

ICT Challenges and Implementation of ERP system in SMEs of Pakistan

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<p>The ability of an ERP (Enterprise Resource Planning) system to quickly and easily integrate all essential business operations into one system with a common database has convinced different types of businesses to opt it. Effective introduction of ERP has been critical to operational productivity in business environments. Essential success factors for the efficient implementation of ERP have been established in this regard. The goal of this research is to recognize and examine ICT challenges faced by Small and Medium Enterprises (SMEs) of Pakistan and propose a solution in contrary to that how implementation of an ERP system in SMEs of Pakistan can improve these challenges.</p> <p>This research draws from the related background studies on how SMEs of Pakistan are facing ICT challenges, what are the apparent obstacles they face when they try to opt for an integrated IT system in their businesses and how an integrated ERP system can overcome these challenges. This research would identify the challenges being faced by SMEs of Pakistan and allow Pakistani small and medium sized enterprises to produce better returns from implementation of ERPs.</p> <p>The author used the qualitative analysis approach for this research. The author interviewed several people from higher management who had ample knowledge of the topic at hand. Often these decisions are also influenced by the financial situation of the firms and senior management.</p> <p>In the end, a solution to this was made by proposing a suggestion of implementing an ERP system in SMEs of Pakistan to overcome the ICT challenges.</p>	
Key words ERP, ICT, SMEs, Pakistan, Challenges, Management, Businesses.	

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1 Introduction

In today's business world, information and communication technology is profoundly influenced by modern IT tools. Modernization pushed SMEs to seek ICT technologies to challenge the business communities in the market, to gain a strategic edge and to take advantage of small and medium sized enterprises (SMEs). The way companies do business is changing ICT rapidly. It is also modifying the decision making of the companies. Also because of ICT technology has the planet witnessed a major shift in market habits. In short, ICT affects each part of a business.

During the last two decades since the dramatic ICT transition, ICT plays a vital role worldwide. The ICT industry has provided a new and fantastic platform to many individuals. It has also supported the start-ups, small and medium enterprises and new business ventures and for those in the underdeveloped or developing countries such as Pakistan. ICT has been a valuable method to build an idea-based culture in order to achieve profitability in organisations. This idea-based culture provides businessmen with resources and encouragement to turn their concepts into potential market opportunities. These trend produces more and more businessmen and the professional employees of community are such decision makers. These systems and frameworks have already been implemented and compensated for in the context of work production and a sustainable development in the developing world.

Without a second thought, entrepreneurship is a new phenomenon in developing countries like Pakistan, which is strongly dependent on ICT. It will effectively help small and medium-sized enterprises boost, grow and eventually contribute to Pakistan's economy. Moreover, all emerging and established small and medium-sized enterprises struggle to incorporate entrepreneurship practices into their organizations to generate more potential.

Nowadays, several factors affect a company's competitiveness and growth. (Porter and Miller, 1985). IT was commonly used as a communication device in its old business world shape. However, after some time, ICT utilization and impact increased dramatically, as technological sophistication increased. (Chan, 2000). The development in technology may be the explanation for this growth. ICT introduction into a business urge for a new technological need and promotes Service and Innovation Policy that can be connected with a technological distribution or infusion.

According to several background studies, it has been found that SMEs of Pakistan rely mostly on the old school and conventional methodology. The use of standard tools like Word processors and spreadsheets have been widely seen to be used by SMEs in

general. Most of Pakistan's office staff are dissatisfied with the tech side. The lack of adequate training may be one of the reasons. Educating and training of the staff can be useful and improve this gap. On-the-job coaching is required for an entity to work properly as IT is used.

Pakistan is both a growing and populated region. It faces various challenges, such as power shortages, weak government systems, energy crises and poor ICT adoption. Such aspects influence the growth of a nation in general, decline international rankings and are not confined to corporate activities. Monitoring of the situation effectively, control the legal situation and adopt flexible policies specifically for small and medium-sized enterprises by the state can improve the situation, which play an important role in the country's growth.

1.1 Research Objective

Businesses in Pakistan face a number of challenges related to ICT. The study will be worth carrying out as it will aim to identify those challenges and find out the reasons behind them. Another goal would be to propose an idea to implement an integrated ERP system to improve the current ICT situation of SMEs of Pakistan. Another challenge is the use of existing conventional tools and technologies by SMEs of Pakistan.

This research will examine the challenges faced by SMEs of Pakistan as they begin to practice ICT and opt for integrated systems. The research will also aim to find the factors behind these challenges and how implementation of an ERP system can overcome these challenges. Businesses in Pakistan have a hard time controlling their operations and addressing all business-related problems.

The results will examine the issues faced by SMEs of Pakistan that will eventually promote them with strong leadership, transparency, accountability and evidence-based decision-making. It will also support SMEs of Pakistan in understanding the need and value of using an integrated ERP system. It is time to improve the entire ERP system with better and improved management, leading to better decision-making, cost effectiveness, manpower and supplies.

1.2 Research Questions

The research will support in exploring the prospect of using an ERP system from the perspective of SMEs of Pakistan. The analysis will concentrate on the possibility of implementing ERP system in SMEs of Pakistan and will highlight the shortcomings and drawbacks of the existing system. Moreover, this research will also help to determine the capacity in the present situation to adapt an integrated ERP system in SMEs. Based on the research objectives, the key research questions posed to answer the objectives are as follows

- What are the challenges being faced by SMEs of Pakistan in terms of ICT use?
- How can ERP software overcome the difficulties in SMEs of Pakistan?

1.3 Scope of Research

By reviewing the literature on ERP systems, the main objective of this study is to examine the ICT challenges faced by SMEs of Pakistan and to research the implementation of an ERP system. The aim is to assess the existing ICT state of SMEs of Pakistan with respect to their existing working methods. An evaluation of the challenges will determine what changes are required for a smoother operating environment in SMEs. The research's main objective is to define the primary areas of ICT improvement for SMEs of Pakistan, and to suggest an idea of introducing an ERP system that could effectively boost operations. With the help of qualitative research carried out in the thesis, the possibilities of an ERP system in SMEs of Pakistan will be studied.

The theoretical section of this thesis is intended to provide relevant knowledge on ERP systems to facilitate the research. This examines the history of ERP systems and discuss the advantages and drawbacks of introducing an ERP system with a look at small and medium sized companies. Another aim of the theoretical section of the thesis is to look at the future aspects of ERP systems and what challenges are likely to be faced in the future. The author's aim through this research is to provide the knowledge required to begin the process of the ERP implementation.

1.4 Structure of the Thesis

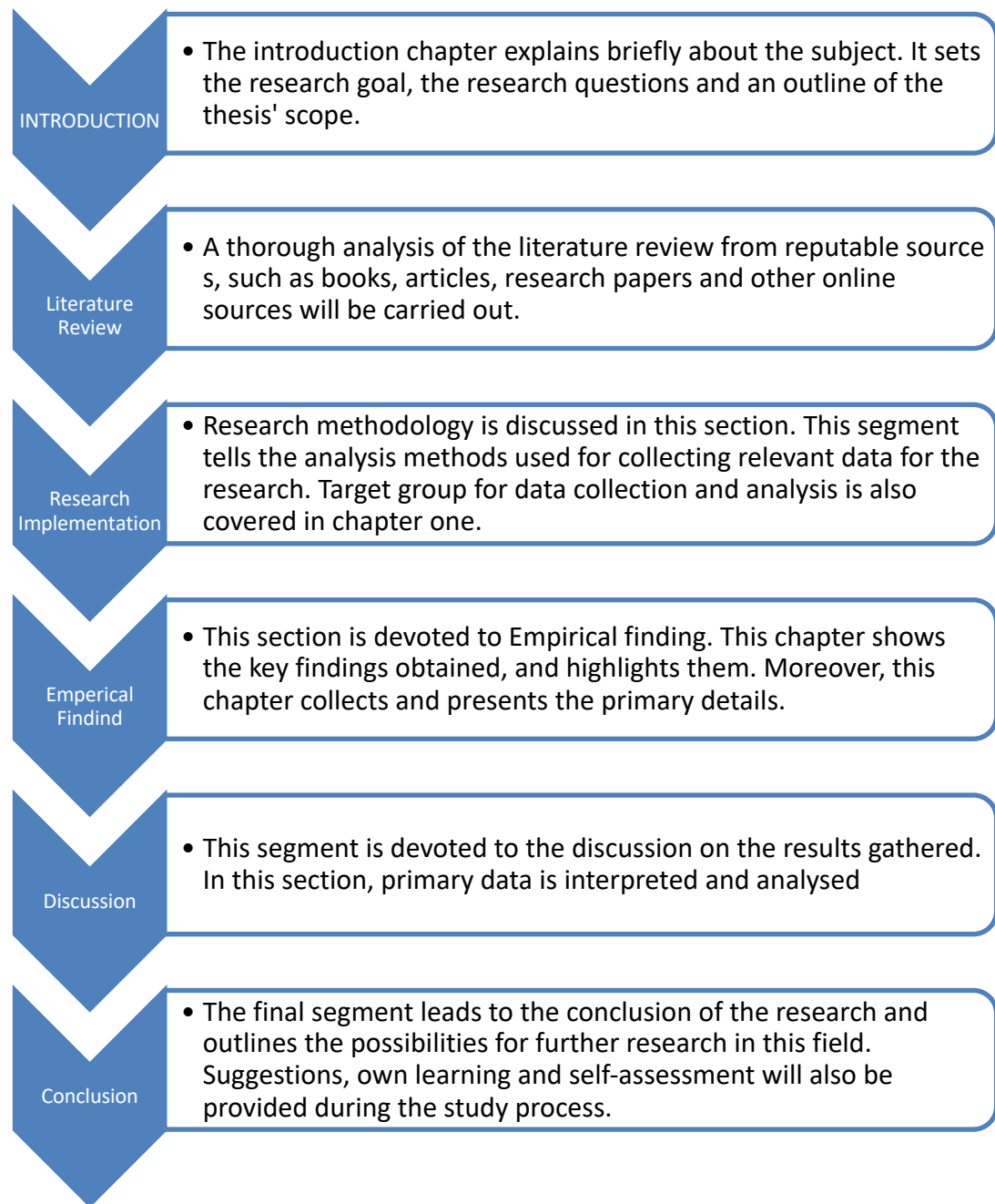


Figure 1. Structure of Thesis

2 Literature Review

Pakistan's very first IT policy was enacted in 1998, and governance began investing in the growth of human capital, infrastructure, and software & hardware industries. In 2004, the government of Pakistan inaugurated several ICT policies. One of which was the introduction of new broadband policy. The policy was set to be updated near 2010, but again due to uncertain environments in the country's politics, the policy was buried deep somewhere without any result or conclusion. During 2012-2013, another policy was designed that focused primarily on ICT access, understanding and security. Broad band penetration jumped from 3% to 15% in 2012 to date (MOIT, 2019). In December 2015, UN released a report on the ICT development index. The report descred the ICT development index of nearly 166 countries worldwide. Pakistan was ranked 143rd among the nations that are thriving hard to improve its situation ICT for businesses, according to this report. Moreover, the study also mentioned Pakistan dropping its ranking from 138th in 2010 to 143rd in 2015. Information & Telecommunication Union ITU prepared this report on various measures such as ICT access, use and skills, etc. (Pathan, et al., 2018)

It has also been widely emphasized that SMEs are significant key drivers for economic development, employment creation and poverty reduction. In general, SMEs are more labour intensive than capital intensive and have higher investment returns than many large firms. The dynamism of SMEs allows SMEs to adapt quickly to changing conditions in their businesses, which makes the SME sector an agent of socio-economic positive change, (Cunningham & Rowley, 2008). Governments, especially in developing countries, who have acknowledged and make strategies for encouraging and improving their SME businesses are being rapidly developed (Feeny & Riding, 1997). Studies also demonstrated considerable interest in assessing policy funding efficacy in the SMEs (Kwarteng et al, 2016). The participation of the SME sector is heavily reliant, (Rahman, Stough & Jalees. 2015) on government support structures and policies. The effects of their work highlight the need for policies in all three aspects of the SME market cycle: implementation, development and company.

However, small and medium-sized enterprises, experience a variety of specific ICT challenges. A literature review was carried out in order to uncover the ICT challenges in the sense of small and medium-sized enterprises entities, which helped to shape the conceptual basis of the study. For both developed and emerging countries, ICT challenges are being faced, though developing countries are more impacted than developed countries. Poor telecommunication services, untrained personals, ineffective ICT diffusion, high ICT costs and ICT rules represent a major problem for Pakistani SMEs.

It has been seen that many tries have been made to adopt ICT implementation in SMEs of Pakistan but many of them were unsuccessful. The reason behind that were poor management systems and the lack of knowledge to adopt ICT. Another researcher addressed that since they do not understand the clear relationship between ICTs and the business, they are unable to follow the correct way in which IT is implemented (Bull, 2003) or the benefits IT can bring are unclear. (Southern & Tilley, 2000). Lastly, it has been noticed that lack of resources and unskilled staff has been one of the reasons of these failures, also lack of policy and restricted access to finance, technology drive and impact of major customers and minimal IT competencies has been seen as one of the potential reasons. (Bhagwat & Sharma, 2007).

The ICT Sector's current status in Pakistan is that Pakistan Telecommunication Authority, PTA has reported in May 2020 that there are about 82 million broadband subscribers in the country, which are over 24 times since 2009 and are 166 billion over ICT subscribers in Pakistan. Yet, Pakistan's overall population is 212.219 million. The government has reduced the development budget for Information Technology and Telecom Division and has allocated Rs. 6.672 billion for it in the budget for 2020-21 compared to Rs. 7.34 billion in 2019-20 under the Public Sector Development Programme (PSDP). But sadly, out of 129 countries, Pakistan is 105 in the "economic innovation index" and 96 in the "market complexity ranking" compared to 81 in 2017 and 59 in the "availability of the new technology ranking". ("Govt Announces Telecom Sector Budget for Fiscal Year 2019-20," n.d.). As per ITU, in 2019, Pakistan is at position 151 out of 176 in IDI ((ICT Development Index) skills sub-index, rankings, and value are 2.95. (ITU, 2019).

This is a very troubling ICT case, and Pakistan is facing a big challenge with the new technologies. There are not only problems regarding the availability of the latest ICT technology, but there are also many obstacles in Pakistani society when it comes to ICT implementation. In fact, this is not only an issue of Pakistan, but developed countries are also faced with obstacles in integrating the ICT system more and less.

ICT use in organizations depends on business nature, company size, higher management personal interest, external pressure, technological motivations etc. But the big businesses are still keen to use new information and communication technologies to compete in the world market. Furthermore, these big companies are more resilient and are cheaper to make investments in advanced ICT technologies, whereas small and medium-sized enterprises may be implemented gradually. There are also new opportunities created by small businesses which still have many challenges where ICT challenges have been most important and have affected the competitiveness and development of these small businesses. (Pathan, et al., 2018).

The rural of areas of Pakistan face a major problem in regards to slow internet connection and frequent disruptions. The informal procedures of business affect very slow speed, volume and capability of the use of data. SMEs typically suffer from slow speed, frequent internet disconnections and limited data capacity. There is currently no more than 8 MB/ S average width speed in Pakistan, but up to 50 MB / s as in Malaysia and Singapore that are developed countries. The lack of IT workers awareness often poses problems for small and medium-sized businesses in Pakistan. Small businesses typically have less personnel and minimal capital to recruit skilled people with their company activities to manage sophisticated, diverse technology. Almost ten years have gone by after Pakistan increased its literacy rate and the IT literacy ratio, but small and medium-sized enterprises continue to use old methods. Small and medium-sized enterprises are also not worthy of engaging in preparation for their workers. SMEs are not yet able to invest in their employees' training and this creates an awareness gap for ICT professionals. High network costs are another factor in accessing ICT. Small businesses need adequate ICT investment for the development and establishment of personal enterprises networks such as VPN or intranet (Pathan, et al., 2018).

2.1 ERP Systems

Enterprise Resource Planning (ERP) systems are software systems for businesses which allow enterprises to automate business processes, share company wide data and activities, and generate information in real time (Sumner, 2000). An ERP system is typically one of a company's main IT system. The purpose of this system is to act as an integrated and continuous system, in which all individual business units have the same information available and support them in various functions. Typically, an ERP system manages a company's basic internal functions, such as distribution, development and financial administration.



Figure 2. Working of an ERP System (E-Hopper, 2019)

2.2 History of ERP

ERP is not a new business concept. ERP systems execute tasks, effectively performed in the same business functions that businesses have performed for decades. The technical and communications developments have contributed to the production of computer-based ERP systems as we know them today. (Dowlatshahi, 2005)

The history of ERP systems initiates back from the 1960s, when software for warehouse monitoring were developed. These systems were primarily used to monitor articles in warehouses. In the 1970s, the development of systems to support development-activities began. These were called MRP systems, and to help warehousing and production, they were intended to produce material requirement calculations. The 1970s were also the period when generic software began to be created, instead of the custom software that were previously used (Kettunen & Simons, 2001).

The 1980s marked the beginning of MRP II systems, that were based on earlier MRP systems. The new MRP II systems had the main functionalities of the earlier systems, but

other than that they also had functions for regulating the functions and delivery at ground level. PC development was assisted with the production and distribution. MRP II was used as a tool for efficient preparation of all the manufacturing company's capital (Lahti & Salminen, 2014).

Early ERP systems originated in the 1990's from MRP II. In contrast with MRP II and MRP, enterprise resource planning focused not only on supply chain management but also incorporated support tasks such as finance, accounting and human resources into the same structure. ERP has focussed on enhancing internal business processes by incorporating knowledge to enhance service and support (Motiwalla & Thompson, 2012).

The early ERP systems got more established and improved their place in the business world. Through the massive technological development and the need to adapt to consumer needs, ERP has grown into the Internet-based framework that it is today. Now the system has focused not only on internal processes but on integrated structures of organizations. The systems allowed the company and its partners to access long-range remedies and incorporated the supply chain management and other business environment systems into a single computer system (Motiwalla & Thompson, 2012).

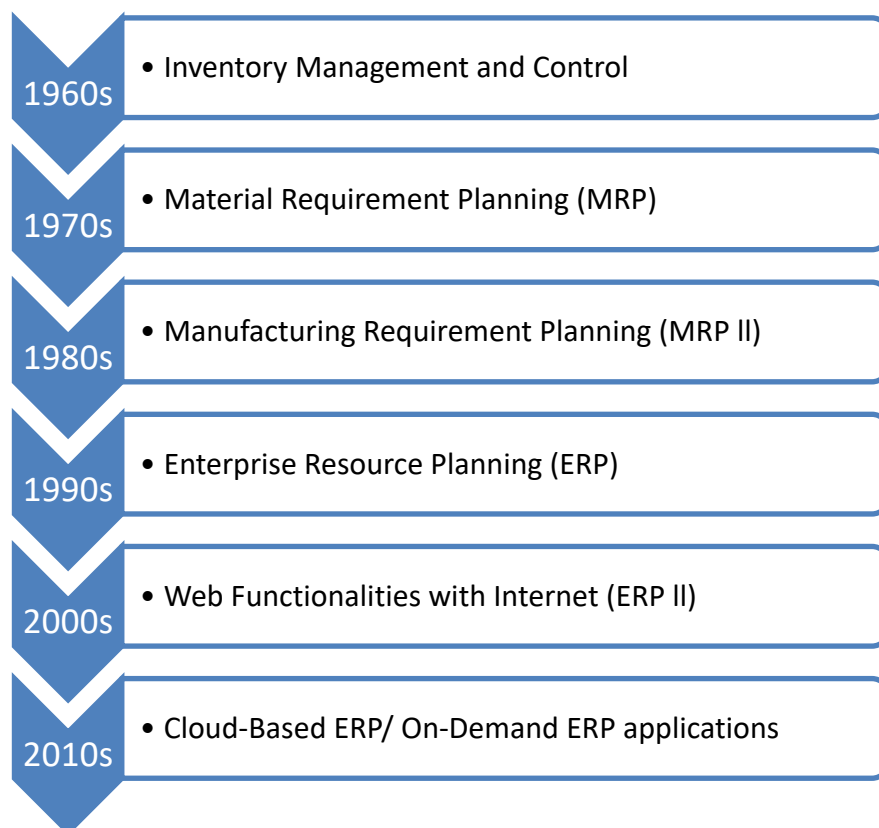


Figure 3. ERP history and the evolution of ERP functionalities

2.3 Implementation of ERP System in SMEs

The implementation of ERP systems is an ongoing process due to an extremely competitive market environment and businesses demanding to have the real-time information available at any given time from each business unit. ERP systems have enhanced the procedures by minimizing the use of multiple systems and increasing performance by reducing repetitive tasks and automating processes (Salminen & Lahti, 2014).

Implementing an ERP system is a process where careful preparation and resources are required. There is a high probability that implementation of the ERP system will fail. 58% of the ERP implementation projects are higher than the initial budget and 65% of the ERP projects are not overdue or remains unfinished by the time period (Nicoleta Carutasu & George Carutasu, 2016).

In the case of SMEs, an ERP implementation process has its own unique assets. Standardized systems with very low degree of flexibility are preferred based on costs. Smaller businesses do not have the resources in the same way as larger organizations and so not so much time can be spent on planning and preparing for projects. In the case of SMEs, the risk impacts are important. As there are often very wide variations in SME's business models, they often have major enterprise-dependent system requirements. It is for this reason that SMEs prefer versatile and adaptive choices (Nicoleta Carutasu & George Carutasu, 2016).

ERP system implementation project starts with a conversation with the ERP system consultant on the goals of the project implementation (Carutasu & Carutasu, 2016). The provider is aware of what is anticipated when the targets are clearly defined and can function accordingly. This stage reduces the probability of implementation failure. The most important goals are standardizing global processes, increasing the efficiency of the organization and extending the system to all locations (Carutasu & Carutasu, 2016).

The benefits of implementing an ERP system are not always simple or even quantitatively observable. In order for an SME to implement an ERP system, the benefits will come in forms of improving compliance with schedules, reducing operational costs, improving production time management and improving completion and on-time performance in products. Effective implementation of an ERP system in an organization will offer long-term benefits and make it run efficiently. It's necessary to try to quantify the benefits that ERP systems can bring to a SME. You will see SMEs using performance testing, where the ERP system provides much of the support and areas, can be made more functional with an integrated ERP system. As ERP systems are increasingly being rendered with the

emphasis on the SMEs, the benefits of properly implementing an ERP system are also growing. This is because manufacturers of ERP systems are concentrated on delivering the best possible product to SMEs and hence the performance of the ERP systems is increasingly better (ERP Software Blog 2010).

The challenges of implementing an ERP system in an SME relates to the advantages. The reliance on SME's by ERP system providers has caused the market to be saturated with ERP system providers for smaller companies. For SMEs, the means for making such a big investment are not always sufficient. An ERP implementation project is very broad in scope and needs a significant financial investment. The selection of the correct ERP system is key to successful implementation of the ERP system. The ERP systems are usually too complex, too complicated and not very user friendly. This is a great challenge for an SME because the ERP system's training and development are very costly.



Figure 4. Steps for successful ERP

2.4 ERP implementation lifecycle

Implementing the ERP system requires a detailed study, strategic planning and sophisticated financial plan for the future of the organization (Piterkin & Oladov, 2011). Implementation of an ERP system is not a one go process as different produced applications e.g MS Office but it requires agile methodology for its implementation process and a whole wide network plan. It is best illustrated as a cycle process that includes continuous checking and returns as shown in Table.

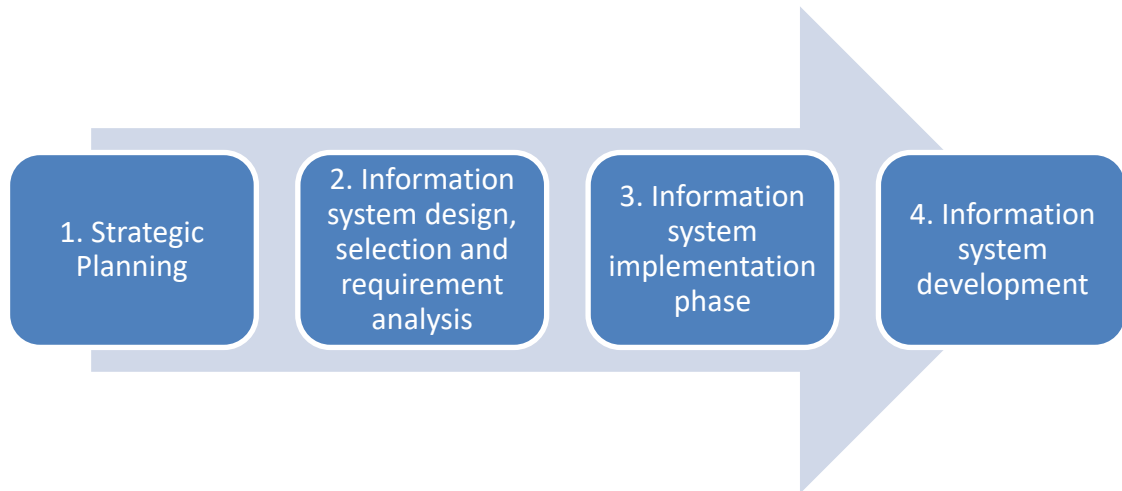


Figure 5. ERP project lifecycle model

A common error in considering the implementation of an ERP to be an IT department project is only technological deployment and partial transformation of data. This involves the organized work and business planning of the organizations which are involved in the communications development. This is why future company growth must be adequately addressed in order to expand the ERP system, leaving room for new modules and new departmental additions.

The ERP implementation process itself has a number of techniques ("Towards the neuro-transfer of PRD to the neurotransmitter", 2016). It is vital to understand and select variations carefully as it not only affects pace and process costs themselves but potential losses in data and possible viability of the entire company's ERP infrastructure.

3 Trend of ERP in Pakistan

There are two types of ERP system in Pakistan that you may reach. One is produced locally and the other is prepackaged and of international sources. In addition, organizations must determine their needs and decide their expenditures, based on their business operations and company's environment. It is a question of tossing a coin and of seeing what comes out of the box of international sources. In addition to managing obstacles to entrants, local ERPs, SAP, Oracle E Business Suite or Microsoft's Dynamics AX are key players seeking to reassert the market here (Ali, 2015).

Their work was simpler for SAP and Oracle, since the bulk of multinationals purchased these goods from their international sources. They would not hesitate to try other solutions even though it is a be-spoke framework. In case of local ERPs There are many competitors on the market for local ERPs that offer individual solutions as well as a full selection of applications. These businesses have benefited from their experiences over the last 20 years and have created a good customer. When the buyers are typically small firms and businessmen, price talks sometimes become blood pools. But anyway, there's a demand you have to stay. The sales are generally closed with free assistance and discounts (Ali, 2015).

Microsoft had a huge dominance in Pakistan and it still has. It has captured maximum business of Pakistan and people very much relies on Microsoft. Microsoft has since launched its own software and associated certifications. Like the other big giants of ERP system, Microsoft has followed the same policy by first capturing the stakeholders and the software later.

A couple of years back, business in Pakistan thought what Microsoft AX can offer to the Pakistan's SMEs industry and what potential benefit they could get from AX. The SMEs of Pakistan were busy in maintenance of their products and the analysts were affirmative that AX can't be a competitor in conventional market of Pakistan. AX did not emerge out of the box or like a technological discovery and captured the SMEs industry by taking over the ERP market, it was offered since the late 90s and companies such as Maison Consulting and Evincible were among the pioneers of AX providers (Ali, 2015).

Local market interpreted and treated AX as harmless, like any other international ERP, as EBS and SAP never posed a serious threat. Also, business and capital changes have always been in a sustainable environment. However, the SMEs industry of Pakistan did not notice that now the odds were different among the ICT industry and the blowing of air has different direction (Ali, 2015).

3.1 Implementation Process Timeframe

Analysts in Pakistan say that the deployment of ERPs takes about four to eight months, but in fact it typically takes a single year or more and also relies on staff, engineers, market analysts and support personnel. Software houses are well aware of this so that they fulfill the expenses and service arrangements. The consumer, on the other hand, must keep the expense under the margins, either by placing problems on hold or by retaining the specifications.

It is fairly straightforward to tailor the customer's expectations for local ERPs and because the time span is shorter, the process of change management is typically appreciated by both sides. However, the high degree of customization presents a problem for some requirements and context-specific procedures such as manufacturing and repair of equipment (Ali, 2015).

The culture and combination of ERPs with industry created harmony between local and international brands. The principles of both systems are known by people. But then there was that thing in between that shifted the way we looked at it and that was the swinging trend of Microsoft Dynamics AX in the emerging Pakistani market.

3.2 Setbacks for implementing ERP in SMEs of Pakistan

Developing Countries like Pakistan face a number of challenges while implementing ERP system in their local market industries, especially SMEs. Business who already opted for Microsoft Dynamics AX did not face as much challenges while implementing ERP systems but for majority of the SMEs industries who relies heavily on conventional tools, Implementation of ERP system is a hard candy for them. Following are some of the challenges listed that the SMEs of Pakistan face if they opt for an integrated ERP system.

ERP systems are expensive. The reason being that since ERP software is not locally developed in Pakistan's IT industry, the IT industry of Pakistan have to rely on foreign sources. One of the reasons of the high price is the foreign currency rate as Pakistan has a very devalue currency currently due to instability of the country's economy and high debts. Secondly, developers which include AX are not the focus of Pakistan 's entire market, primarily MENA and South African regions, as their primary product. (Ali, 2015).

Resources is the second obstacle. Local ERP and practical observers had to comply with global AX implementations requirements. To do this, they wanted qualification as well, but

that's not the issue, since many practitioners were distinguished. The real task was to re-structure and evaluate the method and then model the application (Ali, 2015).

The third challenge were the designers. AX is designed for X++, based on related C++ syntax, but it was challenging for the programmers. Finally, it became imminent to use services that are either accessible to X++ or that are deeply involved in C++. The personalizations and explaining the same to developers became more complicated for companies and technical consultants (Ali, 2015).

Small business behavior is the fourth challenge. The key problem facing AX vendors was the companies who already worked on local ERPs or the companies searching for new solutions. Both situations were heavily criticized on the allocation of services and product development. Retail was the easy component. For certain purposes, the retail framework was introduced without much trouble either because of a lesser degree of adaptation or due to best procedures (Ali, 2015).

In the past, Pakistan's IT industry has encountered severe challenges and has always exhibited greater integrity and trust. It is clear that the local and the foreign ERPs appear to be challenging each other, in the current sense, but the rivalry has also taught players some useful lessons and supplied businesses with outstanding leadership, skills and industry in the same sector. Yet more commitments are made than ever in the future.

3.3 The Future of ERP in SMEs of Pakistan

With the current IT policies of the government, the IT future of Pakistan seems to be the brighter side. Solution companies, who already have spent millions in licensing and buying costs, have now turned their focus to international markets. While some businesses rely on reduced cost and actively seek buyers, some have now consolidated. As a result, with many seasoned practitioners, the industry has evolved. The impact on tech exports would undoubtedly be positive.

Since technology companies are now staring at the cloud, one day the business sectors will have to live with the move. Businesses do not have to worry about the nearby ERP industry. In Pakistan, market thought is a long way out before the wind of transition feels. Only time will say who ends next in this emerging era of ERP business.

4 Research Process

The overview of research process and research methodology is discussed in this chapter. It provides details on the methodology used to conduct this research and reasoning for using this approach parallel to that. This chapter also discusses various phases of the research including participant selection, method of data collection and participant introduction.

4.1 Research Methodology

Research methodology is ascertained by the nature of research questions and the target being investigated, according to (Denzin & Lincoln, 2017). The research methods learned in the course of a study must be used as a guide to address the research questions. The approach taken by a research scientist in the execution of the research project is the research technique used. (Babbie & Mouton, 2010). (Carter & Little, 2007) claimed that methodologies describe data generation approaches which enhance data and analysis. Hence the methodologies have the material in empirical form. In a nutshell, this research methodology refers to the technique chosen for data collection and analysis.

The central research approach for the theoretical part of the thesis was a detailed research into the subject through literature. There has been a lot of previous studies on the subject and a large number of relevant literature is therefore available. The sources for literature study have been chosen primarily from the Haaga-Helia's libraries and electronic databases.

4.2 Qualitative Research

This research is a combination of the qualitative approach (interviews) and literature review. The motive of qualitative research is to gather a detailed understanding of certain practices and the reasons behind these practices. (Denzin & Lincoln, 2017) defines qualitative study as an approach to hybrid research involving a variety of case studies with various topics, introspective studies, direct experience, observational interviews, graphical and communication materials explaining meanings in the lives of human population. The main purpose of the qualitative approach is to evaluate data in order to obtain useful knowledge about the phenomenon. Due to the fact that the amount of information collected by various techniques is immense, the data are analyzed in qualitative analysis in a way that allows clear and easy interpretation. It cannot therefore be implemented on a broader scale. In general, qualitative study findings include an immense amount of knowledge obtained from a small number of individuals. It analyzes and summarizes the

data by breaking down the content and transforming it into a new entity (Tuomi & Sarajärvi, 2009).

4.3 Interviews

The interview, as complicated as the meaning is, can simply be defined as a conversation in which the interviewer is interested in obtaining more detail on a problem as a questioner. This approach is inspired by a scientifically based methodology. An interview can therefore be described as an engaging process in which a person asks detailed questions. Sewell (n.d) defines qualitative research interviews from a scientific point of view as "the effort to see the world from the point of view of the subject, in order to expose the relevance of people's experience, to unfold their lives in advance of scientific hypotheses is important for the interpretation of human experiences. "A qualitative interview is central to collection of evidence as other researchers agree (Gill etc., 2008). However, the most critical aspect is that the researchers have to have a direct connecting impact with the source of information so that it becomes more reliable. Interviewers are trained persons who work professionally to obtain appropriate information from subjects to test their theories for study. Importantly, interviewees are the subject of the interview process (Edwards & Holland, 2013).

4.4 Data Collection

The research focuses on in-depth interviews and literature reviews with the high-level delegation of SMEs in Pakistan. In order to obtain useful results, interviews were performed. Individuals in the relative field were interviewed. The thesis was based on a qualitative approach to discover and to provide answers to the questions of research questions. In order to perform this study, an open-ended interview was arranged with the individuals in which other questions were also asked, relative to research study, in order to obtain in-depth results. A guide was designed to illustrate the subject on the basis of the research questions. There was no arrangement of interview questions in order to enable participants through cinematic interviews and by giving them a free hand to open and address the subject more openly. As the research is based solely in Pakistan, all the interviews were conducted virtually via Zoom and Skype. Prior to the interviews, an invitation email with general ideas relative to subject was sent to the participants. The interviewees were assured that the interview will remain confidential, participants will remain anonymous and it will solely be used for this research purpose only. The interviews were conducted in the month of September and October 2020. The interviews were recorded with an advance permission from all the interviewees. The interview recordings eventually were

converted to a transcript. The interview was transformed to the fulfillment of the study intent by planning relevant research questions.

Following questions were asked during the interviews:

- What is your designation in the company?
- What kind of system is your company using?
- Do you think of any flaws in the current system?
- What are your thoughts on the current system of your company and ICT challenges being faced by SMEs of Pakistan in general?
- What are your views on implementation of an ERP system in SMEs of Pakistan?
- Whether an ERP system can be implemented in your company or not?
- Would you like to opt for an integrated ERP system?
- What possible challenges could be faced during the implementation of an ERP system?
- What are your thoughts on how the current ICT state of SMEs of Pakistan can be improved?

Although, when performing interviews, more dialog and extra questions have been added in order to keep interviews going efficiently.

4.5 Interviewees

To gather reliable and credible information, a total of 8 requests were sent to different target people, out of which, 5 executive staff with extensive work experience and a thorough knowledge of ERP systems accepted the interview. As the scope of research is solely based in Pakistan, hence all the participants were selected from Pakistan serving directly and running operations of small and medium size businesses in Pakistan. A short introduction to the interviewees is mentioned in order to carry the study reliability. The anonymity of the participants is preserved by the creation of identities in order to protect privacy. The following is a brief introduction to the participants:

Interviewee 1 (X1) is an IT Manager at Ghani Glass Limited. He has an experience of 8 years working in the field of IT. He has served as IT support and IT Engineer during his work experience. He is the overall head of the IT department and has a sound understanding of ERP system.

Interviewee 2 (X2) is an IT Director at Bilal Travels. He has an experience of 12 years working in the field of IT. He has a foreign work experience. He is the overall head of the IT department and has a sound understanding of ERP system.

Interviewee 3 (X3) is Principal Software Engineer at Netsol Corporation. He has an experience of 9 years in the relative field. He holds a Master degree in Computer Sciences and have a foreign work experience of 2 years. An advance questionnaire was sent to him by email on the interviewees request.

Interviewee 4 (X4) is CEO at a private firm that he doesn't want to disclose. He has a vast experience in different IT sectors and have deep insights of ERP systems.

Interviewee 5 (X5) is Managing Director at Dulha House. He is a young businessman who inherited the business from his father. He holds a degree in Business ICT and have sound knowledge of ERP systems.

Interviewee 6 (X6) is Business Development Director at Axxeum Group. He holds a master degree in Software Engineering and has an experience of 15 years in the IT field. He has deep insights of ERP as he has served as the IT manager in the same company.

The interviews happened to be a success and the desired findings were achieved. The participants in the interview gave detailed insights about implementation of ERP systems and ICT challenges of Pakistan. Finding the right person was a challenging task, therefore, the author approached some of his colleagues and friends to help him finding the right interviewees. All the participants were approached by email and an invitation was sent to them. Some of them required the questionnaire in advance so they were provided with the questions in advance via google forms.

Following figure break down the carried-out interviewees in a timeframe. The dates are written in the format of DD.MM.

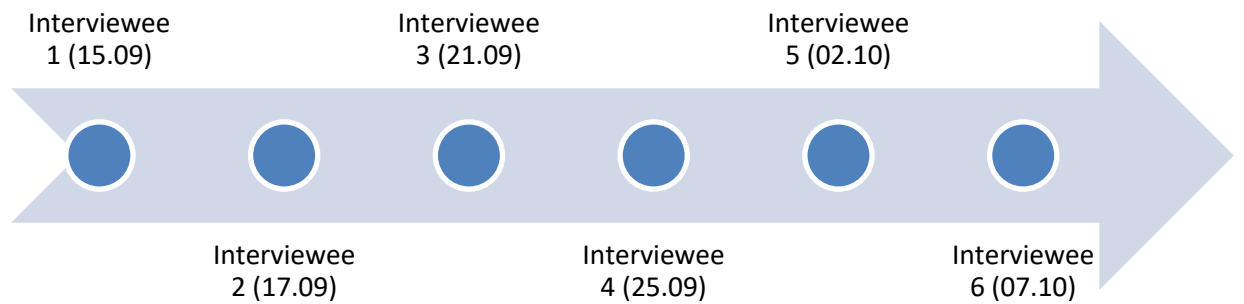


Figure 6. Timeframe of the carried-out interviews.

5 Summary of findings

The goal of this study was to examine Pakistan's current ICT challenges and see what could be done to implement an integrated ERP system in Pakistan's small and medium-sized enterprises. Furthermore, future advantages and obstacles were discussed. Interviews to gain useful knowledge were performed for this reason. Interviews were performed with members from associated industry experience and different companies. The knowledge obtained from the participants was quite practical and appropriate. Summary of the findings based on the transcript of the interviews are discussed below.

5.1 Implementation of an ERP system in SMEs of Pakistan

The needs and value of an integrated ERP system in Pakistan's SMEs have been recognised by all interviewees. The interviewees addressed the key study question by introducing an integrated system as follows:

“The use of an ERP system could really benefit SME's in terms of reducing the labor cost and other operational costs and helping synchronize all departments, increasing the businesses efficiency and profitability. It can help businesses automate processes and make them more efficient.” (X4)

“In Pakistan, ERPs are at very initial level plus they produce static info and reports. Most of the ERPs are very expensive. Although, it can be helpful in managing company wide resources well.” (X3)

“The current state of the ICT system of SMEs of Pakistan calls for policy makers to take an initiative in implementing and centralizing improvements in convergence between multiple vertical structures in one decent system.” (X6)

“ERP system will help the company reduce business software deployment delays and disturbances in Pakistan. Government and private companies are using the deployment approach of to achieve operating productivity and large amount of money.” (X2)

Although, one of the interviewee didn't agree upon it and stated that SMEs of Pakistan are already using integrated ERP system. He added that:

“I don't think so SMEs of Pakistan lack the ICT technologies. Most of the companies in Pakistan are using Oracle based software, to be precise, 80% of SMEs are using ERP software. Almost, in any other organization any good ERP is implemented. I don't think Pakistan is so backward, there is nothing like that, Pakistan is quite advance in IT.” (X1)

Keeping in view all the feedbacks, one of the interviewee didn't recommend ERP system for Small enterprises due to its high cost in both implementation and Maintenance process. He added:

“It is safe to say that ERP systems help companies a lot in automating their business operations, but for countries like Pakistan, ERP system can be a burden on the SMEs due to its sky-high costs and lack of training and workshops for employees. Majority of the SMEs have non-IT trained staff and for an ERP system, they have to rely on additional staff which will automatically raise costs.” (X5)

5.2 ICT challenges being faced by SMEs of Pakistan

The implementation of an ERP system can be a hard candy for countries like Pakistan due to its high costs. But with the emerging trends in ICT policies of Pakistan and measures taken by current government, Pakistan is progressing in technology industry by leaps and bounds. The research question about the challenges being faced by SMEs of Pakistan while implementing an ERP system was addressed by the interviewees as follows:

“To some extent it can be implemented but, we would still need trained IT staff as being a cloth retailing business we need to attend our customers. Also there are other factors while implementing an ERP system like Employee resistance, High initial setup cost, Lack of trained staff.” (X5)

“Resentment from workers is common during the introduction of the ERP software. The efficiency of systems may be seriously decreased. Until implementation, special planning and motivation are very beneficial. This will encourage the teams to get to know the program a bit. There should be a mutual understanding and common moto for implementation of an ERP system between management of companies.” (X4)

Couple of the interviewees reacted to this question in a way that non-IT skilled owners have hesitation in investing in such big software. The interviewees responded in the following way:

“The main challenge is the change management. Many of the owners of small enterprises are backwards when it comes to information technology. Most of them are using legacy system due to their high reliance on that. Some of them just love to rely on the traditional and conventional methods. Some of them are hesitant in investing in such big software. Due to a limited amount of loan offered by the government, and unstable economy of Pakistan, people are reluctant when it comes to big investment in IT in which they have very little or no knowledge.” (X1)

“The total cost of an ERP is much higher than the starting cost. The net cost would depend on the cost of the personalization. More the customization, the final implementation cost will be higher. Even if the management make up the mind for an implementation of an ERP system, the pricing would make them again reluctant.” (X3)

“The common factor is that the management is not serious about it. They don’t even research on the return of investment neither accepts it from the consultants. Due to the conventional mindset of the population, they don’t even look in this matter. The stakeholders and investors should look upon this matter. The integration of master data with the system is one of the challenge but it is more of a technical issue, but the primary challenge I believe is the reluctance to switch from one to another system.” (X4)

“There are also other factors that appear to be more difficult to implement in an ERP system in SMEs, for example a lack of understanding of the value and advantages of an ERP system or a lack of information about how to employ an ERP system and the challenge of persuading experts to consider and use of emerging technology.” (X2)

5.3 Advantages of implementing an ERP system

The interviewees agree upon the fact that implementation of an ERP system in Pakistan is the need of hour. The research question about the advantages of implementing an ERP system by SMEs of Pakistan was addressed by the interviewees as follows:

“Yes, as I think it would be beneficial to create cohesiveness in the business, improve our operations and lead to fewer errors. To begin with we need to educate our businesses about the benefits of using ICT. Secondly, we need carry out trainings for staff to increase their acceptance in using such systems, Furthermore, maybe the government could help SME's by giving them loans to offset the high initial setup costs of such systems.” (X5)

“Most of the SMEs that have implemented the ERP system are customized solutions designed to their needs. They are quite mature and whatever their need is, the ERP software is fulfilling their needs. There are not any flaws or room for improvements as they are fulfilling their needs. But obviously, for SMEs of Pakistan, a slim and smart ERP software like Oracle is enough and can fulfil their needs” (X1)

“It totally depends on what the senior management wants. If the management focus is towards the growth innovation, so they develop the system according to their needs and if they are focused towards daily routine activities then they don’t bother about the developments. It all depends on the management vision.” (X2)

“In Pakistan, introducing an automated system like ERP would be very useful. Firstly, the quality of reporting will be improved. It would also boost customer's trust and employees fulfillment. When centralized data is accessible, processing of information are faster and more accurate, reliable and easy to manage.” (X6)

“It is the need to the hour. We should adopt technology in all level as soon as possible. Effective resource management is not only beneficial for employer but from employer perspective, their skills will be fully utilized in effective manner.” (X3)

6 Discussion

The research primarily emphasis on the implementation of an ERP system in SMEs of Pakistan. The main objectives of this research were to analyze the current ICT challenges being faced by the SMEs of Pakistan and how implementation of an ERP system can overcome these challenges and be beneficial at the same time. Secondly, the research also focuses on whether an ERP system can be implemented in SMEs of Pakistan or not and what are the pros and cons of it. For the finding of results and analysis, an approach of semi structured interview was arranged with the executive management of different SMEs. The results and findings were quite interesting during the interviews.

The primarily research question were the implementation of an ERP system in SMEs of Pakistan and ICT challenges being faced by them. To answer these research questions, majority of the interviewees agree upon that ERP is the need of hour for the SMEs of Pakistan. They stated that SMEs are backbone of any company and the country's economy is primarily based upon that. In this age of digitalization, SMEs of Pakistan should opt for integrated system like ERP. A couple of the interviewees however stated that the majority of the companies are using an integrated ERP system. Oracle ERP system was found to be the most popular and trending in SMEs of Pakistan. They further added that customized and tailored ERP software are fulfilling the desires for the companies and they have a mature ERP system. But majority of the interviewees agreed upon that the small enterprises of Pakistan are still relying on the conventional spreadsheet methods and are reluctant towards change management. They further added that there are many loopholes and flaws in the current ICT system of Pakistan on which government and private sectors both should pay attention.

Other things that were brought forward by the interviewees were the lack of awareness and trained IT staff in local SMEs. Industries like apparel industry should opt for a change.

Workshops and seminars should be arranged to identify the importance of ERP systems. The transition process can be enforced and extended across the country by a taskforce committee. They can also provide the workers with information and education. The strategy design and execution stage of an ERP system should attract all key stakeholders. A feasibility test should be performed to look at the condition of a new system following the implementation process. A person or a community can't control their execution. On the other side, one interviewee did not agree and commented that for small enterprises, an ERP system was not appropriate. They can't bear the sky-high costs including both the implementation and maintenance phase.

When it comes to the challenges being faced by the SMEs while adopting an integrated ERP system, majority of the interviewees stated that due to lack of interest and knowledge of ERP system, people don't opt for it. Due to the lack of IT knowledge from management level people, ERP system seems to be either totally absurd for them or a chance of gamble. Due to lack of financial support from government and non-effective loan policies, people are reluctant to invest their own money in ERP systems. Even if they are being told by the ROI, still they hesitate to adopt such a system as they believe it will just raise the company's cost. One of the interviewee stated that ERP systems are not an option for countries like Pakistan due to their immensely high costs. Another interviewee disagreed from it completely and stated that 80% of companies in Pakistan are using a light and bespoke ERP system which is fulfilling their needs.

However, majority of the interviewees stated that companies should shift towards the trending ERP systems in order to cope up with the modern digitalize world and enhance their business operations. The interviewees also stated that this will not be only beneficial for the companies itself, but it will also boost the economy of Pakistan and it will naturally attract the foreign investors to invest diligently more and more in Pakistan.

On the basis of the results and findings, interviewees answered explicitly that an ERP system can't be overlooked for its function and significance. Change management and deployment of innovative ERP systems is essential for both the SMEs and Pakistan in general. Majority of the interviewees agreed upon that non-IT management should flow with the waves and accept that in order to avoid future problems, now is the time to have a change in the way of working.

7 Conclusion

The key aim of these research was to examine ICT challenges of Pakistan and explore the possibilities for implementation of an ERP system in SMEs of Pakistan and illustrating on that. After detailed interviews with the interviewees, the research found that there are several challenges in Pakistan related to ICT and that implementation of an integrated ERP system is the need of hour. The result indicates that there are many obstacles and challenges while opting for an integrated ERP system. Some of the challenges include the change management. Due to high illiteracy rate in Pakistan and lack of interest of people in IT, people don't want to shift from there current conventional way of working and tools and technologies. They have found a comfort zone in working with it. Furthermore, lack of involvement and incentives from higher management and lack of financial resources hinder the implementation of such ERP systems.

The research suggests that SMEs are lack the use of mature Information Technology system, data is scattered and minimally intertwined with other vertical programs and subsystems. The system of the SMEs must be updated and incorporated between organizations. Therefore, it is not possible to deny the importance and role of integrated ERP system in SMEs of Pakistan.

The research indicates that implementation of an ERP system is possible in SMEs of Pakistan. When the point of the current situation of Pakistan is discussed, majority of the interviewees agreed that the current system of SMEs is outdated and the management have to work on it. One of the interviewee although denied this part and stated that companies are already using ERP systems and one of the interviewee suggested that ERP is not an option for small companies in Pakistan due to its high cost. It can be concluded that, if technological and institutional challenges are overcome, there is a possibility for introducing an ERP system in SMEs of Pakistan. The desire in present circumstances to adapt the ERP system in Pakistan's SMEs depends on change management and the motivation from both the government and private businesses. The higher management is either willing or able to adjust any upgrades, but also needs incentives, understanding, motivation and planning to adopt an integrated ERP system.

7.1 Suggestions and future recommendations

The research proposes few suggestions to promote the implementation of the ERP system in SMEs of Pakistan and address the solution to the challenges being faced by them. First of all, the change management should be prioritized. Workshops should be held by a task force who's main focus must be to address the benefits and pros of an ERP system. This can be done by giving them examples of a centralized system. Rather storing records of accounting, human resources, general ledgers, sales and purchase orders, invoicing, salaries etc into a spreadsheet and word processors, the management could be made motivational by addressing each and every business operation and providing them with ideas that all the information can be stored and accesses in a one centralized system.

The suggestions also include the interorganizational cooperation and communication structure and cultures, raising awareness of the values and advantages of an interconnected system, raising technical awareness, enabling officials to use technologies, data-driven processes and developing computerized registration structures, instead of action-driven.

This research is based more on the current suggestions and less on the future recommendations. The reason is that the research primarily involves an advanced ERP system for private SMEs of Pakistan. The perspective from the government SMEs is not included in this research. To get a clearer view, an analysis should be conducted from the viewpoint of public enterprises. This element would improve the reputation and morale of research and yield improved outcomes.

7.2 Self Assessment

The research concluded in a faster time than originally expected. The same time was allotted for each chapter according to the original project plan. The meaning and role of preparation, the organization of the research and the decision-making process is one of the most important aspects gained during the research. It was hard to concentrate on research at first, but by the time the emphasis and excitement began to grow. Part of the process was author's prior knowledge of the information systems and the challenges being faced by SMEs of Pakistan. In comparison, interviews appeared to be the most difficult aspect of this thesis. As the author lives in one country and the people interviewed and the topic of the study belongs to another country, it was difficult to locate the interviewees and choose the appropriate individuals. As a result, the interviews took place in a little later stage of the thesis. That being said, through personal references, the researcher was able to reach appropriate individuals. After the research on this subject has been good, the author increased his knowledge of the business operations and working methods of SMEs of Pakistan and also enhanced his ability to perform interviews, handle project and do research. The author has further nourished his knowledge of Project Management and have practically experienced the different steering group meetings, status update meeting etc. Should the author be given another opportunity to perform the same job, the author would prefer to conduct early interviews in such a manner that research can be accomplished conveniently. In addition, the interviewees could be extended and interviews with more professional backgrounds could be addressed. The researcher achieves its key purpose in carrying out the analysis on this subject and many new knowledge is gained during the research process.

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