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**HOW ERP IS HELPING SMALL TO MEDIUM
SIZED IT COMPANIES IN IRELAND TO
IMPROVE THEIR BUSINESS PROCESSES?**

A dissertation submitted in partial fulfillment of the requirements for the degree of Masters of Business Administration in Information Systems programme at Dublin Business School.

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DECLARATION

I, Anindita Ghose, declare that this research is my original work and that it has never been presented to any institution or university for the award of Degree or Diploma. In addition, I have referenced correctly all literature and sources used in this work and this work is fully compliant with the Dublin Business School's academic honesty policy.

Anindita Ghose

Signed: _____
Anindita Ghose

Date: _____
21st August 2015

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ABSTRACT

Purpose: The purpose of this research was to explore how ERP systems are helping small to medium sized IT companies in Ireland to improve their business processes. Moreover, it projected which areas of business processes are getting more benefit than others with evidential support.

Design / methodology / approach: Four different organizations were contacted and interviews were conducted of managing director and middle level managers who are using ERP systems within their organizations. As it is an academic research so cross sectional method for data collection was favored.

Findings: The exact way was identified as how ERP helps or optimizes different business processes in a SME IT organization. Further, it found the percentage increase in efficiency of different business processes and percentage decrease in time for processing transactions, which has certainly add value to the existing literatures.

Research limitations / implications: Since it was an academic research and the author conducted only 4 interviews so the result can't be generalized until and unless further research has been carried out with large samples.

Practical implications: The findings of this research will enable every professional working in SME IT organization the importance of ERP implementation within their organizational structure.

Originality / value: Even though the research was carried out for a short period of time and its findings might not be generalized, howsoever it stands out to be the first research in SME IT sector in Ireland.

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CHAPTER - 1 - INTRODUCTION

1.1 OVERVIEW OF THE TOPIC

Access to correct information and its utilization has become a vital tool for success. It is not only limited to personal success but also to organizational success. Quast, L. in 2012 argued that without the flow of information within an organization the day-to-day operations within a business environment are difficult to proceed. However, Attunity in 2013 implied the availability of real time information as a source for organizations to remain successful within their competitive marketplace. Thus, it can be assumed that correct and real time information's helps organizations to achieve clear visibility across all the areas of business processes necessary for successfully running day-to-day operations.

Howsoever, organizations nowadays are not only trying to grab real time information by integrating various aspects of business processes but also trying to differentiate it from others so as to gain competitive advantage. It has undoubtedly become one of the critical success factors for every organization which indeed is being achieved by ERP (Enterprise Resource Planning) system.

According to Raj, A. in 2012, an ERP system at its very basic level integrates all the information's of an organization into one system so that it can be processed and shared entirely within an organization in the real time. In this similar lines, Reed, J. in 2015 extended his view point by stating that ERP systems helps both small and large organizations / large enterprises (LE's) to create competitive differentiation. Howsoever, Seo, G. in 2013 implied ERP systems to be effective only for LE's but Brouwer, J. in the same year contradicted the concept presented by Seo, G. through his research by stating that even though the name of the system relates to enterprise meaning big companies, this system is being adopted by small and medium companies / enterprises (SME's) at large as it helps to gain more profit, integrate all new technologies, provide reliable data and reduce the risks for operational cost which indeed is necessary for them in long run. Therefore, it can reasonably be argued that ERP system acts as a backbone for the effective running of any organization.

Nowadays, not only the SME's are attracted towards implementing ERP systems within their organization but also the vendors of ERP systems have shifted their target from LE's to these sectors because of the market saturation by the previous one (Haddara, M. and Zach, O., 2011). However, Upadhyay, P. et al. in 2012 conveyed that the implementation of the same for the two varies drastically because of earnings and number of employees. Therefore, the projected benefits for the two must vary not only because of the difference in the implementation procedure but also because of several other underlying factors.

Despite these it can be noticed that several reports published in past demonstrates only about benefits from ERP implementation in LE's such as: a report by Panorama Consulting Solutions in 2013 namely '2013 ERP implementation success rate report' surveyed 172 LE's using ERP system through both in-house and SaaS (Software-as-a-service) platform confirmed that 60% of them realized benefits afterwards in terms of both cost saving and reductions in average pay back period. Howsoever, within the same report the rest 40% criticized that either it didn't gave them any benefit or more cost and time was involved. Therefore, it can be said that if ERP implementation is carried out properly then its realized benefit is overwhelming which is definitely needed for any organization to remain competitive in its marketplace.

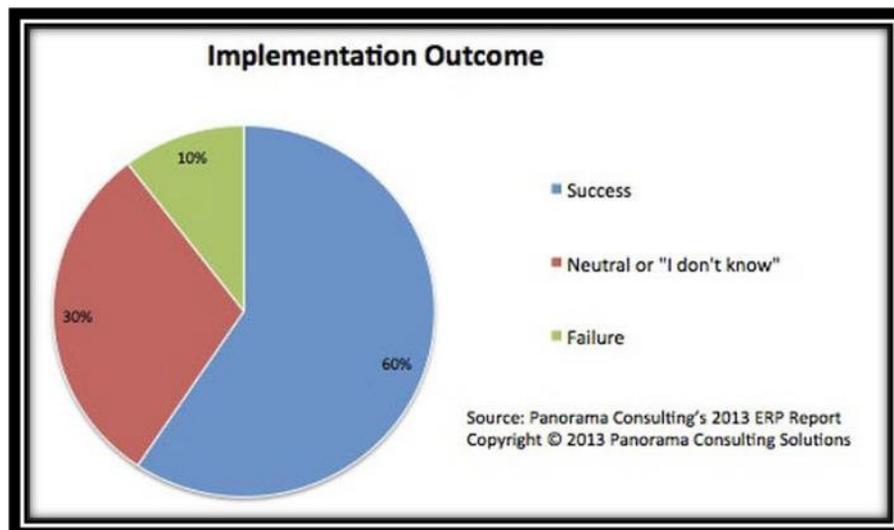


Figure 1 - Implementation Outcome Of ERP

Moreover, the same report implied that the percentage of the projected benefits of the same 60% organizations varied tremendously among different organizations. The reason for the same was already argued by Dezdar, S. and Ainin, S. in 2011 that factors like full support from top-management, adequate training for the users and transparency of communication being important for any organization to achieve maximum benefit after ERP implementation. Thus, it can be established that internal factors within an organization plays a vital role in determining the success rate after ERP system implementation, which is true not only for LE's but also for SME's.

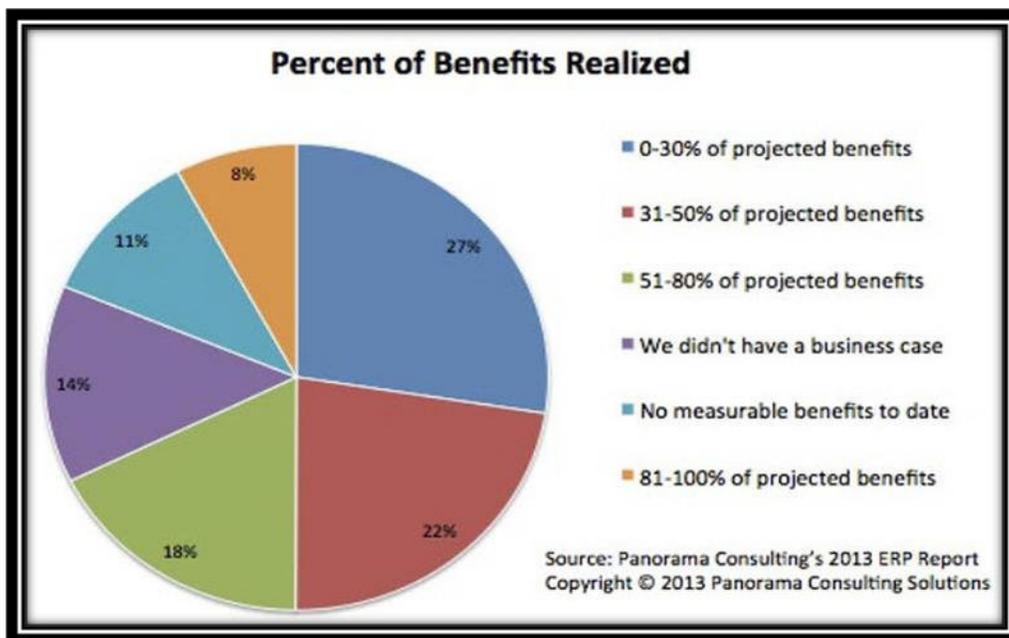


Figure 2 - Percentage Benefit After ERP Implementation

Nevertheless, Neal, H. in 2010 came up with a new theory that not only internal factors of an organization and different ERP systems are major factors in determining the projected benefits of the different business processes in an organization but also the way (the strategy used by the vendors and clients) they (ERP systems) are implemented. Accordingly, a survey was conducted including 45 LE's using different ERP systems hosted differently and found to have received benefits in a wide range primarily because of the difference in implementation strategy. Thus,

not only for LE's but also for SME's these factors play a pivotal role in creating a difference in benefits from one organization to other.

In spite of all these success stories, ERP implementation not only always brings glory for an organization but also sometimes brings huge disasters such as Avon's failure of SAP implementation, U.S. Air Force's ERP failure etc. (Kepes, B., 2013). The failures of ERP implementation does not only refer to system failure after its implementation within an organization but also refers to all those which led to over budget, delivery after scheduled time, improper implementation, inaccurate requirement gathering or insufficient user testing etc. as a result of which the projected benefits of the business operations in terms of improved productivity and competitive advantage is not forthcoming.

Whatsoever, Luthje, T. and Arlbjorn, J. in 2012 contended that despite any number of failure for ERP implementation in organizations, it is always considered as an industry-driven concept for practical solutions in organizations for improving the performance of the supply chain thereby reducing the operational cycle time and thus is a vital strategic tool for facilitating the smooth flow of common functional information and practices across the entire organization to improve business processes.

As this topic is not only concerned with ERP but with the effect of ERP on SME's in Ireland, therefore it becomes reasonably important to understand the meaning of SME's in Ireland so as to understand the effect of ERP on the same. According to Irish Small and Medium Enterprises Association, an SME is either a micro or small or medium sized enterprise which is categorized according to the standard EU legislation as those who employ fewer than 250 persons and have an annual turnover not exceeding 50 million euro, and / or an annual balance sheet total not exceeding 43 million euro.

Therefore it's very clear that SME's earning is much less as compared to that of LE's. So, implementing ERP systems within their organization can be a challenge for them as ERP systems are expensive, sometimes very complex and challenging to manage (Pandey, S. et al., 2012). Because of all these reasons TechRepublic in 2013 published an article mentioning SaaS

methodology for ERP implementation can be one of the strategies for SME's to take full advantage of the ERP system without any huge initial investment which can also provide them with additional benefits such as lower cost entry point, reduced time to implement, limited need for technical support and infrastructure, and a more predictable expenditure cycle etc.. Additionally, Saugatuck Technology in 2009 mentioned this as an ultimate source for SME's to cut down their costs by 30%.

Furthermore, the same theoretical aspects have been verified by two major surveys (Aberdeen Group surveyed 1,680 SME's in 2007 and Federici surveyed 50 SME's in 2009 in Madrid, Spain) conducted across different nations in which it has been found that implementation of ERP systems in SME's can enhance efficiency of different business processes tremendously. However, it didn't cite the exact percentage by which the different business processes received benefit after ERP implementation.

Thus, from the above reports it becomes quite evident that implementation of ERP on SME's is helping to improve business processes. The aim of this relevant research is to analyze how ERP is helping SME's of IT sector in Ireland to improve the business processes and which areas of business processes are getting maximum benefit over others by providing factual report.

1.2 RATIONALE / IMPORTANCE OF THE TOPIC

In this section of the research, the author has given some evidential support to enable readers to understand how this topic was of utmost importance to carry out. According to the most recent official CSO (Central Statistics Office Ireland) statistics in 2012, there were over 185,500 active enterprises in Ireland of which 99.7% were SME's. Moreover, the same CSO business demography results for 2012 found that 68% of Irish private sector employees work for an SME which account for 52% of total employment. Thus, it can be stated that SME's form the backbone of the Irish economy and indeed is a key driver in their economic landscape. Therefore, there is a need to identify the sectors which are growing at a much faster rate than others so as to understand the factors behind it which can possibly be replicated in other sectors as well.

According to a survey by InterTradeIreland in 2012, manufacturing and ICT sectors in Ireland show the maximum growth. Moreover, through the same survey it was found that ICT sector in Ireland creates around 25% of the total turnover by industry. Further, Adam, F. and O'Doherty, P. in 2000 noticed ERP system implementation can be a major breakthrough for organizational success in Ireland. However, in a recent European Digital Agenda (2010), it has been found that shortage of appropriate digital platforms within this sector might hinder their growth in long run.

Therefore, it can be considered that ERP implementation can help the organizations to achieve their goals more easily by improving their business processes. As ICT sector in Ireland is responsible for creating maximum turnover and also as per the European digital agenda without appropriate digital platforms within the organizations of this sector, there is a chance for them to get hindrance in their growth in long run, therefore the organizations which have not implemented any digital platform yet can be recommended the solutions so as to get maximum growth potential out of it. Moreover, it will enable every professional in SME ICT the positive impact of ERP implementation in relation to improved business processes which is necessary for them not only to get tangible benefits but also intangible benefits necessary to remain competitive within their marketplace.

1.3 RESEARCH QUESTIONS ADDRESSED

After completion of this research, the author has been able to address the following two research questions:

(i) How does ERP help small to medium sized IT companies in Ireland to improve their business processes?

(ii) And which aspects of business processes achieve maximum benefit after ERP implementation?

- The first research question has tried to identify how effectively and efficiently the companies are able to process information with fewer errors. Is there any enhancement in

productivity, efficiency, better management in cash flows, inventory, client / customer management, and / or decision making process after ERP implementation.

- Whereas the second research question has tried to understand which areas of business processes are getting maximum benefit over others and what is the percentage increase in those areas after ERP implementation. It has also tried to understand whether the small to medium sized IT companies in Ireland are using area specific ERP software / partial ERP system for any specific purpose or not.

1.4 ORGANIZATION OF THE RESEARCH

The aim of this section of the research is to enable readers to understand how the research was carried out and what different sections of the dissertation aim to elaborate.

The next chapter i.e. chapter 2 provides literature review which summarizes what different authors perceive about this topic. Moreover, in the same chapter it has been laid out what researches have been done till date and where is the gap so as to make it understand how this research best fit into this.

Chapter 3 provides a detailed report for methodology as how and why the research was carried out by these particular methods.

Chapter 4 provides findings of the research by comparing what different respondents argued about this topic when same set of interview questions were asked to them.

Chapter 5 provides a discussion which summarizes the comparison between secondary research and primary research.

Chapter 6 provides a conclusion about this topic as well as recommendation as what needs to be done.

Finally, chapter 7 elaborates about the author's reflection as what she gained through this MBA program, why she chose this topic for her dissertation and how different modules which she learnt during her MBA program in DBS helped her to successfully complete her dissertation.

1.5 SCOPE AND LIMITATIONS OF THE RESEARCH

Scope: The purpose of this research was to understand which areas of business processes are getting maximum benefits over others in SME IT sector in Ireland and the reason behind it. As a result of which information's were collected from only those SME's which use ERP system. Howsoever, being an academic research, it didn't allow the author to conduct a longitudinal study and contact many respondents. Despite this it allowed the author to get information's (like percentage increase in efficiency, time reduction etc.) what she was looking for. Howsoever, further study in the same topic can empower more information which will unquestionably help the professionals to understand the exact positive correlation between ERP system implementation and SME IT sector.

Limitations: As every research comes with certain limitations and hurdles to carry out so as this one. There are five limitations which are associated with this research:

- First, getting a list of all the IT companies in Ireland which falls under small to medium scale according Irish Small and Medium Enterprises Association and are using ERP software.
- Second, getting email replies from those organizations which fit into the category of the research area.
- Third, getting appointments of the middle level managers and the managing directors as they are very busy.
- Fourth, getting proper reply for the research questions. This was because they (middle level managers and the managing director) might not be very interested to give the exact data /

information's to the author (student) for carrying out academic research as this is not going to give them (the interviewees) any benefit.

- Finally, limited number of research on ERP implementation in IT sector have been done in past and there is no prior research available on SME IT sector, which made it quite difficult for the author to gather secondary data.

1.6 MAJOR CONTRIBUTIONS OF THE RESEARCH

Even though there have been many authors in past which stated that ERP implementation helps organizations to achieve their goals more easily by facilitating business processes. However, no one has ever carried out the same concept on SME's in IT sector. But, recently two surveys (one each) by Gartner group and Aberdeen group has proved that SME's in IT sector are increasingly adopting ERP systems within their organizational structure and as a matter of fact small ERP vendors are increasingly gaining more share in ERP market. Whatsoever, they never summarized as which areas are gaining maximum benefit over others and its extent, which became the foundation for the author to carry out this research.

CHAPTER - 2 - LITERATURE REVIEW

2.1 ERP IN IT SECTOR

Even before the advent of ERP system, Rayport and Sviokla in 1995 stated the importance of information technology in relation to organizational success and connected the same concept to the value chain of an organization. The same fact was even proved to be true by Smith, E. and Alouah, A. in 2010 when they claimed ERP as an essence for 21st centuries competitive business environment for most of the organizations (whether it's an MNC or small or micro) for carrying out business operations by integrating every function so as to improve the quality of operations by changing various aspects in the value chain of the organizations. As the value chain includes both primary and supporting activities of an organization therefore ERP system optimizes each of the activities in these two broader concepts thereby critically improving its performance and

hence survival (Bosombo, Folo-Ralph, 2007). Thus, it can be claimed that ERP system implementation acts as a strategic tool for deriving the best practices in the various generic business functions of the value chain of an organization which ultimately helps them to create more value which indeed is directed towards creating more profitability.

In addition to these, Rahul, R. in 2012 implied value creation for any organization especially for SME's have become more important in 21st century due to increased competitions from the competitors in the same marketplace and emerging technologies which are helping these organizations to differentiate themselves from others. However, in today's world not only the technological breakthroughs can help organizations to remain competitive but the way they (the organizations) use these technologies to differentiate themselves. The same technology might help one organization to gain competitive advantage which might not help other. For example: Microsoft Excel can be adequate for database management for an organization having less than 10 employees and access to very few clients, but the same technology cannot be used for organizations having more than 50 employees and much more reach to clients. Therefore, there is a need to understand the basic business needs according to which the technological changes should be done.

Howsoever, a white paper published by Intel in 2012 acknowledged that technological changes according to the current business requirements cannot enable them to remain competitive throughout their overall business cycle but the one which can be customizable and scalable in future accordingly will be fruitful. So, there is a need for technologies that will be agile and act as a cost effective solution for supporting the high velocity growth of the business and ever changing business needs. Thus, it can reasonably be argued that in deficit of agile system the organizations might not gain benefit in long run. The same has been evident through a survey by Openbravo in 2014 wherein 70% of the surveyed firms which used rigid systems were not getting enough benefit in the entire ecosystem of their organization due to the changing working culture and business needs and henceforth scraped their previous systems and implemented new ERP systems. Again, Goldsbury, C. in 2011 mentioned that most of the organizations are moving from their old technological solutions to new especially agile ERP systems. Therefore it can be inferred that agile ERP solutions create efficiency for an organization throughout their entire

value chain thereby improving the overall business performance and helping them to gain competitive advantage over others.

Similarly, Ram, J., et al. in 2014 summarized adoption of ERP in IT service industry not only helps the organizations to industrialize themselves through value creation but also to gain competitive advantage through increased efficiency, productivity, streamlining business processes and improved integration. However, choosing the correct ERP solution and implementing it properly plays an important role in organizational success. For example: IT service industry with many employees, lot of client bases and a rigid business model are getting more than 80% of their business needs satisfied with rigid ERP system SAP (Pilgrim and Vogedes in 2012 in an article 'ERP usage in the IT service industry: an exploratory study' by Johannes, H., et al., 2014) whereas SME's are getting 80% growth in their revenue after implementing agile ERP solutions like Microsoft Dynamics Navision, Microsoft Dynamics Great Plane, Microsoft Dynamics Solomon and Microsoft Dynamics CRM (Sikich, 2010). Therefore, it can never be concluded that agile ERP solutions will fetch more benefit than rigid ones when there is a difference in business model.

Whatsoever ERP systems and its implementation in different IT organizations always vary, for example: organizations with thousands of employees and having global reach will implement ERP systems such as SAP, Oracle, Sage etc (Norton, S., and Boulton, C., 2014). Whereas SME's will install Microsoft suite, Salesforce CRM, Tally, etc (Robb, D., 2011). Moreover, the same systems are implemented through different means. Some organizations implement it in-house, some through cloud whereas some through SaaS methodology. The main difference lies on two main factors: the availability of technical expertise in the organization and the ability to bear the ongoing costs for the ERP system up gradation and maintenance (NetSuite, 2015). However, there always remain pros and cons for all the situations. In case of in-house ERP system, there is less chance for data theft as compared to others whereas in case of other ERP system implementation procedure the host companies need not to worry about the maintenance of the server. As SME's are short of resources and financially weak as compared to LE's so they can't afford to lose their utmost financial resources. Therefore, they need to install an ERP system not

only by considering their business needs but also considering another important factor i.e. the implementation way so that they can successfully avoid the chances of failure.

According to a report published by Gartner in 2014, ERP and CRM software's which have been

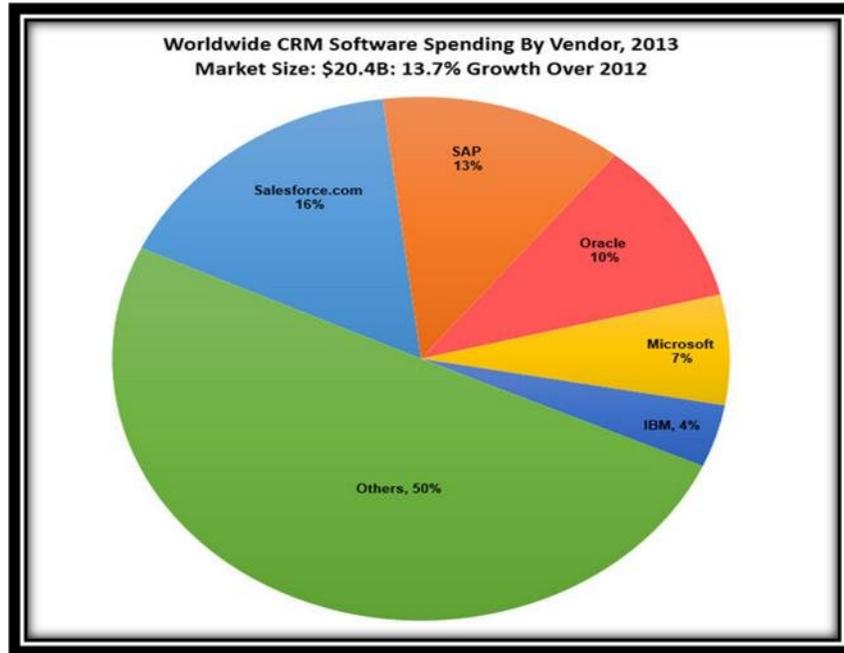


Figure 3 - ERP And CRM Software Market Share For IT Industry

implemented in IT industry for SME's have created around 50% of the market share which demonstrates the popularity of ERP system implementation in the SME's as similar to those of LE's. Moreover, the same report stated that 40% of the ERP and CRM software companies are operating through SaaS atmosphere and the trend is increasing staggeringly thereby changing the revenue models for larger ERP software organizations. Thus, it can be presumed that as SaaS methodology for ERP implementation is increasing along with the increase in SME's market share for ERP implementation, therefore SME's in IT sector prefer SaaS methodology for ERP system implementation not only as it is more affordable but also as it is easier to implement and manage, with no reason to worry about maintaining the server and thus enabling real-time reporting and business intelligence. In conjunction with these, All, A. in 2011 stated that ERP applications used by IT decision makers predict a growth in the ERP software market from

45.5 billion dollar in 2011 to 50.3 billion dollar in 2015 because of the advancement of the SME's to adopt ERP systems. Further, Forrester predicted that SaaS based ERP adoption will rise 21% annually starting from 2015. Therefore, it can be implied that SaaS implementation of ERP system is quite popular in SME IT sector.

Nevertheless, Freeman, R. in 2011 researched that even though SaaS based ERP solutions are aggressively adopted by SME's in IT sector, it just account for the 2% of the global ERP revenue. Thus, it can be inferred that either giant vendor of ERP solution providers do not provide SaaS based ERP solutions to SME's as a result of which the above data only implies to those ERP solution providers which cater to SME's or SME's do not prefer to rely on the software solutions from giant ERP vendors. Thus, in any case it can be seen that giant ERP solution providers such as SAP, Oracle and Epicore are not able to tap SME's properly because of the non availability of the SaaS based ERP solutions. As SME's play a dominant role in the economic development of any economy and SaaS methodology for ERP implementation is helping these industries to empower themselves with the same amount of computing power and data capacity similar to those of LE's, therefore, there is a need for giant ERP solution providers to come up with SaaS based ERP solutions. On the similar lines Isola, R. in 2015 mentioned that big ERP solutions provider such as SAP, Oracle and Epicore are modifying their solutions to cloud based platforms to cater with increased global competitions from other ERP solutions provider and not only they are concentrating on delivering these solutions to SME's but also to LE's as they too view it as cost-effective option for branch sites and other facilities. Therefore, it can be implied that SaaS based ERP solutions acts as a major source of business value in organizations of all sizes.

2.2 BUSINESS PROCESSES IN SME'S IN IT SECTOR

According to Appian.com in 2015 business processes of any organizations act as a fundamental building block for organizational success as it links each of the tasks within an organization, at the end of which they deliver a particular final output which can be services or product. Therefore, there is a need to manage those effectively and efficiently so that the organizations can prosper over time and meet their objectives at all times. Moreover, Appian.com in 2015

again stated that the various business process of an organization can be categorized into three main themes namely management processes, operational processes and supporting processes.

Financial Times described management processes of an organization as those which take into account a particular organization's system of operation. Thus, various processes such as performance management system, strategic planning, expense and capital budgeting etc. constitute various sub divisions of management processes as these ensures a logical and consistent approach for analysis and decision making for an organization that is aligned with the overall objective of the firm.

Moreover, Operational processes, as explained by Garner, S. in 2012 constitute of what exactly that particular organization is doing. So for an organization into sales will have core processes / operational processes as sales and marketing, customer relationship management and other related processes. These processes in fact create value for an organization and are based on the strategic planning developed in the management processes. Thus, there is a core link between the various sub divisions of all the processes in an organization and hence there is a need to tie these processes together so as to use those as key strategic drivers for organizational success.

Furthermore, Lehmann, C. F. in 2012 defined supporting processes of an organization as those which help them to support the operational / core processes so that they can effectively manage / track their core processes needed for achieving their overall goal. For example: an organization into sales and marketing will have purchase department which will look into all inflow and outflow of the products; as this department / activity, tracks / forecasts the need for the products in future which is very much needed for the un-interruptive sales of the products thereby helping the organization to achieve its overall goal. Thus, effectively managing business processes for every organization becomes a vital need for improving the performance of the business operations thereby improving its operational agility.

However, there always remain considerable gaps especially for SME's in understanding how and why the different processes within an organization should be managed. Rouse, M. in 2011 stated the importance of business process management for SME's as the way to reduce miscommunication and human error and the way through which they can focus on the requirements of the stakeholders which indeed help the organizations to optimize their core operations thereby increasing return on investment necessary for the long run of the organizations. Thus, the only way through which these can be done is through unifying them by integrating all the processes within an organization both internally and externally. In this light, Breyfogle, F. W. in 2015 correlated the relevance of integrating business processes for SME's with those of gaining competitive advantage, tangible and intangible benefits and stated that it boosts real time information, monitoring and reporting of different processes within an organization, minimizes the risks for occurrence of problems, delivery time etc. These theoretical and practical frameworks have indeed led to the creation and adoption of ERP or similar systems at large which seek to manage business processes automatically by connecting various process activities via technology.

Nonetheless, according to a statement made by SourceMaking reveals that business processes of any organization not only include the activities which are dynamic in nature but also all the static aspects of a business organization which typically includes organizational structures within which the dynamic activities of the business processes are conducted. Miranda, S., in 2013 extended her viewpoint in the similar context by discussing that even though it seems that different organizations in the same sector should have similar kind of business processes but it differs widely not only because of the difference in organizational structure but also because of the difference in the services or products they are catering to. Managing these different business processes have become vital factor in 21st century mainly because of three factors such as the ever changing and more complicated business operations, meeting customer needs at all times and mobilization of the industries. Therefore, there is a need to understand those well especially for SME's by aligning the business operations with every new business strategy before implementing any software solutions for integrating the same. Thus, it will enable organizations to streamline their processes, execute swift decision making, improve process communication by facilitating smooth functioning of teams, improve operational efficiency, and improve control on

budget and consistency on several processes within the organization (Wickramasinghe, T., 2014) which will ultimately help the organizations to gain competitive advantage and thus greater return on investment.

In spite of all these differences between organizational structures, dynamic and static nature of organizations, etc. there always remain certain business processes which are vital for every organization for carrying out their business operations. These are: customer strategy and relationships (sometimes also known as marketing), employee development and satisfaction (sometimes also known as human resources), quality, process improvement and change management (also known as quality assurance), financial analysis, reporting, and capital management (also known as finances), management responsibility, customer acquisition (also known as sales in), product development, product / service delivery, accounting management and technology management (also known as information technology).

However, Tagliavini, M. in 2014 stated that as SME's have very limited number of business processes within their organizations therefore these above core processes are minimized to five core business processes such as: sales & marketing, accounting & technology, quality & product / service delivery, management, HR & finance, and product development. Howsoever, even these business processes vary widely within SME's of same sector because of their services or products they are catering to. For example: an organization into IT solutions will concentrate more upon vendors and customers so that it can deliver customer requirements at all times without any delay and thus will have core processes as customer relationship management, inventory and vendors while an organization into IT hardware's will be more concentrating on vendors for product delivery and hence will have inventory, freight as their core business processes. Whatsoever, even with the differences in the business processes within the same sector of SME's in IT sector, unifying these through integrating with ERP systems enable them (the organization) to make their business processes seamless and hence no information tend to be associated with only one business process (Stefanou, Constantinos J., 2013) thereby helping them to gain competitive advantage over others.

2.3 IMPACT OF ERP ON THE BUSINESS PROCESSES IN SME'S IN IT SECTOR

According to Monk, E. and Wagner, B. in 2012 the advancement of information technology has carved a niche for ERP systems in SME's. Indeed, InformationWeek published an article in 2001 which stated that ERP systems in future will not only be used by LE's but also by SME's as it will enable them to gain operational excellence exponentially. In these similar lines, Law and Ngai in an article named measuring the impact of an ERP project at SME's: a framework and empirical investigation in 2011 asserted that SME's benefit from the implementation of ERP systems within their organization as it integrates the information flow within the various business processes thereby helping them to achieve operational efficiency which create more value within their value chain thus helping them to remain competitive. Therefore, it can be assumed that ERP systems helps SME's to improve their key business processes which in turn fuel growth and profits thereby helping them to gain competitive advantage in their marketplace.

Moreover, Aberdeen group in 2012 carried out a survey on top performing 385 SME's in IT sector worldwide and described the use of ERP systems as the primary reason for them to stay at a market leader position as it enabled them to cope up with the volatile business environment with changing customer needs and hence helped them to create and add more value to the organizational success, promote efficiency, maintain standardization (where the organizations were dispersed geographically) by facilitating the decision makers within the organization to react immediately and forecast the future needs.

Furthermore, Nexgen Group in 2013 argued that the perspective for the use of ERP systems has changed tremendously over decades as earlier only manufacturing sector was using ERP platforms but nowadays it is being used by organizations in every sector and in particular by IT sectors because of the improvement in various aspects of the business processes. The article further pointed out that 60% of the surveyed SME's (100 SME's in IT sector in India were surveyed in 2013) have agreed to found smooth inventory management, timely scheduling of production cycles, shipment of goods, and better management of human resources. Again, it elaborated that only 5% of these surveyed SME's implemented ERP systems out of the box

which helped them to achieve greater operational excellence over others. Moreover, it described that 9% of the surveyed SME's are using mobile / customizable ERP systems within their organizational structure as a result of which it have allowed them to improve the quality of services what they were offering to the customers, increased productivity by eliminating downtime and reduced the response time thus enabling them to gain competitive advantage. Thus, it can reasonably be argued that ERP implementation in SME's in IT sector helps them to run their business operations smoothly without any hitch thereby increasing their output and efficiency.

Likewise, Khajavi, G. and Mirbagheri, F. A. in 2013 carried out a small survey on the Malaysian SME's and elucidated that ERP implementation in these SME's were not only providing them with tangible benefits but also with several intangible benefits such as improving their goodwill, building strong brand reputation and increasing customer loyalty which indeed is very necessary for them to effectively compete with their competitors. Moreover, it was found that 57.14% of them (total 84 responses were obtained out of 147 SME's) have achieved benefits in different business processes as a result of which different levels in decision making process such as managerial, and operational have attained improvement thereby helping them with increased productivity, cost reduction, better resource management and proper reporting structure. Further, Bohórquez, V. and Esteves, J. in 2011 emphasized a positive relationship between ERP implementation in SME's in Spain, improved business performances and cost reduction. Thus, it can be implied that ERP solutions manage business processes seamlessly between both internal and external factors and therefore help SME's by getting real time business information's needed to boost their operational efficiency to a greater extent which indeed is needed to support for their future growth.

Despite all these success stories of ERP implementation in SME's in different countries, there have been some cases in past which indicates the failure rate for ERP implementation in SME's. Singh, B. and Singh, M. in 2014 stated that not only after effects of ERP implementation in SME's should be considered as a success story rather the entire implementation procedure should be taken into consideration. Accordingly, they surveyed 50 SME's from different sectors in India and found that for 37.5% of organizations ERP system implementation failed because of

the reluctance of the top management to adopt changes, for 14.75% there were budget issues (the ERP implementation cost more than their estimated budget), for 16.5% the vendors were not very experienced in providing ERP solutions aligned to their business needs, for 18.75% the ERP system were not friendly enough for the end users and for 12.5% there were no effective trainings from the consultants. As it is quite evident that SME's have little access to resources and they cannot afford to stand still therefore for successful implementation of ERP in SME's, organizations must have support from top management level, require changes in people's work practices and organizational policies, and effective communication regarding technological changes.

In addition to this, Peng, G. C. and Nunes, M. B. in 2010 conducted few case study analyses on Chinese manufacturing firms in which ERP system implementation was unsuccessful and observed that not only internal tangible factors like top management support, IT professionals ability and system user plays an important role but also intangible factors specially alignment of the objectives of the organization with the technical requirements play a dominant role. Further, they noticed that the cumulative variances for ERP disaster in relation to failing to abide with various factors such as not aligning the business objectives of their organizations with the ERP systems requirement, lack of formal communication, poor top management support, and users resistance to change were 76.134%, 2.06%, 3.5%, 13.5% respectively revealing the importance of software selection procedure with respect to defining business processes after focusing on corporate strategies.

Whatsoever, ERP is becoming a popular choice among SME's across the globe because of the ability to track down all the effects in various business processes with a shift in decision and to have a close control over the complex and specialized tasks involved in sales, services, supplier relationships, and working capital management. As a result of this the ERP market especially for SME's has grown by 3.8% in 2013 (Columbus, L., 2014) with an overall market share for ERP and CRM systems for SME's in IT sector by top vendors equivalent to 50% in 2014 (Gartner, 2014). So, it can be mentioned that in spite of few ERP implementation disaster cases in SME's in different sectors globally, SME's in IT sector are desperately adopting ERP systems within their organization primarily because of eliminating duplicate data entry, easy up gradation and

maintenance of the software solutions necessary for changing business needs, improving the overall business processes by reducing the customer's risk of failure and removing the traditional clumsy workarounds caused by multiple systems welded together, allow consistency of data for simple research and reporting etc.

In these similar contexts, despite ERP system implementation failure in SME's, the market share of top vendors for ERP systems in SME's IT sector is increasing, and it became primary reason for Ruivoa, P. et al. in 2013 to investigate a relation between the commercial use of ERP systems and user productivity in European SME IT sectors. The investigation was done through a web survey on 2,000 European SME's in countries such as Denmark, Portugal, Spain and Sweden to determine which ERP systems (including both in house implementation and SaaS methodology for ERP implementation) from giant vendors like Microsoft, SAP, Oracle and Sage are providing with the best user productivity factors like system compatibility (the degree to which the ERP system matches with IT features of the organization such as compatibility with hardware and other software), system complexity (how intuitive the application is, or how quickly the users can become proficient with the system, and how comfortable the users are while using it), transactional efficiency (how easy it is for users to execute common and repetitive tasks, the effectiveness of the user interface, and the speed and reliability of the software), embedded best practices (how easy it is for users to set up the system and map workflows based on their requirements, and the system's adaptability to business needs), online training (how easy it is for users to be trained on the system through online so that they can understand the content material, and be able to navigate through topics applied to daily tasks) and employee empowerment (how well the software enables collaboration, role tailored reporting, and access to real-time information).

The study suggested that a single ERP system within these IT organizations were not sufficient for delivering top results for all the user productivity factors. Microsoft Dynamics Navision scored the highest with scores 417, 371 and 330 respectively for system compatibility, embedded best practices, and online training factors. Sage X3 scored the highest with a score of 347 for system complexity factor. Oracle scored the highest with a score of 411 for transactional efficiency factor. And SAP All in One scored the highest with a score of 403 for employee

empowerment factor suggesting that great user productivity is driven by more than an appealing user interface and therefore it should be considered as one of the most important categories in ERP adoption decisions. Further, it can be said that Microsoft Dynamics Navision achieved the highest score in three out of the six user productivity factors as its target market is SME's since its inception which indeed is being claimed by Robb, D., in 2011. Hence, it can be summarized that even though giant ERP systems might fulfill some of the requirements of the SME IT sectors but it's not sufficient for all the areas and thus the organizations must implement those ERP systems which are particularly catering to SME IT sectors.

To demonstrate the above relationship, Haddara, M. and Zach, O. in 2013 conducted few case study analyses in MTO (make to order) medium sized companies in Nordic European region and reported to have found a positive relationship between ERP systems catering to MTO medium sized companies in Nordic European region and improved business processes. Further, Haddara, M. in 2014 elaborated the findings with the same region but in relation to SME IT sector and complied that ERP systems in SME IT sectors helps to improve traditional business functions like finance, accounting, sales, human resources, procurement, labor productivity to a greater extent than modern aspects of business processes. In fact, Mantakas, M. and Doukas, D., in 2011 conducted a research on 15 Greek SME's that implemented ERP systems such as Pilot ERP, 360 Enterprise Suite, OfficeBooks, Passport Business Solutions which are particularly catering to SME's, that there has been improvements in production master data and planning, scheduling, execution, costing, and business intelligence processes to a greater extent as compared to those SME's which implemented ERP systems from global giant vendors such as SAP, Oracle and Epicor (moderate increase in productivity was achieved).

Again, Wu et al. in ERP systems in SME's: A literature review by Haddara, M. and Zach, O. in 2011 argued that there is positive impact of ERP implementation in SME's in Taiwanese electronic and science industries with respect to several factors such as enhancement of user communication, training, and achievement of short term goals, and motivation for accepting system changes by users primarily due to approaching vendors providing solutions to these sectors only. Therefore, it can reasonably be argued that there is a greater extent of positive impact in the business processes of SME's IT sector and ERP implementation when these

systems are implemented by those vendors which are catering only to these sectors. However, the exact magnitude and the way for the same (area of business processes getting more benefit as compared to other areas) in relation to Ireland's SME IT sector is still unknown, which essentially is the aim of this research.

2.4 CONTEXTUALISATION OF THE LITERATURE REVIEW

Thus, it is quite evident from several previous researches that proper implementation of ERP systems, choosing a correct ERP system by aligning the business objectives with the ERP system needs, and approaching a correct vendor stands out to be major factors in determining the ERP implementation success for organizations. Further, prior literatures also provide evidence that ERP implementation in SME's has not always brought disaster but also has helped them to improve their business processes.

However, no descriptions are available in previous researches as which areas of business processes in SME IT sectors are getting maximum benefit over other areas and its extent. Apart from this area, there is no description available regarding the trend for implementation of ERP software in SME IT industries in Ireland to understand whether area specific ERP software is in demand or not. This area of ERP software has never been explored before and thus the aim of this research is to bring out the same with evidential support so as to answer the research questions in a best possible manner.

CHAPTER - 3 - RESEARCH METHODOLOGY

This section will try to emphasize as how the author has carried out the entire research in a stipulated period of time through research onion developed by Saunders, Lewis and Thornhill in 1997. It will discuss the philosophy, approach, strategy, choice, time horizon, sampling, data collection and analysis methods chosen by the author to complete this research and justify them in context of the research questions and objectives of the study. The time plan as how the author carried out her research and ethical issues associated with this research have also been discussed in this part.

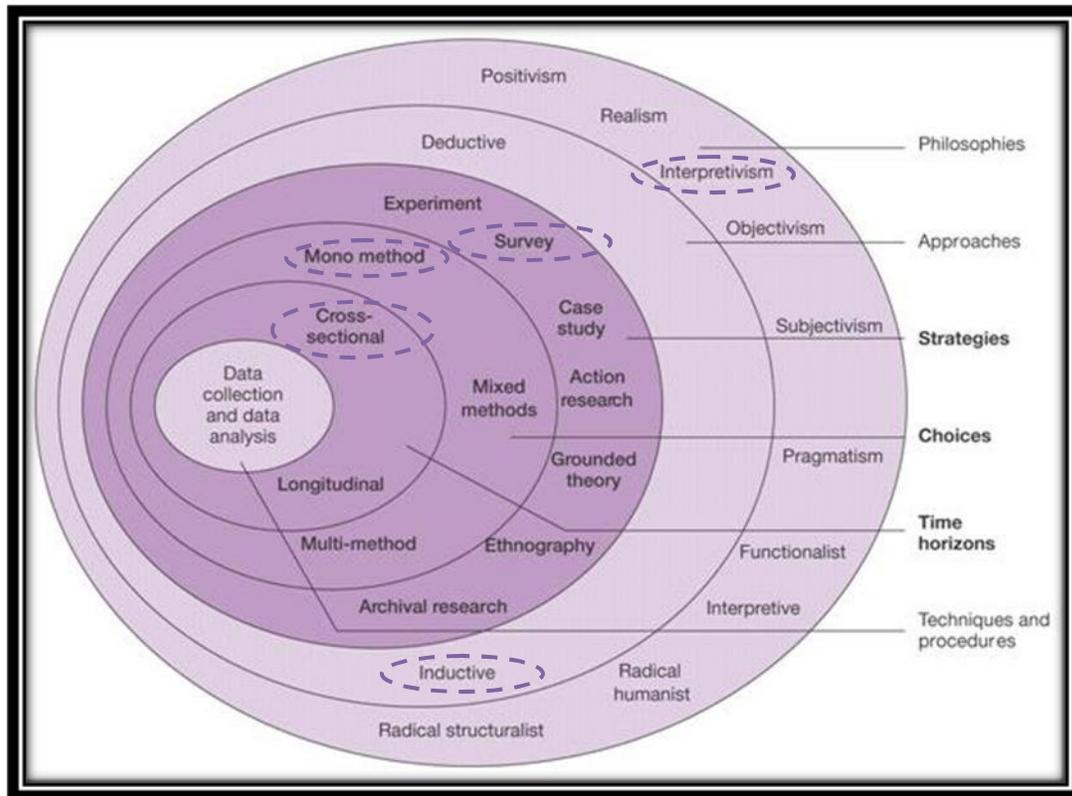


Figure 4 - Research Onion

3.1 RESEARCH PHILOSOPHY

Saunders et al. in 2009 defined research philosophy as the development of knowledge and the nature of knowledge. Therefore, in simple words it can be stated that research philosophy enables the author to gain an in-depth knowledge about the topic in which she has carried out the research. Research philosophy being the first step or first layer in the research onion helped the author to understand how to gather the evidence so as to answer her research questions in a best possible manner by directing her to choose the appropriate methodologies there after so as to avoid inappropriate and unrelated works. Moreover, it helped the author to become more creative and exploratory in her method of research which indeed was very necessary for the successful completion of this research.

According to Saunders et al. in 1997, research philosophy can be broadly divided into two categories: ontology and epistemology. Husserl, E. in first half of 20th century defined ontology as the branch of philosophy which tries to find out what is true whereas Ferrier, J. Frederick in 1800's defined epistemology as the branch of philosophy which tries to find out how is it true. As it is already known through several previous researches and literature review that implementation of ERP fetch benefit to SME's, thus the author seeks to find out how ERP implementation helps SME's of IT sector in Ireland to improve their business processes, therefore making epistemology as the chosen research philosophy for this area of research in broader sense.

Within this epistemology head of research philosophy, the author carried out her research through interpretivism approach of research philosophy. This is because for this topic the conclusion was drawn depending upon the data collected. So, there was no need to believe on the prior conclusions or assumptions drawn from other researches which is the strongest point of this approach (interpretivism) as opposed to others (positivism, realism, objectivism, subjectivism, pragmatism, functionalist, interpretive, radical humanist, radical structuralist). Moreover, this topic needed flexible approach for carrying out the research starting from data collection to carrying out interview questions so as to gain different in-depth insights about the topic which is strongly supported by interpretivism approach as opposed to others making it the second biggest advantage for the author to carry out the research through this philosophical methodology. Finally, the author had knowledge about the subject area but with data and information collected through different professionals the views changed for certain areas of the topic which indeed is supported by interpretivism approach.

3.2 RESEARCH APPROACH

Johnson, R. B. et al. in 2007 defined research approaches as different plans and procedures used for researches that directs the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. Therefore, the research approach which is the second layer of the research onion enabled the author to understand how and why the data should be collected and analyzed in a particular way thereby helped her to interpret the results properly.

Depending upon the nature of researches i.e. how the data should be collected and analyzed, Saunders et al. in 1997 categorized the research approaches into two main themes: deductive and inductive. According to them, deductive approach of research is concerned with developing a hypothesis (or hypotheses) based on existing theory. In this approach, an existing theory is taken into consideration and the researcher creates the hypothesis based on this existing literature either to validate the research or to discard it. Thus, the researcher designs the research strategy, research questions and other steps of the research onion accordingly so as to test the research hypothesis in a best possible manner. Whereas inductive approach for research as defined by them involves for the search of pattern from different observations and thus the development of explanations, which directs the author to develop new theories.

As for this topic of research, very little researches have been done in past regarding implementation of ERP in SME's, howsoever the same topic in relation to a particular sector of organizations i.e. IT sector and that too in Ireland have never been done before. Therefore, this research is going to present with a new concept (not only to the author but to the world) that has never been explored before therefore inductive approach is best suited with it as only after data collection the author was able to formulate a new theory in relation to the research questions. Moreover, for this research topic the author was trying to explore and explain (how ERP implementation is helping SME IT sector to improve their business processes and to which extent) something new by using open ended questions and hence narrowing down the research questions which was used to generate a new theory as opposed to deductive approach which is based on testing a well established theory.

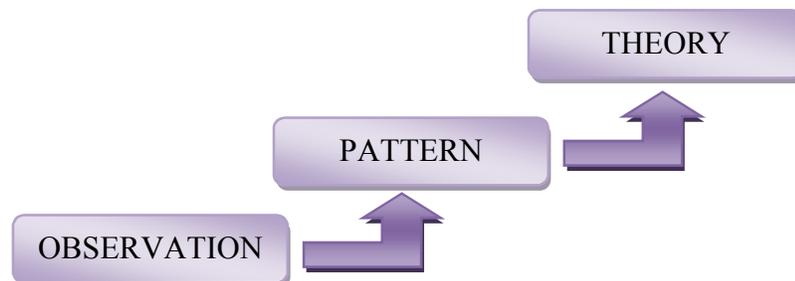


Figure 5 - Inductive Approach

Finally, this approach has helped the author to answer the research questions in a best possible manner as this methodology is used in predicting trends and answers for future as well (to what extent ERP implementation is increasing efficiency now and how it can benefit in future with improvement in technological advancement) which is not possible in any other approach thereby helped her to explain as why or why not implementation of ERP is helpful for SME's and the extent to which it helps SME's to improve their business processes.

3.3 RESEARCH STRATEGY

Saunders in 2003 stated research strategy as a general plan that helps researchers in answering the research questions in a systematic way. Thus, an effective research strategy enables the author to define why she has employed a particular research strategy to conduct the research and thus helped her in choosing the specific data collection tools to support her argument.

Depending upon the nature of researches such as descriptive or exploratory or explanatory, the research strategies are divided into seven categories such as experiment, survey, case study, action research, grounded theory, ethnography and archival research. Some of these approaches are exclusively used for exploratory researches, some for explanatory researches and some for descriptive researches. As it is an exploratory research thus the research strategy that can be used by the author for this research will be either survey, or archival research, or grounded theory or case study.

Archival research involves collecting data or information's from old repositories of the organizations that were originally generated or collected for a different purpose, thus it is not an original strategy for collection of primary data and hence the author discarded this approach. Grounded theory approach for research strategy does not fit with this research topic as it believes in developing theory for which the data or information's are already systematically gathered and analyzed (Strauss and Corbin, 1994) which was not the case with this research and thus the author does not conducted her research through this strategy. In case of case study approach for research strategy it helped the author to collect data or information's for investigating trends and specific situations not only for present but for future as well, howsoever it involves an in depth

study of a particular situation by testing various scientific theories and models, which made it quite impossible for the author to conduct her research through this approach because of the time constraints and hence she discarded this approach as well.

Thus, the research strategy that was used by the author for this topic was survey. As this research topic was trying to explore something new and explain the relationship between ERP implementation in SME IT sector in Ireland and improved business processes therefore survey strategy helped the author to identify the actual relationship between the two as survey is the only research strategy which helps to describe the characteristics of a large population from a small sample. Moreover, no other research strategies can provide the author with same information in a broad way thereby made it much more accurate way of gathering targeted samples so as to draw conclusions and make important decisions.

3.4 RESEARCH CHOICE

Research choice enables a researcher to understand how the data should be collected so as to successfully get all the information's needed to answer the research questions in a best possible manner. Saunders et al. in 1997 divided the data collection procedure primarily into two main heads namely qualitative and quantitative. Qualitative method of data collection is mainly used for exploratory researches and involves interviews or focus group to obtain details about a topic. Most of the time this approach is associated with generating non-numerical data for further analysis. Whereas quantitative method of data collection is mainly used for explanatory researches and involves methodologies such as surveys, interviews and observations. In this approach, the data collected are numerical in nature which can be transformed into graphs and statistics for further analysis.

Within these two broader themes of data collection, Saunders et al. in 1997 divided it into three sub heads such as mono method, mixed method and multi method. Mono method involves data collection only through one means i.e. either through qualitative or quantitative approach. Whereas mixed method involves data collection through one method each from qualitative and

quantitative approach. While multi method involves data collection through more than one means from both of the approaches.

As this topic was exploratory in nature, thus the author opted to collect data or information through qualitative approach. Moreover, as it was an academic research and won't allowed the author to conduct an extensive research considering both time and budget constraints, thus, the author collected primary data or information only through single means i.e. through interviews and hence mono method for research choice was adopted. Furthermore, according to Maxwell in 2005 qualitative mono method is useful for conducting those researches wherein the author is unable to get answers by a single yes or no. As this topic needed open ended answers to generate a new theory therefore this research choice helped the author in accomplishing that. Finally, this choice was easier to plan and carry out as opposed to other methods (small number of respondents can provide the necessary information's) providing additional benefit over others.

3.5 TIME HORIZON

Time horizon is the final layer of the research onion before reaching the core (which is the data analysis procedure) which highlights the time needed by the researcher to complete the entire research. Depending upon the time needed by the researchers to complete their researches, Saunders et al. in 1997 divided the time horizon mainly into two different types longitudinal and cross sectional.

In longitudinal time horizon, the researchers collect data from the same sample more than once (after particular intervals of time) over a period of time (typically more than a year). Whereas in case of cross sectional time horizon, the researchers collect data only once within a short period of time after which various sequences of action take place followed by data analysis and data interpretation. As this was an academic research and the author had only limited amount of time i.e. only 3 months to complete it, therefore the author carried out her entire research only through cross sectional means.

3.6 SAMPLING

Sampling is the process of selecting appropriate respondents from a population of interest so that by studying the responses from the sample, the conclusion can be drawn for a large population. Gingery, T. in 2009 stated that the researches which involves survey strategy for collecting data for them the sampling procedure can be divided broadly into two heads namely probability sampling and non probability sampling.

Probability sampling is a technique wherein all the samples in the population have equal chances of being selected. This methodology is used when the researches have complete knowledge about the sampling frame i.e. the population to whom they might approach for data collection. Whereas non probability sampling is a technique wherein all the samples in the population does not have equal chances of being selected. This methodology is used when there is no sampling frame available to the researchers.

The probability sampling is further divided into different types depending on the way the samples are chosen such as simple random sampling, stratified random sampling, systematic random sampling, cluster random sampling, and multi stage sampling. Whereas non probability sampling is mainly divided as convenience sampling, consecutive sampling, quota sampling, purposive sampling, judgmental sampling, and snowball sampling.

As for this topic of research, the author didn't have full access to the list of all the SME's in IT sector in Ireland who are using ERP system, thus, the sampling method that the author used for picking up the samples for data collection was through non probability sampling. Moreover, within this non-probability sampling, the author used homogeneous purposive sampling to pick her samples necessary for collecting primary data for her research. The primary reason why the author chose this particular methodology for choosing her samples was because all the SME's in IT sector in Ireland who are using ERP system belongs to the same group who shares similar characteristics i.e. view about the topic which was used by the author to draw her conclusion.

As the author wanted to interview people who belong from SME IT sector in Ireland and are using ERP system, therefore she contacted to many government bodies such as Irish Computer Society, Micro Finance Ireland, Small Firms Association, Irish Business and Employers Confederation etc. so that they can help her with a list, with which she can directly contact the organizations for interviews. Howsoever, she didn't get any list from these bodies and at last got a mail from one of the bodies stating how she can find the organizations what she is looking for. The author started finding the organizations and sent mails to 45 organizations stating the purpose of her mail and asking whether they are using ERP or similar system or not for data consolidation. She got reply from 8 organizations including both positive and negative regarding ERP usage within their organization and thus she carried out her next steps.

3.7 TECHNIQUES AND PROCEDURE

3.7.1 DATA COLLECTION TOOLS

The data collection tools that were used by the author for this research are through both primary and secondary means. The primary data was being collected through structured in-depth interviews of 3 middle level managers and 1 managing director of different SME's (1 respondent per company) of IT sector across Ireland using ERP software's. The interviews were conducted not only through interacting with them via face to face but also different options (like Skype interview, email interview, and telephonic interview) were kept open to the interviewees and thus 2 interviews were conducted via Skype whereas rest of the 2 interviews were conducted face to face. The primary reason for conducting the interviews via Skype was because of the distance and the availability of the respondents. As the managing director and middle level managers are quite busy and the schedule for the interviews were changed few times thus keeping in mind their availability and the distance factor (all the interviews were not in Dublin, 1 was from Limerick, 1 was from Cork, 1 respondent working in SME IT sector in Galway went to holidays and was in India and 1 respondent was from Dublin), 2 interviews (1 from Limerick and 1 who went on vacations to India) were conducted through Skype.

The author was able to conduct 2 interviews via face to face (1 of the respondent who works in Cork, for 1 week came to Dublin for some official work) which helped her to understand the non-verbal cues of the interviewee including body language, which indicated the level of discomfort and the level of enthusiasm for the topics being discussed in the interview thereby helped the author to understand the level of honesty being presented in the interview process.

The benefit for conducting structured in-depth interviews over other types in relation to this research was that the author replicated a fixed set of open ended questions to all the interviewees and hence quantified those information's very easily thereby made it very easy for her to test for reliability of the information's presented in the discussions. Moreover, structured interviews were conducted within a short period of time thereby not taking much of the valuable time of the middle level managers and the managing director.

The author conducted her 1st interview with the managing director through Skype on 13th July 2015 at 16:58 PM. The author conducted her 2nd interview with a middle level manager (programmer analyst) through face to face on 17th July 2015 at 14:30 PM. The author conducted her 3rd interview with a middle level manager (system engineer - test analyst) through Skype on 25th July 2015 at 18:57 PM. The author conducted her 4th interview with another middle level manager (senior functional consultant) through face to face on 4th August 2015 at 11:05 AM.

Whereas the secondary data has been collected through text books, academic journals, online sources, company website, newspaper articles, and existing surveys.

3.7.2 DATA ANALYSIS TOOLS

As the data which has been collected via interviews for this research topic is qualitative in nature therefore the author analyzed those data / information using data analysis procedure developed by Miles and Huberman in 1994.

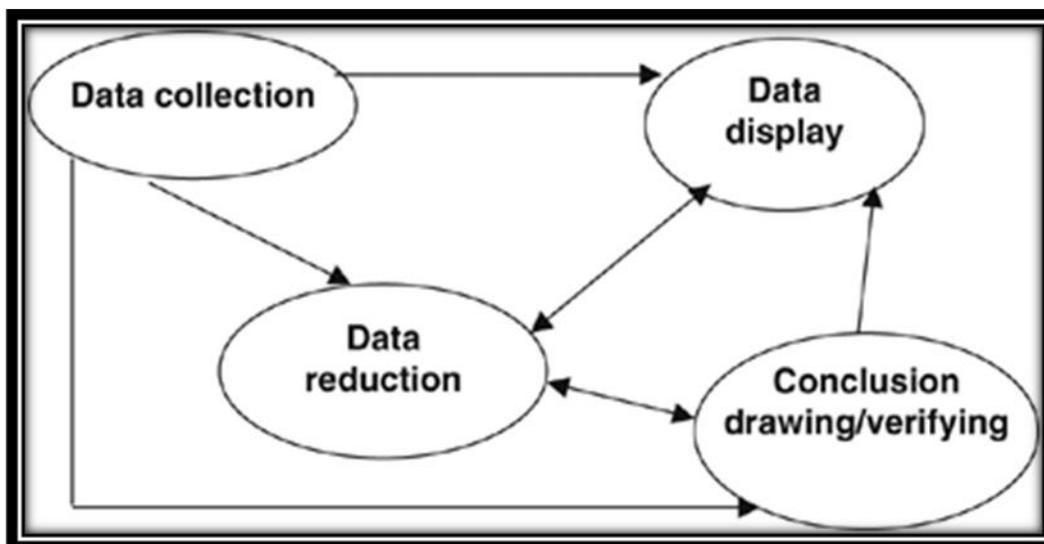


Figure 6 - Data Analysis Diagram

For data analysis first of all, the author used data display and analysis (DDA) in which there are three important stages. The first stage is data reduction wherein all the unimportant data or information collected through interviews were cut down to only fine important materials which were presented using network node diagram (the second stage in DDA). Finally, the output of the final data obtained through categorization and unitization in the 2nd step i.e. after presenting the data through network node diagram was analyzed in the 3rd step using comparative analysis.

3.8 TIME PLAN AS HOW THE RESEARCH WAS CARRIED OUT

As it was an academic research and the author had only limited amount of time i.e. only 12 weeks to complete it, therefore the author was working at a faster pace in order to complete it effectively and efficiently before time. The entire plan for carrying out the same has been given below in a tabulated form:

Number of Week	Date	Plan
Week 1	01/06/15	The entire research method was planned. Moreover, further background reading was

		started.
Week 2	08/06/15	Prepared questions for carrying out the structured interviews and further research was done for literature review.
Week 3	15/06/15	Showed all the work done till date to the mentor and made necessary changes required. Emailed the mentor for certain queries as how to find a list of all the SME's in IT sector in Ireland using ERP system.
Week 4	22/06/15	Started contacting with government bodies such as Irish Computer Society, Micro Finance Ireland, Small Firms Association, Irish Business and Employers Confederation etc. so that they can help the author with a list of all those companies.
Week 5	29/06/15	Was waiting for the replies from these government bodies. Got one fruitful reply as how to find companies which fall under SME sector and thus started making list of all the IT companies which fall under SME's.
Week 6	06/07/15	Started contacting with each and every organization possible. Sent mails to 45 organizations. Got reply from only 8 organizations.
Week 7	13/07/15	Took two interviews in the same week. Started modifying the previous work done. Showed the rough drafts to the mentor.
Week 8	20/07/15	Took one interview in this week. The rough drafts were on the way. Showed the rough drafts again to the mentor.
Week 9	27/07/15	Writing the dissertation

Week 10	03/08/15	One more last interview was taken and data analysis was started, showed the work to mentor
Week 11	10/08/15	Made necessary changes
Week 12	17/08/15	Final draft of the dissertation

Table 1 - Time Plan For Research

3.9 RESEARCH ETHICS

As such there were no big ethical issues with this research. The only two things regarding ethics which the author kept in her mind before carrying out her research were:

- First of all, the author obtained a consent letter from Dublin Business School in which it was written that the author is a registered student of MBA Information Systems program with them and she is collecting these information's solely for the purpose of successfully carrying out her dissertation.
- Finally, the author showed the information form and consent sheet to all the actively participated respondents that the author agrees to maintain data privacy in this entire procedure and the people who will be allowed to see these information's are the author's supervisor and one external examiner; other than that no other person would be allowed to see those. Moreover, the same sheet was duly signed by the respondents in which it was written that they are giving responses with their consent and no one has pressurized them to participate in this research.

CHAPTER - 4 - DATA ANALYSIS / FINDINGS

While the author was conducting her secondary research which she summarized in the literature review, lot of things were observed and lot of things were not answered which formed the basis for this research and the author attempted to address those through her findings or through analyzing the data / information which she received from the responses of the interviewees.

Some of the questions asked during the interviews are used for only one topic or only one heading which has directed her to answer the research questions in a best possible manner.

4.1 After how many years ERP was implemented within the organizations?

The purpose of this question was to understand whether the organizations in this sector prefer implementing ERP system since their inception or after a particular time period. It also gave an insight about the capabilities of the organizations in this sector as after how many years or within what time period they are ready to implement this system within their organization.

It was noted that respondent 1's organization implemented ERP system after 8 years from their establishment date, respondent 2's company implemented it after 9 years, respondent 3's company implemented it after 10 years whereas for respondent 4's company it was there since inception. The respondent 4's view was quite different from those of other responses as respondent 4 works in an organization where one of the branches was opened after few years in Dublin area where he works and where they integrated the system which they were using previously. Even in other branches of the same organization the system was not implemented from inception of the company establishment. So, it can be seen that for all the organizations they prefer to adapt to ERP system not from inception but after few years from their establishment date particularly within 10 years.

4.2 Primary reasons behind ERP implementation

This question tried to emphasize the factors behind ERP implementation for SME's in IT sector. Respondent 1 replied that they are the technology provider of the ERP system. They sell the solutions to their clients and in order to make it more happening they implemented the solution within their organization because there cannot be any other better way to sell the solutions without using it by them. Moreover, the 2nd respondent also shed light on the similar lines and said that they are the authorized partner of one of the ERP solutions provider and that is the main reason why they implemented it within their organization just to check whether the ERP system

what they are going to sell to their client is customer friendly to use or not or whether it is meeting the objectives or not.

Howsoever, response from respondent 3 was quite different. They implemented one of the ERP tools as it helped them to facilitate their business operations over manual work as it had many features that can handle the business much more efficiently. Moreover, he replied that the main reason for them was to handle the inventory of the company in a much better way without any error so that they can facilitate growth.

Despite the above two scenarios, response from respondent 4 was different as he worked in one of the branches of an organization where ERP was there since inception only they changed from one ERP system to another. According to him, the main reasons for this change were to adapt to a more user friendly solution which is both easy to use and understand. Moreover, he indicted two important factors like the cost and after sales service for this change which is much better in the new system as compared to the old ones.

Therefore, it can be noticed that 50% of the respondent implemented ERP system within their organization as they are the vendors for ERP systems in SME's and the primary reason for them being to check the reliability of these systems. Whereas for the rest 50% of the respondent they implemented ERP system so as to track inventory, reduce costs and facilitate growth.

4.3 ERP preference

This question tried to identify whether the SME's prefer to implement ERP system from small vendors or from large vendors. Moreover, it also attempted to find whether large vendors are able to tap SME IT sector in Ireland or not.

Respondent 1's organization is itself a vendor of ERP solution provider to SME's and is into selling ERP solution namely Herbst Insight. Similarly, respondent 2's organization is also an authorized partner for selling ERP solution to SME's namely Mamut. Howsoever, respondent 3's organization even not being an ERP solution provider preferred large vendor catering to SME

sector for ERP system over small vendors and implemented Oracle E-Business Suite Special. Although, respondent 4's organization at first followed the similar path as that of respondent 3's organization and implemented SAP Business All-in-One Solutions but later on changed their system from SAP to Microsoft Dynamics Navision.

Therefore, irrespective of the fact that the organization are catering to provide ERP solutions or not, 75% of the respondents trusted vendors for ERP system implementation who caters only to SME's as compared to 25% respondent who trusted vendors for ERP system implementation who primarily cater to large organizations.

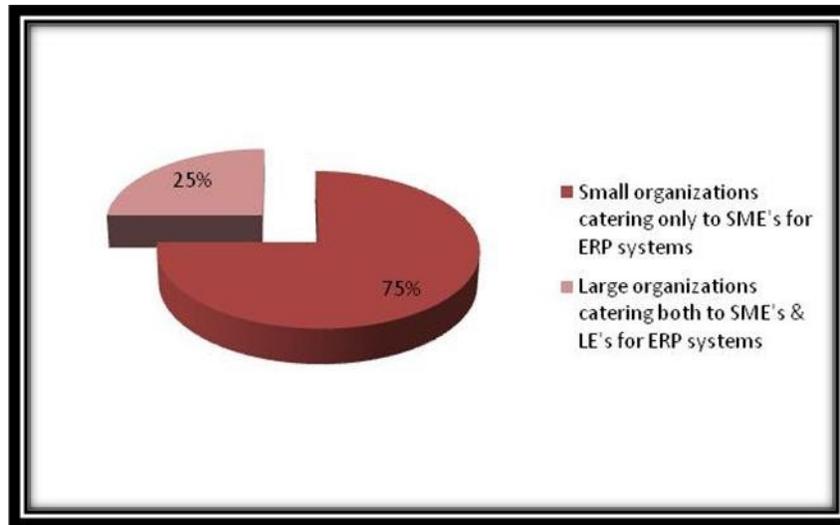


Figure 7 - ERP Vendor Preference For SME's IT Sector In Ireland

4.4 Problems while ERP implementation or change in systems

This question attempted to describe whether ERP implementation in SME's can be done without any hurdles or not. According to respondent 1, there were some unnecessary issues while implementation which they didn't expect but were founding stones for them through which they were able to learn how they can modify the system. Howsoever, he didn't state anything in detail regarding what were the actual problems.

In addition to this, respondent 2 replied that since the development of the product for different clients they faced lots of issues as different organization had a different need for accounts module. Moreover, he mentioned that in client site mistakes were found particularly in accounts as the transactions were reported to be wrongly placed and as a result of which the expenses and profits were wrongly calculated.

Again, respondent 3 asserted that ERP implementation brought lots of problems in the organization like: when the customers were placing orders it was not reflecting properly in the system. Moreover, he mentioned that the data in the database in the front end were not reflecting properly. Also, from the development point of view, the mapping was not done properly means the serial number of a particular product was not showing with that product but rather with a different product. There were many other technical problems also like the raw data were not exporting properly in the oracle database. The bills were not received by the customers properly. The email notification to the concerned person for a particular thing within the organization was not going properly.

Respondent 4 too agreed that the change in ERP systems created some problems. Accordingly, he mentioned migrating data from the old system i.e. SAP Business All-in-One Solutions into the new system i.e. Microsoft Dynamics Navision and then integrating this system with local software they are using for content management system, inventory management and web platform was quite troublesome.

Thus, 100% of the respondents agreed to have found problems while ERP implementation.

4.5 Steps taken to overcome problems

Definitely, if any system has any problem whether its small or big needs to be solved otherwise the clients will no longer be attached with them and will no longer use this as a result of which the vendors will lose their goodwill and thus the clients will go to other software solution provider. So, this question helped to gain insight whether really organizations put any effort to solve any problem and if they did so how they keep up with their clients.

As all the respondents have agreed to found problems while ERP implementation, it became evident to understand as to which extent they solve the problems.

According to respondent 1, as they are technology provider and they need to cater to their clients, they sat down with each and every problem and started resolving those. After doing these they have now implemented the solution in many more companies and have now got much better idea what was it all about.

Similarly, respondent 2 mentioned that the system was constantly reviewed and updated based on reviews and changing needs. And by doing this they were able to resolve problems of their clients.

Also respondent 3 argued that to solve the various problems they used some tools namely clear quest through which they identified the core areas of problems and then listed down those depending upon the severity and priority. These issues were then uploaded in the central server through which the developer used to find it and write further coding. Once it was again coded, it was sent to the testers again who used to test and see whether there was any further problem or not.

Finally the respondent 4 for this question responded that to suit the system fair amount of modification was done by removing and adding some features. Moreover, they were being provided with workforce up skilling / training so that we can get used to with this new system.

Thus, not only technical problems are there in ERP implementation which forms 100% of the case but also some problems like user acceptance which forms 25% of the case. Therefore, to overcome those, not only modifications were done from development point of view (in 100% case it was done) but also from end users perspective training was given (which formed only 25% of the case).

4.6 Are there any benefits after ERP implementation?

This question tried to diagnose even if the organizations were getting so many problems during implementation or changes in system, then are they getting enough benefit which can be compensated over these problems. All the respondents agreed to have found much more benefits after ERP implementation. Even though there have been lots of problems in the past while implementation but after overcoming those, 100% of the organizations have found to have achieved benefit after ERP system implementation or by changing from old ERP system to new one.

4.7 Types of benefits after ERP implementation

This question answered as what advantage they are getting presently what they were not receiving before. Respondent 1 implied that they have been able to remove the paper and pen as much as possible. Moreover, they have also removed excel sheets, and the use of local accounts package by integrating with any other system by bringing it all into one individual package. It has indeed helped them to keep a track on closer look at margins, have a better and easier management of their clients and communication with their clients. Also, it has helped them easier tracking of leads from start to finish for sales prospects. Further, it helped them to control the stocks properly as the system has an in built stock control system thereby helping to track on the traceability.

Respondent 2 has received benefit as it helped them a lot to track the accounts. Less time was involved in working, particularly in preparing invoices and checking different quotations from different vendors and customers as it became very easy for them to navigate those. Further, it also helped them to get reminders for any debt collection. So, the accounts for the organization were highly influenced not only for them but also for the clients whom they serve. Again, the respondent said that as the system is agile in nature it can be customized according to the business needs so other areas of business processes might also get same kind of benefit.

Respondent 3 implied that the system what they recommended another organization to use is agile in nature so it was built according to the business needs. As the organization was mostly concerned about supply chain i.e. inventory and finance specially billing side, they were able to track those major areas much more efficiently.

Finally, respondent 4 argued that they can track more integration between internal business and sales process. There has been easier content for inventory and stock management and customer databases and other related things.

So, it can be seen that the organizations are receiving maximum benefit in those areas in which field they are operating.

4.8 Is ERP implementation giving positive impact in all the areas of business processes?

All the respondents acknowledged to have found positive impact in all the areas of their business processes primarily because all these respondents are using customizable software which are built according to their business needs.

4.9 Areas of business processes getting maximum benefit and method of measuring those

This section tried to justify that there are few business areas for every organization that gain more advantage over others. The aim of this section was to identify which organization gained maximum benefit in which area and thus enabled the author to come up with some kind of conclusion at the end.

According to respondent 1, they have been able to get maximum benefit in sales and accounts. They noticed that they have been able to remove many items of paper and excel sheets. Moreover, they were able to keep a track on pipeline of the sales processes in a better way. It also gave them a better idea on margins and was able to produce more accurate multi managed accounts as well.

Whereas, respondent 2 implied on getting maximum benefit in areas such as HR, Payroll, revenue measurement means the accounts. According to this respondent, few areas such as employee review process which are also dependent of the ERP cannot always give complete or satisfying solution as the numbers can be misleading when it comes to review appraisal. But as all the data were generated by the ERP tool so it was the source for their measurement. Basically, they used graphical representation to identify the level of efficiency achieved.

However, for respondent 3's organization, finance and supply chain were the major business areas where they achieved maximum benefit. According to him, without this system the human resources used to perform all actions which took more time and the errors for different transactions were more. But due to this change the time reduced to perform any action, accuracy increased, cost decreased a lot, were able to reduce the excel sheets, were able to create one virtual warehouse which was not possible when they were doing manually.

Finally, respondent 4 stated that they have achieved maximum benefit in sales order processing. It was quite obvious as there has been a good increase in sales as compared to previous period as they have been able to process sales orders in a timely manner.

Hence, 50% of the respondent got maximum benefit in sales, 75% of the respondent in accounts / finance, and 25% each on HR, payroll and supply chain modules of the business processes.



Figure 8 - Areas Of Business Processes Getting Maximum Benefit Over Others

4.10 Percentage improvement in the areas of business processes where they are getting maximum benefit

According to respondent 1 they never measured the percentage improvement in sales or accounts but definitely they have improved a lot. However, 2nd respondent implied to have received improvement in efficiency in HR, payroll and accounts in between 30% - 40%. Despite this, 3rd respondent mentioned that the time consumption for doing the same transaction for accounts and supply chain was reduced by 50%. Although, 4th respondent said to have received around 2 - 3 times benefit / efficiency in sales order processing.

4.11 Overall effect of the improvement in the business processes in the organization

According to first respondent, it helped them to streamline the sales process more, handle more sales as compared to earlier. Moreover, it has helped them to get information much more easily and thereby help them to convert prospect potential into a client. However, 2nd respondent asserted that errors were reduced, all transaction took less time, and it became very easy to track the reports and invoices. Further, respondent 3 also shed light on the similar context of the 2nd

respondent by saying that the time was reduced for processing sales order as a result of which they were able to process more sales which led to increase the revenue of the organization. Moreover, it also helped the organization to give better customer service as compared to earlier. However, 4th respondent stated about the increase in efficiency level of the sales order processing and relate that to the increase in revenue and goodwill of the organization.

4.12 Percentage increased in the productivity, revenue and efficiency of the organization after ERP implementation

As it has become evident through primary information that implementation of ERP system helps organizations to improve their efficiency and revenue, this question has tried to find out by what percentage has it helped the organization to boost those.

Respondent 1 however agreed to have found improvement in efficiency but didn't disclose anything regarding this question in detail. He implied that their organization have received maximum benefit in the sales area. Moreover, the respondent 2 too didn't utter anything regarding the percentage increase in regards to revenue and productivity, however he too acknowledged to have found greater efficiency nearly 30% - 40% increase in the efficiency of the business processes.

Despite these perspectives, respondent 3 being a technical person has found to have an efficiency gain for time reduction by 50%. Further, respondent 4 too stated that nearly 2 - 3 times the efficiency of the sales order processing has increased; however they too didn't reply anything with regards to productivity and revenue.

4.13 Hosted in-house or in cloud and Why?

This question tried to identify whether the organizations in this sector have technical capabilities for in house implementation or they depend on other external vendors for hosting.

According to respondent 1, they have a setup within their organization as they have the infrastructure for in house hosting. Moreover, he uttered that this system can be implemented in cloud as well but currently they have implemented the same in their client's server base model as it is very simple to setup and install. He further stated that for them it is very cost effective to implement in house. Moreover, the 2nd respondent too shed light on the similar lines by saying that they host the system in house as they are the authorized solution provider for this software system. Moreover, he asserted that they have the technical expertise and therefore there is no need for them to go for external vendors.

Similarly, respondent 3 and respondent 4 implied that they are using in house implementation as these software's are easily customizable and easy and convenient to implement in house.

Thus, it can be noticed that irrespective of the factor that the organizations are vendors for ERP systems or not, the mode of ERP implementation is in-house for all the cases.

4.14 Is ERP system helping the company to achieve its overall goal?

Every organization has some goals which they definitely want to achieve with the use of some tools. This question tried to emphasize whether the ERP tools which these organizations are using are helping them to achieve their overall goal or not.

According to 1st respondent, this ERP system is definitely helping them to achieve their overall goal as it is allowing them to track different business processes, use those and generate reports so that they can compare sales tags and prospects. Moreover it has improved the overall organizational idea by bringing more structural data.

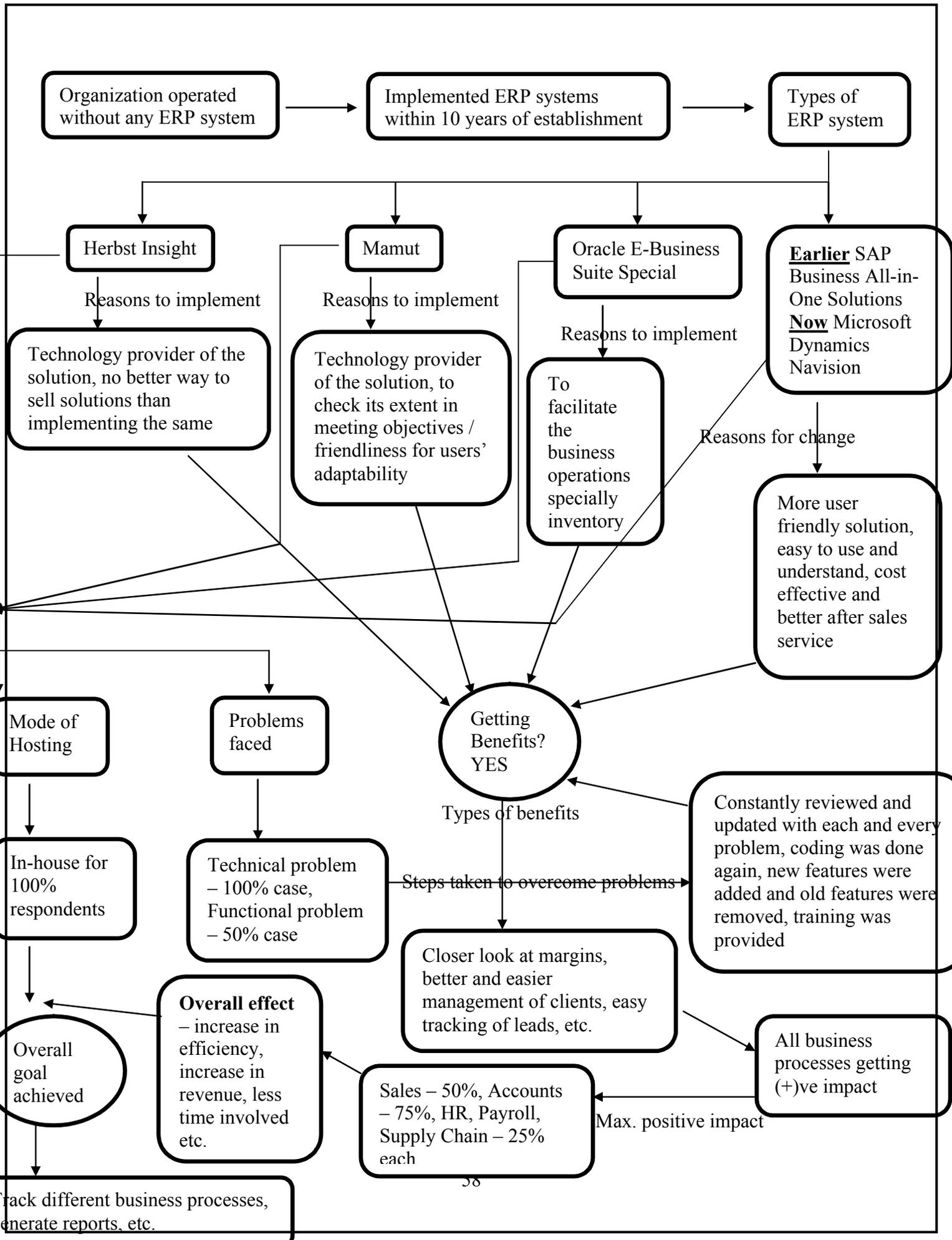
Moreover, respondent 2 also agreed in the similar lines but stated that it can only be maintained if constant change and updates are maintained. Also he stated that the system includes all the operating areas for any business which helped to reduce double effort for doing anything.

However, respondent 3 and 4 didn't describe anything. They just stated that they think it is helping their organization to achieve the goal otherwise they wouldn't have thought to implement or make changes in the system.

4.15 Is the implemented ERP system is only for a particular area of the business process or for all the areas of business processes?

This question was not asked to any of the respondents as from their previous answers it was understood that all these organizations are using ERP systems which are agile in nature and are customized according to their business needs. So, only those business processes have been incorporated in these systems which they need to track. Therefore, it can be implied that none of the respondents have implemented ERP systems for any specific area or partial ERP systems within their organizational structure.

Figure 9 - Below is a network node diagram for the entire data gathered by the author



CHAPTER - 5 - DISCUSSION

This section of the research tried to compare the literature review with the findings which the author found through her primary research and has been elaborated in the previous section. Moreover, it has presented with new verdicts which has certainly answered the research questions.

5.1 Primary reasons behind ERP implementation

As per the data gathered by the author through interviews, the primary reasons for the organizations for implementing ERP systems was because 50% of the respondents were vendors and they wanted to check the user adaptability and efficiency of the solutions before presenting it to their client. However, none of the authors in the literature review has pointed at this aspect for ERP implementation in SME's in IT sector.

Nonetheless, one of the respondents which made 25% of the surveyed respondent implied tracking and facilitating the business operations for smooth growth of their organization as their primary reasons for implementing the system within their organizational structure. Moreover, the same finding is in agreement with the third theme of the literature review what Nexgen Group in 2013 argued when it carried out a survey in 100 SME's in IT sector in India and found 60% of them have implemented ERP systems for facilitating various business processes.

However, another respondent of this research implied cost, after sales service and user friendliness as the major reasons for changing the ERP systems. Even though many authors such as Mantakas, M. et al. in 2011 etc. in the third theme of the literature review have pointed out factors such as cost and user acceptance as the primary reasons for ERP implementation but none in the literature review has ever hinted on after sales service.

Thus, it is clearly visible that most of the reasons as implied by the authors in the literature review have been substantiated in this research and in most of the cases the primary reasons for implementation being facilitation of smooth flow of information within the business processes,

cost reduction and adaptation to a more user friendly software. However, through this research it has become evident that after sales service for any software solution plays a significant role in choosing or changing the operating system. Also, vendors prefer to implement solutions within their organizational structure before presenting it to their clients so that they can maintain a long term relationship with them.

5.2 ERP preference

Through the information gathered by the author it is quite evident that most of the SME's prefer only those ERP solution providers who cater only to SME's and not to LE's. This finding is in fact in agreement with the research done by Freeman, R. in 2011 mentioned in the first theme of literature review that SME's do not prefer LE's for ERP systems.

Moreover, in the research methodology the author stated to have contacted 45 organizations wherein she got reply from only 8 companies including both positive and negative feedbacks regarding ERP usage, as a result of which she carried out 4 interviews. Thus, it can be noticed that only 50% of the SME's in IT sector in Ireland are using ERP systems within their organization. The same verdict is in accordance with the research done by Gartner in 2014 specified in the first literature theme which implied that ERP systems for SME's in IT sector have created around 50% of the market share.

Therefore, it can be summarized that ERP implementation in SME's IT sector in Ireland is popular not only because they are vendors and selling the product but also because they want to take advantage of this system for various reasons which are about to be discussed in coming points and as a result of which 50% SME's in IT sector have implemented the solution within their organizational structure, whatsoever most of them prefer small vendors for the same.

5.3 Problems while ERP implementation or change in systems

Through the research the author has figured out that while ERP implementation 100% of the respondents in SME's IT sector faced problems not only in functional and technical aspects of

the software systems (wrong mapping, incorrect coding, database in the front end were not reflecting properly, raw data were not exporting properly, bills were not being received by the correct customers, etc.) but also in user adaptability. Some of these reasons like technical and user adaptability as main problems while ERP implementation have already been researched by many authors such as Peng, G. C. et al. in past in different sectors in SME's and in different countries which have already been cited in 3rd theme of literature review and in introduction.

Howsoever, in literature review there have been some authors such as Singh, B. et al. in 2014 mentioned in 3rd literature theme which demonstrated that internal factors of an organization such as reluctance of top management support, budget issues, improper alignment of business objectives with ERP system needs etc. as one of the major reasons for ERP systems implementation failure which have not been justified in this research as none of the respondents mentioned about this.

Thus, it can be outlined that ERP implementation for SME's always creates problems especially in technical aspects of the system and user adaptability in client site. Howsoever, due to non availability of large sample size, the internal factors being a challenge for ERP success has not been established through this research.

5.4 Steps taken to overcome problems

According to Nunes, M. B. et al. in 2010 mentioned in the 3rd theme of literature review, alignment of business objectives with those of ERP system requirements can avoid problems for system failure. Indeed the same argument has been validated by the 4th respondent of this research according to whom the primary reason for change was to align it more with their business objectives.

Furthermore, another author Ruivoa, P. et al. in 2013 mentioned in the 3rd theme of literature review implied training as one of the methods through which user adaptability can be enhanced and problems for client site can be minimized to a greater extent. The same fact has again been legitimized by one of the respondents of this research which stated that workforce was upgraded

through online training from the ERP system providers / vendors which made user adaptability for a new system quite easy.

However, 3 other respondents have presented different views as how they overcame problems of ERP implementation and described that they constantly updated and reviewed the systems, identified technical problems through tools and then again sent back those to the developers, and repeated those steps for all the listed problems until and unless they were getting error free products which has not been replenished by any of the authors in the literature review of this research.

Thus, it is clearly visible that organizations always try hard to overcome problems by providing training to the users, howsoever regarding technical deficiencies there is a need to have further discussion with the vendors of ERP solution provider who can accord with more insight about this.

5.5 Types of benefits after ERP implementation

In the literature review, many authors have researched and stated benefits of ERP implementation. Bosombo and Folo-Ralph in 2007 as mentioned in 1st theme of literature review implied on optimization of the activities in an organization through ERP system. Whereas, Ram, J. et al. in 2014 as stated in 1st theme of literature review acknowledged gaining competitive advantage through increased efficiency, productivity, improved integration and streamlining business processes as main benefits after ERP implementation. Further, Breyfogle, F. W. in 2015 as mentioned in 2nd theme of literature review extended his view point on the similar direction of previous authors with slight modifications and asserted that both tangible and intangible benefits such as speeding up of real time information, monitoring and reporting of different processes within an organization, minimizing the risks for occurrence of problems, reduction of delivery time etc. can be attained through ERP implementation.

Even though these facts have been authenticated by each of the respondents of this research but each of them has prolonged their view point by stating that it has also helped them with other

factors such as closer look at margins, better and easier management of their clients, easier tracking of inventory, gaining more sales prospects, easier generation of reports, preparing invoices, etc.

Thus, it can be seen that ERP implementation helps SME's in various ways which should not be recognized in broader scope but also in micro purview which has indeed answered the first research question.

5.6 Areas of business processes getting maximum benefit

As per the 3rd theme of literature review, many authors have admitted to found benefits of ERP implementation more in certain areas of the business processes, as such Nexgen group in his study in 2013 in SME IT sector in India found that 60% of the respondents have achieved maximum benefit in HR and supply chain. Again, Khajavi, G. and Mirbagheri, F. A. in 2013 who carried out a survey in Malaysian SME's, found more improvement in operational aspects of the business processes including customer loyalty. Further, Haddara, M. in 2014 carried out a research in Nordic European research and elaborated that traditional business functions like finance, accounting, sales, human resources, procurement, labor productivity achieve benefit to a greater extent than modern aspects of business processes.

The same has been found out through this research, even though respondents have agreed to found more benefits in HR and supply chain, howsoever the percentage for agreement by the respondents varied a lot. For this research it is only 25% as opposed to that of the research done by Nexgen group which stated 60%. Moreover, 75% respondent in this research admitted to have found more benefit in accounts and 50% in sales which is in agreement with what Haddara, M. found out, whatsoever the percentage for the same was not mentioned by Haddara, M. in 2014. Again, 25% of the respondent found more benefit in payroll although it has not been mentioned in the literature review. Finally, in the literature review customer loyalty has been mentioned by Khajavi, G. and Mirbagheri, F. A. and labor productivity has been mentioned by Haddara, M., nonetheless it has not been established through this research.

Therefore, it can be summed up that irrespective of the SME sector and countries involved, business processes such as HR, supply chain, accounts and sales definitely get maximum benefit over other areas after ERP implementation. This certainly has answered the second research question.

5.7 Percentage improvement in the areas of business processes where they are getting maximum benefit

Even though in the literature review the authors have implied gaining maximum efficiency in the business processes such as HR, supply chain, accounts and sales but the actual percentage by which the same has increased after ERP implementation has not been revealed by them and as such the primary aim of this research was to come up with the same.

According to one of the respondents, the percentage improvement in the efficiency of different business processes such as HR, payroll and accounts ranged between 30% - 40%. Moreover, 3rd respondent mentioned time reduction for transactions in different business areas such as accounts and supply chain by 50%. Further, 4th respondent mentioned to have received around 2 - 3 times benefit / efficiency in sales order processing.

Thus, it can be inferred that ERP implementation helps SME's in IT sector to get maximum benefit in those areas of business processes in which they are operating. It has also supported the second research question by stating the exact percentage for efficiency improvement in the business processes in which they are getting maximum benefit and time reduction for different transactions in the same.

5.8 Overall effect of the improvement in the business processes in the organization

In the 3rd theme of literature review, various authors came up with different views regarding the overall effect in the organizations after improvement in business processes due to ERP implementation.

Aberdeen group in 2012 carried out a survey on 385 SME's in IT sector in worldwide and found that 5% of respondents have achieved greater operational excellence. This fact has been identified by one of the respondents who stated that it helped them to streamline the sales process more, handle more sales as they were able to get information much more easily about clients and their requirements which indeed helped them to convert prospects into clients.

Moreover, Nexgen Group in 2013 surveyed 100 SME's in IT sector in India and found 9% of them have improved the quality of services what they were offering to their customers, increased productivity by eliminating downtime and response time which in fact was cited by 2 out of the 4 respondents for this research who stated that the errors were reduced along with reduction in transaction as well as sales order processing time which resulted in increase of sales and hence revenue for the organization.

Further, Khajavi, G. and Mirbagheri, F. A. in 2013 carried out a survey on Malaysian SME's and concluded that improvement in various aspects in business processes helped them to improve their goodwill, build strong brand reputation and increase customer loyalty which in fact has been stated by one of the respondents for this research along with some additional point as it also helped them to increase their revenue.

So, it can be reasonably be entailed that improvement in business processes helps organizations to get not only tangible benefits such as improvement in sales and thus revenue, reduction in processing time and errors, but also intangible benefits such as increase in customer loyalty, brand reputation and thus goodwill.

5.9 Hosted in-house or in cloud and Why?

According to the first theme of the literature review, a survey by Gartner in 2014 and All, A. in 2011 researched that market share for SaaS methodology for ERP implementation is increasing along with the increase in ERP adoption by SME's in IT sector. So, it was assumed that SME's in IT sector prefer SaaS means cloud based model for ERP implementation as it helps them with a cost effective solution.

However, through this research it was seen that all the respondents preferred in-house hosting for the same as they have their technical expertise within the organization and also it has helped them with cost effective solution which was easy to implement and monitor.

So, it can be inferred that increase in market share for SME's adopting ERP system and SaaS methodology for ERP systems necessarily do not mean that SME's prefer SaaS or cloud based approach for ERP implementation.

5.10 Is the implemented ERP system is only for a particular area of the business process or for all the areas of business processes?

In the first theme of literature review, several authors such as Goldsbury, C. in 2011 mentioned the adoption of agile systems in organizations as a means for gaining competitive position within the market place. Also, white paper by Intel in 2012 suggested the use of agile systems to be important from the perspective of scalability and customizability for future use. Through this research the author figured out that even though SME's have less resources in comparison with LE's but still they promote integration of all areas of business processes with agile ERP systems and don't prefer harmonizing any particular area or partial use of ERP system, which has certainly answered the second research question.

CHAPTER - 6 - CONCLUSIONS / RECOMMENDATIONS

Through the findings in the research it is evident that even though SME's have less resources as compared to LE's but they prefer to implement ERP solutions within their organizational structure not from inception but within few years after their establishment and also they prefer small vendors for ERP solutions over large vendors which has also been cited in the literature review by Gartner in 2014.

Further, it has been justified through this research that the primary reasons for SME's to adapt to ERP solutions is to facilitate smooth flow of information and cost reduction which has also been suggested by many authors in the past in literature review (Mantakas, M. et al. in 2011 and

Nexgen Group 2013). However, a new point has emerged through this research which suggests that SME's also prefer to implement ERP systems within their organization as they are the solution provider to other organizations, which has not been mentioned previously by any authors in the literature review and thus there is a need for further study for this particular approach in SME IT sector in Ireland.

Again, it has also been demonstrated through this research that ERP implementation always constitute problem especially in technical and user adaptability which is in accordance with Peng, G. C. et al. in literature review. Although, Singh, B. et al. in 2014 identified internal problems within an organization as one of the failure reasons for ERP implementation which has not been supported by this research and hence the author suggests further study in this area for SME IT sector in Ireland.

Also, the author of this research has identified how organizations overcame the problems while ERP implementation and explored a new phenomena from development site that further coding and testing is done for each new problems faced by the organizations which has certainly added unique value to the existing literatures and henceforth needs special attention for further research.

Moreover, several authors in literature review (Bosombo and Folo-Ralph in 2007, Ram, J. et al. in 2014, Breyfogle, F. W. in 2015 etc) has mentioned that even though ERP implementation creates problems but its advantages afterwards are forthcoming and elaborated that it helps to optimize activities within the organizations, create competitive advantage by providing both tangible and intangible benefits which has been clarified through this research as well. However, the aim of the author was to support how exactly ERP implementation helps organizations especially SME IT sector in Ireland to get benefit and improve their business processes and its extent which she has been able to explore and add more value to the existing literatures.

Accordingly, this research has answered the first research question by showing that ERP systems has helped to remove paper, pen, excel sheets, use of local accounts package by integrating all areas of business processes with only one individual package. It has indeed helped them to keep

a track on closer look at margins, better and easier management of their clients, customer databases, easier conversion of sales prospects to clients, control of stocks properly, reduce time for preparing invoices and checking quotations from different vendors and customers, get reminders for any debt collection, and prepare bills.

Furthermore, this research has successfully answered the 2nd research question and showed that business processes such as HR, supply chain, accounts and sales are getting maximum benefit over others which are in accordance with previous researches in literature review. However the author has explored one more business area i.e. payroll which is also getting maximum benefit over others which was not mentioned earlier by any of the authors in the literature review. Whatsoever, for the business areas which are getting maximum benefit over others and also been shown in literature review, the percentage of the respondents agreeing to the same varied tremendously. Despite this, the author has explored the exact percentage by which the efficiency of different business processes has increased or the time incurred has reduced after ERP implementation.

Also, it has been very clear from the responses that SME's in IT sector in Ireland are fetching more benefit in those areas of business processes in which they are operating as they are using agile ERP systems customized according to their business needs so they are not promoting the use of partial ERP systems within their organizational structure. Since the author has been able to answer all these questions from only 4 respondents so responses from more samples might change the answers a bit and so there is an urgency for carrying out the research in this area with respect to more respondents.

Finally, the authors in the literature review suggested that SME's prefer SaaS means cloud based platform for ERP implementation, howsoever the research has contradicted it as all the respondents asserted the in-house system to be more economic and easy for them to use. So, the author acclaims further research in this particular area for SME IT sector in Ireland.

CHAPTER - 7 - SELF REFLECTIONS ON LEARNING AND SKILLS DEVELOPMENT

7.1 INTRODUCTION

“Learning gives creativity, Creativity leads to thinking, Thinking provides knowledge, Knowledge makes you great.” - Dr. A.P.J. Abdul Kalam

This thought by Dr. A.P.J. Abdul Kalam (11th president of India) emphasized on the process of gaining knowledge through learning which is a never ending process. Gaining knowledge through both practical and theoretical experiences is indeed necessary for relating and utilizing the information's to climb the ladder so that nobody can stop one to achieve its dream. As I always wanted to come abroad and pursue my 2nd masters, this thought by Dr. A.P.J. Abdul Kalam motivated me to fulfill my dreams and come to a far land, Dublin. Despite this is my second masters in business I had no idea about what I will gain through this MBA programme in Information Systems from Dublin Business School. The teaching style in Dublin Business School especially for MBA program which is a level 9 course helped me to acquire new skills and deal with recent business issues by analyzing the same through latest management techniques and thus constantly challenging myself to provide more rationale solutions to a problem.

7.2 JUSTIFICATION FOR UNDERTAKING MBA INFORMATION SYSTEMS PROGRAM IN DUBLIN BUSINESS SCHOOL

Even though I have a work experience of 2 years and 6 months in Indian market with job responsibilities in different domains such as human resource, admin and IT, I never thought that I will pursue this course (MBA Information Systems) once in my lifetime as I never realized its importance. In my entire work progression I was always associated with entry level jobs in small to medium sized organizations howsoever; I was always wondering why I am not able to get a

job in a global organization even after this experience whereas my friends who have got relatively very less experience than me are working in entry level positions in big / global based organizations. Then I thought that I might need to update myself with some professional degree and thought to pursue Ph.D. in management. As I have already done my masters in business with a specialization in human resource management, I was keen to pursue Ph.D. in human resource management especially in compensation management or in performance management so that I can gain skills as well as the highest possible management degree so that I can work either in corporate or in academics. For this reason I appeared for GMAT, TOEFL and IELTS but as I haven't done MBA it became difficult for me to get accepted by the universities. After all these, I became a bit upset but still continued with my work (at that time I was working in human resource and admin profile) and didn't thought to go for further higher studies and never thought to change my career path from human resources to information systems.

While, I was working in India, one day I came to know from my father regarding ERP software's (as he himself is working in SAP system) and how it helps an organization to process information's seamlessly which made me quite fascinated to learn about these software's and as a result of which while working full time, I did a course on weekends for functional consultants in Microsoft Dynamics Navision. I really liked the program as it helped me to understand the basics of requirement gathering, overcoming challenges, how projects are carried out on an international level and many more other things which were more challenging than the one which I was doing. I completed the certification of the course with an overall grade of 'A' (percentage between 85 - 91) and immediately got a job as a junior functional consultant in an IT / Telecom organization in India. Almost working for a year, I realized that it is the kind of work what I was looking for all these days as it is satisfying me internally and I became firm that I should change my domain permanently from human resources to information systems. It was the time when I made up my mind to pursue my 2nd masters which should indeed be a professional degree i.e. MBA in information systems.

As I was always keen to come to abroad to pursue my 2nd masters i.e. MBA, so as to have an exposure to new cultures which will allow me to gain a broader and sophisticated worldview and diversify my thoughts and values merged with strong cross cultural communications and become

familiar with international standards, laws, and regulations, I was wondering which country should I go for so that I can have benefit of all these factors along with a 1 year MBA program so that I don't have to take a long break from my career else I will again have to recapitulate all those IT skills what I have learnt in past. I came across Dublin, Ireland and researched that it is one of the English speaking countries in Europe offering 1 year MBA program with a GDP growth rate of 1.9% as of July 2014 when the GDP growth rate for entire euro zone was 0.1%. Moreover, I came to know that Ireland is a hub of IT companies and most of the MNC's have EU headquarters in Dublin, which made my choice simply very easy to choose Dublin as the only country for my higher studies as it can fetch me with lot of job opportunities in this domain.

Choosing Dublin Business School for the MBA program was quite easy primarily due to two reasons:

- First, I found the modules taught in this 1 year MBA program quite rich and comprehensive.
- Second, it helped me to acquire a thorough and in-depth understanding of the immense data analysis capabilities using different software tools such as SPSS.

7.3 RATIONALE FOR TAKING 'HOW ERP IS HELPING SMALL TO MEDIUM SIZED IT COMPANIES IN IRELAND TO IMPROVE THEIR BUSINESS PROCESSES?' AS MY DISSERTATION TOPIC

As SME's play a major role in the economic development of any country and also I have worked for almost 1 year in ERP (Microsoft Dynamics Navision) in SME IT sector in India, I felt that if I can put my practical experience with relation to the same topic in Ireland, then not only I will be able to carry it out in a much better way but also I can get insight about the same topic and make comparisons (for my personal knowledge) as how it is helping two different countries in different parameters.

Further, as I have worked in ERP system and in future as well I want to be associated with the same, the successful completion of my dissertation in this topic can help me to fetch a job in ERP systems in Ireland more easily.

7.4 EVALUATION OF MY STRENGTHS AND WEAKNESSES IN RELATION TO ACHIEVING LONG TERM GOALS

From personal and professional development module by Prof. Gay White, I learnt that in order to achieve the long terms goals and career aspirations it is really important for a person to evaluate the internal as well as external factors which can really influence a person in achieving it. These factors can be analyzed using SWOT analysis. As my long term career aspiration lies on my dissertation topic i.e. to work in ERP systems, thus it became quite evident for me to use SWOT analysis for accessing my strengths and weaknesses. Below is the matrix for my SWOT analysis (Stella Cottrell, 2010, p. 75).

<u>SWOT</u> <u>ANALYSIS</u>	HELPFUL FOR ACHIEVING THE GOALS	HARMFUL FOR ACHIEVING THE GOALS
INTERNAL FACTORS	<p style="text-align: center;">STRENGTHS</p> <ul style="list-style-type: none"> • Hard working • Honest • Punctual • Obedient • Self motivated • Career oriented • Optimist • Detail oriented • Flexible (immediately) 	<p style="text-align: center;">WEAKNESSES</p> <ul style="list-style-type: none"> • Trust people quickly • Emotional • Try to be too perfectionists • Overload myself • Sometimes fearful • Anxiety • Tension • Stress

	adjust to any culture) <ul style="list-style-type: none"> • Patient • Independent • Confident • Friendly • Respect elders and peers 	
EXTERNAL FACTORS	<p style="text-align: center;">OPPORTUNITIES</p> <ul style="list-style-type: none"> • Pursuing MBA from Dublin Business School • Seeking Career in ERP system 	<p style="text-align: center;">THREATS</p> <ul style="list-style-type: none"> • As I trust people a lot, it is the biggest threat for me. Many people have stolen my ideas and have got recognition. • Bound by visa norms • The market has still not recovered from recession

Table 2 - SWOT Analysis

7.5 IDENTIFICATION OF MY LEARNING STYLES HELPED ME TO DEVELOP NEW SKILLS

When Eddie McConnon took a special class in the personal and professional development module, I came to know that all people in this world cannot learn the same concept through the same technique and therefore Honey, P. and Mumford, A. in 1982 divided the same into four distinct categories in which they can learn things which were later on identified as four distinct learning styles namely: activist, theorist, pragmatist and reflector.

Moreover, being this type has helped me to complete my dissertation more efficiently as I am a kind of person who wants to get involved in a project or specific assignment like this thesis where I had developed the skills necessary to get a job. As I want to get a job in ERP systems so definitely by identifying my learning style, I have been able to justify this challenge more properly.

Furthermore, I am completely sensing than intuitive which indicated that I am very detail oriented and solve problems at much more ease thereby remove complicated problems with simpler equations. Again being this type, I like courses that have connection to the real world. Being this type has helped me to look for facts in my dissertation topic then draw a big picture for its successful completion. Howsoever, the disadvantage being that I don't think out of the box and don't welcome innovative thinking which certainly is necessary to remain competitive among others.

Also, I have an equal balance of learning through both visual and verbal means. It infers that I am an effective player in a team as well as efficient while working alone.

Finally, my scores suggested me that I am a sequential learner which means that I follow logic and see connections to find solutions to a problem rather than jumping haphazardly to a problem.

To conclude, I can say that my scores suggested me that I have got maximum benefit of this MBA program as it helped me to strengthen my global thinking skills by relating each new topic what I studied in Dublin Business School with those what I have studied earlier in my 1st masters course. Moreover, it helped me to identify my key skills such as problem solver, decision maker, enthusiastic and adaptable according to situations which are necessary to achieve my dreams in future. Further, it also helped me to perceive the world through this dissertation topic by comparing new information from each of the respondents and sensing those more quickly, effectively and accurately through qualitative analysis.

7.6 IDENTIFICATION OF MY PERSONALITY TRAIT

After identifying my learning styles and key skills, I came to know about Myers Briggs test in international management class by Prof. Enda Murphy. This test enables anyone to identify their personality traits which can help to choose the job role that will best fit with their trait. As I am keen to work in ERP systems I took this test so that I can understand the type of job or type of profile within these systems which should I apply in future so as to impress my employer and successfully land with a job in a foreign land. Through this test, I found ENFJ as my personality trait.



Figure 11 - Myers Briggs Test Result

This result suggested that I have a quality of natural leader and thus can motivate a team to achieve a goal. Further, it suggested that I can analyze the situations and can take tough decisions. Thus, a career like team leader or research analyst or business analyst or planner or manager will best suit with me as not only I will be able to give best output but also will enable organizations to meet their deadlines. This result is indeed aligned with my future overall goal i.e. to become a project manager in ERP systems, thus my investment for doing this MBA program will fetch me with a brighter future for achieving my long term goal. Furthermore, being a person with ENFJ personality has helped me to find solutions for different difficulties which I was facing during this dissertation thereby completing it successfully.

7.7 SKILLS DEVELOPED THROUGH THIS MBA PROGRAM

During the entire course in DBS, I have developed various skills from different modules which helped me to effectively complete my dissertation. Moreover, these skills will help me in future as well so as to take appropriate decision while doing a job:

Problem solver - In one of the modules in DBS namely innovation and IT management by Michael Muldoon, I had one assignment wherein I had to choose one organization and provide IT innovative solutions along with evidential support. I chose my uncle's restaurant which was running in loss and gave few solutions as how he can possibly increase his revenue along with its popularity in a not so well known locality. The solutions were quite immersive (depending upon the current statistics) and thus I gave the solutions to my uncle so that he can implement those to overcome from losses. As of now, he has been able to increase his sales by 30%.

Critically thinking - Through the first assignment in MBA program which was from Michael Kealy's financial analysis module and thereafter from every assignment, I learnt how to analyze every situation critically. It indeed helped me to tackle all the problems which I faced during this dissertation. There was one time when I was not getting a list of all the SME's in IT sector in Ireland who is using ERP system (as I was searching in internet). I started to think how possibly I can get these contact information's. Then I started contacting all the government bodies in Ireland to get help from those. At last I got a mail from one of the government bodies who told me how to find the organizations in SME IT sector.

These small successes have made me to believe on my critical and logical thinking capabilities which I gained only through different modules (such as financial analysis, information systems development, and performance driven marketing) in DBS. It will not only help me to take appropriate decisions in future but also as an entrepreneur will help me to take tactical decisions.

Communication skills - Even though my mode of education since childhood was English and the organizations were I worked; they used official language as English, howsoever I always used to fumble and get nervous while speaking in front of many people.

As in DBS, I came across people from different nationalities where the only language through which we were able to communicate or exchange our ideas were English, today I feel that I have gained my confidence a lot and don't fumble or get nervous while public speaking which has definitely helped me to improve my communication skills. Furthermore, it has helped me to become more precise in writing assignment and in particular this dissertation.

7.8 BENEFITS AND COSTS OF ACHIEVING MY PERSONAL GOAL

No course in this world can be achieved without paying any cost and cannot have any single advantage, so as with this course.

The cost for achieving my personal goal cannot be considered only through monetary terms but also through emotional and sentimental point of views. My parents and sister are staying far away from me and I know that they are missing me too much as they love me the most. Moreover, as I come from a very middle class family in India, it's a very huge investment for my family to send me abroad and let me to fulfill my dreams i.e. to pursue 2nd masters (as I am not doing any part time job here). So, it is my responsibility to give them a big return on this investment by getting a full time job in Ireland.

The advantage of this MBA program is that I can get a good job opportunity / internships anywhere across the globe because of the reputation of Dublin Business School. Further, as I am volunteering in Dublin City Volunteer Centre and working on Salesforce platform, I am learning a new IT skill which is definitely going to add weight in my CV which would never have been possible if I wouldn't have come to DBS for my MBA.

7.9 CONCLUSION

To conclude, I can say that MBA in DBS has helped me not only to identify my personality trait and learning styles but also to develop new skills necessary for becoming a successful entrepreneur in this competitive and challenging business environment. Moreover, with completion of this masters program in DBS, I feel very confident that I have developed favorable

relationships with senior consultants in organizations because of the communications during this dissertation.

CHAPTER - 8 - BIBLIOGRAPHY

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CHAPTER - 9 - ANNEXURE

The 1st annexure contains the interview questions that were asked by the author to the respondents for completing her dissertation. The annexure from 2nd to 5th contains the responses from all the respondents for the following questions which were used by the author to best possibly answer her research questions. The author has tried to write as much as possible all other expressions that were expressed during the interviews. Below are the abbreviations that have been used in writing the conversations:

A – Author

R – Respondent

9.1 ANNEXURE - 1 - INTERVIEW QUESTIONS

- 1) When was the company established?
- 2) After how many years of company establishment ERP system was implemented?
- 3) What was the primary reason behind ERP implementation?
- 4) Which ERP system are they using?
- 5) Was there any problem while ERP implementation?
- 6) If yes, then how was it overcome?
- 7) Are there any benefits after ERP implementation?
- 8) What kind of benefits are there after ERP implementation?
- 9) Is ERP implementation giving positive impact in all the areas of business processes?
- 10) Which areas of business processes are getting maximum benefit after ERP implementation?
- 11) As you said, some areas of business processes are getting maximum benefit over others?
How did you measure it?
- 12) What is the percentage of improvement in business processes which they mentioned in previous question?
- 13) What is the overall effect of the improvement in business processes in the organization?
- 14) By how much percentage the productivity, revenue and efficiency increased after ERP implementation?
- 15) Is the ERP implemented within the organization or is hosted in cloud via third party? Why?
- 16) Is the implemented ERP system is only for a particular area of the business process or for all the areas of business processes?
- 17) If they are using area specific ERP system then what is the reason behind it?
- 18) Is the area specific ERP system helping the company to achieve its overall goal?
- 19) Is the company operating only in that area for which they have implemented ERP system?
- 20) If not then why they are using area specific ERP system?

9.2 ANNEXURE - 2 - INTERVIEW 1

R - Managing Director of IT Solutions Ltd. of one of the SME's in Ireland (Limerick)

Date and Time - 13th July 2015 at 16:58 PM

Mode of interview - Skype video call (video of the respondent was turned off)

The author sent a text message to the respondent in Skype to connect with her - [7/13/2015 3:28:16 PM] *** Dear Sir, This is Anindita Ghose, student of MBA Information Systems in Dublin Business School. Today I am supposed to take your interview for my dissertation at 5 PM. Thanks for your valuable time. Regards Anindita Ghose ***.

The respondent accepts the request to connect with the author on Skype and sends a text back - Hi Anin. Skype me at 5pm so. How long will it take?

The author texts back - Maximum 30 minutes.

The respondent texts - Can we try and kick off so around 4.45?

The author replies - Yes Sir, I have no problem.

At 4:45 PM the author calls the respondent but he doesn't receive the Skype call.

At 4:50 PM the author again calls to the respondent but he disconnects the Skype call.

At 4:58 PM the respondent calls to the author.

R - Hello Anin!

A - Hello sir, how are you?

R - I am not too bad, how's yourself?

A - Ya and Thank you sir for your valuable time for my interview questions for my dissertation.

R - O ya that's funny and no problems at all.

A - Ya aa so sir aa when was the company established?

R - Aa 2000 aaaa and 2001.

A - OK, aa and after how many years did the company aa implemented ERP software?

R - Well they are mine as well, we sell our own ERP software so we obviously use it ourselves in house but we we we also sell sell the solutions to our clients so umm we implemented I think back in probably 2009.

A - OK. And what was the primary reason behind ERP implementation?

R - Oo in our case because we are technology provider it was to effect fully to sell on to our clients so there's no better way to sell solution by unless you but using yourself.

A - Oo, That's great. And you are using Herbst Insight.

R - Correct.

A - Ya. So was there any problem while ERP implementation?

R - Umm..well, there's always gotta be unnecessary stumbling glass but there's always could be a learning curve. So, aa it was yes so there's always gotta be things that we didn't foresee or didn't expect for. I think we have now implemented the solution in many more companies so we must have a much better idea what's about.

A - OK, so aa how you overcame all those problems?

R - Well, looks does the solution. In our line of business there's a technology provider does the solution to every aa every problem so aaa its simple you have to sit down and go through and work out for every solution.

A - OK, and aa was there any benefit after this ERP implementation?

R - O ya very much though. We we our plan was to obviously remove the paper and pen as much as possible. We removed excel sheets aa we removed requirement for for using more accounts package, so bringing it all into one individual package. So, now what we have tried to do everything through the the insight package.

A - OK, so what kinds of benefits aa means you get you got after ERP implementation?

R - Umm..., closer look at margins, umm.... we have a better easier management of our clients and communication with our clients. (A - OK) CRM implementation is easier to track leads from start to finish so sales prospects is easier to track. Umm... we have a stock control system built into as well so again that stocks under control but traceability is well if required.

A - OK, and aa is this aa ERP implementation positive impact impact in all the areas of business processes?

R - Umm... I think so ya, I think its its definitely improved all aspects of the business ya.

A - OK, aa and aa how did you measured it means the areas which are getting aa benefit over other areas means among all the areas of business how did your organization measured that?

R - Well, I think first it was down to the KPIs were effectively how many items of paper be removed, how many excel sheets we can remove, ummm..... and I suppose overall keep a better idea on sales so that we can keep a track on pipeline on a better way, ummm.... keep a better idea on margins and produce more accurate I suppose multi managed accounts as well.

A - OK, and what was the overall percentage or overall improvement of the business processes in the organization?

R - The overall improvement of the business processes....ummm....I suppose it's the more streamline I I I think it's the sales process more streamline way do we handle sales process (A – OK) I will devastate improvement in sales processes (R – Is that the question you are asking me, Is that the the...., A – ya ya) Ya that was probably the best improvement overall....umm...streamline of the sales processes so in such a way that someone rings up to your information gets put up in the system and that we have contacts put against that prospect and all way long through to potential turning into a client.

A - OK, and aa by how much percentage the productivity or the revenue or the efficiency of the organization improved after this ERP implementation?

R - Aaa so it's hard one to answer now I think aaa I aaa because we don't necessary track ourselves on efficiencies (A – OK) umm.... Like everyone has KPIs here but realistically there would have been certain amount of more important logging going on logging of contacts for clients or more importantly what was going on before.....ummmm....again I think the sales process has become more efficient along the way as well.

A - OK, Is it hosted within the organization or is it hosted via cloud?

R - No we have a setup here within the organization but it can be it's a kind of package that can be hosted in the cloud as well.

A - So, why have you hosted it within your organization because you are selling the product?

R - It is certainly selling the product but also umm because we have our own infrastructure in house so it runs in a client server base model so for us its very simple to setup, install and why would we suffer a pain for an external hosting if this is the case we can host ourselves (A – Hmm).

A - So, aa is the means ERP software helping the organization to achieve the overall goal, what was the goal of the organization?

R - O ya I think it is ya we have a certain amount of KPIs put in that product allow us to track. Again we because we use the system to generate reports and views of again sales tags and prospects, ummm.... a bit of ours all tracked in the system, so ya ya I think overall its improving the it's improving overall organizational idea bringing more structural data as well.

A - OK, OK, so sir all these were my questions (R – O ya that's fine that's fine). So thank you so much for your valuable time (R – all right) and I think it's very valuable for my dissertation.

R - Good stuff, profit, all right, could we stop here, do you have any other questions? Touch base ya.

A - Ya ya, currently I don't have anything but thank you so much for your valuable time reply all the time.

R - No probs, no probs, talk to you soon.

A - Thank you so much sir.

R - Thank you, bye bye

A - Bye bye take care

9.3 ANNEXURE - 3 - INTERVIEW 2

R - Programmer Analyst of Technology Service Provider of one of the SME's in Ireland (Cork)

Date and Time - 17th July 2015 at 14:30 PM

Mode of interview - Face to face

A - Hello Sir, Good afternoon.

R - Hi, Good afternoon, how you doing?

A - I am good sir, how are you?

R - Too tired and very busy with my hectic schedule. Umm... tell me what would like to ask me for your dissertation?

A - Ya I know sir that you are very busy and aaa.... I would like to thank you for replying me all time and giving me your precious time for today's interview for my dissertation.

R - It's OK, no problem at all. But can we finish it soon as aaa... I already told you that this week I am coming to Dublin office for some work and aaaaa.... That's why it better you come directly here to conduct face to face interview as in Cork I won't be able to give you much time through Skype during office hours.

A - I know sir...It would hardly last for half an hour for my interview.

R - OK, so start with your questions but ummm....as I already told you that in my previous company which I left 1 year back...ummm....I worked there in ERP system....but right now...I am in different profile so I will answer you from my experience from my past company...but I really don't know how much it's going to help you with your dissertation.

A - No problem sir. Sir, my first question is when the company was established?

R - Well I think it's in 1992 no sorry 1997.

A - And aaa... after how many years does the company thought to implement an ERP system?

R - Ummm... it was 2006.

A - What was the primary reason for ERP system implementation in your organization?

R - Actually we are means we were as it is my previous company so we were the authorized partner of mamut solution provider and at that time aaa... I was based in Waterford. Well, aa...what I know from my seniors that the software was implemented within our organization just to check whether it is customer friendly to use or not or whether its meeting the requirements or not and aa... that's it.

A - OK, so you are using Mamut software?

R - Yes I was.

A - OK, so was there any problem while ERP implementation?

R - Yes there were lot of problems....like starting with development of the product for different clients as every client had a different need for accounts module for different method of measurement. Aaaa...the clients were in first place not able to handle the software properly.....so....some mistakes were seen in accounts profile which was definitely a serious issue at that time because...as you know being a business student accounts is one of the core business process....so...ummm...immediate actions were taken to solve the issues of the clients...well our company has a call centre where the clients use to call and report problems so have to facilitate cross field ERP.

A - OK, so aa...what was done at that time to overcome those problems?

R - Well, as the system is built in house, aa... it was constantly reviewed and updated based on reviews and changing needs.

A - OK, so was there any benefit after this ERP implementation?

R - Of course! it is very difficult to manually calculate and track on every single penny so...aa...it helped a lot to track the accounts.

A - OK, so what types of benefits was seen?

R - Less time involved in working, like aa...preparing invoices and checking different quotations from different vendors or customers became very easy and it also helped to get reminders for any debt collection. So, the accounts domain was highly influenced for us and also for different clients whom we serve. And...aa...as this system is highly customizable and any new client process can be addressed so I think any other domain of the business processes will be effected.

A - So, aaa.... can I say that this system is giving positive impact in all the areas of business processes?

R - Yes you can... as I have already mentioned, this system is customizable according to our client's requirement so it definitely gives positive impact in all areas.

A - OK, so...aaa....which areas of business processes or umm....business areas are getting maximum benefit after ERP implementation?

R - HR, Payroll, revenue measurement means the accounts....umm....ya all these.

A - OK, so...aaa....as you just said that some areas such as HR, payroll and accounts are getting more benefit over others areas, how was it measured?

R - Well, few areas such as employee review process are also dependent of the ERP, this cannot be a complete or satisfying solution as the numbers can be misleading when it comes to review appraisal. But all data generated by the ERP tool are used for measurement. The measurement was done through graph which showed the level of efficiency achieved. And....it was generated by the tool in the system.

A - So, can you please tell me what were the percentage improvements in these business processes like HR, and aa...payroll and accounts?

R - Umm...not sure about this...but...aa...might be 30% to 40%.

A - So, what is the overall effect of these improvements in the organization?

R - Umm...things were easy to do, took less time, was easy to track the reports, invoices, and.....errors were reduced. Ya that's all.

A - So, by how much percentage the productivity, or the revenue or the efficiency increased after ERP implementation?

R - Umm.. I am a technical person and don't know anything about revenue as business people are concerned about this. But, yes, ummm....as I already told you that some of the business processes achieved greater efficiency so you can count this as one.

A - As I see that ummm... you told me that Mamut is hosted in house, so what is the reason behind it?

R - Well, we are the authorized solution provider so the system is hosted in house for us as we develop the product for our clients and umm...we have the technical expertise for this so there is no need for us to again go for cloud. But, umm...yes, our clients for our clients we gave support and that's why they umm...for them it was hosted in cloud.

A - So, my last question is is this system helping the organization to achieve the overall goal?

R - Sure is! but constant change and updates are the key. I can say that as this system is customized based on client requirement like aa...it also features an auto-module for employee clocking hours so it mainly includes all the operating areas for any business. So, it reduces double effort. Umm.. well do you have any other questions?

A - No sir, thank you so much for your reply and your valuable time for answering all the questions for my dissertation.

R - No problem it's all right. I helped you because I too know about the difficulty for getting interviews.

A - Yes sir.

R - So, if you need any help, just give me a mail. I will try to help.

A - Definitely sir, and thank you once again.

9.4 ANNEXURE - 4 - INTERVIEW 3

R - System Engineer - Test Analyst of IT Services, Consulting and Business Solutions of one of the SME's in Ireland (Galway)

Date and Time - 25th July 2015 at 18:57 PM

Mode of interview - Skype video call (video of the respondent was turned off, the author and the respondent communicated in their own local language).

R - Hello, can you hear me?

A - Yes, I can hear you. Can you hear me? How are you?

R - Yes I can. It's going as usual.

A - Thank you so much for giving your time even when you are in vacation and you are still awake till late night just because of me.

R - No no that's not a problem after all you are best friend's sister and you need someone to complete your dissertation. And also I am used to Ireland's time as currently I came back from there from an onsite project so it's still evening there not mid night.

A - OK, so is your project over?

R - No, I came on vacation but will go there soon.

A - OK.

R - So, when do you need to submit your dissertation? If you need any data whatever I know I will give it you, write it in a copy so that you can use those while data analysis.

A - 21st August I have to submit and yes I am writing whatever you will say as I need to write this in my annexure.

R - Good. OK so let's start.

A - When was the company established?

R - Look, I work in an MNC in India; I came there on client site for a project. My project is still not over. But when I was there means when I came there first they were handling a project for an SME ERP implementation. Being a technical person I was also supporting that project. So, later on it became difficult for me to handle both the projects but as I was there since the inception so most of the technicalities for this project were handled by me as a team member. So, I think u doesn't need the year of establishment of our company means where I work but you need the one for that SME, right? (A - Yes), OK so let me check in the net.....well it was 2000.

A - OK, and when the ERP system or ERP tool was implemented?

R - It was 2010, when I came there first.

A - What was the reason for this change?

R - Because ERP tools are very advance and these tools have many facilities over manual work. And also to handle the inventory of the company in a much better way. Let's take an example why you use LED TV over Black and white TV, because it has many facilities likewise this ERP tool was implemented so that it can help the company to handle its inventory without any error and facilitate growth. This software system has so many features that can handle the business much more efficiently.

A - OK, so which ERP system was recommended to them?

R - Depending upon their budget, technical expertise within their organization, and all other different factors, Oracle E-Business Suite Special was recommended to them.

A - So, when this change was going on within that organization, was there any problem in implementing this system?

R - 100's and 1000's of problem came while this change.

A - Like?

R - From the development site, there were lots of problems like the orders were not reflecting properly, the data in the database in the front end were not reflecting properly, the mapping for the inventory serial number with that of the product has not been done properly. And there were many more technical problems that we faced at that time. The raw data were not exporting in the oracle database. The bills were not received by the customers properly. The email notification to the concerned person for a particular thing within the organization is not going properly.

A - So, I need to ask what was done at that time to overcome those problems?

R - Well, we used some tools and then recognized the problems and then it was again sent to the developer for further coding. The issues were first listed down and then uploaded in the central server. We used clear quest one of the tools to identify all the issues and listed it down depending upon the severity and priority. It was an iterative process and we were working in sprint. One of the issues were identified, we sent it to the developer and then after they are done with the coding and all it was again sent to us for further testing and when it was having no problem it was checked OK.

A - So, even after all these problems, was there any benefit what that organization was getting after this implementation?

R - Definitely yes, otherwise why the company will think to modify their system.

A - OK, I have one more question here, as you are just saying about the inventory system since the starting, was the company only getting maximum benefit in this area of business process?

R - Look, basically this agile software was implemented to have a track on two major aspects i.e. inventory and finance specially billing side. Basically, it handles the complete supply chain of the organization.

A - So, was it giving positive impact in all the areas of business process?

R - After solving the problems, or rather after overcoming the problems, it helped or it gave positive impact.

A - So, was only inventory and finance were getting maximum benefit after this change?

R - Yes, finance and supply chain. Inventory is just a part of the supply chain.

A - So, I would like to ask one more thing here, as you just now said that supply chain and finance of the organization were getting maximum benefit, so how did they measure it?

R - Measure? Sorry I didn't understand it.

A - Measure means how you could say that it is helping to get benefit.

R - OK, so you want to ask how it is helping to boost their business process?

A - Yes.

R - Well, without this system the people will have to do everything manually. It helped to reduce the time. Accuracy was increased. Cost decreased a lot. Were able to reduce the excel sheets. When they were doing manually definitely there were human errors in inventory so it was difficult for them to rectify those and keep an eye when and from where which product was sold, when it was sold, whether they received the payment through credit / debit card or cash. This tool helped to facilitate everything. Moreover, this system has helped the organization to create one virtual warehouse which was not possible when they were doing manually.

A - OK, so as you told me all these things, can you tell me what were the percentage improvements in supply chain or finance?

R - Well, I can't say percentage improvement as we didn't calculate it. But I can say that it helped to rectify problems that they were facing earlier. For an example: the transaction which took earlier 15 minutes, the time consumption for doing the same transaction was reduced by 50%.

A - So, the time required was reduced by 50%.

R - Yes, the time consumption for any sales order was reduced by 50%.

A - So, what was the overall effect means after this implementation what was the overall effect in the organization?

R - Overall effect was time reduced for one sales order so they were able to process more sales, naturally it will help to increase the revenue of the organization. Moreover, nowadays every one of us has become very insensitive that's why we need prompt reply from the organization and when we don't get it we become mad so it helped the organization to give better customer service as compared to earlier.

A - As you just said about revenue and efficiency, so can you tell me what was the percentage increase in the revenue and the efficiency and the productivity of the organization?

R - Look, I worked in the technical side so I can't tell you anything about the revenue of the organization. I can only see from the technical side that it helped to boost the revenue of the organization but by how much percentage it increased I can't say that, only sales and administration people can tell you correctly about that.

A - OK, OK, so efficiency in terms of time reduction was 50%.

R - Yes, what I felt.

A - OK, so when this Oracle E-Business Suite Special was implemented – whether it was done in house or in cloud?

R - No no the concept of oracle let me tell you, oracle has many software you need to buy that and customize it according to your business needs.

A - OK, so I can say it in house as only the organization will give maintenance support.

R - Hmm.

A - Thank you so much for giving your time. It is really very helpful for me.

R - Really?

A - Yes.

R - If you need any more help then we can again come on Skype.

A - Ya ya definitely.

9.5 ANNEXURE - 5 - INTERVIEW 4

R - Senior Functional Consultant of Technology Solution Provider of one of the SME's in Ireland (Dublin)

Date and Time - 4th August 2015 at 11:05 AM

Mode of interview - Face to face

A - Good Morning Sir.

R - Hi Good Morning, how you doing?

A - I m good sir, thank you for asking. How are you?

R - Grand.

A - So, sir when was the company established?

R - Well it's difficult for me to answer when was the company established as it has many branches but the division of the company based in Dublin was established in 2002.

A - OK, so when was the year when it was thought to implement ERP system?

R - Well, it already had an ERP in other place means locations which was integrated with the system here systems from other divisions.

A - And, what was the primary reason for ERP implementation?

R - We wanted to have an eye on stock / product management, order management, procurement, so ERP system was implemented to fully integrate.

A - OK, so which ERP system is implemented in your organization?

R - Currently, we are using Microsoft Dynamics Navision but previously we were using SAP Business All-in-One Solutions.

A - So, what was the reason for changing this means aa....changing from SAP to Microsoft Dynamics Navision within your organization?

R - Umm..lot of factors are there like first it is means Microsoft Dynamics Navision is very user friendly, it is easy to use and understand as compared to SAP. Well....I can't say that SAP was bad it was equally good enough but the cost is another important factor for a company like us. So, and that was mainly I think so.....umm..major reasons for changing it.

A - OK, so as there was a aaa....change in ERP systems....so, aaa...was there any problem within the organization means what were umm... the challenges for this changes?

R - Certainly yes, there was major issues migrating data from the old system onto the new and integrating the system with the software being used on the Local content management system, inventory management and web platform.

A - OK, so what was done at that time to overcome those problems?

R - Well.... It required a fair amount of modification in order to tailor it to suit the system. Some features were removed and some were added. Workforce up skilling / training was done so that we can get used to with this new system.

A - As you just said some features were added and some were deleted in the new system, so...umm...is it customizable according to business needs?

R - Yes, this system is. It is not rigid as our last system was.

A - OK, so, are you getting more benefit through this new system than the old ones?

R - Yup.

A - OK, so what kind of benefits are there, can you please tell me?

R - We can see more integration between internal business and sales process. And umm... there has been easier content for inventory and stock management and customer databases and other related things.

A - So, Is Microsoft Dynamics Navision giving positive impact in all the areas of business processes?

R - Yes.

A - So, are there any areas within the organization means ummm...the business processes of your organization, which are getting maximum benefit over other areas or other business processes?

R - Look the answer will be quite obvious for this question as we are into selling different software solutions to other companies so ya...definitely...we are getting maximum benefit in sales order processing.

A - OK, so as you just told me that sales order processing is getting maximum advantage after Microsoft Dynamics Navision was implemented, so can I ask you means...aa...how you measured it?

R - There has been a good increases in sales compared to previous period as orders are being delivered in a timely manner.

A - OK, so what is the percentage improvement in sales order processing?

R - It's estimated to be 2 - 3 times

A - OK, so what is the overall effect of this improvement in the organization?

R - Umm....overall effect means? Are you asking me what are we gaining?

A - Yes sir.

R - OK, then as I already told you our sales increased nearly 2 to 3 times so definitely it has helped us to increase our revenue and goodwill and umm....yes all these.

A - OK, so by how much percentage the productivity, or the revenue and or the efficiency increased after Microsoft Dynamics Navision is in use?

R - Sorry, I can't tell you about productivity or revenue. I don't track these. But umm... as I already told you we got most of the benefit in our sales system as we are able to deliver in a timely manner and it increased nearly 2 to 3 times so that's the only thing which I might help you with.

A - OK, so is it hosted in house or in cloud?

R - In house.

A - Why?

R - Because we have our own server where we keep our data so it's easy and convenient for us to implement it in house.

A - OK, I have just one more question to ask.

R - Ya, definitely go.

A - Is Microsoft Dynamics Navision helping your organization to achieve the overall goal?

R - I think so yes. And that's why we changed the systems, right.

A - Ya and thank you so much sir for your valuable time for this interview and replying back to me all time in emails. I feel these information's will help me to answer my research questions properly.

R - OK, that's great but I would like to apologize for keep you waiting for so long and changed the schedule twice as you can understand I am really very busy all these days.

A - Ya sir, I can understand. No problem. Thank you so much sir once again.

R - You welcome. And best of luck for your dissertation.

A - Thank you so much sir.

9.6 ANNEXURE - 6 - INFORMATION FORM & CONSENT SHEET

INFORMATION SHEET FOR PARTICIPANTS

Dissertation Title: ‘How ERP is helping small to medium sized IT companies in Ireland to improve their business processes?’

You are being asked to take part in a research study on how ERP is helping small to medium sized IT companies in Ireland to improve their business processes?

Being a postgraduate student in business management, I need to complete my dissertation so that I can get my degree. As I am a student of Information Systems, I have chosen this topic. Moreover, I have a work experience in this relevant domain for almost a year which made me feel to choose this topic, so that I can effectively carry out this research. Through several prior researches it is evident that ERP implementation helps to improve business processes of an organization. Howsoever, the same has never been carried in context with IT sector that too in Ireland, which is the aim of the author to carry out.

What will happen:

In this study, you will be asked only about ERP system, which ERP are you using and how it is helping different business processes within your organization to improve efficiency, productivity and revenue. In any case it is not going to ask about different policies or procedures or strategies of your organization which involves ethical concerns.

Time commitment:

As it is an academic research so the study will involve only one time interview which won't last for more than 30 minutes.

Participants' rights:

You have the right to stop being a part of the research study at any time without any explanation being asked from you. You have the right to ask that any data you have supplied to that point be withdrawn / destroyed. You have the right to omit or refuse to answer or respond to any question that will be asked to you in the interview. You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study's outcome. A full de-briefing will be given after the study). If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins.

Confidentiality / Anonymity:

The data I collect does not contain any personal information about you except about the performance improvement in different business processes of an organization due to implementation of ERP system. All these information's / data that I (the author) will collect will be used only for completing her dissertation for getting her postgraduate business degree i.e. MBA in Information Systems from Dublin Business School. In doing so neither you nor your organization would be identifiable.

For further information:

I or / and Prof. Patrick O'Callaghan (my supervisor for the dissertation) will be glad to answer your questions about this study at any time. You may contact me any time in my college email id: 10119397@mydbs.ie or my supervisor at his official email id at patrick.ocallaghan@dbs.ie.

9.7 ANNEXURE - 7 - INFORMED CONSENT FORM FOR RESPONDENT 1

Dissertation Title: ‘How ERP is helping small to medium sized IT companies in Ireland to improve their business processes?’

By signing below, you are agreeing that: (1) you have read and understood the Participant Information Sheet, (2) questions about your participation in this study have been answered satisfactorily, (3) you are aware of the potential risks (if any), and (4) you are taking part in this research study voluntarily (without coercion).

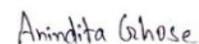
Participant’s signature

Handwritten signature in blue ink, followed by a horizontal line. Below the signature, the date '13/07/2015' is written in blue ink.

Student Name (Printed)

Anindita Ghose

Student’s signature

Handwritten signature 'Anindita Ghose' in blue ink, followed by a horizontal line.

Date: 13th July 2015

9.8 ANNEXURE - 8 - INFORMED CONSENT FORM FOR RESPONDENT 2

Dissertation Title: ‘How ERP is helping small to medium sized IT companies in Ireland to improve their business processes?’

By signing below, you are agreeing that: (1) you have read and understood the Participant Information Sheet, (2) questions about your participation in this study have been answered satisfactorily, (3) you are aware of the potential risks (if any), and (4) you are taking part in this research study voluntarily (without coercion).

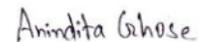
Participant’s signature



Student Name (Printed)

Anindita Ghose

Student’s signature



Date: 17th July 2015

9.9 ANNEXURE - 9 - INFORMED CONSENT FORM FOR RESPONDENT 3

Dissertation Title: ‘How ERP is helping small to medium sized IT companies in Ireland to improve their business processes?’

By signing below, you are agreeing that: (1) you have read and understood the Participant Information Sheet, (2) questions about your participation in this study have been answered satisfactorily, (3) you are aware of the potential risks (if any), and (4) you are taking part in this research study voluntarily (without coercion).

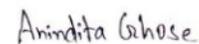
Participant’s signature



Student Name (Printed)

Anindita Ghose

Student’s signature



Date: 25th July 2015

9.10 ANNEXURE - 10 - INFORMED CONSENT FORM FOR RESPONDENT 4

Dissertation Title: ‘How ERP is helping small to medium sized IT companies in Ireland to improve their business processes?’

By signing below, you are agreeing that: (1) you have read and understood the Participant Information Sheet, (2) questions about your participation in this study have been answered satisfactorily, (3) you are aware of the potential risks (if any), and (4) you are taking part in this research study voluntarily (without coercion).

Participant’s signature

Joseph
9/08/15

Student Name (Printed)

Anindita Ghose

Student’s signature

Anindita Ghose

Date: 4th August 2015

9.11 ANNEXURE - 11 - CONSENT LETTER FROM DUBLIN BUSINESS SCHOOL



Registrar's Office
13/14 Aungler Street
Dublin 2, Ireland
Telephone : (01) 417 7500
Facsimile : (01) 417 7595
E-mail: businessschool@dbs.ie
Web site: www.dbs.ie

31 July 2015

Re: Anindita Ghose

Student No: 10119397

To Whom It May Concern:

This letter is to state that Ms Anindita Ghose is a full time student at Dublin Business School since September 2014.

Anindita is enrolled and fully registered on the **Master of Business Administration (Information Systems)** degree programme. She is presently undertaking research on her dissertation which is due for submission on 21st August 2015.

Any help that you could provide to this student in his undertaking would be appreciated.

Please do not hesitate to contact me if you require any further information.

Kind Regards,

A handwritten signature in black ink, appearing to read 'Cian McHugh', is written over a horizontal line.

Mr Cian McHugh
Registrar's Office
Dublin Business School

Dublin Business School
Registrars Office
31 JUL 2015