Strategic Dilemma With ERP System Implementation
Enterprise vs Consultant Perspective

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Abstract

Over the past few years and up to date, many companies around the globe have implemented Enterprise Resource Planning (ERP) systems. Implementing ERP system in an organisation is considered as an irresistible challenge, with the typical ERP system implementation approach. In correspondent, management in an organisation are facing critical challenges’ to make decision on a specific ERP system implementation strategy, however, any considered decision would influence development, testing and ultimately the success of the implementation. Therefore, this thesis aims to examine solution to how organisation can decide or choose the best ERP system implementation strategy and explore the one that could be highly recommended by considering enterprise and consultant perspectives.

In order to accomplish the purpose of this thesis, qualitative and quantitative method of collecting and analysing data were adopted. Quantitative and qualitative data were collected through the mean of questionnaire and structure interview. This is one of the reasons why this thesis can be viewed in an inductive and deductive approaches. To this end, exploratory and descriptive knowledge should be derived from this study.

Analysis of this thesis has discovered that, there are many influencing factors in which organisation needed to be considered when making choice of a particular ERP system implementation strategy. These factors include: (i) Size and Complexity of an organisation (ii) Degree of internationalisation (iii) Number of requirements (iv) Nature of integration and (v) Skills and Experience of people within an organisation.

In order to choose appropriate strategy for ERP system implementation, organisation should considered to implement a skeleton system in which other application can be added to the systems when it is in operation. Clarification of a business vision that would call for the legacy system replacement or re-modification, is also essential for an organisation to consider. Considering the above statements, organisation should be able to choose appropriate strategy that would fit their business processes.

Nevertheless, Phased strategy is considered as the best or appropriate implementation strategy in which organisation can rely upon. Exploring Phased strategy simply means that, the problem of making choice of a particular implementation strategy will be minimal. That is; organisations that are willing to implement ERP system can easily consider phased strategy as their best alternative in order to attain success implementation.
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1 Introduction

What is Enterprise Resource Planning (ERP)? Response to this question can be examined in a broader view with different definitions depending on individual, authors or organisation perspective. O’Leary (2000) described ERP system as part or one of the package software built for use in multiple organizations. A typical example of packaged software that one could think about according to the literature is the one developed by Microsoft. That is; Microsoft word and Microsoft excel. The literature further defined ERP in detailed as computer-based systems designed to process an organization’s transactions and facilitate integrated and real-time planning, production and customer response. Wallace and Kremzar (2001), in their literature argued that, ERP system is not software, rather, the literature derived another terminology as Enterprise system or Enterprise Software (ES). The literature described ES based on Thomas H. Davenport book “Mission Critical” as “packages of computer applications that support many, even most, aspects of a company’s information needs.”

Nevertheless, Enterprise Resource Planning (ERP) as the name implies could be broken down into more meaningful components. To start with, the term enterprise means company or business. Fuller, Valacich and George (2008) defined resource as a source of supply or support, such as money, people, materials, technology and space, while the term planning, could be described as the act or process of making things happen. Therefore, the term Enterprise Resource Planning (ERP) in my own terminology, could be described as a computer-base devised that act or process resources available in an enterprise in order to be successful in business activities. Examples of ERP system include; Oracle ERP system, SAP, Microsoft dynamics AX and Jeeves.

Choosing topic in the area of Enterprise Resource Planning (ERP) for my bachelor thesis has been the area of my interest since I started my program at Jonkoping International Business School. Up to the moment I took a course on ERP system, my interests have developed more on this topic. I got inspired to write about this topic of “Strategic dilemma with ERP system implementation” through a Siemens power corporation case of implementing SAP ERP system in their company. The dilemma in their case was that, the SNI consultants that SPC’s consult for their SAP R/3 implementation suggested that they should implement the system using Big Bang approach in other to save as much as possible money, while the assigned IT specialist from SPC’s case and Top management considered Big bang as too risky for implementation failure (Hirt, 1999). Instead, they considered using Phase implementation approach due to the past experience of comparing success and failure in chosen implementation approaches (Hirt, 1999). Here is a problem when organisations are in the state of dilemma, that is; getting confuse of which one to choose out of many alternatives. However, organisations have to go for the best alternative that will suit their needs.

1.1 Problems Discussion

Over the past few years and up to date, many companies around the globe have implemented Enterprise Resource Planning (ERP) systems. Implementing ERP system in an organisation is globally considered as an irresistible challenge, with the typical ERP system implementation approach (Mabert, Soni & Venkataramanan, 2003). In addition to this, O’Leary (2000) emphasised that, management in an organisation are facing critical challenges’ to make decision on a specific ERP system implementation
strategy, however, any considered decision would influence development, testing and ultimately the success of the implementation. My own understanding toward implementation stages of the information system lifecycle is that, this stage can be regarded as the most delicate stage in order to get a particular result of that system. For systems to yield either positive or negative result, implementation approaches needed to be taking into consideration. Considering the fact from ERP system, it is obvious that this system has contributed and have a lot to contribute to organisation development as a whole. Yet, it is quite unfortunate that many of the ERP implementation resulted in failure, while only a few lead to success.

Apparently, many criteria could be derived from the reason why implementation of any system particularly ERP system resulted in success or failure. Sanjiv Purba and Bharat Shah (2000) in their literature described five major factors that contributed to the project failure or success. These factors include; (1) Human resource issue (2) Technological limitations (3) Political games (4) Funding and (5) Methodological. Out of these factors, human resource issue is the dominant contributor toward project failure (Purba and Shah, 2000). Some of the dominant contributors toward project failure in reference to human resource issue according to Purba and Shah (2000) included; (i) Inability of the user to agree on business requirements (ii) Inability of the user to communicate business requirement (iii) Inability to the implications of business requirements (iv) inability to accommodate changes to business requirements (v) Insufficient technical skills (vi) failure to effectively manage one or more phases of the development effort (vii) Insufficient resources (viii) Weak implementation strategy (ix) Inability to deal with contractors and vendors and (x) Bad planning and unrealistic expectations. “ERP system implementation is perceived as a means by which an enterprise can complete its strategic goals, these goals should be the basis for defining the ERP system implementation strategy, project scope, and its detailed goals” (Soja, 2008, Pg 107).

Considering the citation above from Purba and Shah (2000) and Soja (2008), my interest in this thesis is that of “ERP system implementation strategy”. According to O’Leary (2000), there are two basics implementation strategies or approaches that are being used to implement ERP system. These implementation strategies included; (1) Big-bang strategy (2) Phased strategy. My perception to this is that, most of the factors that contribute to which implementation of ERP system lead to success or failure are influenced by implementation approaches or strategies. Unfortunately, it is very hard to find article or journals that have been written in this area of implementation strategy for ERP system. Nevertheless, I kept asking myself, which of the available ERP system implementation approaches can be highly recommended? What are the factors that influence the choice of implementation strategies and how can organisation choose the best implementation strategy?

1.1.1 Problems Statement

Considering the problem discussion above, many things could be derived from the reason why ERP implementation leads to success or failure. In fact, O’Leary (2000) emphasised that, there are many risks to be considered toward the entire lifecycle of ERP project. That is; from the period of deciding to go for ERP system, choosing a particular ERP system, designing ERP interface, Implementation, after going live and up to training.
Human resource issues as it is mentioned above in the problem discussion is a dominant contributor toward project failure or success (Purba and Shah, 2000). Understanding and knowledge of this dimension gives project managers the ability to bridge problems by building compromises with business units, project teams, stakeholders and other part of the organisation (Purba and Shah, 2000). As it is discussed above in the problems discussion, a lot of issues can be seen as a sub-categories that made up of human element as one of the factors that lead to project failure or success, such as; ERP system project. As it is discussed above in the problem discussion, ERP system implementation strategy is the area of concentration in this thesis. This is really a problem because, if organisation do not know or understand the type ERP system implementation strategy they could use or that fit their organisation needs, there is a risk of failure to ERP system project. This can cause the firm to loose huge amount of money or even go bankrupt.

1.2 Research Questions

The fact that ERP system is characterised with a lot of benefit to individual and organisation as a whole, allow a creativity and innovation to every business that want to gain competitive advantages among the competitors, reduce IT cost and inventory, also known as core business application. Yet, it is difficult to understand why most of the ERP implementation resulted in failure. In order to find some answers to this curiosity and for the benefit of others that this thesis might be interest, research questions are derived to which this thesis will lay emphasis on.

1. What are the factors that influence the choice of implementation strategies?
   I. How can organisation choose the best implementation strategy?

2. Which of the available ERP system implementation approaches can be highly recommended?

The above research questions of this thesis is aim to tackle organisation perceptions toward the problem of choosing a particular implementation strategy of ERP systems. Question one in the above questions aims to know different factors that could be considered as an influence to the decision of choosing a particular implementation strategy in an organisation, while the sub-question to number one aims to provide a solution to how organisation can really decide on a specific strategy in implementing ERP systems. The best implementation strategy in the sense that, organisation have to choose a particular implementation strategy that will lies on a very low risk of implementation failure and the one that will lies on a very high success risk. Regardless of factors that could influence the decision and how organisation can choose the best strategy, experience have shown that, organisation precisely enterprise or consultant, might also have their own opinion toward each of the implementation approaches. Therefore, this question also aims to know organisation personal opinion, knowledge and experience towards each of the available strategies.

1.3 Purpose

The purpose of this thesis is to examine solution to how organisation can decide or choose the best ERP system implementation strategy and explore the one that could be highly recommended.
1.4 Delimitation

As it is stated in the problem discussion of this thesis, there are many factors to be considered when it comes to why ERP system implementation leads to success or failure. Due to the limitation of this thesis, all the problems mentioned in the problem discussion could not be covered. Instead, I will be more focused on of the sub-category contributor that make up human resources issue, which is; implementation strategy for ERP system. In order to carry out empirical findings, I aimed to compare as many as possible enterprise and consultant firm in order to draw concrete conclusion for this thesis. However, the limited time to complete this thesis might not give me the opportunity to accomplish the findings using much firms. Instead, I will compare two to five enterprise firms and two to five consultant firms. I will also like to focus on both medium and large size for each of the enterprise and consultant firm in this thesis.

1.5 Positioning

Considering the title of this thesis, I will assume that no research or little research have been conducted toward the direction of what organisation are facing in choosing appropriate implementation strategy for ERP systems. The reason for this assumption is that, I see this topic as a creative thinking of me as a researcher by exploring my personal preference through the case of Siemens power corporation of implementing SAP ERP system in their company. Also, searching different databases for an existing knowledge toward the area of concentration for this thesis, I could not find any.

However, many researches had been carrying out in regard to ERP system and its implementation. Researches had also been carrying out in regard to why ERP system implementation fails and the success outcome. Though, still neglect this particular area of implementation strategies contribution to both success and failure.

To this end, O’Leary (2000) literature is aim to be used as a basis guide line for this thesis direction. Because, this is the only literature that provide a reliable data for the purpose of this thesis. The literature is base on an existing knowledge in regard to ERP system and its basic implementation strategies. However, articles, organisation website and other relevant resources that can contribute to this thesis are also aim to be use as a basis knowledge.

1.6 Interested Parties

In regard to ERP system implementation project, there are three basic parties that are involve, include: top management from enterprise, consultant and ERP system vendor. In this thesis, the interested parties will be limited to just top management at the company, such as; CEO and CIO. Also, consultant firms in an organisation, such as; CEO, project manager and consultant of that particular firm. However, this thesis might also interest anyone that has interest in ERP system implementation and decision making for appropriate implementation strategy.

1.7 Definitions

Due to the fact that some of the interested parties mentioned above and some other people that this thesis may be interested to might not have some basic knowledge about ERP system terminology, this part of this thesis will define some terms that I think is essential in related to ERP system.
• **Enterprise System (ES):** - This is the large-scale organisation system that is composed of people, processes and IT infrastructure built around packaged enterprise system software (O’Leary, 2000).

• **Enterprise System Software (ESS):** - This is described as packaged software that is built for use in multiple organisations. A typical example of ESS include; Enterprise Resource planning system (ERP), Customer Relationship Management system (CRM), Business Intelligent (BI) and Enterprise Application Integration (EAI) (O’Leary, 2000).

• **Enterprise Resource Planning (ERP):** - This is described as one of the packaged software, core business application that is built for use in multiple organisations with a large number of capabilities (O’Leary, 2000).

• **ERP Modules:** - This is described as built-in applications that exist in an ERP system, that support enterprise departmental activities. Typical examples include; Financial Accounting (FA), Sales and Distribution (SD), Materials Management (MA), Human Resources (HR) and Quality Management (QM).

• **Organisation:** - Organisation in this thesis, simply refers to the stakeholders that involve in adopting and implementing ERP system. That is; from both enterprise and consultant point of view.

• **Best Practice:** - This came in an existence to replace obliteration and rapidly found acceptance. It is also considered as better or best ways of performing a particular process. ERP system is considered as a typical example (O’Leary, 2000).

• **Big Bang Approach:** - This is one of the ERP system implementation strategies in which entire suite of ERP system applications is implemented at all location at the same time (O’Leary, 2000).

• **Phased Approach:** - This is another implementation strategy in which modules are implemented one at a time or in a group of modules, often in a single location at a time (O’Leary, 2000).

• **Parallel Approach:** - This approach involves running both the old and new systems in Parallel for a given period (Jisc infoNet, 2008).

• **Pilot Approach:** - This is the approach that can be organised in a number of ways, but the underlying principle is that the new system is used within a subset of the organisation and trialled over a period of time (Jisc infoNet, 2008).

• **Legacy System:** - This is the old system in an enterprise or system that preceded the new implemented system or considered for implementation (O’Leary, 2000).
1.8 Thesis Disposition

The figure 1.7 below described the model view of how this thesis is been structured and how different chapters relate to one and other.

**Introduction:** This part of this thesis introduces the broader knowledge toward what is ERP system and explained why the chosen area interested to write about. It also described the problem background and the purpose of this study.

**Method:** This part explained and described the approaches in which this study can be view and how different steps will be carry out for both data collection and analysis. This part precede theoretical frame because there is a need for me to identify and analyse different methods to which this study can be achieved.

**Theoretical Framework:** - This part of this thesis will describe an existing knowledge in the field of ERP system and its implementation approaches with the use of framework and model.

**Empirical Findings:** - This part will describe my own findings from the perspective of both enterprise and consultant firm on their perceptions toward ERP systems implementation strategy dilemma.

**Analysis:** - This part aim to analyse both theoretical framework base on an existing knowledge and empirical findings base on the data collection through questionnaires and interview, in order to be able to accomplish the purpose of this thesis.

**Conclusion:** - This part aim to describe the total outcome of my thesis from the perspective of my empirical findings and analysis.

**Discussion:** - This part of this thesis, include the reflection of what I could have done better and what I have done best in this thesis. Further studies to which researcher may be interested to look at in later future and acknowledgement of those that have contributed directly or indirectly to the success of this thesis.

Figure 1.7 Thesis Disposition
2 Method

This part of this thesis describe approaches in which this study can be view and the operation of how different data is and will be collected throughout the entire processes of this thesis. However, both quantitative and qualitative data are expected to be collected through the means of questionnaires and structure interview.

2.1 Research Approaches

“If a piece of research does not eventually lead to an increase in (Human Kind’s) power, in the broadest sense, then it is not worthwhile” the above statement was Quoted by Robert N. Anthony, concisely state why research should be conducted to increase human kind’s power (Cited by Searcy and Mentzer 2003, p. 130).

In order to conduct research in an academic writing, Saunders, Lewis and Thornhil (2007) in their literature described two ways approaches to which research is conducted. The extent to which one is clear about the theory at the beginning of a research raises essential questions concerning the design of a research project (Saunders et al. 2007). That is; a research can be conduct using deductive approach, in which a theory is developed, deduce hypothesis (or Hypotheses) from the theory and design a research strategy to test that hypothesis (Saunders et al. 2007). On the other hand, inductive approach can also be use, in which data is collected and develop a theory as result of data analysis (Saunders et al., 2007).

![Diagram of Research Approaches](Figure 2.1 Research Approaches; Source: (Seigeroth Lecture Slide, 2008))
Figure 2.1 above described the model view of research approaches in line with Saunders et al. (2007). The induction view from the bottom up shows the collection of empirical data from the real world, categorise those data and induct a new theory from the data analysis. On the other hand, deduction approach is when hypothesis is deduce from an existing theory or a developed idea, collecting empirical data as a result of hypothesis deduction and analyse those data to modify the theory if necessary (Saunders et al. 2007).

Considering the research topic with the purpose of this thesis, the most appropriate approach to be use in order to conduct this research is inductive approach. The reason is that, I aim at going into the real world to conduct an in-depth interview through the means of qualitative method. Enterprise and consultant firms in an organisation are the focus in this thesis, to compare their view concerning the dilemma of choosing the appropriate or the best implementation strategy for ERP system. In this sense, empirical data is collected and the data will be analysed, in which a new theory is aimed to be formulated. The time limit for this thesis might not allow me to just carry out an interview, perhaps, conducting research using induction approach and with the aim of this thesis might need to involve at least three to five people in a group formation.

However, deduction approach is also applicable base on the purpose of this thesis. This can be done by conducting a telephone survey or by preparing a questionnaire through the means of quantitative method. Deductive approach can be achieve by deducing hypothesis from an existing theory, in which empirical data is collected and analyse in order to test that theory and modify it if necessary. However, using deductive approach in this thesis is kind of tricky because there is no theory to be tested, but, the method used in collecting and analysing data for deductive approach will also be use in this thesis. Though, theory is not tested, yet, there is a theoretical background in which this thesis will reflect upon.

To this end, both induction and deduction research approaches are aim to be used in this thesis. Because, it is possible for me to prepare a questionnaires, making a telephone survey and at the same time interview people on their perception, knowledge and experience in choosing implementation strategy for ERP system. Choosing both approaches in this thesis, support the argument base on Saunder et al. (2007) in their literature which emphasised that, both induction and deduction approaches are perfectly possible to be combine within the same piece of research. Experience from previous researchers also shows that it is advantageous to combine both research approaches.

2.1.1 Qualitative Vs Quantitative Research

In regard to the above research approaches, qualitative and quantitative are two ways method in which data can be collected and analyse. Saunders et al. (2007) described these methods as widely used in business and management research to differentiate both data collection technique and data analysis procedure. Therefore, the term quantitative is apparently used as a nearest meaning for any data collection technique (such as questionnaire) or data analysis procedure (such as graphs or statistics) that generates or uses numerical data (Saunders et al., 2007). Qualitative on the other hand is also used as synonym for any data collection technique (such as interview) or data analysis procedure (such as categorising data) that generates or use non-numerical data (Saunders et al., 2007).
Considering the above research approaches, qualitative method of collecting and analysing data is highly applicable to the inductive research approach while quantitative method is application to deductive approach. That is; if a piece of research is to be conducted using inductive approach, then the data collection technique or data analysis procedure should be qualitative method. On the other hand, if the research approach is deductive, quantitative method should be use alternatively. However, both methods can also be used in a piece of research according to the Saunders et al. (2007), which is known as mixed methods. That is; the general term for when both quantitative and qualitative data collection and analysis procedures are used in a research design (Saunders et al., 2007).

Dunning, Williams, Abonyi and Crooks (2008), in their article described that, mixed method was originally an outgrowth of the “triangulation of methods” movement and the main goal of triangulation is to confirm a study’s results by using qualitative and quantitative methods. In response to this, Rocco, Bliss, Gallagher and perez-prado (2003), described five purposes for using mixed methods in a piece of research which include (1) Triangulation (2) Complementarily (3) Development (4) Initiation and (5) Expansion. “To increase a study’s validity, triangulation refers to the classic convergence or corroboration concerning the same phenomenon and it is illustrated by using a qualitative interview and a quantitative questionnaire to assess program participants’ perceptions” (Rocco et al. 2003, Pg 22). Complementarily is the use of a qualitative interview to measure the nature and level of program participants’ perceptions, “as well as influences on these [perceptions], combined with a quantitative questionnaire to measure the nature, level, and perceived ranking within peer group of participants’ [perceptions]” (Rocco et al. 2003 Pg 22). Development uses the “results from one method to help develop or inform the other method” For instance; a quantitative survey of program participants’ vocational needs could be used to identify a purposive sample for more in-depth interviews about those needs, while Initiation uses the intentional analysis of inconsistent qualitative and quantitative findings (Rocco et al. 2003 Pg 23). In order to widen the scope of inquiry, expansion calls for including multiple components to “extend the breadth and range of the study”. For instance; using qualitative methods to assess program processes and quantitative methods to assess program outcomes, research design options become wider as design purposes move from triangulation to expansion (Rocco et al. 2003).

However, using qualitative and quantitative methods in the same piece of research project, as both advantages and disadvantages (Dunning et al., 2008). Some of the advantages of using both methods are to increase a researcher’s confidence in the data and findings and such comparisons may also provide an opportunity to revisit existing theories or better understand the phenomenon under study (Dunning et al. 2008). The disadvantages of “using more than one method of data collection and analysis can increase the cost and time needed to undertake the study and its analyses, also there is a question of whether it is appropriate to examine qualitative and quantitative data for confirmation and comprehension when each method contains specific theoretical underpinnings” (Dunning et al. 2008).

Considering the purpose and the research questions that need to be answer in this thesis, both qualitative and quantitative method of collecting and analysing the data are aim to be used. This is because, this thesis aim at comparing two firms in the context of ERP system, that is; Enterprise and consultant perspective toward ERP system implementation strategies. Consider this, numerical data analysis might be applicable.
Also, the aim of this thesis is not satisfy without getting respondents opinion, knowledge and experience toward implementation strategic dilemma. To this end, my perception goes for the advantages of using mixed methods because I am curious to know enterprise and consultant perspective toward ERP system implementation strategy. However, I will be bear the disadvantages for using mixed methods by limiting how many enterprise and consultant I will interview and that will response to the questionnaires.

2.2 Knowledge Analysis

Defining a problem discussion that generates research questions, I inevitably started to think of the purpose for this thesis which is in line with Saunders et al. (2007) statement. Defining the purpose of a research, one will apparently think of the kind of knowledge or answer the research study will be derived. Saunders et al. (2007) described three types of studies in which research study can be categorise. Exploratory studies according to Saunders et al. (2007), is described as the valuable means of finding out ‘what is happening; seeking new insight; asking questions and to assess phenomena in a new light’. Explanatory studies is the type of studies emphasised on the studying of a situation or a problem in order to explain the relationship between variables while descriptive studies is ‘to portray an accurate profile of persons, events or situations’(Saunders et al., 2007). Descriptive studies according to Saunders et al. (2007) may be an extension of, or a forerunner to a piece of exploratory research or explanatory research. However, it is necessary to have a clear overview of the phenomena on which one wishes to collect data before to the collection of data (Saunders et al., 2007).

Considering the research questions and the purpose of this thesis, exploratory is one of the most applicable knowledge that is aim to be derive from this study. This is because, one of the purposes of this thesis is to examine or explore the highly recommended ERP system implementation strategy in an organisation from the perception of induction approach of this thesis. However, descriptive knowledge’s will also be derive from this study, because, this thesis aim at describing some phenomena in regard to ERP system and its implementation strategies, including pros and cons for each strategy.

2.3 Data Collection

“Findings suggest that the use of only primary data permeates the discipline, despite strong methodological reasons to increase business ethics research with secondary data” (Nicholson & Bennett, 2008, Pg 1). In order to collect data in a research project, such as this thesis, primary and secondary are the two types in which data are classified (Saunders et al., 2007; Nicholson & Bennett, 2008). To start with, secondary data are the data that is collected through another source or an existing material, that is; previous knowledge, such as; literature, research articles, magazines, newspapers and internet while primary data is regarded as your own data collected through interview, survey and questionnaire or by any other personal means for a purpose (Saunders et al., 2007).

In order to collect data, this thesis will focus vividly on both secondary and primary data. As it discussed by Saunders et al. (2007), secondary data include both quantitative and qualitative data and they are used principally in both descriptive and explanatory research. Using secondary data in this thesis, I aim at focusing more on the written materials for the documentary secondary data, as one of the three basic types of
secondary data (Saunders et al., 2007). An example of a written materials for documentary secondary data, that will be use in this thesis include; journals, books and organisation websites, while primary data will be base on data collected through questionnaire and interview.

2.3.1 Literature Review

In order to develop good understanding and to have insight into the previous research according to Saunders et al. (2007), this thesis focus on the three basic categories of literature sources availability which include; (1) Primary (2) Secondary and (3) Tertiary literature sources. Examples of these literature source available that will be used in this thesis include; (i) Reports and Theses (ii) Books, Journals and Dictionaries (iii) Abstract (iv) Encyclopaedias and (v) Bibliographies respectively according to the literature sources availability categories (Saunders et al., 2007).

Different queries and method were used to generate some data and sources of literature that may be applicable and use in this thesis. Therefore, I started the literature review by going to the school library to look for related books that will be crucial for this thesis and to read about what other researchers have wrote about ERP system in general. I tried as much as possible to read different literature and articles in the context of ERP system, strategic approaches and management of information technology and implementation of any information technology (IT) in order to have broader knowledge about how ERP system can also be seen as one of the information technologies software.

However, some of them are closely related to the area of study in this thesis, while some are irrelevant. Some that are relevant to this study are used and which can be seen in the reference list. I also used school library database and searching tools like encyclopaedias and Google on the internet to generate both primary and secondary literature source for this thesis. Some of the terms that were used to query school database and searching tools are as follow;

- About ERP System
- ERP system implementation strategy
- Big bang vs. Phased approaches
- Research approaches
- About deduction and induction
- Qualitative and quantitative research
- Primary and secondary data
- ERP questionnaire
- ERP Implementation approaches
- Article about ERP system implementation strategy

2.3.2 Interview Vs Questionnaire

To collect primary data, many options are available to be use, either through observation by observing organisation toward an event, interview people in an organisation over an event or phenomenon or by using a questionnaire for an organisation to answer some questions regarding an event or phenomenon. Choosing the first option take a longer time to be accomplish according to the Saunders et al.
(2007), perhaps, it is not really applicable for the purpose of this thesis. Interview and questionnaire are the other options that are applicable for the data collection for this thesis. However, there are advantages and disadvantages of using either one of them or using both in a piece of research.

Considering interview, the purpose is to have discussion between two or more people and this can help to gather valid and reliable data that are relevant to the research questions and objectives (Saunders et al., 2007). However, respondents may not have the clue or knowledge about the interview or do not have chance to dedicate for an interview. Saunders et al. (2007) discussed different types of interview that can be used and these types include: Standardised and Non-standardised interviews. Standardised interview used questionnaires base on predetermined and identical set of questions, where researcher read out each question exactly as it is written and record the response on a standard schedule (Saunders et al., 2007). Non-standardised interview is where researcher will have a list of themes and questions to cover and this may vary from one interview to the other (Saunders et al., 2007). Regarding questionnaires, this is when researcher prepares a set of questions for one or more people to answer. This is used to derive people’s knowledge and understanding towards a phenomenon or an event. Saunders et al. (2007) emphasised that, questionnaires can be useful when making a descriptive research. However, using questionnaire is not good for explorative research where there is a need for an open-minded response from respondents (Saunders et al., 2007). There are two basic types of questionnaire also, which include; self administered and interviewer-administered (Saunders et al., 2007). Self administered is the type of questionnaire that is completed by respondents, administered through internet or intranet mediated, by posting or by delivery and collection methods, while Interview-administered is where researcher question respondent through telephone or structured interview as it is with interview options above (Saunders et al., 2007).

To this end, both interview and questionnaires are aim to be used in this thesis. Using interview, Standardised interview type is aim to be use because, I aim at preparing a set of questions that can generate response to the research questions and objectives. I also aim at using recording devise that will record respondent response to each question. Using questionnaires, both self administered and interview administered types of questionnaires are also aim to be used in this thesis. Self administered in this thesis aim at using delivery and collection method. Using this method aim at deliver questionnaires to various enterprise and consultant firms and collect it later after the completion of those questions.

2.3.2.1 Operationalisation

This thesis aim to prepare a set of questionnaires in two perspectives, the first one is concern with the enterprise or organisation that has implemented or in the process of ERP system, while the second perspective is concern with the ERP system consultant. The major aim of carrying out this task in this approach is to have a clear overview of both enterprise and consultant towards ERP implementation strategy. This is because, experience and knowledge from the implementation of ERP system shows that, enterprise and consultant have different opinion and perspective toward a particular ERP system implementation strategies.

In order to get some response to the research questions and to accomplish the purpose of this thesis, a set of questions are aim to be derived, that are both directly and indirectly connect to the research questions and purpose. Some of those questions were formulated
through an online survey that I have participated and deduce those that are closely related to the research question and objective of this thesis. Like I said, some questions give a straight up response, while some are not really connect, but, they are necessary and crucial for the data analysis. These questions aim to be divided into two part, the first part is concern about firm background, such as; firm name, year of established, firm size and the position and working experience of the respondent to the firm. The second part of the question is concern vividly about ERP system and it implementation strategies. The full detail of the questionnaires will be located in the appendix, while some of those questions are as follow:

- Does the firm(s) have implemented or in the process of implementing ERP system?
- What kind of ERP system does the firm(s) implemented?
- What type of Implementation strategy used?
- What factors influence their decision of choosing a particular implementation strategy?
- What implementation strategy will the firm(s) recommend regardless of influencing factors?
- How will the organisation rate each of the available strategy?
- Has the firms experienced controversy in choosing a particular implementation strategy?

2.3.3 Respondent Selection

Respondent selection for both questionnaires and interview for this thesis are aim to be base on my own perception toward people in an organisation that have knowledge and experience about ERP system and its implementation. Therefore, it does not really matter where such people is located. The reason behind this aim is that, I considered ERP system as the same when it comes to its implementation. Though, there are some differences when considering built-in applications and package software involve in each ERP systems.

To select respondent, my aim is to search for different consultant firms around the globe and enterprise firms that have implemented any kind of ERP system or that are in process. Having this thought, I realised that, this is might be a difficult task to contact unknown person. Because, of the difficulties to get response through sending of an emails, therefore, I tried to focus more on consultant and enterprise firms in Sweden. Since some of the firms in Sweden can also be seen as both local and international companies, I concluded that, it should not be too much problem in getting contact with respondent. Considering enterprise firm, my focus is IT department in each firm because, I think they will definitely involve in implementation processes of ERP system. My focus at consultant firm are the people that are involve in implementing ERP system for customers or that have various experience about ERP systems and its implementation. However, one person is only required to be interview and to answer questionnaires as a representative of that particular firm.

Selection of respondent to which the research questions and objective would be accomplished is what Saunders et al. (2007) described as probability sampling. Probability sampling is described as the most commonly associated with survey-based
research strategies in which a researcher have to make inferences from, in order to be able to fulfil research questions and/or objectives from the population (Saunders et al., 2007). Saunders et al. (2007) described different type of sampling techniques in order to obtain a representatives of a sample, this include; (1) Simple random (2) Systematic (3) Stratified random (4) Cluster and (5) Multi-stage. Out of the above techniques, simple random is what I could consider that will be used when selecting sample representative for this thesis. This is chosen because I do not know from the beginning which firms that would answer the questionnaires and which one I would be able to interview. Therefore, data analysis for this thesis will be generalise base on the selected and responded sample. Considering the aim and drawback behind the respondent selection for this thesis, this is what Hultsch, Macdonald, Hunter, Maitland and Dixon (2002), described as a fundamental methodological issues in social and behavioural sciences in terms of in-accessibility and cost for the researcher to some sample representative within a population.

2.3.4 Thesis Assessment

To assess this thesis, reliability and validly of the data collection from the above respondent selection is very essential in order to generalise the conclusion. Will the measure of this thesis yield the same result on another trial? Will the similar observation be reached by other researcher or observer? and will there be transparency in how sense will be made from the collected data? These are the questions Saunders et al. (2007) put up in order to assess reliability of a research. Since the study of proposing solution and exploring the best implementation strategy is quite new in the field of social science, I will consider myself as the first researcher to research in this area. Therefore, I do not have conclusion to whether the measure of this thesis will yield the same result on other trial, also to whether similar observation will be reach by another observer. However, I believe this thesis should be a guide line for how other researcher will carry out their own observation. It is highly hope in the thesis to really make sense of the data collection, transparency of the data is also hope for, since both quantitative and qualitative method of collecting data is aim to be use in this thesis. Therefore, any data collected through the use of the both methods of collecting data in this thesis should be very reliable.

Validity of a research is determines from whether the research truly measures what it was intended to measure or how truthful the research results are (Golafshani, 2003). Collection of both primary and secondary data through the means of qualitative and quantitative methods means that, the validity of this thesis will be truly measurable and the result is highly hoped to be trustworthy. Since, the selected respondent for this thesis might be limited to just Sweden, it can be view that, this thesis could be generalise within an organisation in Sweden. However, since the selected respondent is also aim to be people in an organisation with the knowledge and experience of ERP system and its implementation, this thesis can also be generalise in an organisation in which those respondent have gained their knowledge and experience.

2.3.5 Analysing Data

Since data collection for this thesis is aimed to be both quantitative and qualitative data, analysis of data for this thesis will be base on qualitative and quantitative methods of analysing data. When analysing quantitative data, Saunders et al. (2007) described that, quantitative data can be subdivided into two distinct groups include: categorical and
quantifiable data. Categorical data refers to the value that cannot be measure with the use of numbers or figures, while quantifiable data are those value that is measurable with the use of numbers and statistics (Saunders et al., 2007). However, quantitative data analysis of this thesis will only be base on quantifiable data. Considering qualitative data, Saunders et al. (2007) further described that; qualitative data can be analyse using two approaches, include; deductive-based analytical procedures and inductive-based analytical procedures. Each of these approaches can still be categorise in sub-approaches, include; Pattern matching, explanation building, template analysis, analytical induction and grounded theory respectively according to the approaches (Saunders et al., 2007).

Since some of these sub-approaches are somehow related to one another according to my understanding from Saunders et al. (2007) literature, then I will assume that, one to two for each of the analysis approaches will be somewhat applicable for qualitative data analysis in this thesis.

However, the most important thing for every researcher is that, no matter what kind of approaches is used to analysis both quantitative and qualitative data, the outcome of data analysis should be to answer research questions and fulfil the purpose of the study. Therefore, the analysis structure for this thesis is aim to be categorise according to the research questions of this thesis. The reason for this choice is to simplify the readers of this thesis a way of understanding answers to each of the research questions. This choice also allow me as a researcher to make sure that, I am able to answer each of the research question in accordance with the use of theoretical framework and empirical findings of this thesis.
3 Theoretical Framework

This part of this thesis aims at describing some phenomenon in regard to ERP system and its implementation strategies base on an existing knowledge of previous researchers. Having this part simply means there is an existing knowledge that has been written directly or indirectly to the study direction of this thesis. Some part of theoretical framework for this thesis aim to draw attention toward what ERP system is all about, while some part critically important to achieve the purpose of this thesis. To this end, this part focus more on what literatures and journals says about the issues concerning ERP system in general and its implementation strategies.

3.1 ERP System Life Cycle

As it is discussed in the introduction part of this thesis, many definitions for ERP system can be derived from different authors. Aladwani (2001) in his article, also define ERP system as an integrated set of programs that provides support for core organisational activities such as; (i) Manufacturing and logistics (ii) Finance and accounting (iii) Sales and marketing, and (iv) Human resources. A typical ERP system according to O’ Leary (2000) will be assumed to have the following characteristics;

- Packaged software designed for client server environment, whether traditional or web-based.
- The systems integrate the majority of a business processes.
- ERP systems process a large majority of an organisation’s transactions.
- ERP systems use an enterprise-wide database that typically stores each piece of data once.
- The systems allow access to the data in real time.
- The system support for multiple currencies and languages (critically for multinational companies)

Figure 3.1 ERP System Life Cycle; Source: (Inspired from O’Leary E.D 2000)
Figure 3.1 above describe the model view of ERP system life cycle from the point where organisation are in the state of making decision whether to go for ERP solution or not, follow by choosing a particular type of ERP system, such as; SAP, Oracle and Microsoft dynamics AX. In designing face, this is where “reengineering policy” has to be made, whether to make decision in modifying existing system or reengineer business processes (or both). After designing face, the next stage is to implement ERP system. This is where the purpose of this thesis lies upon, implementation stage in ERP system life cycle is where the system has to be implemented in order to yield specific outcome of the organisation requirements. In order to implement ERP systems, several implementation strategies are available to be used and some of the strategies include; (1) Phased implementation strategy (2) Parallel implementation strategy (3) Big bang implementation strategy and (4) Pilot implementation strategy. Going live is when the system implementation has been accomplished and ready for the firm usage or to perform what is expected from the system. The training stage is an ongoing activities and this is concern in educating the users, in order for them to have knowledge about the usage and functionality of the new system or implemented system (O’Leary, 2000).

### 3.2 ERP System Implementation strategies

This part of the theoretical framework for this thesis, aim at describing the available implementation strategies in which organisation can adopt for implementing their ERP systems. Description of each implementation strategy is vividly base on an existing knowledge of how they can be view and examine in reality.

#### 3.2.1 Big Bang Implementation Strategy

Big bang implementation strategy is regarded as “all or nothing” approach. This is where an entire suite of ERP applications is implemented at all locations at the same time (O’Leary, 2000).

Figure 3.2.1 Big Bang Model View; Source: (Jisc InfoNet, 2008)

Considering figure 3.2.1 above as model view of Big bang implementation strategy, the system is changing over from legacy system “old system” to the new system at a specific point in time (Jisc infoNet, 2008). Using this strategy, the system goes from
being a test version to being the actual system used to capture transactions in only matter of days (O’Leary, 2000). This approach usually involve three steps according to O’Leary (2000), in the first step, all relevant processes and artefact are chosen (or developed) and implemented in the software virtually. All modules are tested individually and for their interfaces with other modules in the second step, while the third step involve the old system to be turn off and turn on the new system as it shown in the diagram above. However, choosing this strategy in implementing ERP systems has both advantages and disadvantages according to O’Leary (2000) elaboration in the table below;

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Big bang, there is limited need to maintain and revise legacy software, since little time or resources are needed.</td>
<td>High risk in total implementation failure. One malfunction module in a Big bang can cause entire failure.</td>
</tr>
<tr>
<td>Using Big bang lower failure risk in terms of management involvement to the ERP system project.</td>
<td>No going back to the legacy system after switching to the new system.</td>
</tr>
<tr>
<td>There is functional linkage since all modules are implemented at once throughout the organisation.</td>
<td>Personnel have fewer hands-on opportunities to gain knowledge from implementation processes.</td>
</tr>
<tr>
<td>Using Big bang, implementation time is very short in implementing ERP system.</td>
<td>Project manager cannot show that the system works until the entire system is installed.</td>
</tr>
</tbody>
</table>

3.2.2 Parallel Implementation Strategy

O’Leary (2000) described this strategy as one of the implementation approaches alternative. This strategy involves running both old and new system in Parallel for a given period (Jisc infoNet, 2008).

Figure 3.2.2 Parallel Model View; Source: (Jisc InfoNet, 2008)
Considering figure 3.2.2 above, this type of implementation strategy can be used regardless of how many ERP modules are implemented (O’Leary, 2000). The aim behind this strategy is to ensure confident over the new system, also, to compare both old and new system functionality (O’Leary, 2000). However, this strategy also has both advantages and disadvantages as it is discussed by O’Leary (2000) in the table below;

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old system provides a basis of comparison to see if the new system work properly or as expected.</td>
<td>It requires roughly double the number of computing and human resources, a substantial drain for what can be an extended time period.</td>
</tr>
<tr>
<td>Old system provides a backup in case the new system does not provide positive outcome.</td>
<td>Continue existence of the old system may threaten the potential life of the new system.</td>
</tr>
<tr>
<td>Low risk in total implementation failure in case the new system fails to produce positive result.</td>
<td>May be expensive to run both systems at the same time.</td>
</tr>
</tbody>
</table>

3.2.3 Phased Implementation Strategy

“Phased implementation approach is one where modules are implemented one at a time or in a group of modules, often in a single location at time” (O’Leary, 2000, Pg 152).

Figure 3.2.3 Phased Model View; Source: (Jisc InfoNet, 2008)

Figure 3.2.3 above also describes the model view of the Phased implementation strategy. This is a sequential implementation that consists of designing, planning, testing and installing different modules (O’Leary, 2000). This approach requires that, substantial attention and maintenance need to be given to legacy systems in order- at each phase- to facilitate integration with the new ERP system (O’Leary, 2000). “This
approach usually requires some self contained business processes on the new system before all the remaining processes go-live at later date when the system has been proven and users are confident in its abilities and performance” (Jisc infoNet, 2008). To every possibility, there might also be impossibilities. Therefore, this approach also lies on both advantages and disadvantages as O’Leary (2000) discussed.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>This approach is regarded as lower risk in total implementation failure compare to Big bang that “all or nothing” approaches.</td>
<td>This approach lies on high risk in loosing management involvement before the project is accomplished.</td>
</tr>
<tr>
<td>This approach gives personnel of the company opportunity to gain knowledge at each of implementation phase.</td>
<td>Phased implementation approach lies on a longer time duration to accomplish the total implementation of the system.</td>
</tr>
<tr>
<td>One Big advantage of this approach is the legacy system fallback; this allows an organisation a greater opportunity to ensure that a module works before the alternative is turn off. Thus; provide a back-up.</td>
<td>The need to maintain and revise legacy system is very high compare to Big bang that is limited.</td>
</tr>
<tr>
<td>Here, project manager can demonstrate the working system of a completed phase.</td>
<td>Using this approach is very expensive to accomplish the total implementation.</td>
</tr>
</tbody>
</table>

### 3.2.4 Pilot Implementation Strategy

This can also be seen as an alternative to the basics implementation strategies of ERP system. The principle behind this approach is that, the new system is used within a subset of the organisation and trialled over a period of time (Jisc infoNet, 2008).

![Figure 3.2.4 Pilot Model View; Source: (Jisc InfoNet, 2008)](image_url)
The above figure 3.2.4 is the Pilot model view of ERP system implementation strategy. This approach as it is shown in the above figure complement Phased implementation strategy. The only different here is that, the implementation process can be accomplished by Piloting two or more departments together. This also has its own advantages and disadvantages as follow;

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project manager can also demonstrate the working system of the accomplished system in a particular department.</td>
<td>This is also still expensive to accomplish the total implementation.</td>
</tr>
<tr>
<td>Reduce the total time of implementation duration of the system.</td>
<td>The need to maintain and revise legacy system is still high.</td>
</tr>
<tr>
<td>Reduce the loosing of management involvement into the entire project.</td>
<td></td>
</tr>
<tr>
<td>Lower risk in total implementation failure.</td>
<td></td>
</tr>
</tbody>
</table>

3.3 Influencing Factors of Implementation Strategy Decision

“A cost-benefit analysis and adjusted for risk concerns should drive the choice of implementation methodology, however, it is difficult to measure risk and benefit” (O’Leary, 2000, Pg 156). Many factors can be considered to which the choice of a particular implementation strategy can be influenced. O’Leary (2000) in his literature described some factors that can influence the decision of choosing a particular strategy. Below are the factors described;

3.3.1 Organisation Size and Complexity

Organisation size and complexity are really a concern issue to which the choice of appropriate implementation strategy depends upon (O’Leary, 2000). Considering the size, an organisation size varies, also depends on how different organisation defines their own. However, organisation size can be describe in terms of; (i) Number of customer (ii) Total asset (iii) Total revenue (iv) Size of the product (v) Geography region and (vi) Number of employees (O’Leary, 2000). The above criteria defined the small, medium and larger size in an organisation. Considering the complexity, this can also be drives from a number of sources which includes; organisation product and customer (O’Leary, 2000). O’Leary (2000) described that, organisation with more products or customer are usually more complex compare to the organisation with little or less products and customer. Small or less complex firms tend to have less variation across products and customers, as result, implementation of the resulting design is not as difficult compare to Large or more complex firm with more variation across products and customers (O’Leary, 2000). To this end, O’Leary (2000) emphasised that, if the size of an organisation is small and less complex, Big bang strategy is appropriate and there is likely to be less risk of failure. On the other hand, Phased strategy is more appropriate in a large or more complex organisation.
3.3.2 Organisation Hierarchy and Control

O’Leary (2000) described organisation hierarchy and control as another factor that influence the choice of implementation methodology. The literature described organisation hierarchy and control in terms of; (i) Flat organisation and loose controls and (ii) Extensive hierarchy and tight controls. Flat organisation and loose control can survive the use of Big bang strategy, while organisation with extensive hierarchy and tightly control should consider Phased strategy (O’Leary, 2000). The literature emphasised that, if a firm is not tightly controlled and where organisation is flat, it is very difficult to sustain commitment from the management if Phased strategy is adopted (O’Leary, 2000).

3.3.3 Number of Modules

Number of modules to which organisation is aim to implement from a specific or chosen ERP system is another factors that influence the choice of implementation methodology (O’Leary, 2000). Organisation can choose to implement different modules that meet their needs, since ERP systems are modular (O’Leary, 2000). Coordination and interaction of modules are an important aspect to be considered when implementing ERP system. As the number of modules increases, the amount of resources required increased with each module, so as it is increasingly difficult to coordinate all the modules interaction (O’Leary, 2000). The literature also emphasised that, some modules fit perfectly for the organisation needs while some may need modification. To this end, if few module are aim to be implemented and that require little modification, Big bang could be more appropriate, but, if organisation aim to implement many modules and that require much modification, Phased strategy could be more appropriate (O’Leary, 2000).

3.4 Johnson and Scholes Strategic Model

![Figure 3.4 Johnson and Scholes Strategic Model Source: (Ward & Peppard, 2002)](image-url)
Figure 3.4 above described the emergent strategy in an organisation. The model proposed that, “While, at any one time, an organisation can use all its knowledge and experience to devise its intended strategy and plan for its implementation, along the line, things might not turn out as predicted. In the process, unexpected constraint or new option might occur, where changes will be enforced by the actions of others. Enforcing actions, new opportunity might come up in which that could not have been predicted and some parts of the strategy might fail to be implemented successfully. Having combination of processes, organisation might be able to craft its strategy, such that a different but realisable strategy can emerge. However, organisation must also be aware that, when aspects of the original strategy become unrealisable, it must stop pursuing them. However, the literature emphasised that, “having a strategic management process that can adapt in this way of changing circumstances is not a substitute for initial strategic analysis and planning, it is just a way of making it work. This approach also enables the talent of the people in an organisation to become in its strategic development, rather than merely used to implement a strategy devised by a small group of senior management” (Ward & Peppard, 2002, Pg 85-86).

### 3.5 Critical Success Factors (CSF) Framework

<table>
<thead>
<tr>
<th>Strategic</th>
<th>Tactical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy Systems</td>
<td>Client Consultation</td>
</tr>
<tr>
<td>Business Vision</td>
<td>Personnel</td>
</tr>
<tr>
<td>ERP Strategy</td>
<td>BPC &amp; Software configuration</td>
</tr>
<tr>
<td>Top Management Support</td>
<td>Client Acceptance</td>
</tr>
<tr>
<td>Project Schedule and Plan</td>
<td>Monitoring and Feedback</td>
</tr>
</tbody>
</table>

Figure 3.5 Critical Success Factors Model With strategic and Tactical factors; Sources :( Holland & Light, 1999)

“ERP implementation can reap colossal benefits for successful companies—or it can be disastrous for organisations that fail to manage the implementation process” (Holland & Light, 1999, Pg 31)

The above figure 3.5 describes the critical success factors (CSF) framework to which organisation can adopt in order to have a successful implementation of ERP system. The model described two factors that is needed to be considered during implementation process of ERP system, includes; (1) Strategic factors and (2) Tactical factors (Holland and Light, 1999). This framework was developed by Holland and Light (1999) through their experience and reviewed of different literatures and it is emphasised in their article that, this model have been applied to general project management problems, manufacturing system implementation and reengineering. “This approach is particularly
suitable for the analysis of ERP projects because it includes the influence of tactical factors, such as technical software configuration and project management variables, together with broader strategic influences, such as the overall implementation strategy” (Holland & Light, 1999, Pg 31). Therefore, this framework aimed to guide organisations in the development of an implementation strategy and will guide them to make decision by identifying the role and influence (Holland & Light, 1999).

3.5.1 Strategic Vs Tactical Factors

Holland and Light (1999) in their article based their initial selection of both strategic and tactical factors on slevin and pinto list and they added legacy systems and ERP strategy in the strategic factors, while business process change (BPC) and software configuration to the tactical factors.

Considering strategic factors from the above framework, “legacy system sum up the existing business processes, organisation structure, culture and information technology, therefore, they cannot be controlled by a company in the same way as the other variables in the model” (Holland & Light, 1999, Pg 31). Legacy system determine the amount of organisation change that will be required for successful ERP system implementation and it will also dictate the starting point for the implementation (Holland & Light, 1999). Evaluating the existing legacy system, organisation should be able to define the nature and scale problems that might be likely to meet during implementation (Holland & Light, 1999). Business vision is described as the clarification of the business model behind the implementation of any project, while project schedules and plans is defined as the formal definition of the project in terms of milestone, critical paths and boundaries by slevin and pinto (Holland & Light, 1999). However, top management support can be described as how senior management plays an important role in leading the company and its employees, and their role is very crucial in any project success or failure (Alice Hsu).

Regarding ERP strategy from the strategic factors in the above framework, it might be appropriate for an organisation to implement a skeleton version of a software package initially, then gradually add extra functionality once the systems is in operation and the user can be familiar with the system (Holland & Light, 1999). The article emphasised that, there are different approaches in linking legacy system, ranging from implementing one ERP module at a time and interfacing it with the legacy system to implement an entire, customised system. Furthermore, single-module approach can be done in Parallel with the existing system or on its own (Holland & Light, 1999). It is also important to decide whether to carry out custom development on the packaged software and how this is going to affect the upgrading of the system in the later future, the amount of customisation will now depends on whether an organisation is willing to adapt their business to fit the software or adapt software to fit their business needs (Holland & Light, 1999). Holland & Light (1999) emphasised in their article and I cite! “Most implementation models ignore legacy systems (by assuming a Greenfield site or by adopting a simplistic planning approach that ignore the existing situation) and therefore underestimate the importance of the existing situation on the choice of ERP strategy and the implementation as a whole” (Holland & Light, 1999, Pg 32).

Considering Tactical factors, the addition of business process change (BPC) and software configuration recognise the critical role of aligning business processes to ERP software during implementation (Holland & Light, 1999). It is essential for an
organisation to understand their current business structure and business processes associated with their existing IT systems, and then relate this to the business processes available within the ERP system (Holland & Light, 1999). The article emphasised that, ERP software configuration is different from building a customised system, because the focus of the development effort shift from systems analysis and design to software configuration. However, most of the system analysis and design effort has already been captured within the software, consequently, many of the systems development effort focuses on enabling the required functionality embedded within the ERP system’s business model (Holland & Light, 1999).

3.6 Perception Toward Theoretical Framework Structure

To start with, as important as organisation considered the choice of choosing a particular strategy for implementing ERP systems as a critical problem, it is quite unfortunate that little or no research have been carryout toward this direction of how organisation can choose an appropriate strategy that will lies on high risk of ERP systems implementation success. Therefore, this thesis tries as much as possible to manage the available materials to construct the frame of reference at this part. The main literature used on this part and throughout of this thesis is the book from O’Leary as it is shown in the reference list. However, other literatures, journals and organisation website are also in used in this part of this part and for the entire chapters of this thesis. I used O’Leary literature because I have trust on what information the book provides in regard to ERP system and its life cycle in general. Why is that? the information and knowledge provide from this book is based on a real experience from ERP system adoption and its implementation from different companies, such as: (i) Geneva steel case study (ii) Quantum’s virtual data warehouse and (iii) Microsoft’s SAP implementation case study. Therefore, I considered any data collected from his literature as very vital and agree with his conclusion over every single word and sentences used in this thesis.

Other references used on the theoretical framework for this thesis include; organisation website (Jisc InfoNet), Johnson and Scholes strategic model from Ward and Peppard (2002) Literature and critical success factors framework by Holland and Light (1999). Jisc infoNet organisation website that is used in this thesis and precisely the theoretical framework part correspond with O’Leary emphasis concerning ERP system and its implementation strategies. In addition, this website provides the model view in which each of the available implementation strategy can be view in real life. To this end, I considered information provided from this site and precisely those one that is used in this thesis as reality of how each of these strategies can be view, including the advantages and disadvantages of each of these strategy.

I would not say I totally agree with Johnson and Scholes strategic model used in the theoretical framework of this thesis in regard to their analysis of emergent strategy through planning and implementation, because, it is base on rational and generalised thinking. However, this rational and generalised thinking can also be applicable in how organisation can choose a particular implementation strategy. Critical success factors framework on the hand is really applicable on how organisation can choose the best strategy. All components involve in both strategic and tactical factors in the framework are somewhat reality of what organisation need to consider in choosing a particular strategy for a successful ERP system implementation.
4 Empirical Findings

This part of this thesis also aims to describe the empirical findings from different enterprise firms and consultant firms. Having this part also mean that, it is essential for me to carry out my own findings to clarify my curiosity toward implementation strategy dilemma. Therefore, empirical data for this thesis aim to be collected through both questionnaires and structured interview.

4.1 Enterprise Perspective about Implementation Strategies

This part of this thesis describes the findings and responses from different enterprise firms that have implemented or that are in the process of implementing ERP system. This part is aim to clarify and have overview of enterprise perspective towards ERP implementation strategies.

![Figure 4.1 Chart Strategies from Enterprise Perspective](image)

The above chart represent the response rate for recommending each of the available strategy. The aim for this chart is to categorise enterprise perspective and opinion toward each of these strategies, so as to generalise their overall perception.

4.1.1 Kongsberg Automotive

“Kongsberg Automotive is a global provider of engineering, design and manufacture for seat comfort, driver and motion control systems, fluid assemblies and industrial driver interface products. Their product line includes systems for seat comfort, clutch actuation, cable actuation, gear shifters, transmission control systems, stabilizing rods, couplings, electronic engine controls, speciality hoses, tubes and fittings” (Kongsbergautomotive.com/ourbusiness, 2007). This company was founded in the year 1947 and it is categorised as larger size firm with the size of the customer, total asset and revenue, size of the product, geographical regions and number of employees according to the interview with Per Högberg. The company implemented SAP ERP system between 1998/1999, where business strategy was the motivation for this implementation.
As the Ex-CIO, IT manager and project manager in a global company, call “Kongsberg Automotive”, Högberg in an interview with him totally agree that, choosing a particular implementation strategy contribute and have major impact on the success or failure of ERP system project. In an interview with him, Big bang strategy was used during the implementation of SAP ERP system in their company. He emphasized that, this strategy was used simply because it was the available strategy during their ERP system project and there are no factors to be considered. However, he disclosed that the project was first fail with the entire scope of the project and due to the complexity of their firm. Implementing SAP ERP system in their firm, the basic modules of the system were implemented, such as; financial, human resources, sale and marketing, production and materials management and others.

In further discussion, he emphasized that, the size of the organization is very important to be considered when it comes to the choice of a particular implementation strategy. He explain that, organisation can be large in size and less complex, on the other hand, organization can be small in size and can be more complex. However, from his experience and knowledge, he will recommend Phased strategy as the best alternative to implement ERP system because, this strategy provide a clear scope of how entire project will be handle, also lies on the high risk of the implementation success. He also emphasized that, choosing Big bang strategy, people think it is so easy by just once and for all implementation, but, it is more complex than how people think. He also emphasized that, organization are now trying to avoid Big bang as much as they can.

4.1.2  Fagerhult Belysning AB

“Fagerhult develop, manufacture and market professional lighting systems for the public environments as well as offering a range of decorative lighting. Their activities are conducted with constant focus on design, function, flexibility and energy-saving solutions” (fagerhultgroup.com/about-fagerhult, 2007) The company was founded in the year 1945 and it is categorised as a medium size firm with the total revenue and number of employees according to the interview with Kenneth Hellman. The company are in the process of implementing Microsoft dynamics AX ERP system, where technical functionality and business strategy was the motivation for the ERP system project.

Responding to each question in an interview, Hellman also agree with the fact that choosing a particular implementation strategy contribute and have impact on the success
or failure of the ERP system project. In an interview with him, their company are still in the process of implementing Microsoft dynamics AX ERP system, where sale and marketing module are aim to be implemented. So far, implementation has already been carryout in two different countries, including Sweden and Poland, still remaining eight countries left in which this company has location. Hellman emphasised his opinion and perception towards functionality and service provided from the ERP system and scope that the entire project will be successful. However, the project might not be as successful in terms of budget and time schedule of the entire project because of some gap between budget and the implementation period.

Hellman emphasised that, Phased was the original strategy, and Pilot is used as a support strategy for the implementation processes. These strategies were chosen because, they wanted to have total control of the entire implementation, also, chosen these strategies, they learn and gain more knowledge by implementing phase by phase. Asking Hellman of the functional and organisation parameters that influence their choice of these strategies, he emphasised that, nature of integration, number of interfaces with other applications and the entire scope of the business are the functional parameters they considered. Regarding organisation parameters, he emphasised on many by giving priorities to each of them as follow; (1) Size of the organisation, complexity of the organisation and degree of the internationalisation, (2) Total number of users and resources available (3) level of commitment from the senior management and need to re-design/standardise business processes are the organisation parameters they also considered before deciding on their chosen strategy. However, regardless of influencing factors, Hellman recommended Phased and Pilot strategy as the best alternative to implement ERP system, say no to Big bang, that it should not be used at all. Figure 4.1 above shows his rating among other strategies.

4.1.3 Holmgrens Bil AB

Holmgrens bil AB is a car dealer located in most of the Småland area of Sweden, including Gislaved, Vetlanda, Vimmerby, Varnamo and Jonkoping. The company is selling varieties of cars including Peugeot, Saab, Lexus, Hyundai, Opel, Chevrolet and Toyota. Holmgrens bil AB was founded in the year 1960, and it is categorised as a larger size company with the total revenue and number of employees. The company have implemented varieties of ERP system, first time in the year 1996 and the second time in the year 2003. Where business strategy and technical functionality with their car manufacturing company was the motivation for their ERP system adoption.

<table>
<thead>
<tr>
<th>Respondent 3</th>
<th>Tomas Nors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>IT Manager</td>
</tr>
<tr>
<td>Place and Date</td>
<td>Jonkoping, 18-05-2009</td>
</tr>
</tbody>
</table>

In an interview with Nors, he emphasised that, three different ERP systems were implemented in their company, include; Jeeves, Dracar and Kobra. The reason for these varieties of ERP system was due to their car suppliers. For instance, their car suppliers required them to used similar system as theirs, to support day to day transaction and the flow of data sharing between car manufacturers and holmgrens as a dealer. However, Big bang, Phased and some Piloting were used in this company for their implementation
of ERP system. During the implementation of Dracar in the year 1996, Big bang approach was used, this is because, it was the only option then. During Kobra implementation, Phased and some Piloting were adopted. Considering the factors that influence their decision on the chosen strategies, Nors emphasised that, nature of the requirement, nature of the integration and level of customisation are the functional parameters, while complexity of the organisation, total number of users and resources available are the organisation parameters.

In overall, ERP system implementations in this company were seen as successful based on the company requirements. However, Nors recommended Big bang as the best alternative, if organisation can manage the drawbacks for using this approach, especially, the training issue after going live. His rating to other available strategies is shown in the above figure 4.1.

### 4.1.4 Relative Experience from Different Companies

<table>
<thead>
<tr>
<th>Respondent 4</th>
<th>Mats-Åke Hugoson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>Strategic Business Consultant</td>
</tr>
<tr>
<td>Place and Date</td>
<td>Jonkoping, 13-05-2009</td>
</tr>
</tbody>
</table>

Hugoson, strategic business consultant that have worked with many and different firm such as; manufacturing, logistics, military, healthcare and many more companies in both medium and large size of the organisation also confirmed from his experience and knowledge about ERP system implementation that, decision on an implementation strategy is really an issue in an organisation. He shared his own view with me in respect to enterprise perspective when it come to chosen a particular strategy. Hugson embarks on the topic of this thesis and disclosed that, perception on a particular implementation strategy goes beyond just enterprise and consultant but, also ERP system vendors. He explain that, enterprise perception is to implement ERP system that will meet their organisation need and be successful, also, consultant perception is to implement the system using strategy of their choice while vendor perception is to sell ERP system without consider how the implementation processes will be achieved. Back to the consultant perception toward implementation strategies, Hugoson said and I cote! “I think many consultant firm considered Big bang as a good affair because of one time implementation so as to make their money once and for all, not considering enterprise point view towards progress and success”. He said, that is why organisation should have total control of implementation process and decide on which of the strategies is needed to be considered. From the interview, he used the word step by step to mean Phased approach as the best alternative to which organisation can rely on in order to achieve success factors from the implementation of ERP system project. However, in rating other strategies among others, Hugoson (Email response, 20-05-2009) described that, these strategies are somewhat related to one anoter, however, Big bang strategy should be avoided as much as possible in an organisation, emphasised that, this is really bad alternative to choose for a big common system as an example and it should be rated zero.

In his further explanation, he described Parallel approach as an alternative as soon as Big bang is not chosen. However, it should also be used even if Big bang is chosen. He
described Phased approach as the best options if big common system is chosen in an organisation, emphasised that, timing issue should be closely related to changes in the business processes.

Regarding Pilot approach, he emphasised that, this strategy could be an alternative for Big bang and perhaps a support for Phased strategy. In his final discussion, Hugoson (Email response, 20-05-2009) emphasised in his own opinion that, “the most suitable strategy is to create a structure of interacting systems with high degree of independence which is aligned with (reflects) of the business structure, then each of the business area should implement their system directly coordinated with the development of their business process. Using this approach, it is possible to use ERP systems, either through delineation of independent (but interacting) subsystems from the same vendor, or through use of subsystems from different vendors (the best of breed alternative)”. Considering this structure approach, it is best described as step by step (Phased approach) according to his explanation.

4.2 Consultant Perspective about Implementation Strategies

This part also aims at describing consultant perspective toward ERP system implementation strategies. Having this part also mean to clarify and have overview of consultant opinion and experience in choosing a particular strategy.

![Figure 4.2 Rating Chart Strategies from Consultant Perspective](image)

The above chart also represent the rating response from consultant perception toward each of the available strategies. This chart also aim at presenting consultant opinion toward each strategy, so as to generalise and draw conclusion over their own perception too.

4.2.1 Collaborative Business AB

Collaborative business AB is an IT consultant firm located in mullsjö, Sweden. The company is owned by Per Högberg after his twenty-two years experience in enterprise firm and ERP system implementation. The company implement small portion of ERP system for various customer particular in Sweden, where Phased and Pilot are the focus strategies that the company use for their customers. The company was founded in the
year 2007 and it is categorised as a small size company with the number of employees according to the interview with Per Högberg.

<table>
<thead>
<tr>
<th>Respondent 5</th>
<th>Per Högberg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>CIO</td>
</tr>
<tr>
<td>Place and Date</td>
<td>Jonkoping, 07-05-2009</td>
</tr>
</tbody>
</table>

As it is shown in the table above, Per Högberg is the chief information officer (CIO) of C-business AB. He disclosed his total experience and knowledge with me in reference to the choice of choosing a particular implementation strategy. As it is discussed earlier, the company implement ERP system basically SAP, for various customer in Sweden by using Phased and Pilot implementation strategies. So far, he confirmed that his company has been successful in implementing ERP system for their customers. When considering the functional and organisation parameter to be considered for choosing a specific strategy, Högberg emphasised that, nature of the customer requirement and size of the organisation are very important things to be considered. However, he recommends Phased and Pilot strategies as the best alternative to implement ERP system, while his rating to other strategies is shown in the figure 4.2 above.

4.2.2 Sogeti Sverige AB

Sogeti sverige AB is another IT consultancy firm that also responded to the questionnaires when collecting data. The company was founded in the year 2003 in Sweden and presently have branches in different countries including, Belgium, France, Spain, UK and united state. The company is categorised as large size company with the number of employees, total revenue and size of the geographical regions. The company also implement Microsoft dynamics AX ERP system for various customers, where Big bang and Phased are the implementation strategies used for their customers.

<table>
<thead>
<tr>
<th>Respondent 6</th>
<th>Johan Hagström</th>
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</thead>
<tbody>
<tr>
<td>Position</td>
<td>Consultant</td>
</tr>
<tr>
<td>Place and Date</td>
<td>08-05-2009</td>
</tr>
</tbody>
</table>

Hagström was the consultant that responded to the questionnaires from Sogeti Sverige AB. From his answer to the questionnaire, their company implement Microsoft dynamics AX ERP system for various customers, where Phased and Big bang are the focus implementation approaches used. So far from his response, their company has been successful in implementing ERP system for their customers. In his responses to what factors influence their choice of a particular strategy for a specific customer, he answered that, nature of the customers in an organisation are the functional parameters while size and complexity of the organisation and degree of the internationalisation are the organisation parameters.

In responded to which strategies that could be highly recommended, he answered “It’s all depends on the customer”. To clarify this answer, I sent an email to him to explain
his view toward this response and to rate their focus strategies among other, he replied describing where different strategy is applicable to different customers. However, he emphasised that, “Large multisite and global firms with many different ERP's in use need Phased approach more than a smaller single-site firm with only one ERP need”. Therefore, it is very hard to derive conclusion from his response. He also emphasised that, he cannot rate all these strategies in general because “it still depend on the customer”.

4.2.3 SYSteam Datakonsult i Småland AB

Systeam consultant firm is located in Sweden and was founded in the year 1984. The company is seen as both business and IT consultant, categorised as large size firm with total revenue and number of employees according to the questionnaire response from Stefan Ramsö the CEO of the company. The company also implement Jeeves ERP system for various customers, where Phased is the focus strategy that they used.

<table>
<thead>
<tr>
<th>Respondent 7</th>
<th>Stefan Ramsö</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>CEO</td>
</tr>
<tr>
<td>Place and Time</td>
<td>Huskvarna, 20-05-2009</td>
</tr>
</tbody>
</table>

In his response to the questionnaire, Ramsö emphasised that, the company has been successful in implementing ERP system for their customers. Considering the factors that influence the decision of choosing a particular strategy, he indicated that, nature of integration and number of interface with other applications are the functional parameters while need to re-design/standardised business processes is the organisation parameter that influence their decision. His response also indicated that choosing a particular strategy is an issue in an organisation and they sometimes experience controversy in choosing a particular strategy with their customers. In recommending a particular strategy, he also responded that, “it depends on customer needs” however, he rated all the available strategies as it is shown in the figure 4.2.

4.3 Summary For Empirical Findings

Empirical findings for this thesis shows that, both enterprise and consultant firms have different opinion toward ERP system implementation strategies. However, it can also be seen that, each firm also have different opinion toward each of the implementation strategy.

In a response to the factors that influence each firms decision toward the choice of a specific implementation strategy, table below indicate each respondent influencing factors;

<table>
<thead>
<tr>
<th>Organisation Parameters</th>
<th>Functional Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size and Complexity</td>
<td>Number of requirements</td>
</tr>
<tr>
<td>Degree of internationalization</td>
<td>Nature of Integration</td>
</tr>
<tr>
<td>Total number of users</td>
<td>Number of interfaces with other</td>
</tr>
<tr>
<td>Applications</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>Availability of resources</td>
<td>Level of customization</td>
</tr>
<tr>
<td>Top management commitment</td>
<td>Scope of the business</td>
</tr>
<tr>
<td>Need to re-design/standardized business processes</td>
<td></td>
</tr>
</tbody>
</table>

The findings suggest that, all the above influencing factors are due essential for an organisation to be considered when making choice for a particular implementation strategy. My findings also suggest that, the most suitable strategy is to create a structure of interacting systems with high degree of independence which is aligned with (reflects) of the business structure, then each of the business area should implement their system directly coordinated with the development of their business process. Another suggestion is that, each firm should first of all think of having total control of their implementation processes, so as to avoid imposing implementation strategy and to make the best choice of the strategy that fit business requirements.

![Figure 4.3 Rating Chart Strategies from Both Enterprise and Consultant](chart.png)

Phased implementation strategy is considered as the best or a very recommendable strategy, to which organisation can adopt for their ERP systems implementation from both enterprise and consultant perspective. The chart above indicates each respondent opinion towards each of the available strategy.
5 Analysis

This part of this thesis aim to analyse both theoretical framework and empirical findings in order to be able to draw conclusion for the purpose of this study. Analysing data collected, Each respondent to the questionnaires and interview for this thesis work will be analysis in accordance with theoretical framework.

5.1 Influencing factors to the Choice of Implementation Strategies

When considering the factors that influence the choice of ERP system implementation strategies, my findings discovered that, many things are involved. From the theoretical point of view of this thesis, O’Leary (2000) in his literature discussed (i) Organisation Size and Complexity (ii) Organisation Hierarchy and Control and (iii) Number of modules in which organisation are willing to implement. However, my findings discovered that, influencing factors can be view in two perspectives including; (1) Organisation parameters and (2) Functional Parameters.

Considering organisation parameters, O’Leary (2000) discussed size and complexity, also, hierarchy and control as the factors that is due necessary to be considered when making the choice of a particular strategy. In response to O’Leary (2000), Högb erg the CIO of the collaborative business AB and the ex-CIO, IT manager of Kongsberg automotive company, in an interview with him described organisation size as the number one priority to be considered when making the choice of implementation strategies. My understanding from O’Leary (2000) point of view is that, larger size of the organisation the more complex they are. This is different from Högb erg point of view in which I also make sense of it. Högb erg described that, organisation can be very large in size and can be less in complexity. On the other hand, organisation can be very small, yet, be more complex. In another interview with Hellman the CIO of the Fagerhult Belysning AB, he also described Organisation size, complexity and degree of internationalisation as the number one priority in which they considered when they are making choice of their chosen strategies. They also considered number of users and resources available, level of commitment from their senior management and the need to r-design/standardise business processes as part of the factors that influence their decision. In another interview with Nors the IT manager of Holmgrens Bil AB, he also emphasised complexity, total number of users and resources availability as the organisation parameters in which they considered when making choice of their strategies. In a questionnaire response from Hagström a consultant from Sogeti Sverige AB and Ramsö the CEO of SYSteam consultant firm, they also emphasised influencing factors that need to be considered or what I would agree that they considered in their choice of a particular strategy for their customers. Hagström indicated size, complexity and degree of internationalisation as their consideration while Ramsö indicated need to re-design/standardised business processes are the influencing factors that they considered.

Considering functional parameters, in an interview with Högb erg, he described nature of their customer requirements as very important parameter that they considered when making choice of an implementation strategies. Hagström in his response wrote “the nature of customer in an organisation”, while Ramsö indicated nature of the integration and the number of interface as the functional parameters they considered. In an enterprise point of view, Hellman described nature of integration, number of interface with other application and the entire scope of the business, while Nors emphasised,
nature of the requirement, nature of the integration and level of customisation as the functional parameters that they considered in making choice of their chosen strategies. Considering theoretical point of view, O’Leary (2000) emphasised number of modules as the only functional parameters that organisation need to be considered in making choice of a particular strategy. Meanwhile, none of the respondents from the empirical point of view of this thesis considered number of modules as important. However, it was somewhat mentioned and considered as necessity during the interviewed.

In addition to the theoretical and empirical point of view for this thesis, I think the skills and experience either internal or external are also factors that influence the choice of a particular strategy. For instance; the skills and experience that implementers have will also reflect on their choice of a particular strategy. In an enterprise point of view skill and experience from the project leader or CIO and the team members of the company will influence their choice, while implementation strategic focus will influence from the consultant point of view. Strategic focus in the sense that, some consultant firm may have special skills and experience in using a particular strategy. For instance; consultant A may have special skills and experience using Phased approach while consultant B may have skills and experience using Big bang approach.

To this end, the table below indicate the summaries of both theoretical and empirical findings in regard to the factors that influence the choice of implementation strategies.

<table>
<thead>
<tr>
<th>Organisation Parameters</th>
<th>Functional Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size and Complexity</td>
<td>Number of Requirements</td>
</tr>
<tr>
<td>Degree of internationalization</td>
<td>Nature of Integration</td>
</tr>
<tr>
<td>Total number of users</td>
<td>Number of interfaces with other applications</td>
</tr>
<tr>
<td>Availability of Resources</td>
<td>Level of customization</td>
</tr>
<tr>
<td>Top management commitment</td>
<td>Skills and Experience</td>
</tr>
<tr>
<td>Need to re-design/standardized business processes</td>
<td>Scope of the business</td>
</tr>
<tr>
<td>Organizational hierarchy and control</td>
<td>Number of Modules</td>
</tr>
</tbody>
</table>

5.2 Choosing the Best Implementation Strategies

Up to this stage, influencing factors to the choice of implementation strategies should have been clearly understood. But, how can organisation choose the best or appropriate strategy? As it is discussed in the research questions in chapter one of this thesis, the best or appropriate strategy in the sense that, organisation have to choose a particular strategy that will lies on a very low failure risk and very high success risk. The answer for this question will first of all be derived from the influencing factors.

O’Leary (2000) described size and complexity in terms of small or large size of an organisation and less or more complex of an organisation respectively. The literature emphasised that, if organisation is large and more complex, it is always appropriate to
choose Phased strategy, while Big bang if otherwise. Also, where organisation is flat and loosely controlled Big bang could be the best option, but, where extensive hierarchy exist in an organisation and tightly controlled, Phased approach could be the best alternatives. My opinion towards O’Leary analysis is that, if organisation can try as much as possible to understand these phenomena, implementation failure risk should be minimal. But, this is very different in both enterprise and consultant perspective according to the empirical findings. For instance; Högberg response in an interview with him emphasised that, size of an organisation does not always determine the complexity, however, his responses and from the perception of his attitude during the interview indicated that, size or no size, less or more complexity, Phased approach is always good alternative. Also, the use of Piloting is a best support for Phased approach. This is also a similar response from Hellman and Hugoson; they think organisation should avoid the use of Big bang at all cost, because, total implementation failure is very high. In an interview with Hugoson, he emphasised that organisation should try as much as possible to have total control of the implementation processes. This is also a response from Hellman that, they choose to implement their ERP system using Phased approach and with the use of Pilot, because, they wanted to have total control of the whole implementation. This is where the issue of skills and experience appeared! In order to choose appropriate strategy there is a need for an organisation to have project leader or CIO and project team that have skills and experiences concerning the positive and negative aspect of each strategies and the total implementation processes.

In an interview with Hellman, he mentioned that, prior the implementation stage of ERP system in their company, as it is shown in figure 3.1 of the ERP system life cycle, their primary aim is to implement ERP system using Phased approach. However, Pilot approach later appears as a supporting strategy for their intended strategy. This is what I can perceive from Johnson and Scholes on their analysis for strategic model. They emphasised that, there is a need for an organisation to use their knowledge and experience to deduce intended strategy and plan for the implementation. During implementation Pilot approach emerge as a support for Phased approach according to Hellman, this is also what Johnson and Scholes described as emergent strategy from my own perception. In an interview with Hellman, he described that, everything is going on very well in their ongoing implementation processes, which is somewhat opposite to what strategic model described as failure strategy toward emergent strategy. Therefore, the realised strategy according to strategic model and discussion with Hellman are Phased and Pilot strategies.

To this end, it is due necessary for an organisation to adopt or use existing knowledge and experience to clarify their intended strategy on how they want things to be done. Planning for the implementation upon the intended strategy, new opportunities might come out of the emergent strategy deduced from the proposed strategy according to the Johnson and Scholes strategic model.

Every organisation adopting ERP system implementation has their motivations; it could be for the business strategy in order to gain competitive advantages, technical functionality where current IT system do not support the business processes anymore and even for the cost saving or financial reasons. In any of these motivations, the most important thing to be considered is the business vision of an organisation. This is where critical success factors (CSF) framework came to an existence as a suitable approach for a successful implementation of ERP project according to (Holland & Light, 1999).
Strategic model described the need for an intended strategy; any of the strategy that organisation would have in mind, should go in line with the business vision and goals. Business vision and goals of an organisation should now drive the reason for ERP system adoption and its implementation strategy and whether there is a need for replacing the legacy system or re-modifying the system to meet business requirements. However, O’Leary (2000) proposed that, if minimum changes and with very little number of modules are aim to be implemented in an organisation, Big bang could be the best choice, however, if maximum changes is required with many numbers of modules, Phased could be the best alternative.

According to the interview with Hellman, business strategy/vision and technical functionality was their motivation for ERP system implementation in their company. Where senior managements of the company were the initiator for the ERP system adoption. In his discussion, management aim is to grow rapidly and generate double revenue to what they currently have. However, their current IT systems do not support the business requirement and this call for legacy systems replacements in their company, Fagerhult Belysning AB. As he indicated, this company is categorised as medium size with the number of employees and total revenue. Therefore, business vision of their company that call for legacy system replacement, the size and resources availability and top management support are what he considered before the chosen of Phased approach for the implementation. He considered top management commitment as the third priority, while resources availabilities in second priority.

Holland and Light (1999) described that, it could be appropriate for an organisation to implement a skeleton version of package software initially; organisation can then gradually add extra functionality once the system is in operation. This idea in my own opinion is really good, but, Phased is the best strategy in which organisation can adopt if the idea will really work. In corresponding to this, Hugoson also emphasised in his opinion that, the most suitable implementation strategy is to create a structure of interacting systems with high degree of independence which is aligned with the business structure, then let each business area implement their systems directly coordinated with development of their business. In his conclusion, he also emphasised that it is only step by step (Phased strategy) that can be used to achieve this way of implementation.

To this end, a clearly defined of business vision and goals, should be a way out for an organisation to choose an appropriate strategy that will meet their business needs. In response to O’Leary emphasis concerning changes to legacy systems, Holland and Light (1999) when describing business processes changes (BPC) and software configuration, their emphasis in which I also support is that, the most important thing for an organisation is to understand their current business structure and business processes associated with their legacy systems and relate this to the business processes available with ERP system adopted. In this sense, organisation should be able to deduce an appropriate strategy that can best described and meet their business requirements.
The above chart described the respondents rating scales for each of the available implementation strategies mentioned in this thesis. It is obvious from the above chart that Phased approach took the highest rating; follow by Pilot approach, Parallel approach and Big bang approach. To justify the rating of each available implementation strategies, a rating scale of five to one were used, where (5) is very recommendable, (4) is recommendable, (3) good to use, (2) fairly good and (1) not bad to use.

<table>
<thead>
<tr>
<th>Respondent Number</th>
<th>Company Name</th>
<th>Size and Business Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kongsberg Automotive</td>
<td>Large Size and Global</td>
</tr>
<tr>
<td>2</td>
<td>Fagerhult Belysning AB</td>
<td>Medium Size and Sweden</td>
</tr>
<tr>
<td>3</td>
<td>Holmgrens Bil AB</td>
<td>Large Size and (Småland Sweden)</td>
</tr>
<tr>
<td>4</td>
<td>Relative Experience from many</td>
<td>Small, Medium and larger Size and Global</td>
</tr>
<tr>
<td></td>
<td>companies</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Collaborative Business AB</td>
<td>Small Size and Sweden</td>
</tr>
<tr>
<td>6</td>
<td>Sogeti Sverige AB</td>
<td>Large Size and Sweden</td>
</tr>
<tr>
<td>7</td>
<td>SYSteam Datakonsult i Småländ AB</td>
<td>Large Size and Sweden</td>
</tr>
</tbody>
</table>

The above table describes the number of respondent, the company to which they represent, size of the company and their business region.
Starting with Phased approach, Högberg is the same person that responded to both enterprise and consultant perspective, which can be seen as respondent 1 and 5. He rated this strategy to be very recommendable because this strategy provides a clear scope of how entire ERP project implementation will be handling in an organisation, also, this strategy lies on the high risk of the implementation success. Hellman respondent number 2 also chose Phased strategy to be very recommendable, with his own comment that, this strategy allow him and his team member to learn from each phases and more skills are also developed. However, they have exceeded the budgeting period for the implementation. Nors respondent 3 rated Phased strategy as fairly good to use because of the long term implementation which lies on failure risk of management commitment and support. Hugoson on is response also recommend Phased strategy with a support explanation that, this strategy related to big common system, where module cannot be implemented as own independent systems. If common system is chosen according to Hugoson, Phased strategy should be recommended. However, timing should be closely related to changes in the business processes. Hagström respondent 6 from his response emphasised that, he cannot rate these strategies because they are somewhat related to one and other. However, a chosen strategy will depend on a particular customer needs. Respondent 7 Ramsö the CEO of SYSteam consultant firm also emphasised recommendation of a particular strategy have to do with customer requirements. However, he rated Phased strategy to be very recommendable. Considering comments from each respondent regarding Phased strategy, this is also in line with O’Leary (2000) when describing the positive and negative side effect of adopting Phased strategy as it stated in the theoretical framework of this thesis.

Big bang, despite the belief that these strategies are somewhat related to one and other according to Hagström, this strategy out rated. Hugoson rated this strategy to be zero that this is really a bad strategy to be adopted especially for big common systems and organisation should try as much as possible to avoid using it because too many implementation failures were reported concerning this strategy. Hellman also rated this strategy to be zero, that this strategy should be avoided at all cost. Högberg also commented that, choosing Big bang strategy, people think it is so easy by just once and for all implementation, but, it is more complex than how people think. He also emphasized that, organisation are now trying to avoid Big bang as much as they can. However, he rated this strategy to be fairly good. Even though Big bang might lies on some drawback such as training issues after the total going live of the ERP system, Nors emphasised that, he will recommend Big bang as the best alternative if its drawback can be well managed. Meanwhile, Ramsö the CEO of SYSteam think Big bang is not bad to use. Considering each respondents comments for Big bang also, there is also a correlation between what O’Leary (2000) considered as pros and cons of this strategy.

Parallel approach, O’Leary (2000) considered this strategy as one of the alternatives strategy of the basic implementation strategies. In response to this, Hugoson also commented that, as long as Big bang is not in use or chosen, Parallel approach should be recommended. Even though Big bang is chosen, Parallel should also be recommended to support Big bang. Therefore, he could not find a way to rate this strategy. Considering the above facts, there is a kind of correlation between O’Leary (2000) and Hugoson observation regarding the use of Parallel implementation strategy in an organisation. Ramsö indicated in his questionnaires response that, he will recommend Parallel approach for ERP system implementation. Meanwhile, Högberg
rated Parallel strategy as not bad to use when implementing ERP system, while Hellman think Parallel approach is fairly good.

Pilot strategy, Jisc infoNet (2008) also described this strategy as one of the alternatives in implementing ERP system, so as Hellman also described this strategy as alternative and support for the implementation processes in their company. Therefore, Hellman described that, he will recommend this strategy also because this strategy allows them to implement ERP system departmentally during their ongoing implementation processing of ERP system and that this strategy is really in support of their original strategy; Phased. Högberg in his response indicate that he will recommend Pilot approach; perhaps, he uses Piloting approach when implementing ERP system for customers. Hugoson in his response think Pilot is also an alternative and could be of value to show that Big bang should be avoided. However, if Phased is planned to be use, the first phase could be seen as a Pilot when implementing in a single location. Therefore, Hugoson think Pilot approach could be good for use, but, lead time might increase if this strategy is to be replaced. Ramsö in his questionnaires response and Nors in an interview with him also think Pilot is good for use, which is of the same rating as Hugoson.
6 Conclusion

My findings discovered that, many things can be seen as factors that contribute or influence the choice of a particular ERP system implementation strategy. Therefore, the influencing factors include; (i) Size and Complexity of an organisation (ii) Degree of internationalisation (iii) Availability of resources (iv) Top management commitment and support (v) Number of requirements (vi) Scope of the business (vii) Skills and experience and (viii) Nature of integration.

Organisation can choose the best or appropriate strategy that lies on very low failure risk and very high success risk in total implementation as follow:

- It is very important for an organisation to clarify their business vision; vision of the business will now drive the need for replacing or re-modifying legacy systems.
- Either replacing or re-modifying legacy systems, it is essential for an organisation to have a proposed strategy toward the direction of how they want things to be done and in order to have total control of ERP systems implementation processes.
- Every organisation desire for system interaction with independences and transparency of the system, should try to implement a skeleton system in which other application can be added to the systems when it is in operation.
- All the influencing factors that contribute to the choice of a particular implementation strategy are due essential for an organisation to be considered and analyse before decision making.
- Organisation should also try as much as possible to understand both positive and negative side effect of each implementation and stick to the one that lies on very high success risk.

The chart presented in the analysis part of this thesis have clarify the best or a very recommendable implementation strategy in which organisation can quickly consider in order to have a reliable or a very high success risk of implementing ERP systems. Phased strategy is considered as the best alternative, for an organisation willing to implement ERP system. Considering this strategy as the best alternative simply means that, strategic dilemma in ERP system implementation will be minimal.
7 Discussion

This part of this thesis, aim at describing the reflection of what I could have done better and what I have done best in this thesis. Further studies to which researcher may be interested to look at later future and acknowledgement of those that have contributed directly or indirectly to the success of this thesis.

7.1 Reflections

My reflection for this thesis will commence by appreciating the strength and courage that I have for empirical data collection. The most interesting part of the empirical findings goes for my curiosity in getting to have proper overview of a very recommendable ERP systems implementation strategy. This view gives me an opportunity after my study to be able to contribute to the decision making for an appropriate implementation strategy in an organisation, also, a solution for an organisation that wanted to implement ERP system. Another interesting part is the opportunity that I have to collect both qualitative and quantitative data so as to generalise and draw conclusion from each respondent. However, this thesis could have been more perfect if I am able to have more respondents in other part of the world, rather than Sweden, so as to be able to generalise more on the issue behind the choice of implementation strategies and to be able to draw concrete and solidify conclusion toward the best implementation strategy. Also, I am not able to really justify each implementation strategies base on the little respondents from the empirical point of view. If I would conduct another research base on the same topic, I would like to have more respondents in all size, especially on the enterprise points of view that have implemented ERP system. Since, the questionnaire generate some unclear responses, I would like to be focus more on an indebt interview in order to be able to examine respondent attitude. However, using questionnaire will still help in order to generalise conclusion.

7.2 Further Studies

When conducting the empirical findings for this thesis, even the theoretical framework, many issues pop up in which I do not really know how to tackle them. Some of those issues that pop up also broaden my knowledge and give a way to the direction in which I could conduct another research in later future or for any researcher that this area might interest. For instance; complexity of an organisation is one big another issue that influence the choice of ERP system, my finding discovered that, organisation size does not really determine how complex is that organisation. Meaning that, organisation can be big and lies on very little complexity, also can be small and yet, be more complex. So, how can we really determine the complexity of an organisation in order for making choice of appropriate implementation strategy? Another concern that I have is that, Big bang strategy is a fast and cost saving implementation strategy for both consultant and enterprise firms in an organisation, but, this strategy is rating very low not even competing in recommendation rating. So, what we do to improve this strategy or manage its draw back in order to meet organisation standard and requirements?

7.3 Acknowledgements

My first appreciation goes for God almighty for given me the strength and power to accomplish this thesis. However, my appreciation also goes for my supervisor Jörgen Lindh, for his supervising measures and guideline for how things should be done in
order to accomplish the purpose of this thesis. My appreciation also goes for Ulf Larsson for his assistance in getting contact for respondent of this thesis. My gratitude also goes for my parents for their word of encouragement and praying support all through. My gratitude does not end without appreciating my family right here in Sweden, especially my lovely son and his mum for their endurance and patience support. I also show appreciation to friends both in school and home for their encouraging support for this thesis.
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Appendix

Questionnaires/Interview questions

{Enterprise Perspective}

Part 1:- This part of this questionnaire is to know firm background and firm representative for answering this survey.

1. The name of your firm is?
2. The business region or Country of your firm is?
3. Your firm sector belongs to which of these categories?
4. Your firm was founded in the year
5. Will you say your firm size is
6. What criteria determine the size of your firm?
7. What is the number of your employee approximately
8. What is your position in the firm?
9. How long you been working with the firm?

Part 2:- This part mainly concern ERP system and its implementation strategy.

10. Is any ERP system implemented in your firm or in the process? Yes/No
11. Which department of your firm initiated the idea for ERP system adoption?
12. What is/was the motivation for ERP system implementation
13. What ERP system modules were implemented or aim to implement?
14. Will you say ERP system implementation is/was Success/Failure
15. How did the ERP system implementation fulfil your firm?
16. How long is/was ERP system implementation?
17. What type of ERP system is/was implemented?
18. What are the critical problems if any; encounters during ERP implementation?
19. What will you say are the success factors to ERP system implementation in your firm?
20. What type of ERP system implementation strategy implemented in your firm?
21. Does your firm experience controversy or different opinion in choosing a particular implementation strategy with consultant
22. What functional parameters influenced the choice of the implementation strategy in your firm?
23. What organisation parameters influenced the choice of the implementation strategy in your firm?
24. Will you say choosing a particular implementation strategy contribute to the success or failure of ERP Project in your firm?
25. What type of ERP system implementation strategy will you recommend from your experience regardless of Influencing factors?
26. Will you say choosing a particular ERP implementation strategy have a major impact on the success or failure of ERP Project in your firm
Part 1:- This part of this questionnaire is to know firm background and firm representative for answering this survey.

27. The name of your firm is?
28. The business region or Country of your firm is?
29. Your firm sector belongs to which of these categories?
30. Your firm was founded in the year
31. Will you say your firm size is
32. What criteria determine the size of your firm?
33. What is your position in the firm?
34. How long you been working with this firm?

Part 2:- This part mainly concern ERP system and its implementation strategy.

35. Your firm implement ERP system for customers Yes/No
36. What type of ERP system does your firm implement most for customer?
37. What is the percentage of success factors of ERP implementation for your customers?
38. What is the percentage of failure factors of ERP implementation for your customers?
39. What are the critical problems if any; encounters mostly during ERP implementation?
40. What will you say are the success Factors of ERP system implementation for your customers?
41. What type of implementation strategy your firm used mostly for your customers?
42. Does your firm ever experience controversy in choosing a particular implementation strategy with your customer?
43. What functional parameters influenced the choice of the implementation strategy for a particular customer?
44. What organisation parameters influenced the choice of the implementation strategy for a particular customer?
45. Will you say choosing implementation strategy contribute to the success or failure of ERP Project with your customer?
46. What type of ERP system implementation strategy will you recommend from your experience regardless of influencing factors?
47. How will you rate each of these strategies below from 5 to 1?
48. Will you say ERP implementation strategy have a major impact on the success or failure of ERP Project?