for example in modifying the interfaces.

> They didn't have any problems with this. The problem was with the company. It's a private company, and they were looking for profits in each request for development or modification. This way of looking for profits made [securing] financial support a barrier. But the university liked developing its system, but it considered these high prices for modification or development, which stopped the process. If the contract was written correctly, all different kinds of staff and rules must be available in the system. In the requirements stage, there used to be some weakness which influenced the implementation later. (Assistant Manager of HR)

However, a minority of two consultants and two project management office employees believed that the contract was written correctly and gave the university many advantages; for example, if any new laws went out, the company approved the change or the development request for the GRP system free of charge, and any new modification request that added value to the system and served the needs of other users in other public organizations was approved and developed free of charge.

The majority believe that the role of the implementers differs from the role of the consultants in that the implementer visited the departments using the systems to help with successful implementation and served as the programmers. The consultants (either internal or external) were there to follow up with the implementation, giving advice about solutions to the problems faced by users and sending an analysis to the company with which to create the needed solution:

> The implementers are from the company. They are sent by the company to work in the administration or other departments to solve the user's problems in using the systems. If it didn't have a problem in terms of coding, sometimes the users had less experience, so the implementers guided the users. If there was a problem in coding, they played a role in aligning the needs of the

> system and the university and sent this to the company to deal with the request for modification. (Assistant Manager of HR)

However, a minority of three administrators believe that the role of consultants should be that of transferring the complex knowledge required by the university, not just delivering advice, and helping employees understand programming and system analysis in order to help the vendor provide the needed GRP solutions.

The majority said that implementation was assigned to the PMO, which followed the implementation along with university departments and the company, and refined procedures, because implementation was complex. With the implementation led by the company but operational and benefits realisation led by the PMO, the project was assigned to the PMO to ensure smooth implementation. The same majority said that the implementation required experts who specialised in implementing GRP in the public sector. This is why establishing a house of expertise in the GRP (the PMO) was done mainly to provide the expertise needed to successfully manage the project. The experts had to have a department responsible for communicating between the university – with its seven departments – and the vendor as well as for training and following up on the modification requests. The dean of Electronic Services is an example of the majority:

> Any organization has to lower their expectations. As I said, with a large organization, usually, to move from a nonexistent system or an old system to a new system, there is a lot of work to migrate. The ERP have several fields, several functionalities, and can have limited functions, [like] just HR and payroll, or you can have the full automation and staff like this. So, at the beginning, the scope or the vision of GRP [was] just, at least, just 'let us have our employee information, and let us create the payroll. If we do this we are happy'. Just not exactly like this, but [I] am just minimising [to

> give] an idea [of] how simple the expectations [were]. Of course, I was not in charge of PMO then, but I think the university [did it] in a very smart way; so they used the divide and conquer way. They took the warehouse and took care of it. They said 'let's tackle human resources until they include all the units on GRP [ERP]'. GRP is now running for four or five years, so we have been working on this system for quite a long time. (Dean of Electronic Services)

The training started before the implementation of the system. The majority believe that the training was like a course given by lecturers to explain the system but that, when the implementation started, problems started to appear that were not covered in the training. There is an agreement among ERP researchers on the importance of user training; it is considered one of the critical success factors for ERP implementation, but organizations usually provide a low budget and too few trainers, which then influences the implementation and use of the system (Choi, Kim & Kim, 2007). Research (e.g. Bradley & Lee, 2007) on ERP training has found that it is a neglected part of many ERP implementation projects and that user training satisfaction is a very important factor in the success of ERP implementation. According to Albadri and Abdallah (2009), think that ERP training in its existing forms is 'inadequate because it does not address all the relevant issues and are not effective in preparing users to adopt and make effective use of the system' (p. 2). The head of a HR unit has explained how the training occurred and how it influenced the ERP implementation:

> See, the time of training and the time of implementation are different. The time of implementation is another stage. The time of training was like university lectures. You saw someone explaining the system, and [when they brought] screens, there wasn't a real implementation. When the implementation started, the problems started to appear. And as you know, the system is new [and has]

> never been tested here. Day after day and the university is huge. Three other universities used to belong to us and their work used to be with us. (Head of an HR unit)

However, a minority of two consultants, two PMO employees, and three administrators believe that the training was delivered in every good way, saying that the training covered all the information that needed to be known regarding the GRP system and that what make the training successful is that the employees who passed it were given a certificate that can be used as points for promotion.

Implementers were offered to each department to help with the implementation; if there was a problem, the user could contact the implementer, and the implementer could inform the vendor so that the problem could be solved. In August 2013, the implementers were not based in the departments (except in HR). If there was a problem, it had to be signed by the manager of each department, then sent to PMO for analysis, and then sent to the vendor, who would execute the solution.

The majority believe that the knowledge and expertise of the systems implementers was a central reason for the success of the GRP implementation:

> We used to have an implementer who was keen and responsive, [also] excellent. His knowledge and expertise was a key. (Head of an HR unit)

However, a minority of seven users considered the implementation a failure:

> The software failed. Still some people resisted the system. They said it's not going to succeed, and [it's] difficult to use. So they didn't implement the system properly, and [they don't even want] acknowledgment certificates. (Employee in the Purchasing Department)

The majority believe that the system reached the level at which work could not be done without GRP:

> We can't work if we shut down the system, and for everything to become manual is impossible. (An employee in the Salary department)

Only a small minority said that work has not changed much since the GRP implementation because IT was used for recording data and they use the GRP system only as a data recording system.

8.4 Summary

The majority believe that the GRP was forced on them from the top despite the huge resistance it faced. This resistance was a major challenge. It was overcome through top management support as a main factor, the majority believe. During ERP implementation, Electronic Services in HR used a parallel strategy (i.e. working in both the old and new systems) until the university was ready to close the old systems. The company implementing the system provided implementers to all departments to help with the implementation. The majority believe that the system's main functionalities were covering almost half the needs of the university, so the university asked the vendor to enter the rules that were not covered in the system and make new interfaces. The contract was a problem for the university according to the majority because, in each modification, the company asked for further expenses. The majority believe the contract was not written correctly. The implementation was managed by a PMO at the university that was established to follow up the implementation and reduce the number of procedures required for implementing and developing the GRP. They implemented the system one department at a time. Training was given to the users by the implementers before implementation; a majority of administrators found

this training to be incomplete. Some of the participants thought the implementation was successful, and some thought it failed due to the resistance and the low number of functionalities the system provided. The next chapter will look at how the power/knowledge of consultants and the PMO was institutionalised.

Chapter Nine: Power/knowledge of the PMO and consultants

> Power is an important aspect of the social systems that make up organizations. The concept of power helps to explain how organizational decisions are made and executed, despite opposition that results from competing goals and desires. (Setterstrom & Pearson, 2013, p. 86).

9.0 Introduction

This chapter addresses the fifth research objective/question – to produce a theoretical framework for how user resistance was used in the institutionalising of power/knowledge of consultants and the PMO. This chapter covers the second part of the discussion and findings of the 34 interviews regarding the PMO, the in-house centre for expertise, and consultants. It draws on agency theory, institutional isomorphism (especially mimetic and normative isomorphism), and the legitimacy of both the consultants and the PMO through the legitimacy concept drawn from structuration theory, while adding an analysis of the power/knowledge of the PMO and consultants focusing on two notions: the recruitment of the consultants and the PMO and the resistance of end users and managers. Finally, it also proposes an answer to the question of how the power/knowledge of PMOs and consultants is institutionalized through the application of Clegg's (1989) circuits of power and absorptive capacity.

9.1 Similarities among organizations implementing ERP

There are similarities among organizations, such as the challenges they face, which thus play an important role in the implementation of ERP. For example, organizations facing similar challenges that require the intervention of PMOs and consultants.

Because organizations are facing similar risks, they apply similar solutions. Because organizations require similar employee features, they seek similar characteristics, such as the professionalization of the PMO and consultants. These similarities can influence power/knowledge because they influence the knowledge sources and the knowledge acquired by absorptive capacity; this can be linked to episodic circuits of Clegg's circuits of power because similarities make other actors do something that they would otherwise not do. These similarities can be explained by applying neo-institutional theory.

Neo-institutional theory (DiMaggio & Powell, 1983) assists with explaining and recognizing powerful forces that shape actors' behaviour and that make organizations behave in expected ways and adopt similar forms – in what is sometimes called 'isomorphism'. It also explains how organizational structures and practices spread across institutions. Organizations usually become more like each other by implementing similar organizational structures and practices. In neo-institutional theory, the process that explains these similarities, or homogenization, among organizations is known as 'institutional isomorphism' (DiMaggio & Powell, 1983). At least three types of institutional isomorphism have been identified. Coercive isomorphism occurs as an outcome of the official and unofficial demands placed on managers (who seek clear institutional procedures and practices) by other institutions on which they are reliant. Second, mimetic isomorphism occurs when an institution copies other institutions in an uncertain environment because doing so reduces risk. Adopting mimetic isomorphism can also reduce the costs of finding a solution since organizations are confronted with similar difficulties that have uncertain resolutions. Third, normative isomorphism is the outcome of the professionalization of certain institutional actors, for example managers, administrators, and consultants. The

professionalization of organizational actors results in their having similar experiences and perspectives. These similarities lead these actors to adopt similar solutions (Hu, Hart & Cooke, 2007; DiMaggio & Powell, 1983).

The GRP implementation and development have been described in the previous chapter. This section will show a different side of that process. First, most of the interviewees said that the systems were implemented because the same systems were implemented for other public agencies that have similar rules. The university was understandably reluctant to test a new system from a new company that had yet to test the system for other public organizations. The best interests of the university were served by implementing a system designed for other public organizations seeking the same kind of system. This is a reaction to uncertainty, which results in mimetic isomorphism. This project was managed by a PMO that copied the experience from another public institution, the Shura Council (the advisory council in the Saudi state), to achieve a successful implementation of the GRP. Thus, the university had to adapt to a system designed for other organizations:

> We bought the systems after we visited three universities and looked at their systems; we found that none of their systems was suitable for our institution. We chose the system after we saw that GRP (ERP) has most of our administrative work written into the system, and a number of public agencies and ministries have bought the same system. (Previous director of PMO).

Not only was the technology of the system similar but so was the organisational configuration designed to implement it, as the university included in its structure a PMO on the advice of the PMO supervisor, and his experience in implementing a PMO for the Shura Council reflects mimetic isomorphism:

> The idea of adopting a project management office at the university was my idea, and I tested it in the Shura Council and it succeeded. (Former PMO director)

However, a minority of three administrators and one consultant say that the adoption of the system by other organizations was not a main reason for selecting the system and that the university bought the system due to its reasonable price and its benefits; they also denied that the university tried to copy other organizational practices, meaning that mimetic isomorphism may not have influenced the implementation of the GRP and that other factors such as price and benefits may have played a role. One administrator explains:

> The reasonable price of the GRP is what led the university to choose the system by the university to be implemented. Also not because the system was implemented by other organizations was the reason for selecting the system but the benefits it can bring to the university. (Audit administrator)

Second, the majority view that the PMO and consultants with specific qualifications and experience in project management and GRP implementation and development were adopted to identify similar solutions and what is acceptable in the ERP implementation and development demonstrates normative isomorphism:

> The recruitment of consultants in the project and project managers was based on qualifications and experience. (GRP project manager).

However, a minority of two consultants and one PMO employee believe that the selection of consultants and PMO was based on reputation, not only on qualifications, meaning that normative isomorphism along with factors such as reputation played a role in the GRP implementation. A minority member indicates this:

> Reputation played a significant role in the selection of the PMO and consultants with the qualifications and experience. (Consultant C2)

The literature on IS and neo-institutional theory has started to grow in the last few years. Neo-institutional theory has been applied to the study of information systems security, where it is used to discover whether institutional isomorphism has played a role in information system security initiatives by focusing on external and internal institutional influences (Hu, Hart & Cooke, 2007). Tingling and Parent (2002) have shown that mimetic forces play a significant role in the choice of IT systems by executives. Teo et al. (2003) demonstrated that all institutional forces are central to the implementation of new technology in institutions and provide evidence for the role that institutional isomorphism plays in technology implementation. This supports the results of this research, as the majority believe that the committee responsible for selecting the ERP system chose it because the system was implemented for other public organizations that have similar rules and working procedures – a clear reflection of the force of mimetic isomorphism. Also clear was the adoption of the force of normative isomorphism, whereby the university adopted a PMO and recruited consultants with a specific professionalization gained through experience with project management and ERP implementation and development. Thus, the results of this research indicate that institutional isomorphism and mimetic isomorphism played a significant role in the implementation and development of ERP. However, neo-institutional theory partially explains how the organization chose the system and how the selection of different actors in the implementation and development of ERP happened.

9.2 Legitimacy

The legitimacy of the PMO and consultants plays an important role in the success of the implementing of ERP in organizations. This legitimacy is demonstrated in the reflection of rules and laws in the ERP system according to structuration theory. Legitimacy influences the power/knowledge of the PMO and consultants, as legitimacy influences knowledge assimilation and transformation from absorptive capacity and helps explain the social circuits of Clegg's circuits of power.

Structuration is a continuing process, rather than a stable property of social systems, that seeks to overcome the tension in social theory between agency and structure. Giddens (1984) explains the different elements of his theory. *Structure* comprises the rules and resources that create the structural properties of a social system. The *system* involves the shapes of the communications among actors. *Structuration* is related to the circumstances that manage the continuity or transformation of structure and consequently the reproduction of systems. Agents practice rules and use resources that create social systems (i.e. structures) in their interactions (Kouroubali, 2002). According to Kouroubali (2002), Jones (1998) identified four classifications of structuration theory in IS. The first is the modification of the theory to accommodate the construct of technology. The second is the application of the theory to analyse case studies and explore the theory's strengths and limitations in empirical research. Third, it has been used as a meta-theory, a general approach to examining actions, perceptions, and structure and their interconnections. Fourth, a selection of Giddens's concepts are used in combination with newer theories, such as actor network theory, to guide IS research (Kouroubali, 2002). This section of the thesis differs from other studies in the way it explains how the PMO and consultants have become legitimate actors at the university.

Structuration theory focuses on how agents draw on structural rules and resources while also performing those rules and resources. The central concept is the legitimacy to act, which is the acceptance by others of the right to act. This research uses the concept of 'legitimacy' as understood by structuration theory in concert with other theories (i.e. agency theory, neo-institutional theory, Clegg's circuits of power, and absorptive capacity) to understand the power/knowledge of consultants and the PMO in the implementation and development of ERP in the university setting.

In using structuration theory to explain the power/knowledge of consultants and the PMO, there is a need to explain the rules and resources that create social systems in ERP implementation and development. Rules are partially reflected in, for example, the writing of the software by the programmers and the resources available (i.e. the budget and the generous financial support for ERP implementation and development). Other rules include governmental rules and university rules (what is accepted in the implementation and what is not). For example, the managers cannot dismiss employees who resist the system's implementation and development because only the Council of Ministers has this authority. These rules and resources create a structure. These rules reflect and underpin the legitimacy of the actors, which is the focus of this section. When the structure reflects the rules and resources of agents, it defines the legitimacy of the agents in the structure. Communication happens among consultants, project managers, and users, with managers reflecting the system. Structuration, or the making of social systems, is the practice of rules and the use of resources by actors.

The legitimacy of the PMO and consultants results from their knowledge of the norms comprising the rules of work at the university and from their technical knowledge of the system. For example, the HR department, which can be considered the owners of the ERP system, reflect the rules of the HR department written in the new system. The

more the rules are reflected in the ERP system, the more legitimacy the consultants and PMO have. However, in this case of GRP implementation, according to the majority, the rules were not reflected well, demonstrating that the PMO and consultants lack the legitimacy needed in such projects. This is because a lack of legitimacy on the part of the PMO and consultants causes a poor alignment of the system with the organization:

> The GRP system does not reflect the rules of the governmental civil work laws, which shows that programming of the systems does not have major rules needed in our work. (HR administrator)

The poor writing of the programming of the ERP system (according to the majority) has affected the users' sense of the legitimacy of the system implementers, project managers, and consultants and produced an ERP system that suffers a misalignment with the university. This has demonstrated to the users that system implementers, project managers, and consultants lack knowledge and experience, and this, in turn, reduces their legitimacy and affects the results of the ERP implementation and development at the university. For example, the users may decide that the system implementation is a failure if the norms and rules are not reflected in it.

However, a minority of two PMO employees, one consultant, and three administrators believe that the rules and needs of the university are reflected well in the ERP system, which means that consultants, the PMO, and system implementers have legitimacy for the users and managers at the university. An example of this minority view is an opinion of a PMO employee:

> Currently, the rules and laws of the civil service and other rules for different types of employees are reflected well in the ERP system, and the consultants, system implementers and PMO worked very hard to achieve this level. (PMO employee)

This section of this research shows how the PMO and consultants have established legitimacy through technical knowledge and experience, but, according to the majority, the failure of the system to perform as expected brings their legitimacy into question. This explains how the PMO and consultants sustain their position and re-establish legitimacy in their struggle during ERP system implementation. Structuration theory provided an explanation of the agents' (i.e. PMO's and consultants') legitimacy.

9.3 Interests alignment

Interests and incentive alignment among the top management, users, consultants, and the PMO in ERP implementation play an important role in the success of this type of system implementation in organizations. Agency theory explains how interests and incentive alignment is achieved and shows the importance of this alignment though incentives and design contracts that reflect it. Power/knowledge is reflected when interests are aligned through incentives and influences knowledge exploitation from absorptive capacity because it applies the advice of consultants and PMO input in a system circuit that produces secure outcomes.

Agency theory discards the traditional view whereby organizations have a cohesive, income-maximizing identity and posits instead that organizations are made up of agency relationships constructed by contracts between self-interested agents and principals (Agarwal, 2009). Economists developed agency theory, and many organizational researchers have used it. Agency theory was first developed to look at the risk-sharing problem among parties; it introduced the 'agency problem', which occurs when different parties have different interests and divisions of labour (Eisenhardt, 1989). Agency theory argues that organizational problems happen when the principal assigns duties to agents who do not have the time or the ability to

perform the work requested. Agents are opportunistic and will give falsified information and use resources for their own personal use. Agency theory posits that there is therefore a need to monitor agents and lead them to work by designing incentives.

The main issue in agency theory is that an agent will not consistently act on behalf of the interests of the principal unless their self-interests are met by incentives. Agency theory addresses two issues: the agency problem that occurs when there are conflicting interests between the agents and principals and it is difficult and costly to confirm the agent's behaviour, and the risk sharing that happens when the principals and agents have differing attitudes to risk. The theory concentrates on making the best contract between the principals and agents, which mostly benefits the principals. Because the agent will always act according to his or her self-interests, agency theory identifies two obstacles to effective contracts: moral hazard, the lack of effort on the part of the agent; and adverse selection, the misrepresentation of the ability of the agent.

The theory defines information as a commodity that can reduce the problems arising from the self-interests of the agents. In order to come up with the best contracts – either behaviour-oriented or outcome-based to reduce agency costs – an organization needs to assess the costs of monitoring, motivating, and confirming the commitment of the agent (Nilakant & Rao, 1994; Eisenhardt, 1989; Basu & Lederer, 2004).

Agency theory can also be used to explain power and politics because, according to Eisenhardt (1989), it is similar to the political understanding of firms insofar as it acknowledges the pursuit of self-interests at the personal level and goal conflict at the organizational level. For both agency theory and the political understanding of

organizations, information asymmetry is related to the power of agents. Moreover, for both political science and agency theory, goal conflicts can be resolved through bargaining, negotiation, and coalitions, but agency theory seeks to resolve goal conflict through incentives alignment. This offers agents secure outcomes, which is a reflection of the system circuit of Clegg's circuits of power.

The research on agency theory and IS has studied different themes such as the consultant–client relationship as a predictor of ERP implementation project success (Basu & Lederer, 2011), the interpretation of IS project management (Mahaney & Lederer, 2003), IS and decision quality (Wall, 2008), and coordination in consultant-assisted IS projects (Liberatore & Luo, 2010). Closer to the concerns of this thesis, Haines and Goodhue (2003) have used agency theory to come up with a framework that explains how consultant involvement and knowledge of the implementing organization can impact the outcome of the project, and Basu and Lederer (2004) developed a model of testable propositions for applying agency theory to study the relationship between implementation consultants and client organizations deploying ERP systems and thus evaluate how the relationship affects implementation success.

The notion of self-interest is related to whether the agents do not act according to the principal's interests. Each of the parties – the agents and principals – have different interests, such as their own profit motives, and principals cannot manage or monitor the actions of agents exclusive of costs (Bahli & Rivard, 2003). Self-interest can result in selfish behaviour, but, if there are no goal conflicts, the agent will behave according to the principal's interests without the need for monitoring. Goal conflict requires outcome-based contracts. In these contracts, there is an alignment of the preferences of the agents with those of the principals through incentives that secure the actions required by the principals and thus reduce the conflict of interest between

the agents and the principal. Agency theory places much importance on self-interest and incentives. The theory assumes that most of organizational life is based on self-interest. Information helps reduce self-interest conflicts between the agents and principals: when a principal has information about what the agent is doing, the agent will work for the principal's interests. When the agent acts in a way contrary to the interests of the principal and the principal cannot see what the agent is doing, an agency problem will occur (Eisenhardt, 1989; Agarwal, 2009; Haines & Goodhue, 2003). Basu and Lederer (2004) confirm that incentive alignment via reward structures can solve the conflicts of interest between the principals and agents and assist in curbing agent opportunism.

According to most interviewees, the university administration, as the principal in this case study, has the goal of producing a high-quality system that produces accurate information. This is important because it will help top management make decisions. An example of this majority opinion is that of the vice rector:

> When the system produces accurate information, this is the most important thing. (Vice rector)

Another goal is the satisfaction of user needs because this will improve the users' work and reduce their resistance. An example of this majority opinion is that of an HR administrator:

> The university administration has supported and kept supporting the customization required by the users and authorised improvements that are highly expensive. (HR administrator)

The final goal of the university administration is producing an error-free system. An example of this majority opinion is that of an HR manager:

> Producing an error-free system is a goal of the university administration, which has continued customizing and supporting the ERP implementation for a quite a long time to meet the needs of the university. (HR manager)

However, a minority of three administrators, one consultant, and one PMO employee believe that the university administration's interest is to implement an ERP system to agree with the requirements driven by the government's plan to move toward e-government and public sector e-services. They believe that pressure from the government made the university move toward e-services and implement ERP. An example of this minority is an opinion of a consultant:

> The government has pressured and asked the university to move toward automating all activities as part of its plan of e-government, and this led the university to implement the GRP as it enables transforming the university to e-services. (Consultant D)

According to the majority of interviewees, the goal of agents such as the PMO is on-time project completion because this is one of the measures of PMO success in ERP implementation. An example of this majority is an opinion of the PMO manager:

> We worked hard to implement the system with different parties on time, while other universities take years, such as University X, which has been implementing ERP SAP for two years but has not launched the system yet. We have implemented the system within the timeframe we wanted. (PMO manager)

The majority of interviewees also believe that one of the interests of the PMO was completing the ERP project within the budget but that, because the university administration cares about user satisfaction, it authorized many requests for ERP

improvement that were not part of the budget. An example of this majority view is an opinion of a PMO employee:

> I refused many requests from users, as the Vice Rector in a meeting told me to do the needed changes that are requested from the users and not to worry about the prices that the vendor required. (Project Manager)

However, three administrators and three PMO staff believe that the interest of the PMO is developing their skills and knowledge of ERP implementation in universities. Such skills and knowledge could open new doors, as they can be used in other ERP implementations in other public sector organizations. An example of this minority view is an opinion of an administrator:

> The main interest of PMO people is developing their skills and knowledge of implementing GRP or ERP in universes in Saudi Arabia. (PMO employee B)

According to the majority, one of the users' goals is professional advancement. This influences ERP implementation success because the university provides certificates for the completion of training, which count towards the points required for promotion; this is helpful because it helps ensure the success of the ERP implementation at the university. An example of this majority view is an opinion of an HR administrator:

> The university provided training for using the system and completing the training will count toward points that help users in promotions. (HR administrator)

Another goal of the users is the production of an error-free system because this would improve the accuracy of the work done using the ERP and reduce user resistance. However, the system required a lot of customization, meaning that it failed user needs at the beginning of implementation. Over time, however, the users helped customize it to the needs of the university and achieve an error-free system. An example of this majority view is an opinion of a purchases administrator:

> The system at the beginning had a lot of problems, such as the errors that resulted from the programming of the system in the beginning. We helped customize the needs of the university in the system in order to achieve a free-of-error system. (Purchases administrator)

However, a minority of five administrators believe that the users wanted to increase their influence at the university because they were threatened by the ERP, by which any employee can deliver any kind of work since it includes all relevant rules, laws, and procedures. An example of the minority view is an opinion of an administrator at the warehouses audit:

> One of the aims of users is to increase their influence in their departments and the university, but the GRP has decreased this influence. (Warehouses audit administrator)

According to the majority, the consultants had the goal of professional advancement because their involvement in ERP projects at universities will increase their experience and thus attract customers who want to implement ERP at universities. An example of this majority view is an opinion of an ERP consultant:

> We helped in advising on ERP implementation in many sectors, but higher education is a new field to us, which encouraged me to accept consulting in this ERP project. (ERP consultant)

However, a minority of two administrators said that the interest of consultants was to secure financial benefits from the university, as public sector organizations pay a lot of money to consultants on their projects. An example of this minority view is that of an administrator at the administrative communication department:

> The main interest of consultants in this ERP implementation is their focus on securing financial advantages from the university. (Administrative communication administrator)

This demonstration of goal conflict among principals and agents supports the agency theory understanding that agents and principals have different goals and that the solution is introducing incentives. The university administration (the principals) has, according to the majority, aligned its interests with those of users by providing training at the beginning of the ERP project implementation. Rewards for completing the training include points that count toward promotions. According to the majority, however, there was no clear alignment with the interests of the PMO and consultants, as the university administration did not provide incentives for them, other than the normal fees. However, a minority of six administrators believes that there was not a clear alignment of interests between users and university administration in the ERP implementation due to the weaknesses of training delivery to users; the financial support given to the employees who completed the initial training applied only for a short time. A minority of four administrators believe that there was an alignment of interests between the university administration and the consultants and the PMO because it provided them generous salaries and bonuses during ERP implementation.

According to the majority, the incentives to encourage users to adopt the system through training worked only at the beginning of the project. What was needed, from the principal agent point of view, was to keep providing incentives throughout the implementation and use them until full implementation success was achieved to make sure that users assisted the implementers. What was also needed, according to agency theory, was to provide incentives for consultants and the PMO to ensure an alignment between the interests of the university administration and those of the consultants and the PMO.

There are limitations to incentive structures in organizations. According to the majority, they are expensive, and not all organizations are capable of providing them. An example of this majority view is the following:

> The ERP implementation required a huge budget that included incentives for users as part of the training for using the ERP. The university cares about developing the system but it considers the high costs of such incentives. (Project Manager, D)

This study finds, in line with the agency theory, that incentive alignment occurred during ERP implementation and development and helped achieve success.

Agency theory is useful for explaining system circuits in Clegg's circuits of power (1989) because it assumes that incentive alignment enables the university administration (the principals) to secure outcomes. It also has other strengths; Eisenhardt (1989) explained that the theory provides a complex view of organizations.

Agency theory also has a number of weaknesses, such as being hard to test empirically, neglecting the exploitation of workers, being minimalist, being tautological, lacking rigour, and providing only a partial view of the world (Eisenhardt, 1989). Furthermore, agency theory is not generalizable (Nilakant & Rao,

1994). Critics such as Liberatore and Luo (2010) have argued that agency theory is too simplistic and narrow in defining the principals and agents. The problem with aligning the interests of principals and agents is that it may not be ultimately successful. One of the main criticisms of the theory is that it is over-rational and not complex enough in its representation of interests, as it generally has an undersocialised (Granovetter, 1985) view of actors.

9.4 Power/Knowledge

In this section, the focus is on proposing an answer to the research question of how the power/knowledge of the PMO and consultants becomes institutionalized. To answer this research question, this section defines the PMO and discusses how the PMO is established, why there is a need for it, the role of consultants, the consultants power, how the PMO is selected, the PMO's power, the role of the PMO, and its power/knowledge.

As explained, the PMO is a house of expertise that aims to minimise failure. Dai and Wells (2004) define it as 'an organizational entity established to assist project managers, teams and various management levels on strategic matters and functional entities throughout the organization in implementing PM principles, practices, methodologies, tools and techniques' (p. 524). External consultants played a role alongside the PMO by providing advice on ERP implementation.

According to the majority of interviewees, the previous experience of the PMO supervisor led to the idea of establishing a PMO at the university. The majority explained that this idea was first implemented at the Shura Council. After it succeeded, the previous supervisor took the idea to the university. The PMO supervisor's experience was thus the tool that enabled the plan to implement the

system at the university. This experience enabled him to convince the university. However, the Shura Council's context was different to the university's, which does not guarantee success. The implementation of ERP in the Shura Council was used as a justification for establishing a PMO at the university. As the university's system needs differ from those of the Shura Council, this affected the success of the ERP implementation. A PMO brings many benefits such as helping the management of the university's ERP project and aligning the needs of the university with the requirements of the vendor:

> I first advised the Shura Council to implement PMO to help with the ERP implementation because I believed that PMO can greatly help the organization implement the ERP system. (Former PMO supervisor)

A minority of three administrators and one consultant believe that the establishment of the PMO at the university was not needed for the ERP implementation. This minority believes that the PMO is not needed due to its high costs and because, as it plays an administrative role, it takes an enormous amount of time to study the requests for customizing the needs of the university, whereas having the vendor communicate directly with the university departments implementing the system would be better. An example of this minority view is an opinion of a consultant:

> To be honest, the existence of PMO was not needed and it cost the university a lot of money, as they employed many people and they stopped the ERP development many times. If there are direct communication with the developer, the implementation will be faster and will achieve the goals of the university in implementing the systems. (Consultant B)

According to the majority, the consultants mostly provided advice to the university administration regarding all stages of ERP implementation, development, and use.

This advice was accompanied by the latest research on, for example, the challenges faced in ERP implementation. This advice required the consultants to be experts in the area through experience and research. An example of this majority view is that of a consultant:

> The consultant's role is providing critical advice to the university administration based on his experience and according to latest knowledge available, which the university benefits from greatly. (Consultant C)

Only a minority of five administrators and two PMO employees agree that consultants' advice is needed but believe the external consultants lacked knowledge of the culture of the university, saying that they have more knowledge of private sector culture (as most of their experience is in the private sector) than of public sector culture (its norms, values, and rules), meaning that the university didn't greatly benefit from their involvement, negatively affecting the success of the ERP implementation. An example of the minority view is that of a PMO employee:

> The consultant lacked knowledge of the organizational culture of the university and their knowledge and experience is built from the private sector, which influenced the ERP implementation. (PMO employee C)

This section will also show how the knowledge of the PMO and their consultants moved from external to internal actors to enable them to come up with innovative solutions to problems such as the resistance of users to the implementation and development of the ERP. This discusses how knowledge was identified and used by focusing on stages of absorptive capacity. This research used the data to demonstrate the institutionalizing of power and the performing of absorptive capacity stages at the university in order to explain their power/knowledge. The findings are the result of an

analysis of 34 interviews collected in the summer of 2013 that aimed to shed light on the power/knowledge of the PMO and consultants at the university. The power/knowledge is demonstrated by showing how their power became institutionalized and to what extent they used external information to help with the implementation. This helps our understanding of power/knowledge in the process of ERP implementation and development, and in particular how knowledge acquisition and power issues interact.

Previous research on IS consultants and ERP focused on identifying how knowledge is transferred (e.g. Ko, Kirsch & King, 2005; Lech, 2011), the control mechanisms of consultants (e.g. Chang, Wang, Jiang & Klein, 2013), IS consultants' influence on organizational competence for implementing ERP (e.g. Bradshaw, Cragg & Pulakanam, 2012), the role of consultants in ERP implementation (e.g. Metrejean & Stocks, 2011), and the best practices for consultants in ERP implementation (e.g. Simon, Schoeman & Sohal, 2010). These studies have an inadequate understanding of the power/knowledge of in-house expertise centres, such as the PMO, and external consultants.

Most works on power in information systems adopt one theoretical background for analysis and generate rich insights. Studies that have used Clegg's circuits of power in IS research have used it to explore information systems security and power in areas such as ERP implementation projects (e.g. Backhouse, Hsu & Silva, 2006; Smith, Winchester, Bunker & Jamieson, 2010; Silva & Fulk, 2012). Few studies have adopted the circuits of power theory to explore the power of the PMO and consultants.

This study analyses the power of consultants and the PMO and their performance of the stages of absorptive capacity in order to provide a rich picture of the operation of power/knowledge at the university.

The studies that have used absorptive capacity in ERP implementation and discussed the role of both PMOs and consultants lack a focus on the power/knowledge dimension of IS (e.g. Roberts, Galluch, Dinger & Grover, 2012; Marabelli & Newell, 2014; Saraf, Liang, Xue & Hu, 2013; Harrington & Guimaraes, 2005). This study highlights the power and performing of absorptive capacity among PMOs and consultants in order to demonstrate how influential they are and to show their power/knowledge at the university during ERP implementation. The IS literature on absorptive capacity has covered the following areas: absorptive capacity in the post-implementation of enterprise systems (Saraf, Liang, Xue & Hu, 2013), IT success (Harringron & Guimares, 2005), IT governance (Ali, Green & Robb, 2012), innovation (Cepeda-Carrion, Cegarra-Navarra & Jimenez-Jimenez, 2012), and the role of absorptive capacity in the usage of complex information systems (Mayeh, Ramayah & Popa, 2014). Four main themes were identified in the review of the literature on absorptive capacity and IS research: IT assimilation, business IT knowledge, IT business value, and knowledge transfer (Roberts, Galluch, Dinger & Grover, 2012). Those studies lack in-depth analyses of the power dimension (Marabelli & Newell, 2014) of PMOs and consultants.

An exploration of how the power/knowledge of the PMO and consultants became institutionalized is the focus of this section. The previous chapter featured an overview of the university's implementation of ERP. This section analyses the PMO's and consultants' power/knowledge through Clegg's circuits of power and absorptive capacity. Absorptive capacity is used as a framework for the acquisition and use of

knowledge alongside the circuits of power, which is a framework used to understand the institutionalising of power. As explained, absorptive capacity is the ability of the organization to acquire, transform, assimilate, and apply new external information, which can help with, for example, problem solving, enabling the organization to be more innovative and create a competitive advantage (Lane, Koka & Pathak, 2006). As explained, Clegg's circuits of power theory identifies three circuits. First, the episodic circuit aims to answer the question of how A make B do something that B would otherwise not do (for example, what are the particular objectives of A and B in their struggle around the implementation of the system?). Second, the social circuit comprises the conditions that enable A to exercise legitimate power over B (for example, what are the conditions that place A and B in their perspective positions?). Third, the system circuit (Silva & Backhouse, 2003) aims to answer what causes the organization to generate outcomes (for example, what are the techniques that A uses to ensure B's compliance?).

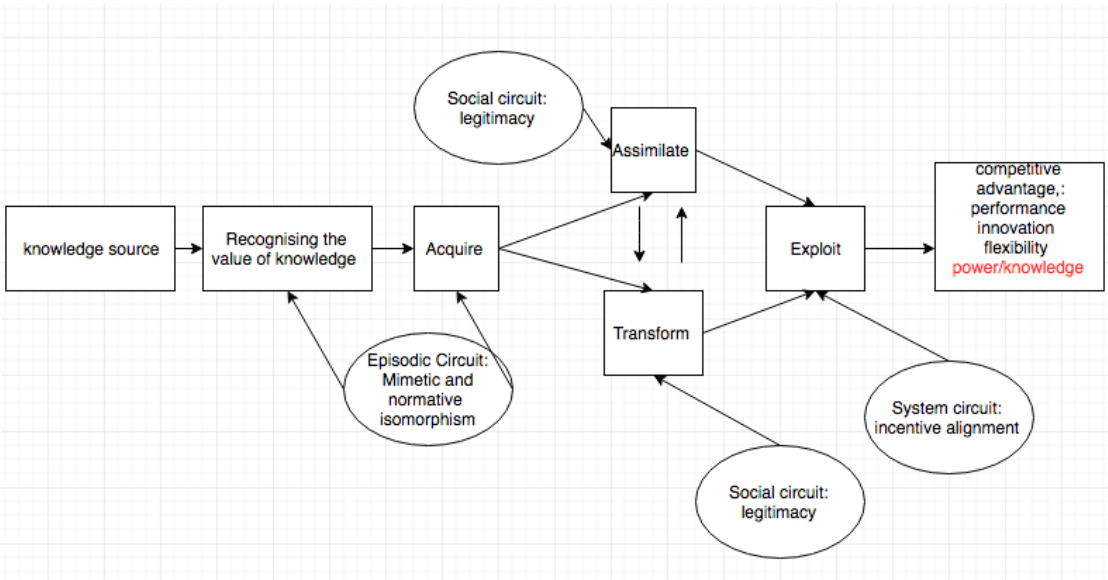

Figure 4 Clegg's circuits of power, absorptive capacity, agency theory, mimetic and normative isomorphism, and legitimacy concept from structuration theory.
Source: author's own work, adapted from Todorova et al. (2007) and Clegg (1989)

What is new in this research is that the researcher has integrated Clegg's circuits of power, absorptive capacity, mimetic and normative isomorphism from neo-institutional theory, legitimacy concept from structuration theory, and agency theory to help analyse power/knowledge. As shown in Figure 7, the episodic circuit can be seen as enabling A to make B do something that B would otherwise not do; this is useful in recognizing the value of new knowledge and acquiring new knowledge, particular objectives for A. Mimetic (copying other organizations practices) and normative isomorphism (the professionalization of the PMO and consultants) can be linked to the episodic circuit, as it enables making B do something that B would otherwise not do and influences the recognition and acquisition of new knowledge. In the social circuit of Clegg's circuits of power, legitimacy, credibility, and authority play a role in assimilating and transforming new knowledge into solutions. The legitimacy concept from structuration, the reflection of rules and laws in the ERP system, will result in legitimate PMOs and consultants and will influence knowledge transformation and assimilation. In the system circuit, where A ensures B's compliance through, for example, incentivise alignment – which will influence the exploiting and applying of new knowledge, this will result in power/knowledge. In Todorova and Durisin's (2007) model of absorptive capacity, it is argued that power relationships play a moderating role in influencing the knowledge source and prior knowledge before recognizing the value of new knowledge. In the selection process for consultants, we noticed the first and second stages of absorptive capacity (how the organization recognized knowledge value and acquired it), and we noticed the first example of the episodic power circuit. In this stage of circuits of power and absorptive capacity, the majority stated that expertise and reputation were the elements that made knowledge move and made B do something that B would not

otherwise do. The expertise and reputation of the consultants and the PMO made users learn, for example, how to use the ERP systems through training. The expertise of consultants and the PMO is demonstrated when knowledge was provided to the users about how to make the ERP implementation and development successful. Reputation makes their input and advice more believable. An example of the majority view is an opinion of a senior manager at the university:

> Expertise and reputation is the main target for the areas that require PMO and consultants to have before we recruit them. (Dean of Electronic Services)

A minority of five administrators believe that the selection of consultants and PMOs depends only on expertise. Expertise in itself can make A make B do something that B would otherwise not do. An example of the minority view is that of an administrator:

> The selection of consultants and PMO depends on their expertise, which is a corner stone in their selection by the university. (administrator D)

A majority of interviewees believe that the selection of consultants and the PMO was based on the reputation and professionalization of the consultants and tended to copy other selection practices. The majority thus believe that mimetic and normative isomorphism influenced the recruitment of consultants and the PMO. This can be explained by arguing that the university avoided the risk of failure by selecting consultants and the PMO with a reputation for implementing ERP for public organizations successfully. The university also tended to select consultants with certain degrees and professional certificates. Thus, mimetic and normative isomorphism and reputation motivated the university administration's selection of

consultants and the PMO. An example of the majority view is a statement of a consultant regard how the selection of consultants and the PMO happened:

> When the university selected consultants and PMO, they tended to chose them based on their reputation, the experience of other organizations in selecting consultants and PMO, and the degrees and professional certificates those actors had. (Consultant B)

A minority of three administrators and two PMO staff believe that the university put a number of skills alongside reputation and expertise as criteria for selecting consultants. This kind of selection made the first circuit, the episodic power circuit, and the first two stages of absorptive capacity – recognizing the value of knowledge and going about acquiring knowledge – more obvious because it showed that expertise, skills, reputation, willingness to change, knowing the working environment, and rules governing work explain how knowledge was recognized and acquired. Thus, we can see how knowledge, broadly understood, is at the root of how A (consultants and the PMO) made B (users and the university administration) do something that they would otherwise not do. An example of the minority view is an opinion of a project manager:

> When we select consultants, we look for knowledge such as their expertise, skills, reputation, knowing the working environment, and the rules of the work in the university. Their knowledge plays a central role, eventually, in employing them and accepting their advice. (PMO C)

In order to implement ERP, the university (according to the majority) decided to found a new department within its structure; the majority believe that the founding of this department, the PMO, demonstrated power by helping to align the university's requirements and the vendor's requirements. In this alignment as an aim for

establishing the PMO and involving consultants for the same reason, we notice that knowledge of the alignment as an aim for the university led to a recognizing of the needed knowledge and to its acquisition from the consultants and its centralisation and active management by the PMO. It enabled the PMO and consultants (the A) to exercise power over the users and university administration (the B) by convincing them via their knowledge about the alignment of the organization with the ERP system. Accordingly, they were selected to align the university and the technology in order to implement the ERP successfully. Moreover, the founding of the PMO department copied that of the same department in the Shura Council, which demonstrates that mimetic isomorphism plays a role in explaining the power of the PMO, as the founding of this department gave more power to the opinion that a PMO was needed by the university to help with ERP implementation:

> Founding a PMO helps with aligning the requirements of the university from implementing the ERP system with the requirements of the vendor and showed how powerful the PMO was from the beginning throughout the implementation and development of the ERP. (PMO deputy supervisor)

However, a minority of three administrators and one consultant believe that the founding of the PMO doesn't demonstrate power because power requires influence on ERP implementation, and they are only following modifications requests passed between the developer and the users and providing training. Their main role has been criticised as being one of only commenting on users' modification and following up with the vendor regarding the university's modification requests. One of the minority group says the following:

> The founding of the PMO doesn't demonstrate power due to their limited role in ERP implementation, where their main role is

> following up modifications with the vendor and providing training for new users. (Budget and Planning manager)

In the role of PMO, we see in the daily working activities the deployment of both the episodic circuit and recognizing the value of new knowledge and its acquisition. According to the majority, the PMO's ERP expertise played a central role in sending modifications to the vendor. They thus controlled the process of requiring modifications and revisions and are therefore decision makers when it comes to ERP at the university. They offer their expertise while trying to align the system with the university and to align the requirements of the university to the technology:

> So we are a mediator and decision-making point, you can see. Imagine there is no mediator between the end user and the company [vendor] in the university. The employee who works in the ERP is an administrator who can come and request a change, and the company agrees with the cost of 50,000 riyals. The company implements the change, and then the employee says, 'that's not what I asked for; I asked for something else.' The company says they will make the change for 10,000 riyals. First, that's a waste of time. We study and make a decision [when there is] real need. (Assistant PMO Project Manager)

According to the majority, the PMO's power is the ability to decide what is a 'real' need based on their technical and administrative experience. An example of the majority view is that of a PMO manager:

> The administrative and technical experience of the PMO helps in recognizing the needs of the university, which demonstrate their power. (PMO manager)

A minority of five administrators believe that the PMO's power is their control of training and study of modification requests before sending them to the developer.

They control the content of the training, which influences the use of the ERP system at the university, and they follow modification requests and give opinions on them:

> The PMO's power is mainly controlling the training sessions' content and following and studying the modification requests from the users. (Purchases department administrator)

According to the majority, due to the size and complexity of the ERP, PMO members must have knowledge of its technical side, which gives more episodic power and influences how knowledge is recognized and acquired. For example, in an HR request for the modification of an interface, the PMO must have knowledge of the nature of ERP programming, which influences the acceptance of the modification and provides the reasoning given to the vendor and the university administration to convince them of the need for the request. The PMO has to have technical knowledge, such as in the programming and coding of the ERP, which influences the acceptance of user requests because any new modification of the ERP system requires programming, which may result in bugs (the PMO has refused many user requests for this reason). All of this influences the kind of knowledge that is needed and acquired and also influences how consultants and the PMO make users, the administration, or the company accept their input on the implementation and development of ERP. An example of this majority view is that of a PMO staff member:

> The PMO has to have a technical knowledge such as the coding of the ERP, which will influence studying modifications and agreement on users' requests. (PMO staff C)

A minority of two consultants and one administrator believe that the PMO's technical knowledge of ERP and programming is not necessary because all they need is knowledge of project management and their main role is to manage the ERP project;

in managing the project, the university needs people with expertise in, for example, change management. An example of the minority view is that of a consultant:

> What is mostly important for PMO is their knowledge of project management and change management, not programming. (Consultant C)

According to the majority, the success of the PMO is based on its role as a mediator and strong leader:

> One of the reasons for the success of [ERP] is the existence of a 'house of expertise' body and strong leadership, and the leadership is important. (Assistant PMO Project Manager in PMO)

According to a minority of five administrators and one PMO employee, however, the success of the PMO is based on their knowledge of ERP implementation in the public sector. This knowledge of public sector needs and requirements for ERP implementation leads to a successful ERP implementation and a successful PMO.

One of the ways to illustrate the recognizing of the value of new knowledge, knowledge acquisition, and the episodic circuit is through training. This involves giving instruction, then issuing certificates for completion of the training. According to the majority, training and the issuance of certificates influenced acceptance of the ERP system at university departments, showing how the recognition of new knowledge, knowledge acquisition, and the episodic circuit is deployed:

> We do training. We have training for thousands of employees. The systems are huge. We still give training after the implementation of the system. We have new employees in the university from time to time. Not all employees get training from their colleagues. They come to us for training, and we issue certificates. Three days a week we issue a certificate for completing the course. The training takes

> two weeks, and [for] the employee who passes successfully, this certificate will help him with promotion. (Assistant PMO Project Manager in PMO)

However, according to a minority of one consultant and five administrators, the training and issuing of certificates didn't help achieve successful ERP implementation because other important factors have to be considered, such as requirements analysis and the reflection of the requirements in the ERP system.

According to the majority, the PMO and consultants played a central role in the implementation. The consultants were recruited mainly for their reputation and expertise, which included factors such as knowing the working environment and rules. Their expertise and reputation, as main objectives of the university in their struggle toward the implementation of the system, played a role in making users and managers accept their input, which is an episodic circuit because expertise and reputation enable A to make B do something that B would otherwise not do. The same expertise and reputation help with discovering new external knowledge and acquiring the knowledge (i.e. increasing absorptive capacity). In an episodic circuit, the PMO and consultants used resources to provide training and training certificates to enable users to operate the ERP system. In this matter, we can consider the training and the certificates as two elements that enabled users to learn the systems and overcome difficulties in using the interfaces as well as user resistance.

To summarise the argument so far, according to the majority, expertise and reputation are two elements that enable knowledge to move between different parties. As shown in Figure 7 below, episodic circuits, the recognizing of the value of new knowledge, and knowledge acquisition – the recognition of the need for new information and the defining of it -- reflect the first circuit of power and the first two stages of absorptive

capacity. Therefore, the recruitment process for the consultants is based on the consultant having expertise, a good reputation, and knowing the working environment, culture, and rules. These elements clarify the episodic circuits from the circuits of power and influence the acceptance of their advice and help in exploring for the needed and acquired knowledge from absorptive capacity.

Resistance has become a source of power and is deployed in the role of consultants and the PMO through Clegg's circuits of power – social and systems circuits – and the absorptive capacity (Todorova & Durisin, 2007) components: recognizing the value of new knowledge, acquire, assimilate, transform, and exploit. Figure 7 presents the framework used to explain the integration of absorptive capacity and Clegg's circuits of power.

Recent research on IS and resistance has focused on the reasons for resistance among project and general managers in ERP implementation (e.g. Celjo, Hanić & Kazalac, 2011) and information technology implementers' responses to user resistance (Rivard & Lapointe, 2012). This thesis differs from the previous research because it shows how the influence of two important actors – the consultants and the PMO – by performing the stages of absorptive capacity respond to resistance by applying the theoretical frameworks of Clegg's circuits of power, absorptive capacity, agency theory, neo-institutional theory, and structuration theory. This agrees with Rivard and Lapointe (2012), who argued that implementer responses to resistance are rare in literature.

According to the majority, end user and managerial resistance was a major barrier to the ERP implementation and development. In order to understand this, the researcher applied Clegg's circuits of power to identify how the power of the PMO and its

consultants is institutionalized and whether it performs the stages of absorptive capacity. According to the majority, the PMO's and consultants' reputations and aligning of the needs of the university to the requirements of the vendor demonstrate their power because the reputations and the alignment of the university and the vendor are the conditions that place the PMO and consultants (A) in a position to exercise power over the users and university managers (B). This alignment demonstrates social circuits as the ability of (A) to exercise power over (B) through the knowledge of alignment and reputation, which builds legitimacy and credibility in the eyes of the users and other actors. Prior research on ERP found that the most difficult part of ERP implementations was matching the needs of the organization to the ERP, which is the mission of the PMO (Helo et al, 2008). An example of the majority view is an opinion of a consultant:

> Reputation and aligning the needs of the university and the requirements of the vendor enable the PMO and consultants to exercise power over the users and managers. (Consultant D)

However, a minority of two consultants and one PMO employee believe that it was not only reputation and aligning the needs of the university to the requirements of the vendor that placed the PMO and consultants in a position to exercise power over the users and managers but also their knowledge of the culture of the university. This knowledge enabled the exercise of power because, when the PMO and consultants know the norms, rules, and values, they can deliver the needed knowledge for ERP implementation. One consultant explained:

> What make us exercise power is our knowledge of culture with the needs of the university and the vendor requirements, which helped a lot in ERP implementation. (Consultant D)

According to the majority, knowledge is also assimilated in the process of aligning the requirements of the university to the vendor, which is an example of the assimilated component from absorptive capacity. When a university department such as HR requests a modification in the ERP system, the consultants advise if the modification is needed and thus serve the needs of the whole university, but the PMO knows the requirements of HR and of the developer, causing knowledge to be assimilated. An example of this majority view is an opinion of an ERP consultant:

> Knowledge is assimilated in ERP implementation when the consultants and PMO deliver their knowledge in matching the needs of the university and the requirements of the developer. (Consultant D)

However, a minority of three administrators, one consultant, and one PMO employee believe that knowledge is assimilated if the consultants and the PMO have the required legitimacy because their main role is to provide a solution and an opinion on ERP implementation challenges and to make sure that the rules and laws are well reflected in the ERP system, which increases their legitimacy.

According to the majority, rewards and sanctions are the techniques that inspire compliance among users and managers (B), which also played a role in their accepting the ERP system; this is a system circuit. Rewards, incentive alignment, and sanctions lead to discipline and generate ERP use outcomes; this is why it is a reflection of a system circuit. An example of the majority view is an opinion of a consultant:

> What plays a role in making our ERP implementation successful is that we apply rewards for people who support the implementation of the system and put sanctions such as removing employees from

> using the system if he resists the system implementation. (Consultant A)

However, a minority of two consultants, one PMO member, and three administrators said that only rewards have played a role in the accepting of ERP implementation, and not sanctions, because (for example) no one can dismiss employees who resist the system without the approval of the prime minster or the king because it is a public organization and it is very hard to dismiss employees in this type of institution:

> One of the major problems we faced is that we cannot put sanctions on employees who resist the system other than bringing someone else to do the work, and nothing happened to the resistor. (Consultant C)

According to the majority, knowledge is exploited in the process of applying external knowledge to solve the problems of end user resistance and modify the interfaces. An example of this majority view is an opinion of a PMO employee:

> Knowledge gets exploited when the university applies and implements external knowledge to solve the problems of ERP implementation such as modifying the interfaces and end user and managerial resistance. (PMO employee)

However, a minority of one consultant, two PMO employees, and three administrators believe that knowledge was exploited when the PMO's and consultants' views were implemented at the university. Also, the majority agree that power relationships play a moderating role in exploiting knowledge to help in achieving competitive advantage or innovation or in improving performance. A minority of two consultants, two PMO employees, and two administrators believe that power relationships do not play a moderating role in exploiting knowledge to help in achieving outputs such as competitive advantage because other factors such as incentive alignment can play a

role in influencing the outcomes of ERP implementation. However, the PMO and consultants are powerful actors capable of performing stages of absorptive capacity.

According to the majority, expertise and reputation, as particular objectives of the university, are recruitment bases; this is also an example of episodic circuits because expertise and a reputation for overcoming end user resistance in ERP implementation, development, and use in the public sector can produce legitimacy and credibility in the eyes of university senior managers, which in turn creates the social circuit of power. For example, the PMO and consultants have implemented the same system for another public organization with GRP requirements similar to the university's, thus gaining experience. If previous implementations are successful, this will improve their reputations for overcoming challenges in implementing ERP and, in particular, for ending user resistance. Legitimacy and credibility are the conditions for A, the consultants and PMO, to exercise power over B, the end users and managers. Legitimacy is reflected well in the rules and laws written into the ERP system. Knowledge is transformed. One example might be found in steering committee meetings, the members of which are internal managers and employees. In these meetings, social circuits of power are reflected when the input of the PMO or the advice of consultants is delivered; their knowledge of change management and of dealing with user resistance result in a legitimacy and credibility that enable the acceptance of their input and advice; in these kinds of situations, knowledge is transformed:

> The university looks for PMO employees and consultants with the reasonable expertise and reputation, and this influences their power. (PMO employee)

In the system integration circuit of Clegg's circuit of power, there was a reflection on how rewards (e.g. incentives) were used to create discipline in ERP use. According to the majority, the way top management has been involved in supporting and influencing the final acceptance of the system – whatever the problems faced by the users – shows a system integration circuit from the circuits of power, which ensures compliance. For example, the president of the university at the time supported the system implementation against all resistance by ignoring HR's complaints about the system and asking all departments to start using and working with the implementer and PMO to overcome challenges in the ERP implementation and development process. One consultant explains:

> When we first tried the ERP we chose the HR as the first department to implement the system in. So we worked very hard with them. But they found the system not complete and lacking many rules and laws of HR. So HR wrote a letter of three pages long to the rector to stop the implementation, but the rector decided to form a guidance committee and became its chairman and followed the implementation of ERP himself. (Consultant A)

Thus, in the same way, the exploitation component of absorptive capacity is noticed when any modification has to be approved by top management and sent to the company. According to the majority, this is because the external information from the company can demonstrate the exploitation component because it analyses, comments on, and applies this external knowledge to modification requests.

The PMO's and consultants' knowledge of and expertise in dealing with resistance in the implementation, development, and use of ERP can be considered an OPP (Callon, 1986) and a source of power since they influence users' practices and actions in relation to the GRP implementation and development. However, the consultants and

PMO were capable of performing stages of absorptive capacity. They used episodic, social, and system circuits of power along with external information, which can be useful for solving problems in the use or implementation of an ERP at the university.

According to the majority, resistance was dealt with through the PMO's and consultants' gaining of access to resources such as training – by training A (the PMO) to make B (end users) do something that B would otherwise not do. The training process – in particular, the certification in career development – is one type of exercise of power. Thus, end users' resistance justifies the budget provided for training and the involvement of consultants. Their knowledge of how to overcome resistance helps build legitimacy and credibility for users and managers; this is a social circuit. The majority also said that this resistance became a source of power in the discourses of the organization. In these discourses, rewards are recommended for the people who support the system, and sanctions are enforced for the people who do not; this is a system circuit. Here, we see the three Clegg circuits of power being deployed. An example of this majority view is that of a consultant:

> The resistance become a source of power because it is what made the top management support the system implementation strongly by providing incentives and following the implementation challenges himself. (Consultant C)

However, a minority of three administrators and one consultant believe that resistance has not became a source of power because resistance was a major barrier and was understood by the top management as such and not as a source of power. An example of the minority view is an opinion of a consultant:

> User resistance has not been used as a source of power due to the nature of resistance, which has understood correctly by the PMO, consultants and top management. (Consultant A)

According to the majority, knowledge is explored by identifying the skills and experience that are required for system implementation. The university has recognized the needed skills and experience by appointing the project managers and consultants at the beginning of the project:

> Knowledge is explored by recognizing the needed skills and experience needed in ERP implementation. (Consultant A)

According to the majority, knowledge is transformed in meetings to overcome resistance and in responding to the modification by the departments. This transformation aims to integrate the current knowledge of the university and the external knowledge of consultants and vendors with the knowledge of the university. This is the responsibility of the PMO – to successfully align the requirements of the vendor and the university:

> Knowledge is transformed usually in meetings that discuss ERP implementation barriers such as resistance and in looking at the change requests from university departments to develop the system or fix a certain problem in the ERP system. (PMO assistant manager)

Finally, knowledge is exploited in writing to management regarding the barriers or the needs of the implementation and technical modification to ERP. This shows how the organization recognised new knowledge from the users, consultants, vendors, managers, and project managers, assimilated it in meetings and modification procedures, and applied to modify the systems (e.g. making new interfaces or solving the problems of resistance to enable successful implementation and resulting in an assumption of better performance through the implementation of ERP). In this way, we see an increasing absorptive capacity, whereby new knowledge is acquired, assimilated, transformed, and exploited in the implementation of ERP. All these

absorptive capacity components work and provide feedback loops, which is a process connected to the beginning through to the end:

> Knowledge is exploited when we send our advice on any matters about ERP implementation such as modification requests, which require financial approval from the university administration, which enables the change to happen. (Assistant PMO manger)

According to the majority, the consultants' knowledge is transformed based on reputation, which provides the legitimacy needed to face resistance, which then demonstrates how the social circuits from the circuits of power and transformative learning are deployed. A minority of three administrators, one consultant, and one PMO employee believe that knowledge is transformed not based only on reputation but also on expertise in implementing ERP in public organizations.

A closer look at how knowledge is transformed may be gained by understanding the consultant's role. The role of consultants in the university, according to the majority, involves roadmaps, project management, and the knowledge of the culture of organizations in order to enable a successful implementation and overcome resistance. Roadmaps and long-term vision are required from the PMO and consultants to fully realise the benefits of ERP systems (Esteves, 2009). One of the road map realizations for ERP in the literature is by Esteves (2009), in which he identifies four roadmap components: prepare, realize, achieve, and audit. Implementers need to be prepared to identify user expectations (prepare), show the organizational potential of ERP in their organizations (realize), fully achieve the strategic benefits (achieve), and continue auditing the realization in each stage and the benefits realization in the organization (audit).

The social circuit is more obvious when the knowledge of culture helps with the implementation of ERP. This knowledge of culture as a resource provides the consultants and PMO with the legitimacy needed for users and managers resisting the ERP at the university, which also helps achieve a successful implementation:

> The consultants' and PMO's knowledge of the culture of public sector organizations makes us accept their input on the challenges faced in the implementation, which helps us achieve a successful implementation. (PMO director)

Social circuits of power and the transformative component of absorptive capacity become clearer when examining the role of external consultants and the PMO and how they dealt with the behaviour and norms of users and managers. According to the majority, studying and knowing the systems in detail and knowing the public sector culture of the university in ERP implementation demonstrate transformative learning and the social circuit of power. This demonstration also became clearer when it helped the PMO align the system to the university and the vendor, and when consultants applied their expertise to several issues, including resistance. This knowledge of alignment increased their legitimacy in the social circuit and their capacity for transformative learning from absorptive capacity:

> If I understand correctly, it's a matter of selection process. It's obvious they usually know consultants in this field, know of course the pros and cons in each, what points and solutions at each excels, what points don't; they know sometimes the limitations that are unwritten. Usually, all the solutions will give you the positive points; nobody advertises their faults. The consultant, with their knowledge, helps. Their experience [provides] mainly in the selection process. They provide information regarding the system

> and how to fit the organization (a matter of alignment). Or they know the technology itself, and this solution will be very hard to implement because it's incompatible with the infrastructure the university has in place, which is active indirectly. Consultants play a huge role in basically aligning the requirements of the university with the features of the technology [resources]. (Dean of Electronic Services)

According to the majority, the consultants' and PMO's role and expertise in dealing with implementation challenges, including resistance, is transformed through leading by example and by referring to their expertise and making sure that rules and laws are reflected in the ERP system. This demonstrates a social circuit and the transformative component of absorptive capacity because it shows how expertise is used to build legitimacy and reputation, which are transformed through leading by example. Thus, the demonstration of the social circuit and transformative component of absorptive capacity continues as expertise builds legitimacy, which results in credibility and influences how knowledge in ERP implementation and resistance is transformed:

> Yes, if I know they helped with implementing this solution, and this solution is working, [I] give him more credibility than someone who didn't implement and who has some nice methodology but has never implemented. Experience is a key. (Dean of Electronic Services)

However, a minority of one PMO employee, one consultant, and four administrators believe that consultant and PMO expertise in dealing with implementation challenges, including resistance, is transformed only when they refer to their expertise. Referring to their expertise is what makes them credible and legitimate. The same expertise transformation demonstrates a social circuit from the circuits of power and explains the transformative component of absorptive capacity.

According to the majority, the main issues when selecting consultants and PMO were their understanding of ERP and the university, their reputation, and their credibility. All of this legitimately increased their social power. A participant explained that aligning the needs of the university with the needs of the vendor is a major activity of the PMO and consultants. This alignment to overcome challenges, including resistance, demonstrates the transformative component of absorptive capacity:

> The role of the PMO and consultant is important because it plays a role in aligning the needs of the employees and the requirements of the vendor. They know the system, what it can provide to the university, and [they] make things easier for both the university and the vendor. (Project Management Unit employee)

For example, the consultant's advice should demonstrate expertise in resistance and offer an example in which this problem has been solved in a way that helps in using the system. The role of experience is essential because it gives legitimacy and credibility, and it enables transformation from a previous situation to a new one:

> The employees get convinced because the system makes their work easier. They get training, and the consultants talk to the managers. In this way, it will serve us, and it will make us more comfortable. Instead of doing everything on paper, everything will be on computer, and anything you need, you can get it on your screen by clicking a button. (Project Management Unit employee)

An example of how social circuits and the transformative component of absorptive capacity are deployed is demonstrated in the way consultants and PMO dealt with the conflict and resistance. They used training and meetings, which demonstrated the social circuit from the circuits of power and the transformative component of absorptive capacity:

> The conflicts were passed through convincingly, and not all people get convinced, and the solution for those people [is] that they don't work on the system, and you find within this a resistance. In this situation, you have to listen to the employees. I sit with them. Sometimes he gets satisfied through this way, but in other ways like training courses, this is change management. (Project Management Unit employee B)

According to the majority, rewarding users with certificates for completion of training plays a central role in GRP acceptance at the university because rewards and certificates for completing training demonstrate a system circuit, which enables users who were successful to use these certificates as points towards promotions or enforces sanctions if they resist the system. Thus, the PMO and consultants were capable of influencing the criteria for promotion due to the expected resistance in these ERP implementation projects. The exploitative component of absorptive capacity is demonstrated in the PMO, and consultants apply knowledge in writing to management, which then approves the technical modification of the GRP, in order to overcome resistance and solve the implementation problem. This shows that the PMO and consultants were powerful members of the organization, demonstrating the three circuits of power and absorptive capacity in dealing with resistance:

> You give them [users] rewards such as a month's salary, which makes him work. These rewards exist everywhere. When I worked in project management in Libya, nothing got through without rewards, training courses abroad; if they do not want to work, no one can say anything to him or fire him without the approval of the cabinet. (Consultant B)

However, a minority of one consultant, two PMO employees, and three administrators believe that top management support plays the central role in the accepting of GRP implementation at the university. The top management support is what makes the

university provide rewards and certificates for completing the training; top management agreed to add the certificates as part of the promotions criteria. Top management support made the system circuits of circuits of power clearer, as that top management support is what guarantees the outcomes and results. The exploitative component of absorptive capacity is demonstrated when the consultant and PMO apply top management decisions, such as providing training. One of the minority group, a consultant, explains:

> Top management are the decision makers, and they apply our advice; without their support, the system would never get implemented. (Consultant C)

According to the majority, identifying reasons and carrying out discussions with users and managers play a central role in ERP implementation and in ensuring that knowledge is exploited. At this stage, the exploitative component of absorptive capacity is noticed when transferring consultants' advice into solutions for problems such as resistance by identifying reasons and through discussions with senior management for approval:

> Reasons…you search for the reasons with the managers and the employees. Discussing the solutions with the manager and the employees has played a role in knowledge exploitation. (Project Management Unit employee B)

However, a minority of two PMO employees, one consultant, and three administrators believe that knowledge is exploited in the process of studying modification requests by the PMO. When the PMO does this, they identify the costs and consider the time needed to make the modification through the vendor:

> In the process of studying requests, the PMO consider, the costs, time and the nature of the modifications and make, sure that

> modifications serve the needs of the university. All of these issues help with knowledge exploitation. (Consultant C)

An example of how consultants' knowledge is exploited is seen in how resistance is dealt with: by discussions with management to force use of the system. The deployment of the third system of the circuit of power occurred in a way that showed that the system is a reality and has to be accepted:

> User resistance, as I said. You will encounter refusal at the beginning. Refuse to work on the system. And they will say that the system is complicated. Some of them never saw the system. He will say, everyone says that the system is complicated. The implementer asks him to try, and use the system, and then say your opinion. [The solution is that he will] be forced to use the system through his manager after returning to [the Rector]. The resistor has to accept it because the system became a reality on the ground. Thus, the support of the top management is essential, and it was obvious in the university because at the end, you will write to top management [about] what happens, what are the barriers, etc. (Project Management Office, employee C)

The majority indicate the disciplining of actors during the implementation of the ERP system; this is also a system circuit from the circuit of power because the ERP shows all activities to management, which influences the speed of the work done by the users of the system. Thus, the system offers opportunities for surveillance over the work of ERP users, but it also offers greater empowerment through the new processes enabled by the ERP (Sia, Tang, Soh & Boh, 2002):

> Now the user name appears on screen. When did it enter the system? Where is the work? How long is the work under study? Now they all care to finish the work on time because everything appeared on screen. (Project Management Unit employee C)

However, a minority of five administrators believe that the new ERP system has not played a role in disciplining actors because the system has not reached the level at which all work is done by the ERP system. Some of the old system's work, rules, and laws have not been included in the ERP system, which means that some of the work done before the ERP system project began has not changed:

> Disciplining of users has not changed before and after the implementation of ERP because the nature of the work has not changed. (Audit administrator)

There was a focus on resistance in the interviews, which showed the nature of resistance at the university during ERP implementation and how control was a source of power that was threatened by the ERP.

> So, first of all, there was a resistance because human nature doesn't accept change by nature. So then you had an old ERP because it was a basic one. The resistance got higher because it faced problems. There is no such thing [as] 'you switch on' and nothing happens. Problems within the first two or three months, easily you will have problems. People who work will suffer, because I have [had] this thing going on for a while, and it was smooth, no problems. Then I moved to this. They don't see the big picture. The other thing is that also control—meaning before this I have power, depending on my position—now the system has eliminated this power. Somehow, let's give you some stupid example. My boss always asked me because I provided him with statistics, which I had [done] on paper. Even the previous system didn't provide it. Now, with this new system, my boss doesn't even need me because I can get the statistics by [the] click of a button. OK, so this also, however, this was for a phase of time: eventually people were moving on. Eventually people know the benefits; the pros overtake the cons. (Dean of Electronic Services)

The Dean of Electronic Services described the consultants' knowledge as their source of power. Business process reengineering is an example of knowledge that was used in the implementation and was criticised for being a source of power in the implementation of ERP.

One of the reflections of the system circuit is the management intervention in the face of resistance to the implementation of ERP:

> You need strong management, an administration for managing the system. You can't force the implementation. You still find people who don't use the system. You need to convince [them] that [it's] an important system, and apply sanctions if needed. (Assistant Project Manager of PMO)

Thus, the majority believed that user resistance has become a source of power and had been used to institutionalise the power of consultants and PMO as showed previously. One of the majority is a consultant who said:

> Resistance yes became a source of power because it led the top management to take decisions regard resistors and they helped us overcome this resistance and they applied our advice (consultant A).

However, a minority of six administrators, two consultants, and one PMO employee believe that resistance was not a source of power and that it was a threat that was dealt with in appropriate ways in order to overcome the risk of resistance to ERP implementation. One consultant said:

> I don't believe that user resistance was a source of power but it was a major threat that can threaten university investments in ERP implementation. The university listened to our advice for how to overcome the resistance and we succeeded. (Consultant A)

The establishment of the PMO as an independent unit didn't continue; it was placed under the management of the Dean of Electronic Services when the implementation

arrived at a stable stage. It operated as an independent unit because ERP implementation usually takes a long time. They learned this from previous implementations. The solution was making the department independent. The project also requires strong leadership and management, reporting directly to upper management. It also requires providing the changes asked for by the units of the university. All these reasons led to the decision to establish the PMO:

> So, technically [PMO] is part of IT, and the decision to move or merge it, with or under my responsibility, is an indication of this. At the beginning, it had its own unit for several reasons:
>
> a) The university management wanted to implement it in a fast way. ERP usually takes a long time to implement. It needs a very aggressive project management team, and very huge support from upper management. Otherwise it will take forever. I'll give you an example: SAP [is] a very famous ERP system or company. [They] have only been working with one university for two years, and they have not launched the system yet. This is why they dedicated a unit for reporting directly to upper management.
>
> b) Other reasons: they wanted to control changes, and they had this unit to minimise the chain of people you need to go through [for] the changes. PMO was communicating directly with human resources; this is because they are actually the owners of ERP. They have them in touch directly.
>
> c. Now, after the system was stable, it was back under IT. It was considered as a system; it was in [a] production environment; there was not a lot of development going on. There was still development, but not as huge and as aggressive as it was before. (Dean of Electronic Services).

9.5 Summary

Knowledge value, acquisition, and episodic circuits are demonstrated when the university requires PMO and consultants with the needed expertise and reputation. This expertise and reputation for overcoming resistance produce legitimacy, credibility, and authority, which are reflections of the social circuits of power that influence knowledge transformation and assimilation. The PMO's and consultants' advice about rewards or sanctions for users who resist ERP system implementation is a reflection of a system circuit and influences knowledge exploitation.

Chapter Ten: Recommendations and Conclusions

10.0 Introduction

This chapter summarizes the findings, research motivations, research questions, and conclusions of the research. It also explains the study's contributions to the related literature, what the study has analysed, and its theoretical contributions. The section addressing theoretical contributions will list and discuss each contribution of the research. This chapter additionally explains the practical contributions of the research, its limitations, and recommendations for future research.

Enterprise resources planning systems offer integrated systems that claim to aid most organizational activities, including financial accounting, sales and distribution, materials management, human resources management, production planning, supply chain management, and customer information management. A distinctive characteristic of those systems is their control of the flow of information within processes inside or outside of the organization. ERP systems can also improve organizational performance. However, in ERP implementation, a clear problem complicates the process in which different actors have different interests; a possible solution is power and politics. To explain this complicated process, it is important to identify the power/knowledge of consultants and PMOs within the processes of ERP implementation.

This research has reviewed ERP systems and their implementation in higher education, as well as knowledge, knowledge management, the role of consultants in IS, and PMOs in order to justify this research on consultants, PMOs, and power politics in IS implementation.

10.1 Summary of thesis chapters

As we saw in Chapter 1, the main area of concern is to understand how power/knowledge is institutionalised in ERP implementation for two main groups: the consultants and the PMO. Thus, the main aim of this research is to produce a theoretical framework for the power/knowledge of consultants and the PMO in ERP implementation at a Saudi university. The main objective for this research is to review the relevant literature on knowledge management, the role of consultants in IS, the PMO, power politics and IS, ERP systems implementation, and ERP and higher education. The second objective is to develop a theoretical framework based on Clegg's circuits of power, absorptive capacity, agency theory, neo-institutional theory, structuration theory, and legitimacy in order to enable a theoretical understanding of power/knowledge in ERP implementation. The third objective is to explain the research methodology used. The fourth objective is to identify and explain the context of implementing ERP at the university and the power/knowledge of consultants and the PMO. The final objective is to produce a theoretical framework for how user resistance is employed to institutionalise the power/knowledge of consultants and the PMO.

As we saw in Chapter 2 in the literature review, the research on the power of consultants and the PMO in ERP implementation at a Saudi University is closely related to the literature on IS, specifically ERP systems implementation in higher education, and the role of consultants in ERP implementation (e.g. Howcroft &Light, 2006). This also fits with the interpretive side of the IS literature, particularly the ERP literature, because it adopts the interpretive case study strategy, as suggested by Walsham (1995, 2005) and Klein and Myers (1999). Further, this research contributes to the literature on knowledge management (e.g. Polanyi, 1962; Nonaka & Takeuchi,

1994; Davenport & Prusak, 1998), the role of consultants in IS (e.g. Howcroft & Light, 2006; Jones, 2003), PMOs (e.g. Aubry, Hobbs, Müller, & Blomquist, 2010; O'Leary & Williams, 2008), power politics in IS implementation (e.g. Bariff & Galbraith, 1978; Keen, 1981; Markus, 1983; Silva 2007), and ERP and higher education (e.g. Pollock & Cornford 2001; ALdayel, Aldayel, & Al-Mudimigh, 2011). This study has mainly contributed to the literature on the power/knowledge of consultants and PMOs in ERP implementation, which lack studies in this area. Thus, this chapter aimed to provide an answer to the first objective/research question, which is to review the relevant literature in order to identify ERP system implementation in both organizations and higher education and to examine the roles of consultants, PMOs, and power/knowledge politics in IS.

As we saw in Chapter 3 of this research, a theoretical framework was constructed to understand the power/knowledge of consultants and the PMO in a case study of a Saudi institution of higher education. This is the second research objective/question. This study adopted Clegg's Circuits of Power (1989) and Todorova and Durisin's absorptive capacity model (2007) to explain the institutionalizing of power/knowledge for the consultants of ERP system. Other theories were adapted to contribute to the components of Clegg's circuits of power and to absorptive capacity. Agency theory was used to understand whether there is an alignment of goals between the agents (project management officers and consultants) and principals (the university administration); it also contributes to an understanding of the system integration circuit of Clegg's circuits of power and influences on the knowledge exploitation component of absorptive capacity. Neo-institutional theory was used to examine mimetic and normative isomorphism, providing an understanding of how these two notions affect the buying of the ERP system, the selection of vendor, and

the selection of the PMO and consultants. It contributes to understanding the episodic circuit of Clegg's circuits of power and influences the first two components of absorptive capacity: recognizing the value of external knowledge and acquiring knowledge. Structuration theory's understanding of legitimacy was applied to examine the legitimacy of consultants and the PMO, which has been built by implementing ERP; it also contributed to understanding the social integration circuit of Clegg's circuit of power and influences the knowledge assimilation and transformation components of absorptive capacity.

Chapter 4 explained the research methodology used in this research, which is the third research objective/question. How can the social constructivism (interpretivism) paradigm, a qualitative approach, and the case method strategy help answering how the power/knowledge of consultants and PMO institutionalised at the university. Social constructivism considers reality as subjective and multiple. Power/knowledge is investigated by understanding that the social world is shaped by humans through their actions and interactions (Orlikowski & Baroudi, 1991). The research approach is the qualitative approach, which aims to understand and explore power/knowledge from inside the social world, which is a university in this research. The approach's main goal is to interpret the meaning of and explain power/knowledge (Flick, 2007; Creswell, 2009; Myers & Avison, 2002). The research strategy is the interpretive case study strategy, in line with Walsham (1993) and Orlikowski andBaroudi (1991), used to describe the process and context of power/knowledge by focusing on individual meaning (Creswell, 2009).

Chapter 5 explained the data collection methods and data analysis techniques available to the researcher to provide an answer for how the power/knowledge of consultants and PMO is institutionalised at the university. This completes an answer

of the third research objective/question. The data collection methods involve the stages that are required to collect information following a recognition of the borders of the research (Creswell, 2008). Different data collection methods were discussed, such as focus groups, documents, observation, questionnaires, and interviews. A discussion of how semi-structured interviews were adopted in this research was presented. The aim was to understand the opinions and the power/knowledge of consultants and the PMO in ERP implementation at the university. The researcher followed the snowball sampling method, in which he first interviewed the PMO supervisor and then asked every participant to suggest the next interviewee. The sample includes project managers, senior managers, middle managers, administrators as users, and consultants. This chapter also discussed how the selection of the site took place. It happened when the researcher was looking for an institution of higher education implementing the ERP. The university providing the data for this research was implementing an ERP system for a quite a long time (five years). In addition, there are few universities in Saudi Arabia implementing an ERP system that are the size of this university. Data analysis aims to clarify the activities required to reach a meaning for the text of the interviews (Creswell, 2008). The chapter also discussed the factors to be considered in qualitative data analysis, such as validity, reliability, and ethical considerations. An explanation was provided for the different analytical techniques used in this research: Creswell's qualitative analytical procedure (2009) and Klein and Myers' (1999) principles for conducting and evaluating interpretive studies in IS.

In chapter 6, the researcher provided background information related to Saudi Arabia, the university, and the GRP system it implemented.

In chapter 7, the researcher provided information regarding the pilot study conducted in the summer of 2012 to study the role of consultants in influencing the organizational culture of the university. The study found that the PMO and consultants are powerful, so the researcher decided to expand the main study and research the power/knowledge of consultants and the PMO in ERP implementation.

Chapter 8 discussed the context for implementing ERP at the university that help to provide a context for how the power/knowledge of consultants and PMO is institutionalised at the university. This is mainly the fourth research objective/question. It was necessary to investigate change at the university and the institution's technology both before and after the implementation of the ERP system. That investigation showed that technology has become significantly more important at the university. The research also elaborated upon the way the university shifted from a computerised record approach toward a workflow/process approach in using technology. An explanation of one type of ERP system, named GRP by the developer, was offered, and the procurement of the system, its justification, and the process of implementing it were described. The motivation for purchasing this system primarily stemmed from the recommendations of visiting universities that had implemented similar systems, which then opened up a competition between developers to present their systems. In this sense, the justification was chiefly that the system accommodated the governmental procedures followed by the university and was developed for other governmental agencies and ministries in the country. The system was implemented by the system developer, and a new departmental PMO was introduced both to provide training for users and administrators by developers and to manage the project. Implementation proceeded department by department.

Chapter 9 described the theoretical framework for explaining the power/knowledge of consultants and the PMO in the implementation of the ERP system at the university by applying Clegg's (1989) concepts of circuits of power, absorptive capacity, agency theory, neo-institutional theory, and structuration theory. This chapter aim to provide an answer for the fifth research objective/question, which is to provide a theoretical framework for how user resistance was used to institutionalise the power/knowledge of consultants and PMO at the university during ERP implementation. This chapter provided evidence that episodic circuits of the Clegg circuits of power and mimetic and normative isomorphism influence the recognizing of the value of new knowledge and acquiring knowledge from absorptive capacity. Also, the social circuit of Clegg's circuits of power and legitimacy influence knowledge assimilation and transformation from absorptive capacity. Finally, system circuits of Clegg's circuits of power and incentive alignment from agency theory influence knowledge exploitation from absorptive capacity. All of these results foster an understanding of the power/knowledge of consultants and the PMO in ERP implementation.

10.2 Contribution of the thesis

1. This research has provided knowledge about the power/knowledge of the PMO and its consultants at a Saudi university, as well as building a theoretical analytical framework for examining the power/knowledge of two chief actors (consultants and PMOs) in the process of ERP system implementation. Thus, this research has increased knowledge about both an internal and an external actor that plays a major role in ERP implementation. Their power/knowledge has been described in a theoretical framework to be used for analytical purposes to understand how the PMO and consultants become powerful. Brigham and Hayes (2012) explained that it is important to study the different

actors involved in the alignment process of IS with the organization to gain a useful understanding. Ifinedo (2011) also explained that an understanding of the effect of in-house IS personnel's knowledge and expertise is limited in the existing literature. Thus, understanding the different actors and the effect of their knowledge can be achieved by understanding the power/knowledge of PMOs and consultants. This research has analysed the university's implementation of an ERP system by looking at the context and using theories (Clegg's circuits of power, absorptive capacity, agency theory, neo-institutional theory, structuration theory) that provide the main theoretical framework constructed to clarify the power/knowledge of consultants and PMOs in the implementation of ERP systems.

2. This research has reviewed the literature on knowledge management, the role of consultants and PMOs, power politics and IS, and ERP in higher education. This study found that there is a lack of studies on the power/knowledge of consultants and PMOs in ERP implementation at higher education institutions in developing countries such as Saudi Arabia.

3. Clegg's (1989) circuits of power, absorptive capacity, agency theory, neo-institutional theory, and structuration theory were all integrated to study the power/knowledge of consultants and PMOs in ERP implementation. First, agency theory was applied to discover any alignment of interests among the principals of the university administration and agents, end-users, developers, implementers, consultants, and PMO staff. It found an alignment of interests by providing incentives for agents to use the system as part of avoiding the agency problem in agency theory. It can also be thought of as part of the system circuits of Clegg's circuits of power because incentives are used to

align the interests of agents and principals to ensure the securing of results, and this influences knowledge exploitation from absorptive capacity as explained in chapters 9 and 3. The concepts of normative and mimetic isomorphism from neo-institutional theory have been applied to discern whether the organization has become similar to other institutions by implementing the ERP system. This research specifically adopted the lens of mimetic isomorphism to identify whether the organization emulated other institutions' practices in order to reduce the risks inherent in implementing an ERP system and found that the university adopted practices similar to the Shura Council (the formal advisory council in Saudi Arabia) in its adoption of a PMO in the implementation in order to reduce the risk of failure. The research also examined normative isomorphism, finding that some professionalization had occurred for certain organizational actors through a focus on their experiences and degrees during their recruitment by the university. This normative and mimetic isomorphism can be thought of as part of the social circuits of Clegg's circuits of power, which are the conditions that place (A) the PMO and consultants in the position to exercise power over (B), the users and managers. These conditions arise when the organization has adopted a system that is implemented for other institutions based on the experience of a PMO supervisor who implemented the same system for the Shura Council. The experience provides authority and legitimacy that enable the project manager to exercise power over the managers in the university. In addition, the recruitment of consultants and project managers based on their professionalization (e.g. their experience and qualifications) gave them more authority and legitimacy in their advice or decisions in the ERP implementation, and mimetic and normative isomorphism influence the

recognizing of the value of new knowledge and acquiring the knowledge. Third, adopting the concept of legitimacy from the theory of structuration revealed that the knowledge of norms and rules at the university was not reflected well in the ERP system, which resulted in a lack of legitimacy for the system implementers, consultants, and PMO. This can also be a part of the social circuits of power and influences knowledge assimilation and transformation from absorptive capacity (for an explanation of how agency theory, mimetic and normative isomorphism and legitimacy influence Clegg's circuits of power and absorptive capacity, please see chapters 3 and 9).

4. This research has adopted a social constructivist position, qualitative approach, case study strategy, semi-structured interviews and followed Creswell (2013) and Klein and Myers (1999) in analysing the data. It showed how the social constructivist position, qualitative approach and case study strategy can be applied to explore the power/knowledge of consultants and PMOs in ERP implementation at universities.

5. In its effort to understand the context, the study looked at change at the university and how it influenced the university, increasing the significance of technology there and shifted from a computerised record approach to a workflow process approach, causing automation and deskilling via the ERP in the university. It also explained the procurement of the GRP, the justification of buying the GRP, and how it was implemented. All these issues were important to understand the context.

6. The chief theoretical framework encompasses the power/knowledge of consultants and the PMO at a Saudi university's implementation of ERP. This

framework focused on the recruitment process and the use of resistance to institutionalize the power/knowledge of consultants and the PMO. Their power was clarified through the three circuits of power: episodic, social, and systems circuits. In the first circuit, the episodic circuit, consultants and the PMO built alliances among actors involved in the implementation process and used resistance to gain more resources (e.g. for training). During the recruitment process, the episodic circuit (i.e. the micro-level of interaction) required knowledge recognition and for the acquired knowledge to be demonstrated. Expertise, reputation, skills, willingness to change, and knowing about the working environment and the rules governing the work are all elements that make knowledge 'move' – or, in Clegg's model, make B do or know something that B would not otherwise do or know. In the second circuit, the social circuit, the consultants and the PMO needed legitimacy and had to negotiate with different actors. The establishment of the PMO to play a central role in the implementation increased the PMO's and consultants' social circuits of power. Their efforts in the implementation of the ERP system at the university increased their credibility, which is also part of the social circuit of power. Their knowledge of the ERP system's implementation and resistance made their decisions and responses to ERP implementation challenges more credible and legitimate. In the systems circuit of circuits of power, users are strengthened by making user resistance part of the discourse within the organization, which allows resistance to become a source of power, and this can lead to the institutionalization of power for consultants and PMOs. Consultants' and the PMO's use of resistance becomes an OPP (Callon, 1986) because it motivates users and managers to implement practices that are necessary for the implementation process. Thus, if the university solicits

advice from the consultants or the PMO on how to manage such resistance, the resistance itself becomes a route, or OPP, to convincing the administration about the solution to user resistance. Rewards were also utilized to create discipline in ERP use, thus demonstrating a systems circuit of Clegg's circuits of power. This research also adopted the Todorova and Durisin (2007) model of absorptive capacity. The model starts by identifying the knowledge source and prior knowledge, which in this study are skills and reputation. The first component in absorptive capacity is identifying the value of new knowledge, which is required before the acquisition of knowledge can begin. This value of new knowledge, the first dimension of absorptive capacity before knowledge acquisition, has been identified in this research as occurring when the university identified the need for certain skills in the implementation process. The episodic circuit and mimetic and normative isomorphism also influence knowledge acquisition. The second dimension of absorptive capacity is that knowledge assimilation is closely linked to professional routines, processes, and pathways that enable organizations to analyse, process, and interpret information that comes from outside the organization. The university has implemented the ERP system by establishing a PMO and engaging a reasonable number of consultants. It has also established a route for implementing the ERP with the advice of consultants, managed by the PMO. The third dimension is knowledge transformation, which is related to the organizational capability to develop and improve the integration of new knowledge with current knowledge. The university has been able to integrate new knowledge with current knowledge in its meetings and reports regarding the barriers that the ERP implementation faces. In this stage of absorptive capacity, the knowledge assimilation and transformation components are

influenced by the social circuit of Clegg's circuits of power and legitimacy. The fourth dimension is knowledge exploitation, or the ability of the organization to utilize this synthesis of new and prior knowledge. The university has been able to apply solutions stemming from the advice of consultants or the reports of the PMO regarding modification requests or user resistance. This last dimension of absorptive capacity is shown when, for example, the senior management approves and applies the advice of consultants and the PMO and makes a final decision to address resistance. In this final stage of absorptive capacity, the knowledge exploitation is influenced by system circuits of Clegg's circuits of power and incentives alignment. Meanwhile, the concept of absorptive capacity clarified how knowledge shifts through knowledge acquisition, knowledge assimilation, knowledge transformation, and knowledge exploitation.

7. This theoretical framework has practical implications. For example, it can help to develop job descriptions for consultants and PMOs, whose power needs to be underscored in such descriptions.

8. The fostering of alliances and the sound use of resources can be a source of success in the implementation process, as this study has clarified, as well as giving further credibility and legitimacy to the institution.

9. Using knowledge as explained in the introduction (how knowledge shifts and is used according to the model of absorptive capacity) is important to the successful implementation of ERP systems. Performing stages of absorptive capacity is thus also a source of success for the organization when implementing complex integrated systems such as the ERP. Correctly

identifying the skills needed in the ERP implementation, introducing a central PMO, and involving consultants are other success issues that must be taken into consideration. Fast and accurate decision making by senior management in the ERP implementation – giving solutions to problems raised by users or implementers, such as user resistance – is another source of success.

10. The consideration of both power and knowledge in the ERP implementation for the PMO and consultants is important for avoiding implementation failure. Analysing power and knowledge at the time of implementation can lead to a better understanding of the barriers facing IS implementation in general and ERP systems in particular. As explained in the literature, the implementation of ERP is a complex process, and power politics may increase this complexity. Therefore, addressing power/knowledge is a recipe for success in ERP implementation.

11. Understanding the previous experiences of similar ERP implementations at other universities (or any organization similar to the organization that is implementing the system) is helpful, whether or not that earlier implementation succeeded or failed. Such an understanding and learning from previous implementations may also lead to a successful or failed implementation. This research has found that implementing an ERP that was designed for similar organizations did not guarantee success and that the amount of customization required by the institution has led to the feeling among the users that the system had failed. However, according to the users, the system is running – in spite of the difficulties it has faced – with the minimum requirements.

12. One of the lessons of this research is that establishing alliances between the implementers, developers, users, consultants, PMO, and administration is an important step toward institutionalizing both ERP systems and the power/knowledge of the PMO and the consultants. Thus, establishing an alliance is mainly done to secure the resources to be used – for example, in training.

13. Knowledge of implementation challenges, particularly user resistance, can increase the legitimacy and credibility of the PMO and consultants, which may help in implementing the ERP successfully. The practical implication for PMOs and consultants is to deliver training that addresses user resistance issues, such as the difficulty of the system.

14. The establishment of a PMO can increase communication and hasten the implementation process toward a successful implementation. Also, the involvement of consultants is an important factor in transferring the knowledge needed for the ERP implementation.

15. The support of senior management by, for example, providing incentives or forcing sanctions on employees who do not support the system is important for avoiding implementation failure. This research showed that, without the support of top management, ERP system implementation will fail.

10.5 Limitations of the research study

The limitations of this research are that it constitutes only one case study at one university in a particular region of a developing country, which means that similar research at other universities or regions might provide divergent results. The ERP implementation at the university began in 2007, and the research started in 2012,

which means that the research is retrospective, and many events in the implementation might be interpreted differently five years after the implementation. One of the limitations of non-longitudinal studies is that they involve a short period of time, which is spent in the organization collecting the data. In retrospective studies, it is hard for respondents and research participants to recall certain events. Participants are also open to deliberate distortions of the events that occurred in the ERP implementation. Thus, the accuracy of the data collected is also questionable due to the short time period (three months) spent in the organization and due to the nature of retrospective studies (Farrall, 1996).

The data have been interpreted by identifying the majority and minority of views for each argument. Also the interpretation was built by applying the theoretical framework to analyse the case study. Also, the interpretation of the data occurs from the researcher's academic point of view, and the data might be interpreted differently by, for example, an executive dean

This research deals with a sensitive topic – power/knowledge in ERP implementation. Participants might find this to be a hard topic to speak about because power/knowledge involves questions about power, and discussing power in the institution implementing the ERP can mean speaking about other people critically, which can make people hesitate because they are afraid of the consequences.

A total of 34 participants were interviewed; interviewing more people might have led to a different interpretation. Obtaining results from other universities would require access to those universities, which may be an insurmountable barrier. Another limitation is that the primary data collection method entailed semi-structured interviews, which raises issues of authenticity.

10.6 Future research

In terms of future research, there are four focuses the researcher would like to examine:

- Playing politics and revisiting the game of politics and power in information technology implementation, development, and use by applying the lens of Clegg's circuits of power;
- Investigating how user resistance builds a better reputation for information technology implementers (in a grounded theory study).

This study's theoretical framework can be expanded to include other case studies or ethnographies for studying the role and power of consultants and PMOs at universities, as well as other types of organizations in other regions. This researcher thinks that more case studies on the topic using other strategies such as ethnographies can increase our understanding of power knowledge and power politics in ERP implementation. The future direction needed is to study and better understand the power and politics involved, as well as how decisions are made within the technological implementations of ERPs or other types of IS in public or private organizations by applying the lens of Clegg's circuits of power. This will enable us to improve the jobs done by different actors.

One practical application for a better understanding of power and politics is how user resistance builds better information technology implementers, consultants, and PMO reputation. Using grounded theory methodology will be useful in understanding such concepts.

Finally, this research might have provided a more detailed result if a mixed-methods strategy were adopted. Semi-structured interviews along with a survey could provide

detailed answers towards understanding ERP implementation and the role and power of different actors.

11. Appendices

11.1 Interview questions and topic guide

I would first like to thank you for giving us this opportunity to ask some questions regarding your views on the ways consultants or the project management office influence the way technology is used in your organization. We aim to listen to your experiences, and if you have any questions before we start, please do ask.

First, I will record this interview, if you don't mind.

I would like to reassure you the data will be secured and confidential, and will not be used for any other reasons than academic purposes. Later, a script will be sent to you for your authorisation that the information is correct. This interview is structured around the many areas of involvement that consultants or project management office have with IT implementation and use. These areas include a little information about yourself, your role in the organization, the reasons behind hiring consultants or project management office, and the processes by which you select consultants or project management office. They also include the issues faced by you and your team in the implementation process of ERP, consultants' or project management office's influence on some aspects of the organization, and you and your team's relationship with the consultant or project management office.

A. Tell me something about yourself

a. Background

b. Education

c. The nature of the job, your responsibilities

1. A short history of the organization

2. The changes that happened generally in the organization over the last five years

3. What are the recent development in the university?

4. What are the recent changes in the university from the technological point of view?

5. How did the shift or the move happen to the ERP systems?

6. How did the ERP change the way employees work?

7. How was the GRP (ERP) bought?

8. Why did they choose this particular GRP system?

9. How was the GRP implemented?

10. How did the contract influence the implementation and use of the GRP?

11. How was the training delivered?

Power/knowledge of PMO and consultants

12. How did the university choose a particular system?

13. How did the university put a PMO into its structure?

14. How did the university recruit the PMO and consultants?

15. How were the rules and norms reflected in the ERP systems?

16. What were your goals in participating in ERP implementation?

17. How were incentives applied in the ERP implementation?

Process for hiring consultants or project management office

18. How did you select consultants or project management office members?

- Are there any standards, polices in the university?
- Is it their experience (the number of IT or ERP implementation)?
- Is it their knowledge (specialised degrees or technology certificates)?
- Recommendations from other IT experts?

Reasons for hiring consultants or project management office members?

19. What were the problems faced in ERP implementation that required the intervention of the consultant or project management office?

20. How did the consultants or project management office help in dealing with the problems of ERP implementation? Did the consultant refer to his or her experience with dealing with the implementation problems?

21. How has the advice of consultants or project management office influenced organizational issues, including:

20. What were the previous norms and values of technology?

22. Explore the behaviour or the attitude toward using the technology.

22. Were there any conflicts that occurred during the implementation process, and how were these overcome?

24. Are there any examples where consultants or project management office were able to influence organizational culture through this technology implementation?

- By 'organizational culture', I mean the norms, values, and behaviour employees use to look and behave concerning the importance and use of technology in their daily working activities. The norms related to the previous understanding of the use of technology by the university personnel. The values related to the previous understanding of the importance and practicality of using the technology by the university personnel. The behaviour related to the attitude of the university personnel regarding using the technology.

25. How did the selection and recruitment PMO and consultants demonstrate their power/knowledge?

26. How did the founding of the PMO demonstrates power/knowledge?

27. What was the role of PMO and consultants, and how did that demonstrate power/knowledge?

28. How did the training happen in ERP implementation, and how did the training reflect the power/knowledge of consultants and PMO?

29. Was user resistance a major barrier in ERP implementation?

30.Is your resistance became a source of power in ERP implementation, if 37so how did user resistance become a source of power for the consultants and PMO?

31. How did the knowledge of organizational culture by the consultants and PMO influence the implementation of ERP?

32. How did the consultants and PMO deal with the user resistance and conflict?

33. How was knowledge explored, transformed, assimilated, and exploited?

34. How was resistance dealt with?

35. How did top management play a role in ERP implementation?

36. How did disciplining occur, and what enabled the compliance of actors in ERP implementation?

37. What do you think is the nature of the relationship between the organizational members and consultants or project management office?

38. How did the relationship develop?

39. How was the consultants' or project management office relationship with different departments than yours; for example, the finance or HR departments?

40. How were the consultants' or project management office relationships with the old generations?

41. How were the consultants' or project management office relationships with the young generations?

42. What do you think the consultants or project management office have brought to the organization?

It has been a pleasure finding out more about you. Let me briefly summarize the information that I have recorded during our interview:

a. Summarize: all the answers given by the interviewees to questions would be repeated to …… etc.

b. Is there anything else you think would be helpful for me to know?

c. Would you like to have the transcription of this interview?

(We certainly appreciate your time and contribution to this topic; thank you so much, once again)

11.1.1 Interview 1 with an external consultant and project manager (24/07/2013)

1. Ibrahim: Tell me something about yourself.

Background and education:

Participant: I am…... I hold a B.Sc. degree in computer science from Jordan. Since my graduation, I have worked as a programmer, systems analyst, software engineer, system implementer, and project manager, and now as a consultant.

2. Ibrahim: Tell me something about the consultancy firm.

A short history of the firm:

Participant: Twenty-seven years from the establishment of the firm, we started letting hosting systems through these letting lines. We moved to use a new generation, for example the fourth generation, such as Oracle and Dotnet. We deal with the public sector by offering a government resources planning GRP.

We focus on the public sector and were successful in attracting many departments in the government such as:

The royal court

The crown prince's court

The prime minister's court

The Ministry of Islamic Affairs

University of Najran

King Saud University

The changes that happened generally in the firm over the last five years:

We just finished expanding our firm. This location is made up of two flats. We now just opened a women's section specializing in controlling quality while keeping the privacy needed according to Islamic principles.

Throughout the last five years, we kept the following:

The number of employees is increasing; we kept the resources and were able to develop further. The important factor is that we were able to upgrade our systems, and we told our clients of this.

We improved the employees and their salaries because of the high living expenses in the country. A number of new clients, such as the University of Najrn, moved to our list of clients.

Ibrahim: Tell me something about your current role.

1. The nature of the job

A project manager and consultant:

Participant: At the level of tender preparation, I have knowledge of the market and experience in dealing with the clients. A consultant in tender preparation and pricings starts negotiating to win tenders and contracts with the different public departments, telling the different departments about our recent experience as systems implementers, answering questions a lot easier.

After winning the tender or the contract, we have to assess the plan, risks, structure of the project, and implementation plan, and the project manager is responsible for this.

There is the communication plan, where two teams from the client and the firm work together in dealing with the problems requiring a quick response. If the problem is not solved, the clients can talk directly to the president of the company.

Establish the project scope and document it through the project charter.

Then, we write a document that has the following:

Systems implementation through a certain methodology that takes about two weeks.

Training, user acceptance test, and including certified certificates for using the systems if the user uses it successfully.

The operation of the system:

Start using the systems, and the project manager will be available with some implementers. His role is directing the process.

If there is a problem, we provide the best practice and solution. The project manager's role is to provide a solution, or to inform the firm about the problem, while providing the client a specialist who can provide assurance that this problem can be solved.

Centrality of modifications and the King Saud University Deanship of Electronic Services has chosen our firm for this reason.

We offer more modification of the system, and it doesn't cost the client because this modification will be available for all clients.

We add all new legal acts and royal decrees to our systems.

So, we are a company that aims to make profits, but we provide services to the community and train new IT graduates for free.

Ibrahim: How did the shift or move to ERP systems happen?

Participant: Mainly, the university understood that the university needed to change its previous systems, which were only for recording data, to a system that guides the process, such as the ERP. We implemented the system by the vendor who trained the users first before using the system. Also, the vendor sent implementers to each department using the system to make sure that the system implemented smoothly and with no problems and deal with the requests to modify the system. Also, the university introduced to its structure a new department, which is the project management office (PMO), to help with managing the project.

Ibrahim: How did the ERP change the way employees work?

Participant: The system is mainly a process-based system, which enables the users to follow their work electronically. Also, it changed the work whereby only certain employees know the work procedures and rules, whereas now all the rules are written in the system.

Ibrahim: How was the GRP (ERP) bought, and why did they choose this particular GRP system?

Participant: The GRP was bought from us after we were in competition with Oracle and other companies, and we won this tender because we provide a system that includes all governmental rules, and we had implemented the system for other public organizations successfully.

Ibrahim: How was the GRP implemented?

Participant: We implemented the system after we understood the requirements of the university, and we provided our system with the minimum requirements. We did a

business process engineering for all working procedures at the university. Later, we provided training to the users before we implemented the system. We were helped by certain consultants and the PMO to help us recognize the needed improvements and solve the implementation challenges. PMO played a role of communicator with internal and external bodies. The consultants played a role of conflict resolution and communicator. The top management helped with implementing the system successfully and with the quality of the system. The vendor sent and kept sending implementers to each department to know the needed modifications and the problems and solve them. We considered also the performance evaluation. Also, another problem in the implementation of GRP was the contract, which made the vendor return to the contract if any modification was required by the user.

Ibrahim: How did the contract influence the implementation and use of the GRP?

Participant: The contract was not written correctly because it didn't serve the needs and the interests of the university. With every modification requested, the vendor had to return to the contract and tell us of the costs of each modification, which stopped the implementation of the GRP.

Ibrahim: How was the training delivered?

Participant: Training was delivered by system implementers before the implementation of GRP, but it was limited because it didn't make our use of the system easy, and many problems occurred after the implementation that were not covered in the training.

D. Process for other organizations to hire consultants

1. Ibrahim: How do other organizations select you and other consultants in your firms, and how does that influence your power/knowledge?

Participant: The firm's market includes a number of organizations that have implemented systems for a number of successful IT implementations, and the project sizes (for example, in the KSU project, KSU has a huge number of employees).

The product (GRP) and the certified certificates the firm has (for example, the Middle East Prize for the best IT firm in the region) indicate that a firm has the highest standard.

The company itself also matters – its situation of stability through the owners, financial situation, employees, expertise and reputation – all these issues make us powerful and demonstrate that we are knowledgeable in GRP implementation in the public sector.

Ibrahim: What were your goals for participating in ERP implementation at the university?

Participant: Our main interest was that the higher education sector was a new area for us, which encouraged us to participate and work with the university in implementing the GRP.

Ibrahim: How were incentives applied in the ERP implementation?

Participant: Incentives were applied when the users completed the initial training course for the ERP.

E. Ibrahim: What were the reasons for hiring you, and how did the university choose this particular system?

Participant: We weren't hired because we have expertise in implementing ERP for public institutions. We made it possible to implement an ERP system in the public sector with the needs of those departments, and we called it 'Government Resources Planning' (GRP). We developed this system in our firm, and we developed it according to the governmental systems and procedures. The university chose our system because it agrees with the requirements of its managerial and financial needs. This system had been developed in the company without the intervention of any foreign company. The product starts with analysis, design, and maintenance through the company. The modifications and maintenance for the systems are cheap because there is no involvement of any foreign companies. There is also the use of vocabularies that are similar to the words used in the governmental agencies, so the system is easy to use.

Ibrahim: How did the university put into its structure a PMO, and how did the founding of the PMO demonstrate the power/knowledge of consultants and PMO?

Participant: As far as I know, the supervisor of PMO, who is also an internal consultant, helped implement ERP for the Shura Council by introducing a PMO, and it was successful, so he advised the university to have a PMO because it was successful in other public organizations. This new PMO played a role of communicator between the university and vendor, and because the previous success of introducing PMO in other organizations was successful, it convinced the university administration to accept the advice of introducing PMO at the university. The founding of PMO demonstrates power/knowledge for the consultant because his

experience helped in implementing the PMO and resulted in a PMO role that is powerful in GRP implementation.

Ibrahim: How are the rules and norms reflected in ERP systems?

Participant: The rules and norms of the public sector organizations are well reflected because we included the needed governmental laws and acts in the system that agree with the requirements of those organizations.

Ibrahim: How did you help in dealing with the problems of ERP implementation?

Participant: At King Saud University, we helped with transferring data from the old system to the new one. These old data were written in the COPAL format, and there was a problem of finding programmers still working in those languages. These data had a different structure, which created a problem of transferring these data into database management systems DBMS-style. It was a time-consuming process, and there was difficulty in cleaning these and transferring them.

In terms of size, the data that needed to be transferred are huge. Thus, huge amounts of data will reflect on the systems' performance, which requires improving the system to meet this need.

There was also difficulty with the size and number of users, but the university helped us by providing the needed infrastructure for our new system.

For example, the administrative communication systems have about 1500 users, which results in huge pressure to deal with complaints.

Ibrahim: How did the training happen in ERP implementation, and how did training reflect the power/knowledge of consultants and PMO?

Participant: The training was introduced at the beginning, before the implementation of GRP as university lectures. The consultants advised the administration to give bonuses for users completing the training and to consider the training as points in future promotions. The PMO delivered the training to the users. This role in the training demonstrates the power/knowledge of PMO and consultants in the university.

Ibrahim: Was user resistance a major barrier in ERP implementation?

Participant: Yes, user resistance was a major barrier, and it influenced the time required for ERP implementation.

Ibrahim: Do you think user resistance became a source of power for you and the university?

Participant: We saw resistance to change; users don't accept change. Some people don't see that this new system will improve the university. This required us to explain to the users that the old system didn't meet the current university expectations, and this new system doesn't need any sort of expanding. What we saw is that the people with less education tend to resist the new system, which results in more burden. The university dealt with this problem by giving certificates and bonuses for certificates for learning to use the system, and this counted for the employees at the time of promotions. User resistance makes the university administration agree to support the implementation and use of GRP financially by providing incentives and bonuses for users who successfully pass the training. Maybe this is what made user resistance a source of power.

Monopoly of knowledge: those employees resist the new system because of the fear of losing their status in their departments. The fear of losing power is noticed when this new system makes the knowledge of those employees available to everyone.

The new systems also can result in the firing of those employees who used to have this knowledge. However, many managers eventually supported the implementation of the system without knowing how to use it.

In relation to experience in dealing with the implementation problems and referring to the experience.

There are different solutions, of course, but these solutions are common in most organizations.

For example, in the new systems, there is a procedure of materials exchange. We convinced the manager of the need to change the existing procedure by explaining the disadvantages and suggesting another solution. Some departments accept the advice and some do not, but the experience plays a very important role. Yet, the solution depends on the type of the problem.

So yes, you can say that user resistance has become a source of power because it was a risk for implementing ERP successfully for us and the administration.

Ibrahim: How has your advice influenced organizational issues, what is your role and how did that demonstrate power/knowledge?

Before implementation

Participant: There is difficulty in giving up a previous procedure (for example the accounting records), but it depends on if the organization likes to decrease or increase the paper used with the system.

All of this requires persuasion, with the support of senior management, and there is also the use of power. This is for the low-ranking users. However, for the high-ranking users, including managers, we tend to make PowerPoint demonstrations that show the importance of the new procedures, which will convince the managers to not resist the new procedures in the new system.

In this process of persuasion, there is a need to explain commonalities and explain the importance of the new system. There is the ability to modify the new system, but it has to work properly. Thus, there is a need to convince them that the procedures are easy to learn and use, but it is a necessity that will take some time.

On behaviour

A man in his sixties works in the Warehouse Department, and there was also an old system which this man used to work on for a while. When the new system had been implemented successfully, we used the following to convince him to use the system:

1. Good manners
2. Explain that the new procedure is legally correct
3. The necessity of change
4. Training (as I said before, we used to give training before the implementation and use of the system. It was like a university lecture, where we bring different interfaces and show how it can be used. Also we were able

to convince the university administration to give bonuses to users who successfully passed the training assessment)

5. Not to use power directly but try to convince and persuade through the consultant and manager

6. Provide certificates for people who support using the new system.

7. For the people who resist the system, reduce their influence and contact with the project.

This role demonstrates power/knowledge because it influences the actions of employees regarding the use of the new system in the university and it helps transfer the knowledge needed.

Ibrahim: How did the knowledge of organizational culture of the consultants influence the implementation of ERP?

Participant: The knowledge of culture gave us the legitimacy required in the implementation of GRP, which made our advice more related to the needs of the university.

Ibrahim: Are there any conflicts that occurred during the implementation process, and how were those overcome?

Participant: We used to give recommendations, not orders, and usually the IT departments supported our plans. Our recommendations and advice are supported according to the relevant laws. These recommendations have to be presented to the manager and then to important employees. Explanations of advantages and disadvantages are given, and then an agreement on the system's scope must be made

that doesn't cause any problem in the future. All of this requires a kind of trust between the two parties.

Ibrahim: How is knowledge explored, assimilated, transformed and exploited in the process of ERP implementation in the university?

Participant: Knowledge is explored when the university tries to find people with the skills and experience needed. Knowledge is assimilated and transformed in meetings and in studying modification requests raised by users and transformed. Knowledge is exploited in the writing to upper management regarding the barriers and needs of the users.

Ibrahim: How was resistance dealt with?

Participant: The resistance was dealt with by trying to educate users regarding the importance of the system in the university and by providing rewards for people who completed this training.

Ibrahim: How did top management play a role in ERP implementation?

Participant: Without the top management support, the system would never get implemented. They support the consultants' and PMOs' advice and input in all activities in ERP implementation.

Ibrahim: How did the disciplining of actors happen in ERP implementation?

The GRP system has the ability to show management where the work is and under whose responsibility, which effects the disciplining of actors in the university.

Ibrahim: What is the nature of the relationship between different parties?

There is a mutual respect but also a kind disagreement. The relationship develops with no previous contacts or relationship – a business kind of relationship. The two parties don't know each other, and there is no previous knowledge of any kind of advantages or disadvantages. There are ups and downs in this relationship, and through this we try to build a good reputation.

Ibrahim: How is your relationship with different departments; for example, the Finance or HR departments?

HR:

The procedure and complications are far more than with any other department in the university. The many procedures create many problems and difficulties. There is a kind of a sensitive relationship due to the nature of the work that this department does. There are always new rules and new acts in relation to the HR in the country, which makes new modifications necessary. Finally, there is a kind of tension between our staff and HR staff.

Finance:

There are few procedures in comparison with the HR. All HR procedures go to the Finance department (for example staff names and salaries). The laws related to Finance do not change as much as with HR. The culture, education, and style of management are different than they are in HR.

Young generation:

We create a kind of friendliness with the young employees. We have to deal with them, and they are usually supporters of new technology implementation. It's easy to discuss new ideas with them.

Old generation:

Usually, the old generations are not available, unlike young generations. They don't have that much time, and they leave decisions to younger employees in these kinds of matters. Unit managers are far more important than general managers in ERP implementation.

Ibrahim: What have you brought to the organization, and what have you taken away from the organization?

Participant: GRP (ERP) brought a new culture to the university. Previously, there were unlinked systems. Each department had its own system, but now all different systems have one oracle database. Thus, GRP brought the idea of integrated system with one data structure. It moved the university to a new culture of work.

We have improved our reputation by bringing KSU to our clients list. We added to our experience in dealing with health and academic organizations. We deal with different sorts of people, which are academics, and learn new styles of communication with them.

11.1.2 Interview 2 with PMO manager at King Saud University (25/7/2013)

1. Tell me something about yourself

Background and education

Participant: I am an engineer and the technical manager of PMO. I hold a Bachelor's degree in computer science, but my experience is in developing Government Resources Planning (GRP). I was a development manager for about five years at one of the local companies here in the kingdom. It was in the area of developing governmental systems for management and finance. This was a business experience, which added business requirements experience to my experience in IT. I am a technical manager for the MADAR project, and I have taken training courses in the area of project management and information technology strategy. I also experienced the implementation of GRP and ERP in many places, public or private. I joined the university at the start of the MADAR project four years ago in 2008.

Ibrahim: So you have a technical background?

Participant: Yes, I have this technical experience and am also a consultant for a number of departments outside the university. I can say that the university is the one that came up with the idea that I work as a consultant in the area of ERP. And, of course, our experience in ERP in the university added a lot to our experience.

Ibrahim: Tell me about the history of the university.

Participant: Look, at a university, I can only speak about the last five years. Before this, it wasn't part of my life, and I have little knowledge about it. But you can speak to people who are older than me in the university that can help you with this. However, the old generations have a very old mentality, especially before, say, the Al-Othamn revolution. We can call it the 'first era' and the 'Al-Othamn time' as the second era. Before, the university had limited resources. Change requires resources and support, and this is important. We heard that, in the first era and previous administrations, people were scared of change, and there were also no resources and no potential. Even if you don't have potential, you can bring expertise from outside to help you with your plans. The government employees have a lot of people that deserve respect, but the way the governmental departments operate creates a kind of indifference for the employees. The salaries in comparison with the private sector are low, and it's very rare to find encouragement through bonuses. This is why it's difficult to find people that like to develop themselves, except for people who have internal force but not the external or the institutional framework. Of course, all of this creates difficulties in developing public institutions, such as the university. So you would need to develop the university, and this I think you can call the 'Al-Othman revolution'. When he took office four years ago, he began the idea of paying to bring a consultant. This started the idea that, if you don't know, bring a consultant, or in other words 'buy the knowledge'. Definitely, this was the principle of transferring the knowledge. You bring someone from outside, you get the knowledge needed, and then you transfer this knowledge to people in your organization. Honestly, this ideology helped us a lot in the implementation of this new ERP. Definitely, it left a huge influence on the university. Let's say that it also made changes in other departments in the research area or the academic area. I am talking to you just about the financial and administrative departments, but you can find the change in the

amount of buildings that the university has started to build in the last few years. This is because of a policy to pay people, work with the people outside the university, and let the internal people work with them and support them. An example of this support is that the rector might leave his office on the fifth floor and come to support any small project in the university. He lets you feel that this small project is a very important one to the university. He encourages the people and provides whatever support that the project requires. So people feel that this project is an important work, so they work harder. Plus, the financial support has an influence. This means, if you bring a government employee whose salary is 7,000 riyals, you give him overtime pay as stable monthly income. If this person worked for the private sector as a programmer with three years' experience, his salary would be 14,000 riyals, but, in the government, he won't be paid more than 8,000 riyals. So there was a policy that, if this person deserves more, we can give him overtime 25% plus 3,000 riyals as a reward every month. So he would feel that the university started to take care of him. This created a new generation of employees that benefitted from this knowledge transfer from outside and from the consultants.

Ibrahim: What are the changes that occurred in the last five years?

Participant: Ok, let's talk about the last four years. The first stage was convincing people to change. We used to have Legacy systems that were operating for more than 15 years, but everything has a limit. Even its operation cost was high, and few people still work in these systems. Some of them moved to other places, and some are dead. For example, one person entered the university at 24 and now is 60 years old. It's very hard to convince those people to change unless the management or the administration totally convinces them. So when the university supported the change, they wanted a modern system that could help with the change the administration wanted. They chose

the new systems and bought them. You know, ERP is not a huge technical change, but it's a change in the business. So when you buy an ERP system, you like to change the way you do business. When you want to change the way people work, you will have resistance, which is that people refuse change. Definitely, at this time, the university administration policy was to strongly support the MADAR project. This is a strategic project, and you can see the slogans under the rector's name, such as 'we have to write our success story' and 'work hard and do everything you can to be successful'. So the university administration provided a huge amount of support for the people who wanted to implement the system, but the project gave the right to change the employees who resisted the system – thus, changing the people but not the system. Also, there was financial support for the system. So the university rector understood the point of change, and he used to say 'buy their time if they don't have time'. The employees worked for about seven to eight hours every day without needing to work for the MADAR project. At the start of using the system, there were a lot of problems from data clearing. We are at the end of the technical staff, but I can judge that MADAR worked properly. The staff who uses the system can tell if it works properly. They are busy all day. They wonder why they need to work with us and if they are going to have extra bonuses. So we applied what the rector used to say: 'buy their time if they don't have time'. They started to work with us, and they got bonuses in addition to their salaries. Finally, because the rector supported the systems, this change became possible.

Ibtrahim: How did the shift or move to ERP systems happen?

Participant: The university employed a PMO to manage the ERP project. Also it employed certain internal and external consultants to help by providing advice on complex matters. The university used to have an IT system that was used for

recording data, not a process-based system, which required the university to move toward process-based system such as GRP. The move to the ERP system required system implementers that have experience in implementing such system for public organizations, and the vendor has provided this, which helped the move to the ERP system.

Ibrahim: How did the ERP change the way employees work?

Participant: Mainly, the system provided a system that has all the important rules and laws that are related to the work of the university in terms of administrative and financial matters. Also, it provided surveillance by the managers over the work of employees and told them where the work was, which influenced the speed of work. Also, there used to be a monopoly of knowledge, where certain managers and certain employees knew all the rules and laws and where some users did not know such rules and laws, which influenced their participation in work.

Ibrahim: How was the GRP (ERP) bought, and why did they choose this particular GRP system?

Participant: The university asked different companies to participate in a tender and competition where different companies such as Oracle and Hasab and others provided their systems and the prices of such systems. The university chose the GRP because of its reasonable price and the functionalities the system provides to the university.

Ibrahim: How was the GRP implemented?

Participant: The university first had a committee to decide what are the requirements and what system the university should buy. We had to engineer all business processes in the university. Then the implementation starts by providing training for users by the

vendor. The vendor then provided the system to the university. During the implementation, the vendor sent implementers to each department to help with the implementation and use of the system to help with performance evaluation. Also, the PMO played and continues to play a role in managing the project and controls the modification and follows work with us regarding the modification and faults of the system during the use and implementing of the system by communicating with internal and external bodies. Also, the consultants played a significant role in helping overcome complex issues during the implementation such as the resistance of end users and managers and also a role of communicator and conflict resolution. Also, the top management played a role in making the implementation successful by providing the needed support such as financial support and the quality of the system.

Ibrahim: How did the contract influence the implementation and use of the GRP?

Participant: The contract was a major problem for us in the implementation of GRP because the vendor had to tell us for every modification that this modification will cost us more money because it is not part of the contract.

Ibrahim: How was the training delivered?

Participant: The training was like a lecture delivered to students, and it had interfaces and showed us how it worked. Actually, many problems occurred after the implementation that were not covered in the training, which made the GRP difficult to use.

Ibrahim: What are your goals in ERP implementation in the university?

Participant: Our aims in the Project Management Office are to complete the project on time and within budget and follow up any changes required in the system with the users and vendor.

Ibrahim: How were incentives applied in the ERP implementation?

Participant: Incentives were applied as part of the training for the ERP by the PMO to users. Users who completed the training sessions before the implementation got a month's salary and points that will help them in future promotions.

Ibrahim: How did the university choose this particular system?

Participant: The university started studying their requirements, and they found a system that met the needs of the university, which is GRP. They also studied and visited the universities that applied a similar system to learn their experience. For example, they found KFUPM has an Oracle system but lacks the governmental laws included in the system. What made them choose GRP is the agreement of the system with the laws and procedures of public sector organizations.

Ibrahim: How did the university put a PMO into its structure, and how did the founding of the PMO demonstrate power/knowledge?

Participant: When the requirements of the university were studied by the committee responsible for this, the previous manager, who was a member of the committee and also a consultant for many organizations, told the university of the importance of having a PMO to manage the ERP project. He also told of his experience at the Shura Council and how it was a successful story of implementing ERP and how PMO helped achieve a successful implementation. The bringing of the experience of founding a PMO at other organizations can, I think, demonstrate power/knowledge

because it influenced the decision to accept the advice to found a PMO at the university and help the transformation of knowledge needed by the university from the consultants.

Ibrahim: How did you select the consultants and project managers, and how did that influence their power/knowledge?

Participant: Look, in the university, we tend to bring in internal consultants. In the MADAR project, the university asked internal consultants from the College of Computer Science. For example, Dr. Abdullah Al-Madumigh is the supervisor of the MADAR project and a consultant for many departments in the public and private sectors. He specializes in ERP and has many publications in the field. Thus, the university depends on their internal staff if they need advice regarding any area. We might ask for external consultants, but it's not that often. For example, I was asked to be a consultant for the Deanship of Electronic Services, and we asked for an external consultant in pure technical matters where we lack an expert at the university. Thus, we asked for consultants from Microsoft to provide a specific solution for the sharing point. For members of the Project Management Office, we look for people who have knowledge in ERP systems implementation for public organizations and expertise and have a reasonable reputation. This expertise and reputation make the consultants and project managers more powerful, knowledgeable, and capable of convincing us through their input in the challenges faced in ERP implementation.

Ibrahim: You don't have the knowledge needed in terms of involving consultants?

Participant: Sometimes, you need an expert of a high level. The university, you know, is a huge academic environment. In the end, we are technical staff, not academics. What really matters for us is that the system works well. It's true that we have good

staff with reasonable knowledge and experience, but sometimes we face problems that our staff can't deal with. Thus, asking for external expertise at this stage is very important. Even if the cost of involving external expertise is, let's say, $1,500, it's still cheaper than doing new research on the problem. The first thing I do is bring them; then my staff will learn from them; the problem can begin to be solved, and the staff needs to be assured.

Ibrahim: It's also about their experience?

Participant: That means the consultancy is not something financial. You are not buying food or drinks, and it's not something that can be counted in days. You are buying a target, expertise, and knowledge (now it's the 'knowledge economy'; people today buy knowledge). So once you ask to involve a consultant, they can achieve your target within one or 10 days, but you want to achieve a target or solve a problem.

Ibrahim: So it is about knowledge and experience?

Participant: Of course – knowledge and experience.

Ibrahim: What are the difficulties you have faced during the implementation that required the intervention of consultants and project managers?

Participant: Of course, we have seen many difficulties, and one of these difficulties was the ERP system itself once the decision to change had been taken. We had consultants internally from the College of Computer Science and other departments in the implementation stage and planning stage, and, once the plan had been agreed, we needed a consultant to give us the assurance that we were working in the right direction. Also, we changed the plan slightly, and we needed consultancy on pure technical matters such as node balancing, servers, and clustering. They gave us the

best practice. The university pays a lot; we have the potential to request consultancy because we pay millions of riyals in these projects. It won't cause any problems if we pay a little for consultancy to ensure that we are working in the right direction. And we had, for example, consultancy from Dell and Microsoft to ensure that the plan we had regarding the servers was good. This supported us, and, if we have a problem later, we can argue that this plan was supported by consultancy firms. Of course, change management required the intervention of consultants because there was a strong resistance in this ERP project. In terms of project managers, they follow up the implementation with the departments implementing the GRP and make sure that the implementation is going smoothly and they follow up the changes required with the vendor. They communicate with the internal departments regarding their requests for change or problems with the system with the vendors.

Ibrahim: Is user résistance a major barrier in ERP implementation, is this resistance in the university's high management or within the employees in these departments, and does this resistance become a source of power for the university administration, project management office and consultants?

Participant: Look, it was a major barrier, and it's on the employee level. The university administration was supporting the project, but the administration is very busy, making it difficult to meet them every week to discuss the ERP project. They have academic research and manage different projects – things that are more important than this ERP project. We tried more than once, and we wrote about low-ranking employees that resisted the system. This dean supported the new system, and he told them about the importance of working on the system. This resistance has reasons and forms. The resistance is not always that the person doesn't want to use the system, but it's more an unawareness of the importance of using the system for his

organization. It's also an inability to meet the current working requirements. This employee used to do the procedure 1, 2, 3, 4, but with the new system the new procedure can be 1, 3, 4, 2. Now he tells you it has to be according to the original procedure; it's difficult to convince him of the importance of improving the procedure. This type of resistance does not like to change rules and working conditions. For example, take an old man: every time they train him, he forgets what he has been trained for. However, young people use smartphones, and it's easy for them to use new equipment. You know, the old generation will know something for decades and does not want to change. For example, we trained an old man in one of the departments, and the training was successful. We decided to bring a young person to do the work instead of this old man because it's not typical that we would continue training him forever. Change management also required consultation from inside the university. They gave us some recommendations on the way we deal with this resistance. For example, you are a manager of a certain department: sometimes you lose trust in me and don't believe my advice. I tell you that you will have problems 1 and 2. However, if someone external comes and tells you that some employees may resist the new systems by 1 and 2, you will believe him more than me because you dealt with him for a while. The consultants' influence on the receiver of the advice is clear. In terms of user resistance becoming a source of power, yes, it can because it influenced the support we had from the upper management to implementing the system. They supported us in terms of bringing the needed consultants to advise us in user resistance and supporting our actions to ensure that the departments ended their resistance.

Ibrahim: Do they refer to their experience?

Participant: Most consultants talk about their experience, and they say 'we did this in that project'. This is what justifies their advice, and this is something normal. I need to tell you that the professionalism is what makes the difference in the consultation. Here in the university, we use internal advice, and, honestly, the academics' advice is not as good as the professional consultants' advice. The professional consultant is someone who sees and works under different conditions, which is difficult to find in academics, who work under the same conditions every day. The academics know a lot of theories, but these theories are not applicable everywhere. For example, the ERP system here in the university: you cannot dismiss the people resisting the system due to the rules that govern the way public workers work in the public sector. In the private sector, if a decision has been made regarding the use of the new system, the employees have to follow up and use the system if they want to continue working in a bank or a private organization. Yet, here in the public sector or the university, even if the rector or the minister wants the systems to be used, a small group of employee can create problems and not use the system successfully. Thus, those theories mostly fail in the public sector, and you would need experts in this area if you want to ensure a successful implementation of technology.

Ibrahim: What about the influence of consultants and project managers on the norms of employees?

Participant: Sometimes, we work here as consultants for the King Abdullah Institute and in other organizations. When we first started working here, we wanted to implement the systems at the Finance Department. The general manager of this department had been the manager for about 30 years, with a strong personality, and he doesn't discuss anything. But when he left, a young person took charge of the Finance Department who accepted the change we are trying to make through this ERP

implementation. The old person didn't accept change, but the old generation respects the consultation advice while not liking to change the procedure. The new or young generation, they listen and then they are convinced that this is the right procedure and accept it. Usually, the new and recent departments or organizations accept change. Usually, young managers listen to the consultants because the consultants speak like medical doctors. They like to listen to him without any complications, and the consultant is like a referee. Generally in the university, the consultants and project managers didn't influence the norms of the employees through this technology implementation.

Ibrahim: How are the rules and norms of the university reflected in the ERP systems?

Participant: There were problems in terms that the norms and rules of the university were not reflected well in the ERP system, which caused problems in terms of meeting the needs of the university. This also required a lot of modifications requested by the users, and was one of the reasons for resistance.

Ibrahim: What about the influence of consultants and project managers on the behaviour of employees?

Participant: One of the negative factors that we were able to change is the monopoly of knowledge. Previously, knowledge was held by two people in some departments. Those people came with an old and complicated system, but generations like ours don't know and don't like to work under such systems. It had very complicated screens, and, of course, this created a kind of wariness that employees used to have. However, the new system came with new ideas, such as the transfer of knowledge. Now, all of the department can do the job needed even with the absence of key people. This created a new generation of employees that have knowledge of all the

activities in the department. For example, before the implementation of ERP systems, the academics used to leave their college and their lectures and go to the HR department to get a paper that explained their job rank and salary. However, now this can be directly printed through the new systems from the academic's office. This kind of work changes peoples' mentality about the way they do work.

Ibrahim: What is the consultants' and PMO's role, and how does that demonstrate power/knowledge?

Participant: The consultant's role is providing advice regarding any difficulty we face in the ERP implementation. The PMO's role is helping in managing the project and achieving successful implementation of the ERP in the university. This role demonstrates power/knowledge, as we are the decision makers in decisions about improving or fixing the system, and our knowledge plays a role in studying the users' requests. We, for example, study the requests for improving certain interfaces for the HR or including certain laws in the system. We then send the requests to the vendor and communicate with the vendor until the request is dealt with. The consultants' advice demonstrates power/knowledge because it influences the actions and decisions of the PMO or the university administration, and consultants' knowledge plays a role in accepting the advice of the university administration.

Ibrahim: How have you dealt with conflict?

Participant: A disagreement, in my opinion, always occurs, but we always overcome this through knowledge and experience. For example, I'll tell of something that happened to me personally. Consultants sometimes force their views regarding some issues, and sometimes their opinions don't give good results. And sometimes the consultants try to give you a balanced opinion. Honestly, we benefit from them, but

sometimes disagreements occurred, and we took their advice when I was a decision maker. Sometimes, I was forced to follow an opinion when I was not a decision maker. I balance the opinions, and I look at the risks and then make a decision. So the consultants give an opinion; for example, they might ask you to train our employees in Ramadan. In that month, there is no training, and the working hours in the month are only five hours. It is impossible for those reasons to train users. Also, their psychological condition doesn't encourage the users to accept training. Thus, the consultant gives incorrect advice to the PMO that cannot be implemented.

Ibrahim: How did the training happen in ERP implementation, and how did the training reflect the power/knowledge of consultants and the PMO?

Participant: The training was part of the implementation plan by the vendor and is delivered by the PMO. In the beginning, the training was delivered by system implementers, who know the system very well. People who completed the training session and passed the assessment were paid one month's salary, and this was a suggestion of the consultants, and this can demonstrate their power also. The consultants also advised that the training for new employees that would happen after the implementation could be delivered by the PMO and that those who passed the assessment should get points towards their promotions. In this training, the PMO's and consultants' power/knowledge influenced the success of the implementation of ERP through their advice and the delivery of the training.

Ibrahim: In summary, you agree that the knowledge of the organizational culture of the consultants and PMO influenced the implementation of ERP?

Participant: You can look at the warehouses example: we shortened the working cycle, and the employees accepted it and worked according to it. The consultants'

opinion was to give certificates that could be accepted as points in promoting the employees who took the training successfully. Thus, the users became interested in taking the training for the sake of the certificate. At the beginning of the project, we chose the name 'MADAR' and ran a competition at the university for choosing the name of the project. People became interested in participating to choose the name. The consultants asked the PMO to put this competition online on the university website. In terms of the knowledge of the organizational culture of the PMO and consultants, it is demonstrated by knowing the norms and rules and behaviour of employees and how to influence them in ERP implementation. This happened when the advice of consultants and the input of PMO members' influenced the ERP implementation by reflecting the behaviour, norms, and rules in the ERP system.

Ibrahim: The consultants and PMO influenced the behaviour and norms of employees of HR?

Participant: The consultants were more about the mechanics of implementing and using the system than the mechanics of dealing with the people. The PMO through the ERP training influenced the behaviour and norms of users. Don't say that we failed. No, we were successful, but there was a need to focus on the user more.

Ibrahim: How was knowledge explored, assimilated, transformed and exploited in the process of ERP implementation in the university?

Participant: Knowledge is explored to recognize the skills needed and experience. Knowledge in meetings and in studying modification requests, you can see that

knowledge is transformed and assimilated. In writing to upper management regarding the barriers and needs of the users, you can consider that knowledge was exploited.

Ibrahim: How was resistance dealt with?

Participant: Training and rewards play an important role in dealing with the resistance of end users and managers. Training enables the educating of users and shows how important the system was for their university, and rewards encouraged users to use the system quickly, which influenced the success of ERP implementation in the university.

Ibrahim: How did top management play a role in ERP implementation?

Participant: The consultants and PMO advised that the implementation required top management support, and the university administration realize this, and provided the support needed.

Ibrahim: How did the disciplining of actors happen in ERP implementation?

Participant: Usually, the ERP system shows where the work is and where it stops in the process of studying requests from users. This shows that the disciplining of actors can be achieved due to the previous reason – that all their moves are documented.

Ibrahim: The nature of the relationship?

Participant: The consultants are from the university. The university chooses the consultants internally. The consultant here has an office and comes from time to time depending on the needs of the project. Here in the university, when an academic takes an administrative role, he takes money for this and forms good relationships with the employees. He is definitely different than the external consultant, who comes from outside the university. The internal consultant's advantage is that he normally likes to

serve the university, which differs than the external consultant, who has only a goal to achieve and then leaves the university.

Ibrahim: The consultants' and PMO's relationship with the employees of the HR and Finance office?

Participant: You will find the consultant in many committees and in certain administrative levels. For example, in the guidance committee, you will find directors and managers of units and PMO members who the consultant and project managers have made good relationships with. In the university, specifically, the employees of the HR and Finance are very sensitive to the involvement of academics in their work. In every sector, there are two different categories of employees. For example, in the military sector, there are civil workers and military workers, and in the university, academics and administrators. And the administrators are very sensitive to the doctrine of the departments and units of the university. The academics also don't know the tricks for dealing with government rules and laws, which are related to HR and Finance. The administrators blame the academics for the heavy use of theories, which they think are not applicable in their settings.

Ibrahim: The consultants' and PMO's relationship with the young employees?

Participant: The young people who have a limited experience tend to more easily accept the academics as consultants and managers for two reasons:

1) They treat the academics as consultants. These employees graduated from university almost five years ago.

2) They have limited experience, which can equal the consultant's knowledge. The problem is, you bring an academic of 35 years old, and they

make him a manager of employees older than him. When the age of the employee increases, his experience also increases. This is why we called them 'dinosaurs' that are not able to accept any change.

Ibrahim: What did the consultants and PMO leave to the university?

Participant: They left a good staff with the idea of accepting the change. The consultants dealt with many ideas in the university that have been built for years by the previous managers of different units and departments. The influences refreshed the working cycles and established new procedures. They helped people to be more open and accept the transfer of knowledge, and people started to believe in these ideas. The consultants face you with your problem. If you go to some departments and face their problem, some of them accept and some don't. We found that all the power in some units is given to one or two people, and we discovered this in the process of implementing the ERP system. The PMO has helped in managing the ERP project and followed up with any request with the internal department and the vendors. They play a role in terms of providing expertise in the modifications requested by the university employees and saved a lot of money for the university.

Ibrahim: How do you select the consultants and PMO?

Participant: We prefer consultants and PMO members with more experience and certificates. What are the projects that they did in this area? His knowledge through the certification ensures that the candidate has the minimum knowledge required. This is a person who is a project manager for more than 30 years, but does he have a specialized certificate to make sure he is implementing the correct methodology?

Experience counts for about 70% of the process of selecting consultants. Also, it is important that he has the ability to transfer his skills.

I would like to tell you something about the differences between the foreign and local consultants. The local consultant is less respected in comparison with the foreign consultant. For example, in the area of information technology [IT], consultants came to us from companies such as Waterhouse, Armstend, and Mechanize. Those previous names are big names in the IT industry, and they have local employees. However, the foreign employees are very influential, while the locals are not.

For example:

1) Mechanize came to us to help with building an IT strategy. They estimated the costs to be about 250 million. When the university asked for 250 million from the Ministry of Finance, the Ministry answered 'Are you crazy? You need all this amount of money to buy a PC?' The problem is that Mechanize didn't consider the limitation of budgeting and the nature of work in Saudi. At King Abdullah Institute, we had the same strategy with only 10% of the costs of Mechanize. Even the university told us that our plan was easy to understand and shorter.

Ibrahim: The PMO department has implemented the ERP system in the university?

Participant: No, the implementer is a local company. We are managing and supervising the implementation and use of the systems. If there are any problems, we deal with them.

11.1.3 Interview 3 with the assistant manager of the Administrative Communication Centre (2/8/2013)

Introduction

Ibrahim: Tell me about yourself.

Participant: I am the university representative in the Administrative Communication System at MADAR.

Ibrahim: Your background?

Participant: An employee in the university for more than 20 years in the Administrative Communication Centre, and I hold a Master's degree.

Ibrahim: Tell me little about the university and the history of the university.

Participant: In 1957, the university was established. The work in the Administrative Communication Department at the beginning was totally by paper. Then we moved to use a simple system, and then we used the new integrated system, MADAR, which enables us to have a shared database, unlike the previous system.

Ibrahim: Tell me about the changes that happened in the last five years.

Participant: In the university, there has been a lot of work and changes that I can say are tremendous, especially in the time of Professor Al-Othman, the previous rector. And now, hopefully we will continue working in the same way and ambition.

With regard to the development of the system, I can say this system MADAR is better than the previous one. The previous one didn't eliminate the need for paperwork but enabled us to follow the work electronically. Now it's possible through the university website for you to follow any type of work, either in the university or outside the

university. Also, there is the possibility to print the received documents and work orders and print the data lists.

Ibrahim: Does the new system reduce the use of paperwork?

Participant: The paper is still there, but the difference is to know where the work is. You can follow up on more than one work order for more than one department at the same time. There are services that are only used by a few departments, such as Add Attachments, so it enables the department to return to electronic methods when needed. This, as I said, is just used by a few departments.

Ibrahim: What is the nature of your work?

Participant: I am the assistant manager of the Administrative Communication Centre.

Ibrahim: What are your responsibilities as the assistant manager of the Administrative Communication Centre?

Participant: As an assistant manager of the Administrative Communication Centre, I am responsible for the administrative communication system at MADAR. I need to tell you that the administrative communication systems is not only for this centre but is used by all units in the university because all units have input and output, and the university works in a way that is far from centrality. In addition, as the low-ranking employees in any department have this administrative communication system, these low-ranking employees can receive and send the work they do. This means that this system is used by a huge number of employees in the university. But our role in the centre, as with many units in the university, is that we have work, and we put work in the system.

Ibrahim: How did the shift or the move to ERP systems happen?

Participant: In terms of how the shift happened to ERP, we applied a parallel strategy in a way that we kept working with the old system until we achieved full implementation of the ERP in the university.

Ibrahim: How did the ERP change the way employees work?

Participant: You can see that the ERP changed the way employees do work because it reduced the need for paperwork. Also because the system has all the rules and laws that are related to the work of the university, it reduced the need of experts in university departments.

Ibrahim: How was the GRP (ERP) bought, and why did they choose this particular GRP system?

Participant: The GRP was bought after a competition with other ERP providers such as Oracle and others. The university has chosen this GRP because of its reasonable price and the service that the provider provides, such as that the vendor has to include all the new rules and laws of administration and finance.

Ibrahim: How was the GRP implemented?

Participant: Different actors played a role in ERP implementation, such as top management, consultants, system implementers, system analysts, and programmers. Firstly, the university realised its requirements to select the appropriate system and engineer its business processes to agree with the GRP. Top management provided all the support needed, such as when the HR complained to the rector that the system had many faults and did not include all rules and laws needed for the HR work, which helps also. The rector replied that the system had to be applied with all the difficulties it had and that HR had to work with the director of PMO to overcome those

difficulties; this is an example of top management support for the project. Also, the consultants played a significant role in providing advice for critical difficulties that the project faced. For example, they advised the university that they had to pay bonuses to employees who completed the first session of training for using the GRP. System implementers also played a role in terms of visiting all departments to make sure that the system was used; if there was a problem, they dealt with it in the departments; if they could not, they sent the problem to the vendor programmers, who also played a role in the performance evaluation of the ERP. System analysts played a role in terms of studying the modification requests of the university, and it helped with providing better services to all public organizations using the GRP. So the GRP had training provided before it was implemented. Also, it provided system implementers to all departments using the system to deal with the difficulties that the users faced. The PMO played a role of managing the project, and they studied the modification requests from users before sending them to the vendor. This is how the system was implemented.

Ibrahim: How did the contract influence the implementation and use of the GRP?

Participant: Actually, it was not written correctly because it was used by the vendor in each modification for the GRP.

Ibrahim: How was the training delivered?

Participant: The training was a like course led by system implementers to explain the system and how it is used. However, the training was not delivered based on the requirements of the users to make the use of the system easy, but many problems occurred because the training was delivered to certain people, not all users, and the same people who had training faced problems that were not covered in the training.

Ibrahim: What are your goals in participating in ERP implementation in the university?

Participant: Our aims as users in implementing the ERP system is producing systems a free of errors and helping in promotions at the university.

Ibrahim: How did the university select the consultants and project managers, and how did that influence their power/knowledge?

Participant: As far as I know, the university looked for a PMO and consultants who have expertise in implementing ERP systems for public organizations and have the needed reputation. Those two factors were, I think, the crucial factors that led to the selection and creation of the PMO and consultants. This expertise and reputation led the consultants and project managers to be more powerful, knowledgeable, and capable of influencing us regarding their opinions in dealing with the challenges in ERP implementation.

Ibrahim: How did the university choose GRP MADAR?

Participant: The university's ambition is far more than the current system. The current system doesn't agree with the ambition and the fast development that the university needs. Five years ago, we had a need for this system because, at that time, we didn't have a shared database for all the systems we had, which were a necessity. The Finance Department used to have a system, as did the HR, the warehouses, and the Administrative Communication. We made it possible through this new system to integrate those different systems into one system.

Ibrahim: How did the university put a PMO into its structure?

Participant: The consultant advised the university to put a PMO into its structure to help in managing the ERP project. He argued that the PMO helped many organizations implement the ERP successfully.

Ibrahim: What are the difficulties that you faced during the implementation of the system?

Participant: There were a lot of difficulties, and we overcame them in time. Some of these difficulties had a link with the system and some didn't, such as creating new procedures or changing the structure in the whole university. There were difficulties in implementing the systems and enabling change in the university. I expect the biggest problem we faced is that we implemented the system quickly, and we didn't try to develop the university and change the procedure. This problem made us make the system work under the university's same old procedures and structure. There is no problem if you try to develop and implement the system at the same time; we just didn't try to study the current structure and procedures and then implement the system.

Ibrahim: What about the change management?

Participant: There was a lot of pressure from the senior management to implement the system quickly. There is, as you know, a contradiction between implementing the system quickly and quality. We tried to do our best until we achieved the full implementation of the system.

Ibrahim: What about the users' difficulties?

Participant: The administrative communication system is used by a large portion of users – almost 2500 users. There is a difficulty in that some users enter wrong data,

which leads to the loss of work, and, due to this number, the training available is limited and occurs while they are working.

There is a difficulty in creating one working structure for the whole university because the university isn't centrally managed. For example, there are units who used to have all work signed by the unit manager, and there are units that didn't. This difference in working styles doesn't help in implementing the system.

The previous system moved us from the records and books to a computerized system that enabled us to look up work, but this system was not used by the whole university.

Before the training, we sat with the external body we bought the system from, and they had the advantage that they had implemented the system in many other public organizations. We also benefitted from their experience in training our employees. Those other public organizations differ from us in working styles and procedures. However, we benefitted from them through general information regarding implementing the system, redesigning the interfaces, and requesting some related reports. In general, we changed the system to fit the university's structure and working styles. When we started training, we told them about the university environment; they transferred their experience, and then we made a training program. However, due to the huge number, we didn't train all employees. We trained a few people from all units, and then these people trained their units.

Ibrahim: How did you choose the company that implemented the system?

Participant: I have no information regarding this, but, when the university bought the systems and the implementation started, we worked with them.

Ibrahim: Did the consultants, the external company, and the PMO help you in overcoming the implementation problems?

Participant: We requested some modifications, and they did those modifications for us but only when we had difficulty. We wished that they had told us in the development stage and didn't wait for us to present problems. This is because our employees put their effort in their work. One of the problems is that they didn't present new ideas for us; they only saw if we wanted something or had a problem that they could solve.

Ibrahim: What about the disagreements and conflict that occurred with the implementer, PMO, and consultants?

Participant: At the beginning of the implementation of the system, the system was directly linked to the employee unit at HR. Here at the university, we have different units, and we can't recognize where the employee is at any unit or department. For example, an employee might be at the Art College, but where is he exactly at the Art College? The administrative communication system needed to identify where the employee is exactly, and now we have reached a point where we can identify where the employee is and in what unit he is, in total independence from the HR system.

Ibrahim: How did you convince them of the problem and that there was a need for a solution?

Participant: We said this is a problem and needs a solution. There is a problem when the system linked to the HR won't work. We have in the university, for example, an employee in a certain unit that sometimes works for a different unit. The old HR system wouldn't identify exactly where he is. And because of the previous system, we

asked to develop the HR systems. However, the company provided us with a separate system.

We wrote to the company about the problem until we decided with the company that we would get a separate system and that it was better for them to develop the system. Since every system works separately, we accepted that we needed a separate system so we could work.

Ibrahim: As far as I understand, the company that implemented the system has implemented this for many public organizations.

Participant: Every public organization has its own characteristics, and, in the university, the colleges or units – similar to a governmental body – have their own budgets and working styles.

Ibrahim: How did the company that implemented the ERP system (the consultants and PMO) influence the employees' norms, and how were the rules and norms of the university reflected in the ERP systems?

Participant: The administrative communication system within the MADAR system built on serving the needs of people who are following up on their business – the most important user of the system. Some procedures have changed in a way that the same work is sent with the same number of people required to find out where the work has arrived. The computer has become a recorder, instead of using books as was done previously. Some procedures have changed, so some departments can send work without returning to the Administrative Communication Centre. So, some of the rules and norms of the university have been included by the vendor in the GRP system but not all the norms and rules.

Ibrahim: The company, consultants, and PMO influence the behaviour of the users of the system? What is your role, and how does that demonstrates power/knowledge??

Participant: At the beginning, there was resistance, and we dealt with this by providing training and support for the actions required by the top management. Some departments over time began to use it fully because maybe they found advantages over the previous situation. Now that the system has become a reality, everyone and all departments have to deal with and use it. Our role was making sure that the employees use the system and improve the system by working with MADAR in, for example, ensuring that all rules are included in the system. Influencing the behaviour of employees demonstrates power/knowledge in the way that the top management implement's the advice of consultants and the PMO to make the GRP a reality and be accepted.

Ibrahim: How have those people (vendor, consultants, and PMO) dealt with this resistance? Does this resistance become a source of power for the university administration and Project Management Office and consultants?

Participant: They put the MADAR project between the university and the company implementing the system. The MADAR project was the communication link with the company. The company has no direct communication with us in the Administrative Communication Centre. However, they came to us and trained a huge number of users. This training was needed to overcome resistance, and resistance was used as an excuse to convince the top management to put more money in training and to do what was needed to overcome user resistance. So, yes, I think resistance was used as a source of power in ERP implementation.

Ibrahim: That means that this is a MADAR responsibility?

Participant: MADAR is the connection link between the university and the company. That means that, if there is any request or modification of any procedure, MADAR writes to the senior administration for agreement and then writes to the company to do what is needed.

Ibrahim: How were the conflicts and disagreements with MADAR (PMO) or the company or the consultants implementing the system overcome?

Participant: The first episode was the resistance to change. The current system is linked with other systems, with more interfaces than the previous system (the administrative communication system), which was easy to use. Of course, when you have a system that is linked to other systems, you need a huge database. In all these matters, there were conflicts and disagreement of views, but we acceded to the wish of the university.

At the beginning, as employees, we were used to a previous system, which did the needed work and was easy to use. We started to ask ourselves what the new system was for, and it was not meeting our expectations. And then resistance happened, and there was disagreement about implementing the new system.

We expected the new system, which was from a company that had implemented the system for many companies. We found out that the new system needed many modifications, and we worked on this until we achieved what we have now. All of this was because of the pressure from senior management to implement the system quickly.

There wasn't direct conflict and disagreement with the consultants and the company that implemented the system because of our direct link with the MADAR. The only

disagreement was about the previous link with the HR, and we had our own separate system. As I previously said, we wrote to the MADAR project, which was supposed to solve the problem totally. What was really important for us was that the system worked well.

Ibrahim: Do you remember an example of how the company influenced your norms?

Participant: The company had no direct link with us, and we related directly to the MADAR project. The MADAR project worked it out.

Ibrahim: OK. How did MADAR influence the norms of the university employees?

Participant: MADAR provided options to some university units, such as to attach a photo with an electronic transaction, and this shows the change from the total dependence on paper to the new system.

Ibrahim: You agree that the knowledge of the organizational culture of the consultants and PMO influenced the implementation of ERP?

Participant: Yes, the knowledge of the organizational culture – knowing the behaviour, norms, and rules of the university – influenced the success of the ERP implementation by making sure that the behaviour was dealt with in an appropriate way, such as providing training for users in order to influence their behaviour. In terms of norms and rules, it should be written in the system.

Ibrahim: How was knowledge explored, assimilated, transformed, and exploited in the process of ERP implementation in the university?

Participant: Knowledge was explored in the ERP implementation in that university did research to identify the skills and experience needed. The skills and experience

required from the people who wish to be involved in ERP implementation play a major role in the exploration of knowledge. Then, knowledge was assimilated and transformed in meetings and in providing input regarding if the modification requests were needed or not. Knowledge got exploited in the final involvement of upper management in the process of ERP implementation, such as their decisions regarding the modification requests and their financial approval.

Ibrahim: Was user resistance a major barrier in ERP implementation?

Participant: User resistance caused a challenge to us due to its nature, that required the intervention of all actors in ERP implementation.

Ibrahim: How did top management play a role in ERP implementation?

Participant: Top management provided the financial support that was needed by the university by approving the costs for customization and training. They approved the bonuses for the people who completed the training. So they supported us at all levels.

Ibrahim: How was resistance dealt with?

Participant: Talking with the managers and users who resist the system is the first step in dealing with resistance. In this talk, we try to provide the positive nature of ERP and how it can change the business in the university. Also the university provided training two times before the implementation through the system implementers and the PMO later. Also, the university has recognized the need to pay rewards to people who completed the initial training. All these issues played a role in ending resistance.

Ibrahim: How did the disciplining of actors happen in ERP implementation?

Participant: With the nature of ERP as a process-based system, it showed any requests the user raised; in this situation, one can assume that a kind of disciplining of actors happened because it shows the time it took to study each user request and under whose responsibility.

Ibrahim: How did the relationship develop with MADAR?

Participant: At the beginning, there was a representative from 15 units and departments. We met with MADAR and discussed the start of the implementation. Our goal was to implement the system to provide the most important services as a starting point. The only problem we faced was the huge number of users. There were technical problems, and we wrote to MADAR about them. Our relationship was a business working relationship, and we started working with them through meetings with MADAR and a representative of the external company. We didn't start using the system until the rights and secrecy needed were clarified, and simple problems were overcome.

Ibrahim: How was the relationship with old people?

Participant: We tried to simplify the use of the system, and we tried to solve the problems that usually occurred with old people. You know, some old people don't know how to use the computer in general. We tried to simplify and make the systems flexible and easy to use for old people. At the beginning, there were about 70 interfaces, but we shortened those to seven interfaces.

Ibrahim: How was the relationship with the young people?

Participant: We explained how the system worked to young people, and there weren't any issues or difficulties.

Ibrahim: What has MADAR left with the implementation and use of the ERP?

Participant: We started by following up on the work at any unit in the university, and we tried to identify the employee responsible for that work. This, in itself, is a success for us. It also reached to the low-ranking employees at any unit, and the high-ranking employees began to know where the worker was exactly. All of this clarifies how easy it is to follow up on the work, but we didn't change a lot in the procedure and working styles.

Ibrahim: Returning to the resistance, what was the solution?

Participant: What helped us with the resistance of users was the senior management support.

Ibrahim: Without the support of senior management, was there any possibility of overcoming this resistance?

Participant: This is a problem we faced with the old system: there was limited senior management support, and convincing everyone to use the system was a very slow process. However, when we implemented the new system, we worked with it from the first day. And, of course, there are some employees who looked for problems, but it didn't influence the way the system works.

Ibrahim: Finally, Did MADAR help with this resistance?

Participant: We held meetings with MADAR. We tried through these meetings to solve and study the problems and find solutions for them.

11.1.4 Interview 4 with an internal consultant (23/7/2013)

Ibrahim: Tell me about yourself.

Participant: I am an assistant professor of Information Systems at the College of Computer and Information Science and work as an internal consultant for the MADAR project here at the university.

Ibrahim: Your background?

Participant: I have a PhD in Information Systems from the university of Iowa in the United States.

Ibrahim: Tell me little about the university and the history of the university.

Participant: The university was established in 1957, and since that time the development of the university hasn't stopped. We built many colleges and introduced many assistant deanships throughout the years since establishment, such as the Deanships of Admission and Libraries.

Ibrahim: Tell me about the changes that happened in the last five years.

Participant: There have been many changes in the last five years, especially after Professor Al-Othman took over as Rector of the university. He worked hard to develop the university in all stages academically, administratively, and financially. He convinced some businessmen to support research financially. He also built the girls' campus and new housing for students and faculty. So, there has been a development in the university, and everyone can see this now.

Ibrahim: What is the nature of your work?

Participant: I am an internal consultants specialising in ERP and e-government.

Ibrahim: What are your responsibilities as an internal consultant?

Participant: I am responsible for helping the PMO and the university in overcoming challenges in ERP implementation by providing my expertise and advice in implementing ERP for public organizations.

Ibrahim: How did the shift or move to ERP systems happen?

Participant: There was a deep discussion on how to move or shift to the ERP, and we advised that the university should work with both the old system and the new ERP until the university finished moving all data to the new system.

Ibrahim: How did the ERP change the way employees work?

Participant: The ERP changed the way employee work in a way that there is no need for the users to know all the rules and laws because the system has included such rules and laws. Also, managers now have the ability to follow where the work is and with whom and how long the work has taken. These are examples of how the ERP changed the way employees work.

Ibrahim: How was the GRP (ERP) bought, and why did they choose this particular GRP system?

Participant: The GRP was bought after the university identified their requirements and visited other universities to see their experience and get advice on what systems the university should buy. Then a competition or a tender was opened to all developers such as Oracle and Hasab to present their systems and prices. The university chose Hasab because of its price and because its system has been implemented in other public organizations with the laws and rules of the public sector.

Ibrahim: How was the GRP implemented?

Participant: The GRP was implemented by considering many factors, such as requirements analysis, performance evaluation, top management support, involving consultants to provide advice on critical and complex matters that the university and vendor lacked expertise in, introducing the PMO to help with managing the project, providing training to users before and during the implementation of ERP, sending system implementers to each department using the system to deal with implementation problems and solve them. The system was improved to include all laws and rules of work at the university by first describing the problem for the user and sending the modification required after signing it from the manager; it got studied again by the PMO before sending the modification to the vendor the developer; then developer studied the request to see if there was a real need to this modification. If there was a real need, it got sent to the programmers for the needed work.

Ibrahim: How did the contract influence the implementation of GRP?

Participant: It influenced the quality of the system because many of our modification requests were refused because they didn't agree with the contract.

Ibrahim: How was the training delivered?

Participant: The different university departments selected different people to participate in the training sessions before the implementation of GRP. The training was a like course delivered by system implementers, but this training was limited and didn't include all the needs of the users.

Ibrahim: What are your goals in participating in ERP implementation in the university?

Participant: Our goal was making sure that the system used in the university served the needs of the university and improving my expertise in implementing ERP for public organizations such as universities.

Ibrahim: How did the university choose GRP MADAR?

Participant: The university chose this GRP after studying the needs of the university and visiting three universities that have similar systems. After the study of the needs and visiting other universities, the university decided to invite an ERP vendor to present their system and how it will fit the university's needs. After this, the university chose the GRP because of the price and because it met the needs of the university.

Ibrahim: How did the university put a PMO into its structure?

Participant: During the planning stage of ERP implementation in the university, the consultants advised that a PMO could help achieve a successful implementation by managing the project. The university agreed.

Ibrahim: What are the difficulties that you faced during the implementation of the system?

Participant: There have been many difficulties, mainly the resistance to the implementation from the users, and many interfaces lacked the rules that needed to be included in the system. These are the two main problems I think we faced during the implementation of ERP in the university.

Ibrahim: Did the consultants, the external company, and PMO help you in overcoming the implementation problems?

Participant: Yes, they helped a lot. The consultants helped by providing critical advice on the implementation of ERP, such as change management issues. The PMO provided their expertise in helping managing the ERP project according to the goals of the university. The external company provided training and system implementers for each department to help implement the system.

Ibrahim: What about disagreements and conflicts that occurred with the implementer and the PMO?

Participant: There were disagreements with the implementer regarding the continuing need to send system implementers to every department until the full success of the ERP implementation. Also, there were some disagreements with the PMO regarding the changes requests for the interfaces, as they took a lot of time studying our requests. Also, the PMO provided training, where we think that the training provided by the PMO was not enough in terms of covering all the issues that the users needed. There was no direct disagreement with the users, as we don't have direct communication with them.

Ibrahim: How did you convince them of the problem and that there was a need for a solution?

Participant: Not all the time did we convince them [the PMO and vendors], but we tried to explain the advice regarding the problem the university faced with the ERP system. Now, the university introduced a webpage (as we advised) that enables users to send any problem with the system to the PMO quickly, not like before, when we needed to fill out a paper that had to be signed by the manager and then sent to the PMO.

Ibrahim: How did the company implement the ERP system?

Participant: The company implemented the systems first by providing training to some users. Before, the university had studied the requirements of the different departments and put them in one document and then presented a competition between different developers such as Hasab and Oracle and then decided that Hasab were capable of providing the needed requirements and was cheapest in terms of price. The vendor sent implementers to each department to help with overcoming the ERP implementation problems.

Ibrahim: How did the consultants and PMO influence the employees' norms?

Participant: The consultants advised the university administration to pay extra bonuses and give points towards promotion for users who successfully passed the training for using the ERP in the university delivered by the PMO. This influenced the norms of the users, who used to work with paper most of their time; now they are using a computerized system that make their work quicker.

Ibrahim: How are the rules of the university reflected in this ERP system?

Participant: Some of the rules are reflected in the ERP system, which are required by the university to continue sending modifications for the system to include all the rules of the civil services.

Ibrahim: The company, consultants, and PMO influence the behaviour of the users of the system? What is their role, and how does that demonstrates power/knowledge?

Participant: There was user resistance at the beginning. The university dealt with this by supporting the initiatives of consultants, PMO, and the vendor in way to make the implementation successful, whatever problems were faced. These problems were

addressed by providing training and financial support for the users who completed the training successfully; this is how they influenced their behaviour. Their role is making sure that the ERP or GRP is used according to the requirements of the work, and the influence on behaviour demonstrates power/knowledge because the training and bonuses influence the behaviour of using the GRP successfully.

Ibrahim: Is user resistance a major barrier in ERP implementation? How have consultants, system implementers, and the PMO dealt with this resistance? Did this resistance become a source of power for the university administration, Project Management Office, and consultants?

Participant: Yes, it was and still is a major barrier. The PMO, consultants, and vendors dealt with resistance by providing training to some employees, who would train their colleagues. The vendor sent implementers to all departments using the system. In terms of whether user resistance became a source of power…yes, I think so. The university administration, PMO, and consultants made any new modification requested by the users a sign of user resistance.

Ibrahim: How have the conflicts and disagreements with MADAR or the company implementing the system been overcome?

Participant: There were no conflicts, but there was disagreement regarding, for example, the interfaces and the rules included in the interfaces with the PMO. But, when we raised this issue with the administration, they asked us to accept the minimum requirements, as changing requests requires a lot of money.

Ibrahim: You agree that the knowledge of the organizational culture of the consultants and the PMO influenced the implementation of the ERP?

Participant: Yes, the knowledge of organizational culture, such as making sure that the rules and norms of work were written in the system, influenced the success of the ERP implementation.

Ibrahim: How was knowledge explored, assimilated, transformed, and exploited in the process of ERP implementation in the university?

Participant: Knowledge was explored in the process before ERP implementation, as the university looked for certain people with certain skills and experience in ERP implementation to help the university implement the system. When it comes to how knowledge was assimilated and transformed, this happened when the employees involved in ERP implementation discussed each user requirement, for example in meetings. Knowledge was exploited when upper management approved the advice of the consultants or the PMO.

Ibrahim: How was resistance dealt with?

Participant: The first step is trying to deal with resisters directly by informing them that there are many benefits of the ERP system, and also providing them with training and rewards played a major role in ending this resistance.

Ibrahim: How did top management play a role in ERP implementation?

Participant: First of all, they provided support to all actors in ERP implementation. They supported the advice and input of consultants and the PMO. They supported the users by providing training and bonuses and encouraged them by considering the completion of training and the certificates resulting from this in future promotions.

Ibrahim: How did the disciplining of actors in ERP implementation happen?

Participant: ERP, as you know, can increase the disciplining of actors because it shows activities to management regarding any work in the ERP. In this way, you can assume increasing discipline.

Ibrahim: How did the relationship develop with MADAR and the PMO?

Participant: At the beginning, there was a meeting between us and MADAR and representative from each department. In this meeting, there was an introduction of the GRP and how it would be implemented in the university and when. This is how the relationship developed. During the implementation, MADAR were a link between the university and the vendor, and they sent our modification requests or implementation problems to the vendor.

Ibrahim: How was the relationship with old people?

Participant: Our only relationship was with MADAR.

Ibrahim: How was the relationship with the young people?

Participant: Our only relationship was with MADAR.

Ibrahim: What has MADAR left with the implementation and use of the ERP?

Participant: MADAR and the PMO left to the university a system that is used for financial and administrative issues in the university. They increased the knowledge of the users regarding the importance and advances that the technology can provide in terms of services for faculty and staff.

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