



ROOT-CAUSE FACTORS EFFECT ON THE SUCCESS OF ERP IMPLEMENTATION PROJECT

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CERTIFICATION OF DISSERTATION WORK PAGE

The thesis of a student named: Hassan Jamil Mahmoud Jamal,
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IMPLEMENTATION PROJECT"

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ABSTRACT

Some information technology, enterprise resource planning (ERP) implementation projects are failing; and whether this failure is partial or full, it is normally wasting organization's time, efforts, cost or a combination of these. It is actually painful experience for some of organizations needed to implement ERP applications. This research aimed at identifying Root-Cause Factors affecting the Success of ERP Implementation Project and to identify problems of failed enterprise resource planning (ERP) project implementation (as independent variables). The three root causes identified, viz; communication, Business Environment Readiness and Integration were linked with the dependent variable, i.e. success of ERP project implementation to examine relationship between the independent and the dependent variables. This study adopted quantitative approach. First a pilot study was conducted through interview of 10 samples of CIOs, ERP managers, project managers, etc., who are directly concerned with ERP project implementation to generate variables that was used in the main survey. The interview from the pilot study enable the researcher to identify variables that are mostly related to local market, moreover, additional variables were theoretically identified and adopted in this study. After, the pilot survey a structured online questionnaire instrument was developed which was distributed electronically to the respondents to get their feedback about the relation between failure reasons and root-cause problem. Three hundred and fifty questionnaires were distributed but only seventy completed questionnaires were retrieved and used in this study. The data was analyzed first by categorizing failure reasons into groups based on different factors like root-cause problem based on where each belong to; taking into consideration that enhancing project communication, business environment readiness and project integration are key solutions for root-cause problems, as these three factors are considered as major root-cause problems for ERP project's failure. Findings from this study shows that 42% of the failure's reasons appear while implementing ERP applications are rooted due to communication deficiency, whilst 40% of failure reasons are due to business environment readiness deficiency and 18% of failure reasons are due to integration deficiency. Therefore, this study recommended that practitioners should; Pay more attention and be careful when it comes to dealing with any party working for your project; before communicating with others, you should think what exactly you want from others?, how do you want it to be done?, when you need it and why?, how to communicate with others?, what time to communicate and why?, and why you should communicate with others?. Make sure the project blueprint (goal and objective) is determined and clear for project manager and others. Put all project's parties in a cohesive pool and plan properly for it and monitor and control the project carefully. Make sure that the business environment is ready for what the project needs to implement, and make sure it is ready prior to start the implementation, with enough time. The project manager should be proactive, not just reactive. Don't wait until the problem comes to him. He should look for it always and in all circumstances. Project managers, as practitioners, should keep their eyes open for symptoms of potential failures that might arise during the project lifespan.

Keywords: **ERP Failure Reasons, Communication, Business Environment Readiness, Integration**

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LIST OF ABBREVIATIONS

IT	Information technology. It is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business or other enterprise. Several industries are associated with information technology, including computer hardware, software (ERP applications), internet, e-commerce and computer services.
ERP	Enterprise resource planning (software application/system). ERP is an integrated computer-based system used to manage internal and external resources, including tangible assets, financial resources, materials, and human resources. Its purpose is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connection to the supply chain. Built on a centralized database and normally using a common computing platform, ERP systems consolidate all business operations into a uniform and enterprise-wide system environment.
CM	Change management. It is designed to help ensure the effective transition of an organization and its people from the current (prior to implement an ERP, as an example) to future states (after implementing an ERP), and in so, doing support the realization of business benefits. A client should be advised to effectively lead and manage individuals, teams, and assisting organizations to successfully adopt the changes needed to achieve required or desired business results.
IDC	International data corporation. It is a company.
KPMG	International consulting firm, KPMG is a global network of professional firms providing audit, tax and advisory services.
Gartner	Gartner is the world's leading information technology research and advisory company.

CRM	Customer relationship management and it is part of the ERP applications. Processes implemented to manage a company's interactions with customers and prospects.
URL	Uniform resource locator. URL is a reference to a resource that specifies the location of the resource on a computer network and a mechanism for retrieving it.
PMI	Project Management Institute is the world's leading not-for-profit professional membership association for the project, program and portfolio management profession. Founded in 1969.
PMP	A profession entitled to whoever passes the project management institute exam and gets the certificate. PMP is standing for project management professionals.
Survey	It means here the questionnaire, which has been conducted for the purpose of this research. The questionnaire design is added under the section 4.2 in this document.
CIO	Chief information officer. The CIO is a job title commonly given to the most senior executive in an enterprise responsible for the information technology and computer systems that support enterprise goals.
PMO	Project management office. PMO is a group or department or functions within a business, agency, organization or enterprise that defines and maintains standards for project management within the organization. The Project Management Office strives to standardize and introduce economies of repetition in the execution of projects. The PMO is the source of documentation, guidance and metrics on the practice of project management and execution; has many styles depends on the level of maturity.
“SurveyMonkey”	A tool over the internet was used for survey purposes.
BPR	Business process re-engineering. BPR is a business management strategy, originally pioneered in the early 1990s, focusing on the analysis and design of workflows and business processes within

an organization. BPR aimed to help organizations fundamentally rethink how they do their work in order to dramatically improve customer service, cut operational costs, and become world-class competitors.

DB Database. Is an integrated and organized collection of logically related records or files or data that are stored in a computer system which consolidates records previously stored in separate files into a common pool of data records that provides data for many applications

KPI Key performance indicator. A KPI is a business metric used to evaluate factors that are crucial to the success of an organization.

KPI is a type of performance measurement. KPIs evaluate the success of an organization or of a particular activity in which it engages. Often success is simply the repeated, periodic achievement of some levels of operational goal, and sometimes success is defined in terms of making progress toward strategic goals. Accordingly, choosing the right KPIs relies upon a good understanding of what is important to the organization. 'What is important' often depends on the department measuring the performance - e.g. the KPIs useful to finance will really differ from the KPIs assigned to sales. Since there is a need to understand well what is important, various techniques to assess the present state of the business, and its key activities, are associated with the selection of performance indicators. These assessments often lead to the identification of potential improvements, so performance indicators are routinely associated with 'performance improvement' initiatives. A very common way to choose KPIs is to apply a management framework such as the balanced scorecard.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Enterprise-wide resource planning (ERP) system software packages are highly integrated, complex systems for businesses, and thousands of businesses are running them successfully worldwide (Koch, 2011). Even companies such as Hershey, JoAnn stores, Whirlpool and Samsonite that have suffered through classic disasters, acknowledge the software packages are able to handle the job. The systems are capable of functioning as advertised; however, companies run into costly and sometimes fatal difficulties with the implementation and subsequent maintenance of these packages. According to The Gartner Group, 70 percent of all ERP projects fail to be fully implemented, even after three years (Gillooly, 2012). Typically, there is no single culprit responsible for a “failed implementation”, and no individual reason to be credited for a successful one. Even the definitions of failure and success are gray areas, lending to interpretation. There are generally two levels of failure: complete failures and partial failures. In a complete failure, the project either was scuttled before implementation or failed so miserably that the company suffered significant long-term financial damage.

Those implementations considered partial failures often resulted in tenuous adjustment processes for the company; creating some form of disruption in daily operations. In the same vein, an ERP success can be a complete success – one in which everything goes off without a hitch, or one in which there are few alignment problems, resulting in minor inconvenience or downtime. Frequently, these situational circumstances that have to be ironed out in the weeks and months after the “go-live” date are not severe enough to disrupt the daily operations (Gargeya & Brady, 2005).

ERP applications implementation as part of IT projects are ranked high in terms of failure as it takes longer time than other types of IT projects; and regularly takes more than the time planned initially for the project, cost more than the budgeted money, and some of them end up with scope creep. However, IT projects like ERP applications implementation touches many areas within any organization. Like

business environment's culture, process implementation, management decisions, etc. Obstacles are usually there in all types of projects, but the big percentages of ERP implementation project failure raise some concerns for most of the people who nearly work with technology and business owners (PMI, 2016).

According to several independent parties, including companies like KPMG, IDC, Gartner and others of consulting firms, PANORAMA consulting solutions firm (2015) wrote in its "2015 ERP Report" that according to their survey which covered the last five years between 2010 and 2014, they found out that *"58% of ERP implementation projects exceeded their planned budget while 65% experienced schedule overrun and 53% of organizations achieved less than 50% of the measurable benefits they anticipated from new ERP software"*. And reference to what was published by KPMG in 2001; there is less than 20% of IT projects (KPMG, 2001) that are completed successfully, on time, on budget, and within the agreed scope. One third of IT projects are completed, but may exceed budgets or time or even with scope creep, however, more than half of IT projects were failing, according to KPMG survey named "Survey of unsuccessful information technology projects" (KPMG, 1997). Accordingly there are several factors that affect the success of ERP implementation projects. Once they have been resolved, the ERP implementation project success potential will increase and root-cause problems will be minimized or even eliminated.

Herein, this research tries to find root-cause problems that may raise or be part of most of the reasons for failure in Saudi market ERP projects. The reasons as those mentioned in previous researches around the globe. After defining root-cause problems and their implications; this research will start to link failure reasons to root-cause problems. Moreover, this research will propose some suggested solutions to each one of these root-cause problems. However, proposed solutions were taken-out from the survey's results which been done for the purpose of serving this study; this path followed by a section which illustrated how project manager could, in future, detects symptoms of project failure and allow him early to solve/ rectify the impact of root-cause problem prior to its happening, in order to avoid failure in ERP implementation projects.

1.2 Problem Statement

Most of IT projects we hear of being either over budgeted, late, or did not achieve its goals. However, still different people alleged that those projects have been successful. Neither the practitioners nor the academicians seem to agree on what constitutes project success. It appears to be a rather an elusive concept.

PANORAMA consulting solutions firm (2015) wrote in its “2015 ERP Report” that according to their survey which covered the last five years between 2010 and 2014, they found out that “58% of ERP implementation projects exceeded their planned budget while 65% experienced schedule overrun and 53% of organizations achieved less than 50% of the measurable benefits they anticipated from new ERP software”. Thus, project deemed failure if some or all of these three factors are not resolved as per planned at the beginning of the project (PMI, 2016).

Most previous researches and studies focused on ERP implementation projects failure reasons (that are results of pain) (Bingi, Sharma, & Godla, 1999; Ehie & Madsen, 2005; Gargeya & Brady, 2005), with rarely focusing on the root-cause problem of that failure. Some of the previous researches focused on technical and management aspects of ERP implementation project failure factors, where the conjunction with business properties are not taken into consideration in some studies. Several reasons may lead to ERP implementation project failure (Gargeya & Brady, 2005). The Saudi local market may have more chances of failing due to its business attitude toward deployment of technology. As some project sponsors and key users look to dramatically customize standard technology, for the ready-made applications, to satisfy their businesses rather than try to accommodate business operations with the standard technology. ERP is regularly built based on the best practices in the same industry globally (IDC, 2009). In addition, the failure in integrating project parties in one cohesive pool in order to achieve the main objective of the project and aligns with the reason it was originally undertaken for, is one of the major faults that makes some projects’ parties ends satisfactorily while others are not; which finally leads to project inconsistency and may be strong potential for failure (PMI, 2016).

Three major factors if enhanced will participate in project’s success are specifically the communication, business environment readiness, and project parties’ integration.

1.3 Research Questions

This research is intended to answer the following questions:

- Q1. Why most of ERP implementation projects across Saudi Arabia country fail?
- Q2. Are there common reasons for ERP implementation project failure? And can they be categorized considering some project properties and business environment factors?
- Q3. What are factors that increase the success potential for ERP implementation projects?
- Q4. What is the relation between business environment readiness and ERP implementation projects' success?
- Q5. What is the relation between integrating project's parties and the project success?

1.4 Hypotheses/ Propositions

The followings are the working hypotheses of this study. These are, that;

- a) There is no relationship between the better business environment readiness; preparing the business environment prior to implement and an ERP project implementation failure.
- b) There is no relationship between the better project consolidated views (integration); the clarity of the project's vision and goal to project's stakeholders and the ERP project failure.
- c) There is no relationship between better project manager, in terms of communication skills and the potential for ERP project failure.

1.5 Research Objectives

This study concentrated on finding and categorizing some ERP implementation projects' failure reasons in the Saudi market. Those reasons may not be covered well previously or deemed minor; whilst focused here on the root - cause problem (the real cause of pain) which may cause many reasons for failure (result of pain).

This study will therefore, set to achieve the following objectives:

- 1. To identify reasons for the failure of ERP Project implementation in Saudi Arabia.
- 2. To categorize the reasons of ERP project implementation failure based on the project properties and business environment factors

3. To identify factors those increase the potentials for the successful ERP project implementation.
4. To determine the relationship between business environment readiness and ERP successful project implementation.
5. To determine whether there is a relationship between integrating project's parties and the project success.

This research attempted to put forth points (failure reasons) of different views for researchers in this field in classes, and then offer some solutions for root-cause problems. These root-cause problems were taken out from previous research papers, interviews, author's experience, as well; it is part of the result that is taken out of the conducted survey for this research. Consequently, in this research, solutions are proposed for each of the classifications; with a focus on the role of integrating project parties, including project management soft skills and preparing the business environment and make it ready prior to the start of technology implementation.

To distinguish between two terms which are failure reasons and failure results, it should be clarified that many failures, minor-reasons (results of pain, called in some previous researches or articles as failure reasons) may be caused by very limited reasons (failure root-cause problem). Sometimes minor reasons were used and treated as reasons for the failure. Obviously it is not. In this research, root-cause problems have been linked to each one of these minor-results and major-results and clarified how failure reasons are linked to more than a reason (root-cause problem).

Actually and as a result of the survey conducted especially for this research, it is now clear that root-cause problems perform a triangle which is composed of three elements that are communication, business environment readiness, and integration.

1.5 Scope of the Study

This research has a focus on the main reasons that are known world-widely as potential failure of ERP project implementation. It outlines the root-cause problem as reasons for failure of ERP implementation projects. Thus, providing different solutions will have effects on avoiding potential failures, by enhancing the potential of projects to succeed; and the area for this study is the Saudi Arabia market.

It focused on assessing factors that support the ERP projects implementation success for those projects that implement tier one ERP applications. Therefore, the companies selected were of big size of companies as they are willing to pay the cost of

such ERP applications, like SAP, Oracle and MS (People Soft/ Dynamics/ Great Plains).

Research scope is extended in three main parts here, as follows:

1. Root-cause problems (definition and importance to the project management), then categorized the mentioned failure-reasons in previous researches and link each of those failure reasons (as author describe them here) to the relevant root-cause problems.
2. Propose solution for each of the concluded root-cause problems.
3. How to detect the early symptoms of project failure.

1.6 Significance of the Study

The result of this research will enable project Managers as well as practitioners to practically keep eyes open for symptoms of potential failures based on the proposed root-cause problem as identified in this research; right from its early stage, and try to solve the issues behind the appeared symptoms by applying maybe, one of the solutions offered here in this research.

Moreover, Subsequent researchers will be able to reassess theoretically the relation between the proposed root-cause problems in the future, and the reasons for failure of ERP implementation projects as well, this will give a great bases for a reasonable frame which properly categorize failure reasons and their relation to root-cause problems, meanwhile, it will keep the door open in the future for adding to the root-cause problem, or offer solutions to root-cause problems and failure reasons.

1.7 Organization of the Thesis

The research covered five main chapters which flow from the introduction through the literature review of previous researches and articles about the subject matter, next is defining and linking root-cause problems to reasons of ERP implementation project's failure; furthermore to propose solutions, hints for root-cause problems, and finally, illustrates on the way of detecting symptoms of failure in order to minimize the future ERP implementation failure opportunities.

The chapter one; covers the General introduction, started with the background of the study with citations from some international references and statistics for the ERP failure reasons. The chapter also highlights on the direction of the research aptly stated in the problem statement. Then it follows with the set of research questions to

be answered in this study; then the research objectives and scope of the study. The definition of ERP's project failure criteria part, is illustrating what is accepted nationally to decide that the project is a failure story.

The chapter two deals with review of relevant literature on published researches, articles, essays, etc.

The chapter three dwelt on the research methodology consisting of the research design, operational definition and instrumentation, data collection technique, such as the sample and the sampling procedure, and the technique of data analysis used to reach at the results.

The chapter four deals with the data presentation and analysis, shows the definition and importance of root-cause problems to project management, then categorized the mentioned failure-reasons in previous researches, analyzed and categorized the failure-reasons, according to the survey's results, and analyzed & linked failure-reasons to the defined root-cause problems.

The last chapter five covers the summary, conclusion, and recommendation. It explain the early detection for symptoms of project failure and treatment, recommended general solution for issues and problems, proposed solution hints for root-cause problems, and recommended some steps to deal with issues raised during the project run.

1.8 The Definition of ERP's Project Failure Criteria

Crawford (2002) reported that *“project success is an important project management issue, it is one of the most frequently discussed topics and there is a lack of agreement concerning the criteria by which success is judged (Pinto and Slevin 1988; Freeman and Beale 1992; Shenhar, Levy, and Dvir 1997; Baccarini 1999). A review of the literature further reveals that there is, in fact, a high level of agreement with the definition provided by Baker, Murphy, and Fisher (1988), that project success is a matter of perception and that a project will be more likely to be perceived to be an ‘overall success’ if: the project meets the technical performance specifications and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people on the project team, and key users or clientele of the project effort. There is also a general agreement that although the schedule and budget performance alone are considered inadequate as measures of project success, they are still important components of the overall*

construct. Quality is intertwined with issues of technical performance, specifications, and achievement of functional objectives and it is achieved against these criteria that will be more subject to variation in perception of multiple project stakeholders.“

ERP implementation means to make the organization parties using actual computer applications, considering that all organization's functions and resources are covered within the ERP modules; irrespective of being the same ERP, but at least all computer applications should be linked to each other.

In the survey, which was built for the reason of gathering local feedback; there was a portion for making inquiry on the criteria of judging the project success, and the question was about to select one of the following:

1. The ERP implementation project to be deemed successful or failure depends on the client's top management judgment.
2. The ERP implementation project to be deemed failure should have two out of the three triple triangle elements(Scope, Time, Cost), are out of the original baseline plan.

Analysis of respondents' feedback from the survey showed that 64% of the responses surveyed were of the opinion that the judgment by client's top management is the suitable criteria to measure the success or failure of any ERP implementation project.

In one-on-one interview those were conducted by the researcher with many CIOs, PMO, IT managers and ERP implementation managers, which come prior to publishing the survey, the same question was raised and 63% of the responses were selected on the same which is “judged by a client's top management is the suitable criteria to measure the success or failure of the project”.

Actually, these two questions were formed according to one-on-one feedback and perception regarding how to measure project success. It is critical for a project manager to understand what the stakeholders consider as a successful project. In order to avoid any surprises at the end of the project, there is the need to identify the different perspectives on what success means before the project started. It is also vital to remember that success criteria are the standards by which a project will be judged, while success factors are the facts that shape the result of projects. Success criteria have changed considerably through time and moved from the classic iron triangle's view of time, cost and quality to a broader framework which includes benefits for the organization and user satisfaction. A common factor mentioned by many authors is

senior management support for the project and it is recognized as one of the most important factors of all. In conclusion, early definition of success criteria can ensure an undisputed view of how the project will be judged and early detection of success factors will guarantee a safe path to deliver success.

Therefore based on this research, it will be considered that the client's top management is the proper source for judging the success of the project as the management will normally have a wisdom of aligning between new technology and the organization's readiness for implementing such technology. So paying extra money, sacrificing the agreed project quality, going beyond the original agreed time or scope is accepted by the client sometimes, as it comes as a result of balancing among different variables, those may be unforeseen at the time the project has started.

1.9 Chapter Summary

According to many independent parties across the world, the ERP implementation projects have high percentages of failure, thus it needs to be investigated to diagnose the root-cause of problems arising during ERP's implementation.

Most of ERP projects that are either over budgeted, late or didn't achieve goals. Several questions that related to the reasons of failure, to try to find the relation between failure reasons and proposed root-cause problems. These are communication, integration and business environment readiness. This study concentrated on finding and categorizing some ERP implementation projects' failure reasons in the Saudi Arabia market. Those reasons were not properly and adequately covered previously or were deemed minor; whilst focused here on the root - cause problem (the real cause of pain) which may resulted in many reasons for failure (result of pain). Then Propose solution for each of the concluded root-cause problems; and guide practitioners on how to detect the early symptoms of project failure. Actually, as a result of the survey conducted especially for this research, it is now clear that root-cause problems perform a triangle which is composed of three elements that are communication, business environment readiness and integration. Finally, this chapter tried to define the criteria, which judge whether the project is a success story or not.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter deals with the review of relevant literature and it is organized based on the following sections. Section 2.1 is the introduction to the chapter; section 2.2 covers a review on ERP project implementation and causes of failure; section 2.3 deals the conceptual framework.

2.2 ERP Project Implementation and Causes of its Failure

PANORAMA consulting solutions firm (2015) wrote in its “2015 ERP Report” that according to their survey which covered the last five years between 2010 and 2014, they found out that *“58% of ERP implementation projects exceeded their planned budget while 65% experienced schedule overrun and 53% of organizations achieved less than 50% of the measurable benefits they anticipated from new ERP software”*.

As time, cost, and benefits of implementing ERP applications are indicators for project success or failure, and according to this study, it appears from the outcome of this study that there is deviation from what was planned at the beginning of the project regarding project’s time, cost and benefits or scope of work and what was concluded at the end of the project, thus and in a such case, project potential for success is low, as these factors are real player for project to be success or fail story.

Whittaker, B. (KPMG Consulting, 2001), wrote in his research “What went wrong With IT Projects? Unsuccessful information technology projects” that KPMG consulting in Canada sent a survey questionnaire focusing on IT project management issues to Canada's leading 1,450 public and private sector organizations. KPMG's 1997 Survey of Unsuccessful Information Technology Projects revealed that the three most common reasons for project failure are: Firstly, Poor project planning. Specifically, inadequate risk management and a weak project plan. Secondly, a weak business case. There should be a business case to support the business need for implementing an ERP application. Next is lack of top Management’s involvement and

support. However, it should be there along the project duration. Some of the other main findings reveal that Projects fail more often because of schedule overruns than budget overruns. Also many projects fail because they use new or unproven technology. Then poor estimates or weak definitions of the requirements of the project planning stage also contribute to project failure. The research discovered that failure reasons were defined in three ways:

Firstly, is overrunning its budget by 30 % or more; overrunning its schedule by 30% or more; or failing to demonstrate the planned benefits. Of these, the failure by overrunning schedule was by far the most common. A total of 87 % of failed projects exceeded their initial schedule estimates by 30 % or more. This compares to 56 % of failed projects that exceeded their estimated budget by the same amount, and 45 % of failed projects which failed to produce the expected benefits.

Then the project size: A high number of failed projects were small projects; that is, they were scheduled to take 12 months or less to complete. Of failed projects, 60 % fell into this category. Looking at this 60 %, nearly all respondents (92 %) with small projects reported that these projects went over scheduled. Of those with large projects (projected schedules of over 12 months) a lower percentage (86%) found meeting these schedules a problem. So also poor estimates or definitions of the requirements of the project planning stage contributed to project failure. Larger organizations are more in danger of suffering from serious budget overruns (50 % or more over the original target). One-third of responding organizations with over 5,000 employees reported serious budget overruns, compared with only 20 % in organizations of 1,001 to 5,000 employees. There is a correlation between schedule and budget overrun. However, this correlation is much stronger in cases with budget overruns, than in cases with schedule overruns.

An article written in OGC, "Common Causes of Project Failure" identified that common causes of project failure and consequently key questions to address are; Lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success. The issues needed to be pondering about are; have we defined the critical success factors (CSFs) for the project? Have the CSFs been agreed with suppliers and key stakeholders? Do we have a clear project plan that covers the full period of the planned delivery and all business change required? Times and showing critical dependencies such that any delays can be handled?

Secondly, lack of clear senior management and Ministerial ownership and Leadership; does the project management team have a clear view of the interdependencies between projects, the benefits, and the criteria against which success will be judged? If the project traverses organizational boundaries, is there clear governance? Are there arrangements to ensure sustainable alignment with the business objectives of all organizations involved? Are decisions taken early, decisively, and adhered to, in order to facilitate the successful delivery? Does the Senior Responsible Owner (SRO) have the ability, responsibility and authority to ensure that the business change and business benefits are delivered?

Thirdly, lack of effective engagement with stakeholders; have we identified the right stakeholders? Have we secured a common understanding and agreement of stakeholder requirements? Does the business case take account of the views of all stakeholders including users? Do we understand how we will manage stakeholders (e.g. Ensure buy-in, overcome resistance to change, allocate risk to the party best able to manage it)? Whilst ensuring that there is clear accountability, how can we resolve any conflicting priorities?

Fourthly, lack of skills and proven approach to project management and risk management; is there a skilled and experienced project team with clearly defined roles and Responsibilities? Are the major risks identified, weighted and treated by the SRO? If external consultants are used, are they accountable and committed to help ensure successful and timely delivery?

Fifthly, too little attention to breaking development and implementation into manageable steps; has the approach has been tested to ensure it is not 'big-bang' (e.g. In IT-enabled projects)? Have we done our best to keep delivery timescales short, so that change during development is avoided?

Number Six, Evaluation of proposals driven by initial price rather than long-term value for money; do we have a proposed evaluation approach that allows us to balance financial factors against the quality and security of delivery? Does the evaluation approach take account of business criticality and affordability? Is the evaluation approach business driven?

Seventh, is the lack of understanding of, and contact with the supply industry at senior levels in the organization; Do senior management sufficiently engaged with the industry to be able to assess supply-side risks? Are the processes in place to ensure

that all parties have a clear understanding of their roles and responsibilities, and a shared understanding of desired outcomes, key terms and deadlines?

2.3 Causes of Project Failure

Centerline Solutions Inc., seen in their article “10 Major Causes of Project Failure”, that A project is considered a failure, whenever a project does not meet the expectations of the stakeholders. The impacts of project failure Cost & Time Overruns; Quality degradation, Frustration, sometimes resulting in people quitting; Stress, sometimes resulting in people quitting; Low job satisfaction; Low corporate market value; Low public opinion; Negative media campaigns.

While 10 Major Causes of Project Failure according to the Centerline Solutions Inc., are as follows:

1. Lack of Change Management, The Problem: These are changes that were not initially planned for are added to the project. The project takes longer and costs more than planned and. What to do here to document the change management process to be used and followed by the project team. To educate the project team to recognize a change or deviation from the plan. To follow the change management processes.

2. Poor Communications, The Problems here include; team members do not have the information they need when then need it, causing delays. Issues or changes do not get escalated. Project reporting (and therefore control) is sluggish.

What to do & Prevention includes the following; finding out the communications requirements of all team members and stakeholders, document them in a communication plan, and follow the plan. Identify; who needs the information? What do they need to know? What level of detail? How do they want it? When and how often do they need it? How should it be delivered, and by whom.

3. Inadequate Resources, The Problems here are; tasks take longer than expected to complete. Deadlines and milestones get missed. Project completion date comes into jeopardy. You end up working double-shifts to complete all the work.

In this instance, what to do is to; Get executive sponsorship for the project. Document which resources and skill sets are needed to get the job done. Create a plan that gives enough time to get the job done with the allocated resources. Pre-assign the required resources to the team.

4. Poorly Defined Requirements, The Problem here is that Customer will be unhappy. So what to do is; find out and document exactly what the customer wants. Inform everybody of the project scope. Document business, functional and technical requirements. Have the customer agree to and sign off the required documents.

5. Inaccurate Estimates will create the Problems of; an unrealistic timeline or budget. You will not be able to do all the work in the time allocated. Therefore, what to do is; List all the work as well as possible. Estimate each work package. Add up all work packages. Always give answers using a range of dates.

6. Poor Risk Management, this causes the Problems of; unexpected events cause delays. Domino effect of things going wrong. What to do is; list all the work as well as possible. Figure out what can go wrong with each piece of work. Prioritize each risk. Sort the list. Create a plan to deal with the risks at the top of the list.

7. Poorly Defined Deliverables, There are Problems in terms of; difficulty to get agreement that the project is finished. Customer keeps wanting more, saying you didn't do it to their specifications. In such a case, what to do; is to ensure milestones or deliverables are; clearly defined, measurable (or quantifiable),

8. Over Optimism, the associated problems are; there was little or no planning before deciding you can get the job done. The task you agree to turns out to be more work than expected. It takes you longer and jeopardizes other deliverables. What to do; is take the time to fully understand the work before agreeing to it. It's okay to say the work is not possible or will take too long. Only agree to work when you're sure it can be done, this will benefit you and your manager.

9. No Time for Project Management, The Problems: are that the plan is flawed from the start. The project gets out of control and can't be recovered. What to do is; planning a project is like setting out a roadmap. Controlling a project is like controlling a car. You have to continuously watch the road (the plan) and make little adjustments.

10. Improved PM Skill sets needed, The Problems: Your projects don't finish on time. Your projects are always squeezed at the end. Your projects are stressful. You have to deal with unrealistic expectations or customers. You feel your projects are out of control. Hence, what to do: Learn the methods, tools, and techniques successful professional project manager use to initiate, plan, execute and control their projects.

Stuckenbruck, L. C. (2006). Wrote the "Integration: The Essential Function of Project Management", and focus on the integration part of the project. Every project is

a system in that it consists of many interrelated and interconnected parts or elements which must function together as a "whole." Projects vary greatly in size, complexity, and urgency; however, all but the simplest projects have a common element in that they must be integrated.

Project integration can then be described as the process of ensuring that all elements of the project its-tasks, subsystems, components, parts, organizational units, and people-fit together as an integrated whole which functions according to plan. All levels of management ascribe to this goal, but project managers must be preoccupied with it since they have the direct responsibility to ensure that it occurs on every project.

The most important decisions and resulting actions are those taken by top management, and many of these actions must be taken \veil before the project is actually started. Not all of these actions are directly concerned with the integration function, but they are all necessary for the successful implementation of project management. The most critical of the actions which must be taken by top management are the following; completely selling the project management concept to the entire organization; issuing a charter to completely delineate it project and functional authority and responsibilities; choosing the project manager or project managers; choosing the right functional managers to participate in the project and/ or matrix organization; supplying adequate resources to the project organization such as finances, equipment, personnel, computer support, etc., and continuing strong support for the project and for the project manager.

The project manager is the; single point of integrative responsibility, and is the only person who can initiate and monitor these actions. The most critical of these actions are as follows; Issuance of the Project Implementation Plan, issuance of the Project Procedures Guide and issuance of Work Authorizations.

Planning for Project Integration, Developing Integrated Project Control, Managing Conflict, Removing Roadblocks, Setting Priorities, and Facilitating Project Transfer.

Johnston, C.R, Johnston, L. A., (2006). Wrote in his paragraph "Some Reasons for Failed Information Technology Outsourcing Initiatives and how Capital Budgeting and Value Chain Analysis can help", as reasons of failure may be for "Poor risk management/ Risk Planning".

“Perhaps the greatest potential for risks exists when outsourcing IT functions overseas. Outsourcing to another country involves many issues, including culture and geography, personal behavior, competitive security, and public opinion. With these issues come many risks which must be identified, incorporated into planning, and dealt with in a timely manner. “.

And as per his conclusion and recommendations for further research he wrote: “Barthelemy and Adsit (2003) summarized “seven deadly sins of outsourcing.” One or more of these are present in most failed outsourcing initiatives (Over half of the almost 100 firms in Europe and the US they studied were outsourced of IT). These mortal sins include; outsourcing Activities that should not be outsourced, so no core activities that contribute to competitive advantage should be outsourced. Selecting the Wrong Vendor. Writing a Poor Contract; to avoid that the contract should be as complete as possible. Overlooking Personnel Issues, as the communications concerning possible outsourcing decisions should be open and ethical. Losing Control over the Outsourced Activity, so the management of the vendor must be capable and active. Overlooking the Hidden Costs of Outsourcing. Failing to Plan an Exit Strategy.

Prabhakar, G. P. (2008). Wrote in his “What is Project Success: A Literature Review”, Rockart (1979) developed a three step procedure for determining which factors that contribute to meeting organizational goals. His study reveals that many executives tend to link in terms of “what does it take to be successful” in their business rather than in terms of purposes, objectives, and goals. Consequently, the key question in this method is, “what does it take to be successful in the business?” The three main steps in the process are; Generate critical success factors (CSFs), refine (CSFs) into objectives and identify measures of performance.

Rockart (1979) and his associates applied the CSF method at several different organizations. Murray, J.P. (2001) describes the nine factors for IT project success that he thinks can make or break IT projects. These are, appropriate senior management levels of commitment to the project, adequate project funding, A well-done set of project requirements and specifications, careful development of a comprehensive project plan that incorporates sufficient time and flexibility to anticipate and deal with unforeseen difficulties as they arise, an appropriate commitment of time and attention on the part of those outside the IT department who have requested the project, combined with a willingness to see it through to the end.

Next is the candid accurate reporting of the status of the project and of potential difficulties as they arise, followed by a critical assessment of the risks inherent in the project, and potential harm associated with those risks, and the ability of the project team to manage those risks. Then the development of appropriate contingency plans that can be employed should the project run into problems and finally, an objective assessment of the ability and willingness of the organization to stay the project course.

A study by Dong et al. (2004) covers most of the concerns of Chinese information systems' project managers, for which they reviewed extensive literature. The most commonly cited set of CSFs are; effective communication, top management support, user involvement, Project manager and team members, Project definition, Project planning, Project control and change management, and technology support.

Project Success Criteria: According to Crawford (2002) project success is an important project management issue, it is one of the most frequently discussed topics and there is a lack of agreement concerning the criteria by which success is judged (Pinto and Slevin 1988; Freeman and Beale 1992; Shenhar, Levy, and Dvir 1997; Baccarini 1999).

There is also a general agreement that although the schedule and budget performance alone are considered inadequate as measures of project success, they are still important components of the overall construct.

The project manager is an important factor leading to project success. Many leading authors agree with this point of view and are conducting research to substantiate this grounded theory.

Qassim, A. A. (2008). Wrote in his article, "Why information systems projects fail: Guidelines for Successful Projects OMAN" had ranked projects risks as follows; lack of top management commitment, misunderstanding of scope/objectives/requirements. Lack of client/end-user commitment/involvement, changing scope/objectives, Poor planning/estimation, inadequate project management, failure to manage end-users expectations, conflict among stakeholders, change is senior management ownership. Lack of adequate change control, Shortage of knowledge/skills in the project team, improper definition of roles and responsibilities; artificial deadlines, Specification not frozen, new or radically business process/task, employment of new technology, poor control against target, a number of organizational units involved, lack of effective methodologies, staff turnover and multiple vendors.

While author ranked the improvement factors to include the followings; greater top management support, more commitment from users, more power and decisions making authority, greater financial control and flexibility, greater Control over staff resources, commitment to requirements and scope once specified, more project management training, commitment to a stable project management method, alignment of IT project initiatives to business strategy, greater understanding of project management on the part of top management, project boards and clients, greater realism in setting targets. Several respondents railed against imposed rather than planned targets and deadlines and establishment of a supportive project/program office. She concluded with a guideline, divided into three stages:

A. Firstly, before starting the project:

Analyze the organization environment using standard tools such as SWOT or PEST to; Align Business with ICT Strategy; ensure management buy-in; ensure adequate project resources; ensure project team has the required skills and knowledge to run the project; clearly define scope, objectives and requirements; break project down into manageable components; construct the project's product to be flexible and open to future change; make use of previous experience; establish clear criteria for supplier selection; carry out detailed costing and establish a feasible project budget, maintain communication at all levels; boost awareness in the organization of the project.

B. During the project:

Adopt a good project management strategy; create a risk plan and monitor it; establish timetable to give users enough knowledge to accept the new system; establish documentation standards and backup strategy.

C. After the project implementation; Periodic review once project is live; consider ongoing user training; establish a project knowledge base.

Guyen, E. (2008). Wrote in her article "Project Management - To Be Successful or Not to Be Successful" identified that a project can be considered a failure if; It deviates too far from original specifications; It doesn't meet key user requirements; and it is late or over budget. The main IT project failure criteria include the following; Missed deadlines (Time); exceeded budget (Cost), and inability to project requirements (Scope). While the main IT project success criteria include;

meeting milestones and deadlines; meeting the budget, and meeting the project requirements.

Veld, C. I. (2008). Wrote in his article “7 Habits of Highly Successful Project Management Professionals” and clarified that there are seven habits of highly unsuccessful project managers. They are as follows: lack of planning should be avoided; include as much as possible of stakeholders; project manager shouldn't be easily influenced; Let your words speak, so project manager must communicate well; over the edge, so project manager should look after his project, and be proactive and not only reactive; don't follow the wrong way by settling the client expectations and maintain it; and slave driver; Project manager shouldn't be a slave.

Often the success of any project lies heavily on the effectiveness of the project manager. As such these managers would do well to learn from these undesirable habits in order to better themselves. They all may seem logical enough to know and yet there are project managers out there fostering these habits; make sure that you or your project manager is not one of them!

Norton, R. K. (2008). Wrote in his article “PRINCE2 for a Successful Project” Some common reasons for unsuccessful projects are; lack of management support; resource conflicts; lack of clarity on roles and responsibilities; poor communication; lack of leadership.

However, some common reasons for a successful project can include the following:

1. Advanced planning - individuals are given defined roles; teams are established; the outcome is defined.
2. Strong leadership - continuous committed leadership; executives show strong support; metrics and incentives are in place to drive desired behaviors; change is seen as an ongoing process.
3. Relationships are maintained - the leaders are 'people focused'; relationships are maintained while meeting needs.
4. Quality delivered - project deliverables have met all functional, performance and quality specifications.
5. Stakeholder expectations met - every expectation of the stakeholders was met; every key stakeholder accepts the results.

Al-Ahmad, W. (2009). Wrote in his article “A Taxonomy of an IT Project Failure: Root-causes”. The three panels of experts identified initially a list of 53 IT

project risk factors. The list was reduced to a set of 17 through ranking and paring down processes, as shown below:

1. Lack of top management commitment to the project.
2. Misunderstanding the user requirements.
3. Not managing change properly.
4. Failure to gain user commitment.
5. Lack of adequate user involvement.
6. Conflict between user departments.
7. Changing scope and objectives.
8. Number of organizational units involved.
9. Failure to manage end-user expectations.
10. Unclear / misunderstood scope and objectives.
11. Improper definitions of roles and responsibilities.
12. Lack of frozen requirements.
13. Introduction of new technology.
14. Lack of effective project management skills.
15. Lack of effective project management methodology.
16. Lack of required team knowledge / skills.
17. Insufficient / inappropriate staffing.

Krigsman, M. (2009). Wrote in his article “Three big reasons CRM initiatives fail” wrote that there are three major pitfalls that plague many CRM initiatives. While not a comprehensive inventory of potential problems, many projects succumb to these big causes of failure.

Failure 1: Installing technology without a business strategy.

Failure 2: Paying insufficient attention to user needs and benefits.

Failure 3: Using ambiguous (or non-existent) measures of project completion and success.

Waters, K. (2010). Wrote in his article, “Most IT Projects Fail. Will yours?” illustrating that Gartner studies suggest that 75% of all US IT projects are considered to be failures by those responsible for initiating them. But what do they mean by failure?

They mean the solutions fundamentally did not do what was agreed. Or they missed deadlines. And/or came in over budget. Indeed, half of the projects exceeded budget by 200%!

A Standish Group study, again in the US IT industry, found that 31% of projects were cancelled outright and that the performance of 53% of the all projects was so worrying that they were challenged merely as a result of; unclear or unconvincing business case; insufficient or non-existent approval process; poor definition of project scope and objectives; insufficient time or money given to the project; lack of business ownership and accountability; insufficient and/or over-optimistic planning; poor estimation; Long or unrealistic timescales; forcing project ends dates despite best estimates; Lack of thoroughness and diligence in the project startup phases.

Some technical and Requirements Issues include the following; lack of user involvement (resulting in expectation issues) Product owner, unclear or consistently not available; scope creep; lack of adequate change control; poor or no requirements definition; incomplete or changing requirements; wrong or inappropriate technology choices; unfamiliar or changing technologies; lack of required technical skills; integration problems during implementation; poor or insufficient testing before go-live; lack of QA for key deliverables; long and unpredictable bug fixing phase at end of project.

Stakeholder Management and Team Issues includes; insufficient attention to stakeholders and their needs; failure to manage expectations; lack of senior management/executive support; project sponsors not 100% committed to the objectives; lack understanding of the project and not actively involved; inadequate visibility of project status; denial adopted in preference to hard truths; People not dedicated to project; trying to balance too many different priorities, and Project team members lack experience and do not have the required skills; the team lacks authority or decision making ability; poor collaboration, communication and teamwork

The Project Management Issues are; no project management best practices; weak ongoing management; inadequately trained or inexperienced project managers; inadequate tracking and reporting; not reviewing progress regularly or diligently enough; ineffective time and cost management; and lack of leadership and/or communication skills.

Viser, V. (2010).Wrote in his article “Project Management Series - Managing the Successful Shop Project”, a project, by the very definition of the term, is all about parts. Parts considered, parts acquired, parts assembled, parts finished. In a job shop or on a manufacturing floor, a project usually involves another aspect-people. In a shop project, people work as a team to complete a task that, ultimately, is greater than the

sum of its parts. The questions to consider, however, are how often do shop projects end up as unsuccessful, and why? With so many people contributing to the cause, it should be a matter of fact that the projects would succeed merely by virtue of having so much oversight.

Surprisingly, in many shop project failures it is clear that many team members are on separate pages about the ultimate goals, specifications, and even products of the project. Like a theatrical production without a script, improvisation during performance is mistake-laden, often lacking a clear sense of direction. To ensure a successful outcome for any shop project, basic communication is absolutely necessary so that team members know what's going on. Again, this notion begins at the management level and travels down to the team. If the manager doesn't have a clearly defined idea about what the project parameters are, don't expect the shop floor personnel to create them on their own.

This mandate for communication also applies to on-going communication within the team itself. Management must facilitate this, and constructive and critical insights regarding project improvement should be highly encouraged. In other words, all team members should feel free to question ambiguous or otherwise unclear process and procedure-before mistakes are made in production. Once mistakes are made due to a reluctant communication environment within the team, needless waste is introduced into the project with profit margins and quality of outcome chipped away.

Providing an open atmosphere for the critical insights of team personnel also requires a large degree of positive reinforcement of the project efforts. The notion that the project is developed and implemented as a team effort means that the more tightly members are bonded to the team, the more likely they are to see themselves as members of a larger body-that the personal failure of one in the project task has a broader negative effect upon the group and its efforts to succeed in the project. These are the basics of group dynamic communication.

Finally, near the completion of the project, be sure to inspect the product and measure it against the specifications laid out in the approved plans. While this should surely be an on-going quality assessment, nearing the end of the project completion-before external eyes see it-plenty of time should be used to ensure that the thing has been done right. With time enough before promised delivery dates, most production errors can still be fixed before clients or the in-house managers who ordered the project in the first place make a final review.

Planning, preparation, communication. With these basic management tools in mind, you will achieve more frequent success in undertaking not only simple shop projects, but the most complex as well. Remember the management mantra: It is always the team that works in harmony that makes the best music.

Gulla, J. (2011). Wrote in his presentation “Seven Reasons Why Information Technology Projects Fail” that there is a list of top seven reasons why IT projects Fail, as follows; poor project planning and direction; insufficient communication; lack of change, risk, financial, and performance management; failure to align with constituents and stakeholders; ineffective involvement of executive management; lack of skilled team members in the areas of soft skills, ability to adapt, and experience, and poor or missing methodology and tools.

Project failures can be easily attributed to a number of factors. Which are considered as the common pitfalls, these are; failure to align with constituents; lack of proactive risk management; poor performance measurement; loose definition of project scope and management; insufficient project communication, and missing methodology.

Badamas, M. A. (2011). Wrote in his article “Information Technology Project Outcomes: An Exploratory Study of project Managers’ Viewpoints”, he concluded that Enterprise IT projects can end up costing much more than initial estimations, taking much longer time than expected or delivering benefits below expectations. The success or failure of IT projects, however, depends on the project managers. Many reasons are attributed to the success or failure of an IT project. The major stakeholders who are involved in IT projects are the right people to provide these reasons. Author found that 33% of respondents to a recent survey identified project management as the number one management challenge of the decade, indicating that the biggest project management challenges that IT will face in the coming years are global teams, vendor partners and project portfolios (Brandel, 2006). In a recent survey by KPMG International, 81% of companies reported increases in the number of new IT projects in the past 12 months, and 88% reported increase in the complexity of projects (Bednarz&Dubie, 2006).

According to the Standish Group Report more than \$250 billion is spent in a year on about 175,000 IT projects in U. S., and the average cost of a project for a large company is \$2,322,000. For a medium company it is \$1,331,000 and for a small company, it is \$434,000 (Standish, 2000). According to the same Standish Group

Report, 31.1% of projects will be canceled before they even get completed, while 52.7% of the projects will cost 189% of their original estimates (Standish, 2000).

Project successes as believed by different groups of stakeholders do not match. Stakeholders external to the project organization use target cost and time to determine project success while stakeholders, internal to the project use the attainment of scope of the project to determine project success. It was found that the highest determinant of success is meeting the scope of software projects, which comprises the functionality and quality of the project outcome.

Mehta, N. (2011). Wrote in his article “4 Reasons Why Your Projects Fail – And What You Can Do about them”.

Reason 1: You don't know where you want to go.

Projects are journeys. If you are not certain about the destination, you can't reach there. When we start on the project, we only have a top level view of what the project should accomplish. Most clients have a vague sense of what they want. No matter how well we try to define and document the requirements, we discover details when we are closer. We always learn the most about something when we are actually doing it.

The point to take home? Develop and propagate the vision of your projects.

Reason 2: You don't know how to get there.

No matter how much experience you have, every project is new. Every project has its own challenges. It could be a new market, team or technology. You or your team may not know how to execute the project. We may have a good understanding of overall implementation, but the devil is in the detail. And we generally have a tough time getting around those details.

Question for you: do you have clear direction for success?

Reason 3: You don't track how far you've reached.

We may take regular status updates, but are we tracking what forwards a project and what pushes it back? What are the key performance indicators for your projects? Are you tracking them on a regular basis? What action do you take when you notice an anomaly? Send an email to the person responsible, and then hope it will be taken care of?

Success is a big motivator. When team members know the project is progressing well, they are more likely to complete it well. Weekly iterations, big visible charts, reviews and follow ups – they are all critical to a project's success.

Do people know what you are tracking? Have you setup clear and specific milestones?

You must allocate sufficient time every week for tracking and course correction. You want to correct the course of your journey before it's too late.

Reason 4: Whose project is it anyway?

Does the project belong to the client? Is it the organization's project? Is it the project managers? What is your contribution to the project? Do you determine the success of the project?

For most people, their contribution to the project is the work they are assigned. Small work that makes little difference cannot light fires in their bellies. If your team does not get a sense of ownership, there is little chance you will succeed.

IDC New Zealand, (2013). Wrote in its article "Project Failure Is All about Business Perceptions" that Key factors identified by IDC as contributing to this persistent gap and project failures include; inadequate project prioritization and selection processes. To get the budget approval for a project, IT managers often need to commit to a concrete deadline. This inflexibility increases the likelihood of the implementation not meeting the requirement for project timelines.

Changing scope during the project. Changes to the original project brief, however minor, generally have a compounding effect on deadlines as the consequences ripple through the entire project timeline and resource availability. The bigger the project, the bigger the ripple.

A lack of transparency beyond the IT management level. A lack of visibility into IT projects can obscure progress on success factors in the non-IT management level. Project managers often underestimate the importance of defining and clearly communicating risk factors, particularly in large critical projects.

Insufficient executive involvement in IT project governance. Successful projects require strong executive involvement and sponsorship. If executives believe that they are being excluded from the projects that directly affect their business it will be difficult for these stakeholders to objectively evaluate the success of projects.

Vagueness of the businesses' expected needs or project outcomes. In the survey, 60% of line of business managers stated that they were only sometimes or never consulted for IT projects affecting their department. This can lead to a lack of clearly defined and mutually agreed success factors, particularly in complex projects.

No formalized mechanism for capturing and analyzing end-user satisfaction with IT service delivery. End-user satisfaction is the bottom line success factor in IT projects. Without a formalized mechanism or process for capturing and analyzing end-user satisfaction, attitudes there is a danger of IT repeating the mistakes of the past and leading to a dangerous situation where "shadow" IT becomes irretrievably entrenched within the organization.

"Project success is all about managing perceptions," says Louise Francis, Research Manager, IDC New Zealand. "The more complex the project, the more critical it is to understand stakeholder attitudes and motivations during all stages of the IT project from planning to post implementation support. The impact of poor requirements gathering is often a major factor in IT project failure, hampering effective lines of communication throughout the project through business irrelevance that which can doom a project right from the start."

Wailgum, T. (2009). Wrote in his article "10 Famous ERP Disasters, Dustups and Disappointments" The world of enterprise applications (ERP, CRM, BI and supply chain apps) may seem boring to those caught up in the hysteria over Twitter and iPhone applications, but there's plenty of drama to be found: Troubled multimillion-dollar software deals that produce spectacular failures. All of this drama is actually creating a very real ERP backlash. Consider 10 ERP scandals as a warning if you're contemplating an upgrade or implementation.

1. Definitely bad experience for Hershey; could a failed technology implementation take down a Fortune 500 company (in this case Hershey Foods)? It certainly didn't help Hershey's operations during the Halloween season in 1999 or make Wall Street investors thrilled. In the end, Hershey's ghastly problems with its SAP ERP, Siebel CRM and Manugistics supply chain applications prevented it from delivering \$100 million worth of Kisses for Halloween that year and caused the stock to dip 8 percent.
2. Just Do It: Fix Our Supply Chain System! What did a \$400 million upgrade to Nike's supply chain and ERP systems get the world-renowned shoe- and athletic gear-maker? \$100 million in lost sales, a 20 percent stock dip and a collection of class-action lawsuits. This was all back in 2000, and the horrendous results were due to a bold ERP, supply chain and CRM project that aimed to upgrade the systems into one superstar system.

3. HP's "Perfect Storm" of ERP Problems. The epic tale of HP's centralization of its disparate North American ERP systems onto one SAP system proves that one can never be too pessimistic when it comes to ERP project management. You see, in 2004, HP's project managers knew all of the things that could go wrong with their ERP rollout. But they just didn't plan for so many of them to happen at once. The project eventually cost HP \$160 million in order backlogs and lost revenue—more than five times the project's estimated cost. Said Gilles Bouchard, then-CIO of HP's global operations: "We had a series of small problems, none of which individually would have been too much to handle. But together they created the perfect storm."
4. A New Type of Freshman Hazing. Pity the college freshman at the University of Massachusetts in fall 2004: The last thing they needed was some computer program to haunt their lives and make their new collegiate experience even more uncertain. But more than 27,000 students at the University of Massachusetts as well as Stanford and Indiana University were forced to do battle with buggy portals and ERP applications that left them at best unable to find their classes and at worst unable to collect their financial aid checks. Said one UMass senior at the time: "The freshmen were going crazy because they didn't know where to go." After a couple of tense days and weeks, however, everyone eventually got their checks and class schedules.
5. Waste Management Trashes Its "Fake" ERP Software. Garbage-disposal giant Waste Management is still embroiled in an acrimonious \$100 million legal battle with SAP over an 18-month installation of its ERP software. The initial deal began in 2005, but the legal saga commenced in March 2008, when Waste Management filed suit and claimed SAP executives participated in a fraudulent sales scheme that resulted in the massive failure. Several months later, SAP fired back, claiming that Waste Management allegedly violated its contractual agreement with SAP in several ways, including by "failing to timely and accurately define its business requirements," and not providing "sufficient, knowledgeable, decision-empowered users and managers" to work on the project. In the fall 2008, accusations were still flying about documentation, depositions and delays in bringing the case before a judge.
6. The Curious Case of Oracle Fusion Applications. Back in January 2006, Oracle boasted that it was halfway through the Fusion Applications

development process. You might remember the hype about Fusion Apps: a killer enterprise application suite that combines the best features and functionalities taken from Oracle's expansive E-Business Suite, J.D. Edwards, PeopleSoft and Siebel product lines. Oracle's master plan was to "build the next-generation of applications that are completely standard." More than three years later, we're all still waiting for the first generation of Oracle's suite of Fusion Apps.

7. Oracle, SAP and a Little Company Named TomorrowNow. If enterprise software maintenance wasn't so boring, the details of this sordid story would make Hollywood producers fight over the rights to shoot this movie. Here's a brief summary: In 2005, SAP bought TomorrowNow (TN), a small company that provides ERP software maintenance and services for Oracle's ERP products—at 50 percent off Oracle's price. Of course, TN's services could work equally as well for SAP's products (but we were supposed to ignore that). We have come to find out that not everyone at SAP thought the TomorrowNow acquisition was a good idea. Flash forward to 2007: Oracle alleges that SAP (via TN) "has compiled an illegal library of Oracle's copyrighted software code and other materials." A nasty lawsuit unfolded (and is still going strong) and SAP abruptly shut down TN in 2008. Meanwhile, a former TN cofounder (Seth Ravin) formed his own TN-like company (Rimini Street) and has been scooping up all the former TN business. In addition to the Oracle ERP products his company already services, he's going to start offering half-off maintenance services for some of SAP's ERP products this year.
8. Shareholder Pressure Halts SAP ERP Rollout. All was not well with bedding-maker Select Comfort's multi-module ERP implementation of SAP's ERP, CRM, supply chain and other applications. So in 2008, with serious shareholder pressure to end the \$20-million-plus project that was "indicative of extremely poor judgment by management" (charged one shareholder's SEC filing), Select Comfort did just that: It puts the project on hold. In this economic environment, is this just an incidental sign of the times or a sign of more things to come?
9. ERP + SaaS = Software Success or Bad Idea? When CIO magazine surveyed 400 IT leaders about their ERP systems in early 2008, CIOs said they remained committed to on-premise, traditional ERP systems—despite

aggravating integration and high-cost headaches. The results weren't that surprising. CIOs have been reluctant to take chances storing the sensitive data (accounting, HR, supply chain) contained in their ERP systems in another company's data center. In the survey, just 9 percent of respondents reported using an alternative ERP model, which included SaaS applications. That was then. This is now: SaaS ERP providers such as NetSuite have experienced greater acceptance of their house-your-ERP-data-offsite models, which in turn has allowed them to go from upstart to the industry player.

10. A Legendary "Moon" on the High Seas. The details of the infamous "mooning" between SAP's Hasso Plattner and Oracle's Larry Ellison have become stuff of urban legend. So what actually did happen? Well, during the 1996 Kenwood Cup sailing race, Ellison's sailing crew reportedly ignored Plattner's wounded sailing yacht (which had a broken mast and bloodied crew member). Plattner did admit to mooning Ellison's crew ("I lowered my pants," he told *Sailing World*) for not helping with his injured crew member and battered yacht. But, alas, Ellison was not aboard that yacht. SAP and Oracle haven't stopped battling it out—on land or on water—since.

2.3 The conceptual Framework of the Research:

This chapter will illustrate clearly the root-cause for problems that arises during ERP implementation as conceptualized in this study in. It will gradually define, identify, build relationships, analyze, and find solutions for them.

This chapter shows the definition and importance of root-cause problems to project management and categorization, then categorized the mentioned failure-reasons in previous researches, analyzed and categorized the failure-reasons, according to the survey's results, and analyzed & linked failure-reasons to the defined root-cause problems.

2.3.1 Root-Cause Problem Definition

The root: is *“any underground part of a plant”* which *“anchoring the plant”* (Dictionary.com), and according to this it could be defined as the hidden and solid part which is the base of the seen part of the matter. Root is more to the origin.

The cause: is “thing that acts, happens, or exists in such a way that some specific thing happens as a result”. And it is actually what triggers the reason to clearly be on the surface.

Causes may be categorized under three types:

1. Physical causes (Tangible), like material items failed in some way (for example, a car's brake stopped working).
2. Human causes, like people did something wrong, or did not do something that was needed. (For example, no one filled the brake fluid, which led to the brakes failing).
3. Organizational causes. (A system, process, or policy that people use to make decisions) (For example, no one person was responsible for vehicle maintenance, and everyone assumed someone else had filled the brake fluid).

The problem: is “any matter involving doubt, uncertainty, or difficulty”. So, any issue which may deviate from the planned tasks or activities will not be continuing as per the plan.

“A root-cause is a factor that caused a non-conformance and should be permanently eliminated through process improvement” (www.ASQ.org).

A root cause is an initiating cause of either a condition or a causal chain that leads to an output or effect of interest. The root cause is used to describe the depth in the causal chain where an intervention could be implemented to improve performance.

The root-cause is “the evil at the bottom” that sets in motion the entire cause-and-effect chain causing the problem(s) (www.ASQ.org).

The root-cause problem: is the major pillar for initiating one issue or more which at the end seen on the surface as a problem which needs to be solved.

Root-cause Analysis seeks to identify the origin of a problem. It uses a specific set of steps to find the primary cause of the problem, so that it can be determined what happened? Why it happened? Figure out what to do to reduce the likelihood that it will happen again?

2.3.2 Communication Definition

Communication: in general is *“a purposeful activity of exchanging information and meaning across space and time using various technical or natural means, whichever is available or preferred. Communication requires a sender, a message, a media and a recipient”*. (www.wikipedia.org).

Communication: *“is one vehicle that makes people see the benefit of what you have done”, “Effective communication doesn’t just convey facts. It makes people understand the role they play in the project.”*(www.PMI.org).

Communications management: *“is the systematic planning, implementing, monitoring, and revision of all the channels of communication within an organization, and between organizations; it also includes the organization and dissemination of new communication directives connected with an organization, network, or communications technology. Aspects of communications management include developing corporate communication strategies, designing internal and external communications directives, and managing the flow of information, including online communication. New technology forces constant innovation on the part of communications managers”* (www.wikipedia.org).

Project Communications Management: As per PMI, in its PMBOK 4th edition *“has identified the processes involved in ensuring timely and appropriate generation, collection, dissemination, storage, and ultimate disposition of project information. It includes identifying stakeholders, plan communications, distribute information, manage stakeholder expectations and report performance”* (PMI, 2008).

Many problems are fall under the communication category due to its nature, as most of these problems caused due to lack of communication, miscommunication or improper communication.

As per PMI, in its PMBOK 4th edition, 90% of project manager’s time should be spent in communication.

As illustrated in (4.2), in this research, 42% (in average) of all elements in all areas are rooted due to poor communication.

2.3.3 Integration Definition

Integration: In general, *“it is process of attaining close and seamless coordination between several departments, groups, organizations, systems, etc.”*(www.businessdictionary.com).

Integration Management: *“Integration management is a collection of processes required to ensure that the various elements of the projects are properly coordinated. It involves making trade-offs among competing objectives and alternatives to meet or exceed stakeholder needs and expectations”* (wikibooks.org).

Project Integration Management: the processes and activities needed to identify, define, combine, unify, and coordinate activities within the project management process groups. Unify, consolidate, articulate, and integrate actions crucial to project completion, managing stakeholder expectations, and meeting requirements.

As per PMI, in its PMBOK 4th edition, it involves making tradeoffs among competing objectives and managing interdependencies between knowledge areas.

So, the project integration: is bringing all project parties together in one picture and build the dependency among parts and then puts them in one cohesive pool to monitor and control them collectively.

A blueprint would be used in this document and it is a reproduction of a technical drawing, documenting architecture or an engineering design. The process allowed rapid and accurate reproduction of documents used in construction and industry. The blueprint process was characterized by light colored lines on a blue background, a negative of the original. The use of word blueprint here is to describe the view of the final picture of the project's products into a draw to visualize the project's target.

Architecture is an important grouping of physical architecture assessment activities. It traditionally follows the fit gap analysis and may take place simultaneously with the scope phase. The architectural assessment evaluates what type of physical hardware specifications the company requires to support a new ERP application. It provides a comprehensive report that details performance projections, assumptions, and recommendations. It also will mitigate risks around potential and expensive downtime during deployment and production due to performance issues.

Integrated picture or vision for the whole project should be there and agreed upon among most or all of the project stakeholders, that's to facilitate transformation and make all participants, after common consensus, work as enablers for change not as obstacles, neutrals or resistors.

2.3.4 Business Environment Readiness Definition

Readiness: *“State of preparedness of persons, systems, or organizations to meet a situation and carry out a planned sequence of actions. Readiness is based on thoroughness of the planning, adequacy and training of the personnel, and supply and reserve of support services or systems”* (businessdictionary.com).

Business environment readiness: means to prepare the business environment and make it ready for ERP implementation; whilst change management takes place to facilitate transformation.

The purpose of preparing the organization from the business process perspective is to identify and review the high-level requirements and selected business processes that should be included in the scope of an ERP system. The principal objective is to identify and document as many of the requirements as possible, as well as any Integration and Interface requirements that will be important factors of consideration for the evaluation and decision. This phase will also examine the as-is processes selected for potential implementation to ensure that the ERP system can support them. Once it has been established that the business processes in question can be supported, the review should start with the functional requirements to ensure that the requested functionality can be realized in the potential solution. Furthermore, integration and interface requirements need to be reviewed to ensure that they are consistent with the potential ERP integration and customization recommendations. Finally, any other non-functional requirements or strategic decisions regarding related technologies need to be identified to make sure there are no compatibility conflicts. The requirements and process review should result in a report detailing the high-level scope in terms of business processes, functional requirements, non-functional requirements, integration requirements, and interface requirements. Areas of concern should be identified and documented.

Most ERP applications have its own business processes that are compliant with the industry and business which the project was undertaken originally for; these processes need to be implemented by highly experienced functional experts who design, customize, modify, and configure ERP processes according to real business processes after enhancements and not vise-versa (except for minor tuning). As known and regularly, the business leads information technology, and not the opposite. So it is known that ERP has like BAA (business application analysis), BPM (business process mapping) and others that are ready with the ERP applications to apply in any organization to gain consensus on processes prior to run ERP.

Fit gap analysis should be done in order to identify and review the high-level requirements and selected business processes that should be included in the scope of the ERP system. This analysis determines the “degree of fit” between the current business requirements and the ERP system, identifying the “gaps” that must be filled

to address requirements comprehensively. The deliverables at the end of this exercise include a Fit Gap spreadsheet and Solution Blueprint report that describe, in easy-to-understand business terminology, what changes are necessary to meet the defined needs. This phase will identify the major customizations that will be required to address defined business requirements and to provide an understanding of how a new system would work in the particular business environment. To achieve this, the assessment team must meet with executive sponsors and SMEs to confirm the scope of the project; review documented business and IT requirements in light of existing system capabilities; Conduct necessary workshops to gather and clarify requirements; Produce a Fit Gap spreadsheet and Solution Blueprint report; Meet again with executive sponsors and SMEs to report the findings of the analysis and answer any questions that linger or arise.

So this step, as business process mapping, is better run by a third party or individual who is more to the business than to ERP, with a deep knowledge of the ERP which is to be implemented; that to act as interpreter to translate business requirements into technical, for the ERP team, to allow them to design the ERP functions (forms, reports, inquiries, etc.).

Many problems are fall under “business environment readiness” category due to its relation to the running business operation.

As illustrated in (4.2), in this research, 40% of elements are rooted due to “business environment readiness”.

2.3.5 Justifying Independent and Dependent Variables

Figure 2.1 Shows the Conceptual Framework of the Study

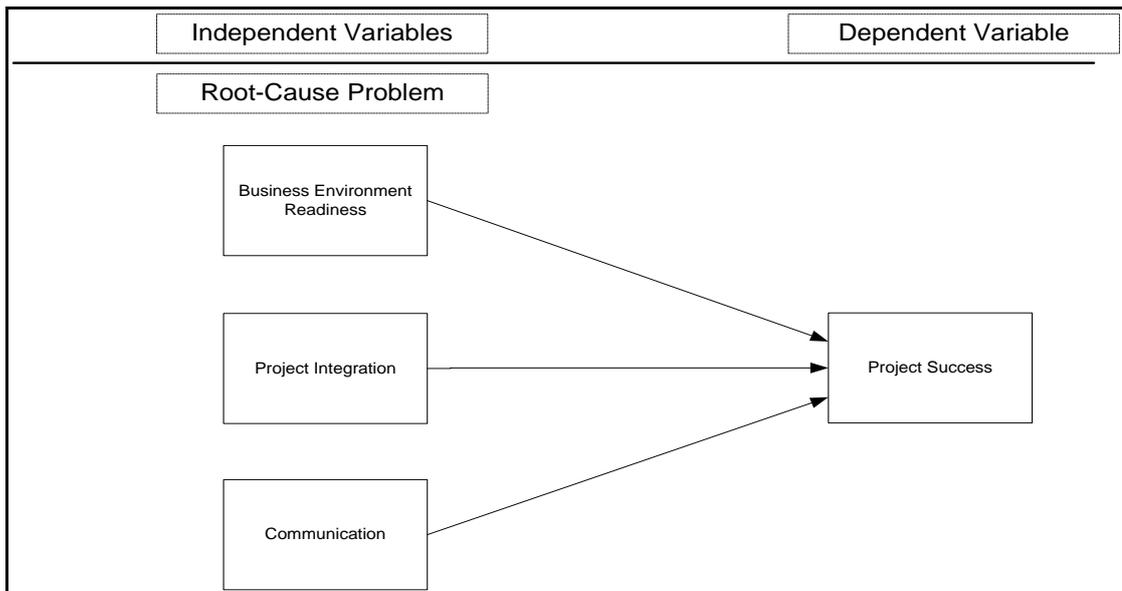


Figure 2.1: The Conceptual Framework of the Study

Project success is an aim for each project; and is taken here as dependent variable. Variables selected for this study, as independent variables, were pilot tested through conducting interview of a sample of CIOs, ERP managers, project managers, etc. The interview from the pilot study enable the researcher to identify variables that are mostly related to local market, moreover, additional variables were thought out through the researchers long years of working experience (twenty years) in the same field and local market; The variables were then used to develop the instruments that were used in the next step, which is the main survey for collecting the respondents' perspectives.

However, other variables that explain the root-cause problems and failure reasons were theoretically identified through the review of past and recent studies conducted by reliable and specialized independent organizations in IT industry across the entire world, some of these variables were however, adopted in this study.

After the verbal interview, the information generated were used to design the instrument for the main survey which were at last distributed to various the interviews IT managers, CIOs and ERP implementation project manager; to get their feedback about the relation between independent and dependent variables.

2.3.6 Research Gap According to the Project Management Body of Knowledge

Business environment readiness; which means preparing the business environment prior to implement an ERP has positive relations with the project success.

It was clear enough, as an outcome of the survey's results, that there is a direct relationship between, preparing the business environment to be ready to receive the automation and the ERP implementation project's success. So as much as the business environment is ready, the potential for success project increases; illustrated in (4.2) tables.

One of the business environment readiness targets is to prepare the business environment, as cleaning house, to receive the ERP implementation; this concept is not clear enough in the current project management body of knowledge; meanwhile the relation among the three root-cause problems are neither set nor clear as identified here, so this study fills this gap and tried to treat this area.

2.4 Categorizing the Mentioned Failure-Reasons in Previous Researches

Many researchers have categorized failure reasons in their researches depending on their views, experience and results of their studies or researches. In line with Whittaker, B., he opined that the three most common reasons for project failure are; poor project planning, Specifically, inadequate risk management and a weak project plan; a weak business case - there should be a business case to support the business need for implementing an ERP application; and lack of top management involvement and support, which should be along the project duration.

As per the article written in OGC, "Common Causes of Project Failure" identified that common causes of project failure and consequently key questions to address are; lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success; lack of clear senior management and Ministerial ownership and Leadership; lack of effective engagement with stakeholders; lack of skills and proven approach to project management and risk management; too little attention to breaking development and implementation into manageable steps; evaluation of proposals driven by initial price rather than long-term value for money; and lack of understanding of, and contact with the supply industry at senior levels in the organization.

From the perspective of Centerline Solutions Inc., 10 Major Causes of Project Failure are said to include; lack of Change Management; poor communications, inadequate resources; poorly defined requirements; inaccurate estimates; poor risk management; poorly defined deliverables; over optimism; no time for project management; and improved PM Skill sets needed.

While Stuckenbruck, L. C., considered the most critical of the actions which must be taken by top management to avoid project failure to include the following; completely selling the project management concept to the entire organization; issuing a charter to completely delineate it project and functional authority and responsibilities; choosing the project manager or project managers; choosing the right functional managers to participate in the project and/ or matrix organization; supplying adequate resources to the project organization such as finances, equipment, personnel, computer support, etc.; and continuing strong support for the project and for the project manager.

He sees that the most important part of project success is the integration of the project's parties; and the soft skills of project management team to sell the idea of the project and keep monitoring, controlling and supporting the project.

Murray, J.P., he describes the nine factors for IT project success that he thinks can make or break IT projects. These are; appropriate senior management levels of commitment to the project; adequate project funding; a well-done set of project requirements and specifications; careful development of a comprehensive project plan that incorporates sufficient time and flexibility to anticipate and deal with unforeseen difficulties as they arise; an appropriate commitment of time and attention on the part of those outside the IT department who have requested the project, combined with a willingness to see it through to the end; candid, accurate reporting of the status of the project and of potential difficulties as they arise; a critical assessment of the risks inherent in the project, and potential harm associated with those risks, and the ability of the project team to manage those risks; the development of appropriate contingency plans that can be employed should the project run into problems; and an objective assessment of the ability and willingness of the organization to stay the project course.

Also Qassim, A. A., ranked project risks as follows; lack of top management commitment; misunderstanding of scope/ objectives/requirements; lack of client/end-user commitment/involvement; changing scope/objectives; poor planning/estimation; inadequate project management; failure to manage end-users expectations; Conflict

among stakeholders; Change is senior management ownership; Lack of adequate change control; Shortage of knowledge/ skills in the project team; Improper definition of roles and responsibilities; Artificial deadlines; Specification not frozen; New or radically business process/task; Employment of new technology; Poor control against target; A number of organizational units involved; Lack of effective methodologies. Staff turnover; and multiple vendors.

According to Guven, E., he identified that a project can be considered a failure if; It deviates too far from original specifications; It doesn't meet key user requirements; and, It is late or over budget.

In his opinion, Veld, C. I., clarified that there are seven habits of highly unsuccessful project managers. So project managers should consider the following; Avoid Lack of planning; Include as much as possible of stakeholders; Project manager shouldn't be easily influenced; Let your words speak, so project manager must communicate well; Over the edge, so project manager should look after his project, and be proactive and not only reactive; Should not follow the wrong way, by settling the client expectations and maintain it, and Project manager shouldn't be a slave.

Moreover, Norton, R. K., pointed out that some common reasons for unsuccessful projects are; Lack of management support; Resource conflicts; Lack of clarity on roles and responsibilities; Poor communication; and Lack of leadership.

As per, Al-Ahmad, W., there are seventeen identified IT project risk factors and they are; Lack of top management commitment to the project; Misunderstanding the user requirements; Not managing change properly; Failure to gain user commitment; Lack of adequate user involvement; Conflict between user departments; Changing scope and objectives; Number of organizational units involved; Failure to manage end-user expectations; Unclear / misunderstood scope and objectives; Improper definitions of roles and responsibilities; Lack of frozen requirements; Introduction of new technology; Lack of effective project management skills; Lack of effective project management methodology; Lack of required team knowledge / skills; and Insufficient / inappropriate staffing.

Krigsman, M., suggested that there are three major pitfalls that plague many CRM initiatives; as follows:

Failure 1: Installing technology without a business strategy.

Failure 2: Paying insufficient attention to user needs and benefits.

Failure 3: Using ambiguous (or non-existent) measures of project completion and success.

To Waters, K., he means the solutions fundamentally did not do what was agreed. Failure reasons categorized as follows; Unclear or unconvincing business case; Insufficient or non-existent approval process; Poor definition of project scope and objectives; Insufficient time or money given to the project; Lack of business ownership and accountability; Insufficient and/or over-optimistic planning; Poor estimation; Long or unrealistic timescales; forcing project ends dates despite best estimates. Lack of thoroughness and diligence in the project startup phases; Technical and Requirements Issues; Lack of user involvement (resulting in expectation issues) Product owner, unclear or consistently not available; Scope creep; lack of adequate change control; Poor or no requirements definition; incomplete or changing requirements; Wrong or inappropriate technology choices; Unfamiliar or changing technologies; lack of required technical skills; Integration problems during implementation; Poor or insufficient testing before go-live; Lack of QA for key deliverables; Long and unpredictable bug fixing phase at end of project; Stakeholder Management and Team Issues; Insufficient attention to stakeholders and their needs; failure to manage expectations; Lack of senior management/executive support; project sponsors not 100% committed to the objectives; lack understanding of the project and not actively involved; Inadequate visibility of project status; Denial adopted in preference to hard truths; People not dedicated to project; trying to balance too many different priorities; Project team members lack experience and do not have the required skills; The team lacks authority or decision making ability; Poor collaboration, communication and teamwork; Project Management Issues; No project management best practices; Weak ongoing management; inadequately trained or inexperienced project managers; Inadequate tracking and reporting; not reviewing progress regularly or diligently enough; Ineffective time and cost management; and Lack of leadership and/or communication skills.

There are seven (7) reasons why IT projects Fail, according to Gulla, J., and they are as follows; Poor project planning and direction; Insufficient communication; Lack of change, risk, financial, and performance management; Failure to align with constituents and stakeholders; Ineffective involvement of executive management; Lack of skilled team members in the areas of soft skills, ability to adapt, and experience; and Poor or missing methodology and tools.

Similarly, there are four reasons for projects fail as per, Mehta, N., these are;

Reason 1: You don't know where you want to go.

Reason 2: You don't know how to get there.

Reason 3: You don't track how far you've reached.

Reason 4: Whose project is it anyway?

As per, IDC New Zealand, Key factors identified by IDC as contributing to this persistent gap and project failures include; Inadequate project prioritization and selection processes; Changing scope during the project; A lack of transparency beyond the IT management level; Insufficient executive involvement in IT project governance; Vagueness of the businesses' expected needs or project outcomes and no formalized mechanism for analyzing end-user satisfaction with IT services.

As seen above, some researchers categorize their failure reasons based on project management disciplines, project phases, problems' nature, missing of project resources, etc.

It wouldn't be feasible to mention them all here again, but in author's perspective, the most organized failure reasons were listed in the research titled "10 major causes of project failure". Part of that research is posted here in chapter 2 - the "Literature review".

2.5 Analyzing and categorizing failure reasons, according to the survey's results

After studying some of previous researches, articles, essays, etc. Failure reasons are categorized, according to their nature and relation into seven groups, as follows;

- i. Project setup
- ii. Executive management support
- iii. Solution provider (consultants/ implementer/ internal staff)
- iv. Business requirements and environment readiness
- v. ERP fitness to the business/ industry
- vi. Key users/ users
- vii. Project management capabilities

The description of the above seven groups, that include all failure reasons those mentioned in the survey; meanwhile all failure reasons were distributed under these seven groups:

- i. **Project Setup:** prepare the environment to receive temporary the project, and as well, receive its product and deal positively with it, after the project successfully finishes. The preparation includes preparing for a project to take place on the ground in the organization and allow it to run and sometimes involve some of its activities with the organization's operation, so it is expected to use some of the organization's resources. Meanwhile, prepare the organization to deal with the project while it's run and participate in the project's product creation. Project setup concerns identifying the external parties and internal parties and define their roles, prior the project started.
- ii. **Executive management support:** Executive management is generally a team of individuals, at the highest level of organizational management, who have the day-to-day responsibilities of managing a company or corporation. They hold specific executive powers conferred onto them with and by authority of the board of directors and/or the shareholders. The executive management typically consists of the heads of the firm's product and/or geographic units. In Project Management, senior management is responsible for authorizing the funding of projects, enforce changes, and make things done within their organizations.
- iii. **Solution provider (consultants/ implementer/ internal staff):** is a business which providing the implementation services to customers. The need for external implementer has evolved due to the increasing costs of specialized software peoples who have far exceeded the price range of small to medium-sized businesses financial abilities. The complexities and costs of ERP can be cut down by subcontracting ERP implementation to an external party or internal ones, like sister company and by signing service level agreement with an internal department who specialize in ERP services. In addition, the issues of implementing, or upgrading the ERP have been eliminated; meanwhile, maintaining ERP, technical support, physical and electronic security and in technical support for business continuity and flexible working, are all could be assigned to the solution provider. The importance of this marketplace is reflected by its size.
- iv. **Business requirements and environment readiness:** Business requirements are what must be delivered to provide value. Products, systems, software, and processes are the ways how to deliver, satisfy, or meet the business

requirements. Topic of business requirements often arises in the context of developing or implementing an ERP application. Business requirements exist within the business environment and must be discovered, whereas product requirements are human-defined. Business requirements are not just high-level but need to be driven down to detail. Business requirements are always driven by determining the business development and the required deliverables out of implementing an ERP. In ERP implementation projects, the business requirements usually require authority from stakeholders. This typically leads to the creation or updating of the ERP application. The ERP requirements usually consist of both functional requirements and non-functional requirements. Although typically defined in conjunction with the ERP functionality (features and usage), non-functional requirements often actually reflect a form of business requirements which sometimes are considered constraints, such as necessary performance, security, or safety that apply at the business level. Business requirements are often listed in a business requirements document. The emphasis is on what is required? Rather than on how to achieve it. Business requirements in the context of software engineering or the software development life cycle, is about eliciting and documenting business requirements of business users such as customers, employees, and vendors early in the development cycle of a system to guide the design of the future system. Business requirements are often captured by business analysts who analyze business activities and processes, and often study as-Is process to define a target To-be process, and then by systems analysts.

- v. ERP fitness to the business/ industry: the fitness is the effectiveness of a design, support process employed in delivering a good ERP or service that fits a customer's defined purpose, under anticipated or specified operational conditions. The ERP should be tested previously and announced widely that it contains all functions required for a similar business operation. Localization setting should be supported by the ERP; meanwhile, the coverage for local functions that are sometimes not covered globally should be considered.
- vi. Key users/ users: each business department has to define the role “key user”, who is the first contact for end users in their location, when they have problems using the ERP. The key user is also the user who is responsible of

spreading the technical knowledge in his department. He works closely with the ERP support team; he assists in the preparation of the methods and the tool test. He informs the ERP support team on the issues and helps in the solution development. Key user responsibility is to solve functional user questions, create and manage and close the issues and requests list, summarize technical user problems and address them to the solution provider, inform the end user about the solved technical issues, summarize end user change requests, propose user suggestions for ERP improvements.

While the end user, during the whole live of the ERP implementation, should be principally focused on concepts the basic model and principles that guide the user's problem-solving activity, tasks that the user is trying to accomplish, objects which includes the menus, commands, buttons that the user manipulates to get the job done, and find out the problems he faces like warnings, troubleshooting to minimize the stop time and ERP usage obstacles.

- vii. Project management capabilities: Project management capabilities or soft skills is a term often associated with a person's emotional intelligence, the cluster of personality traits, social graces, communication, language, personal habits, interpersonal skills, managing people, leadership, etc. that characterize relationships with other people. A person's soft skill emotional intelligence is an important part of their individual contribution to the success of an organization. Particularly those organizations dealing with customers face-to-face are generally more successful, if they train their staff to use these skills. For this reason, soft skills are so important for project management team to have.

2.5.1 The Significance of Seven Groups to the Study

Data which was collected from many resources, was analyzed first by categorizing failure reasons into groups based on different factors like root-cause problem based on where each belong to; taking into consideration that enhancing project communication, business environment readiness and project integration are key solutions for root-cause problems, as these three factors are considered as major root-cause problems for ERP project's failure.

In principle, and for simplification purposes, most gathered failure reasons were categorized under one of the following groups:

- **Project Setup:**
Has a list of all failure reasons that fall under and have relation with project's characteristics.
- **Executive Management Support:**
Has a list of all failure reasons that fall under and have relation with project's sponsor(s).
- **Solution provider (Consultant/ Implementer/ Internal staff):**
Has a list of all failure reasons that fall under and have relation with project's executor.
- **Business Requirements and Environment Readiness (BPM):**
Has a list of all failure reasons that fall under and have relation with project's executing environment.
- **ERP Fitness to The Business/ Industry:**
Has a list of all failure reasons that fall under and have relation with project's industry.
- **Key Users/ Users:**
Has a list of all failure reasons that fall under and have relation with project's future beneficiaries.
- **Project Management Capabilities (project management soft skills):**
Has a list of all failure reasons that fall under and have relation with project's needed skills for project management team.

2.6 Root-Cause Problem, Importance to ERP Project Implementation

The root-cause problem is very important to be detected early for the project management, as the early detection of the disease is very effective in either eliminating or minimizing the consequences. And as well, finding a solution for the root-cause problem is the best treatment than solving part of the problem, and will prevent some of the consequences and unexpected problems from being initiated.

In most of ERP implementation projects, ignoring symptoms of a problem without interference or even paying attention by project managers for correction until the problem becomes serious and bigger like the "ice ball" will cause that, it may become very hard for the project leaders treat it in later stages which badly impact the project success or maybe resulted into the project failure. Whilst dealing with the root-cause

problem and trying to find early solution for it will also help in fixing the problem and may be impacting positively by fixing many other issues that are associated with it.

2.7 Relation of Communication to each of the Seven Groups

“Project setup”: the communication is crucial here, as the clarification is required by all parties, in order to allow them knowing each other.

“Executive management support”: is needed in all project phases, so top management should be kept aware of project progress and their interference should be at the proper time, and this would be achieved by creating a strong communication plan.

“Solution provider” (consultants, implementer, or internal staff): is required to communicate broadly to be clear enough about the business and get the special business cases to be considered while configuring the ERP.

“Business requirements and environment readiness”: as the business requirements should be gathered properly and it needs very high traffic of communication, and proper skilled users execute.

“ERP fitness to the business/ industry”: is fatal for the project success, so it is very important to communicate properly to get all business needs and then diagnose the requirements to find the suitable ERP.

“Key users/ users and Project management capabilities”: should have proper and enough communication skills to handle the whole project along its life time.

2.8 Relation of Integration to Each of the Seven Groups

“Project setup”: is the first step where to create the integrated project vision or blue print.

“Executive management support”: top management should understand the piece and parts of the project, and their relation to each other, and interdependency among the project’s parties during project’s execution, and when exactly the management should interfere.

“Solution provider” (consultants, implementer, or internal staff): should integrate and consolidate with other parties to facilitate the information exchange and interface among parties.

“Business requirements and environment readiness”: requirements are the main source for integration.

“ERP fitness to the business/ industry”: should be able to technically and functionally interface and consolidate (integration) with other parties.

“Key users/ users and Project management capabilities”: open minded skilled staff with technical capabilities should be equipped with all tools required for integrating project’s parties.

2.9 Relation of “Business Environment Readiness” to Each of the Seven Groups

“Project setup”: should consider business environment, organization values and organization culture while setup the project.

“Executive management support”: is an important ingredient for ERP implementation at the organization.

“Solution provider” (consultants, implementer, or internal staff): interacting with the business environment and getting properly into it, is crucial to understand the business then customize and configure the ERP accordingly.

“Business requirements and environment readiness”: measuring the business maturity at the beginning is giving an ability to measure it again afterward to determine progress and achievements.

“ERP fitness to the business/ industry”: fitness of ERP to the business environment and its readiness is a major key for convincing stakeholders of ERP importance.

“Key users/ users and Project management capabilities”: preparation of business users to change by enhancing their skills and knowledge in order to interact properly with the ERP is a key to facilitating the transformation.

2.10 Root-Cause Problems, as Related to Each Other

All root-cause problems are by away or another are linked and related to each other as all of them are ingredients of the final product, so missing or deficiency of any of them means there is no complete product or may be no product at all.

a. Communication:

It is the soul of any project as it is opening channels to convey messages among project’s teams or parties. These messages have three major parts that are sender, message and receiver.

Communication is essential to obtain and understand the business environment and requirements, and to build consensus about the project target blueprint; whereas the blueprint is the project's final picture which the project aim to achieve.

Most important areas of any project are the communication while good communication is fatal to project success.

An example for dependency between root-cause problems:

“Insufficient communication”, which being mentioned under a group of “Project Management Capabilities” in the survey, raised that all stakeholders should agree on what is the best way to handle business transformation, by taking into consideration the environment readiness and business maturity.

b. Integration:

Integrating project parties to each other to achieve the target of the project is mortgaged to the well understanding for project's parties, interfaces and consolidation requirements and needs. So communicating enough, considering the business environment's circumstances and the clarity of the project's goals will facilitate interacting among project parties

An example for dependency between root-cause problems:

- “Integrate the product (ERP) with other systems”, which mentioned under a group of “ERP Fitness to the Business/ Industry” in the survey, show that all project parties and even external parts to the project those needs to be interfaced to the ERP or consolidated with it should be studied and examined well whether they can be technically and functionally integrated with ERP in early stages of the project.

c. Business Environment Readiness:

The environment, where ERP will be implemented, is the base for all activities during the execution of project plans. The environment's culture, values, privacy and maturity are so crucial for ERP implementation success.

An example for dependency between root-cause problems:

Lack of technology awareness and cross-functional business cycles for key users, which mentioned under a group of “Key Users/ Users” in the survey, illustrated that in order to cover these points it needs some process owners to have full understanding

and awareness of business cycles cross-functions then train them on ERP to practice all business processes prior to train end users and go-live with the ERP application.

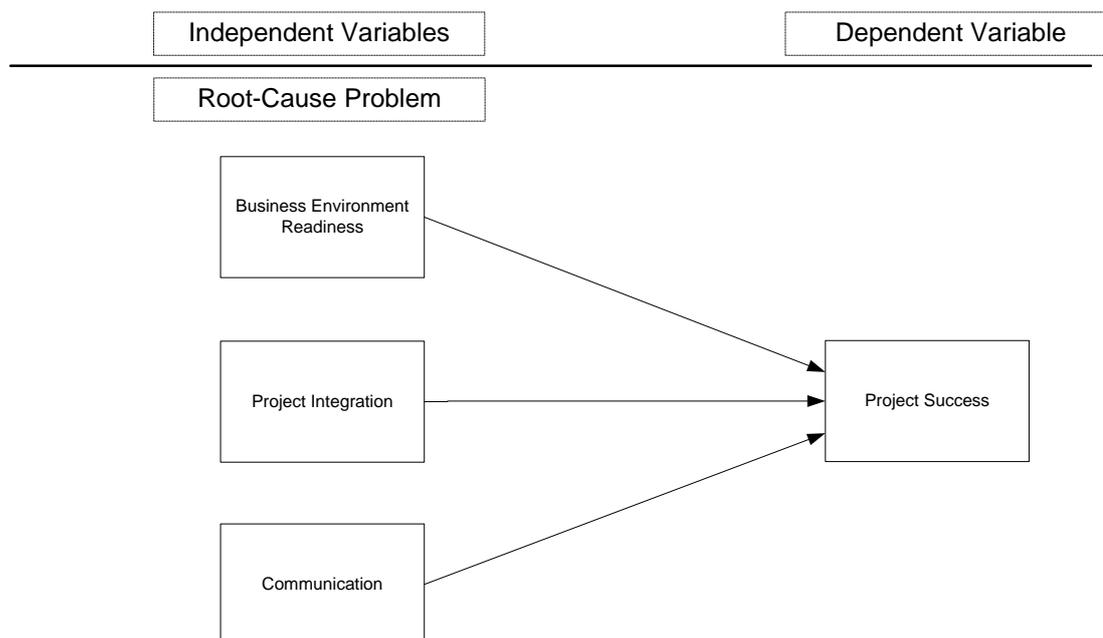


Figure 2.1 the Conceptual Framework of the Study

2.11 THE MEANING OF EACH FAILURE REASON AS AN OUTCOME OF DIFFERENT RESOURCES

The following table contains each one of the failure reasons, under this group, with a comprehensive description of each element.

First Group: Project Setup, included the following elements:

Table 2.1:

Definition for the elements under "Project Setup" group.

S/N	Element	Description
		Unrealistic time scales for the whole project:
		The project time estimation is not adequate, may be due to the way it was used to build it (top-bottom approach or approximate estimate may be used) or the time was imposed by decision makers or external parties.
1	Unrealistic time scales	might be caused due to poor schedule estimation; Many project managers understand the need to deliver the projects fast due to which they set unrealistic schedule to make sure the project is produced quickly without knowing the amount of work that needs to be done. Sometimes the managers are also pressurized by the stakeholders regarding the project

deadlines. As a result of this unrealistic time scale the final product is either faulty or does not meet the user requirements or delay in delivery of project resulting in increase of the product cost.

Multiple inconsistent vendors:

2 No harmony among different vendors of the project who work for the same project's product or even for different project's dependant products which impact the consolidation of the whole targeted picture of the project.

A challenge such as multiple inconsistent vendors is regularly conflicting data standards. Responding effectively to these issues will help the global firm to gain competitive advantage.

Improper planning, which lacks integration and ERP implementation methodology:

3 Insufficient planning or missing the clear vision, which if done correctly builds a consolidated picture among project parties; or have a clear methodology for implementing the ERP.

ERP applications enable organizations to integrate and manage their data, processes and applications. Integration of information, process and people is the main objective for many companies to adapt expensive ERP applications.

Improper IT infrastructure sizing:

4 It is crucial for project success to make a proper estimation for the required hardware, software and human resources for IT department, in order to allow it to run the project and consequently support the ERP, after the project is handed-over.

Due to lack of technology infrastructure in some organizations, ERP applications could not be implemented properly. On the other hand lack of IT expert make proper sizing in early periods of change process will cause troubles in enhancing the operation.

Project team high turnover:

5 Replacing or opting-out for some of the project team members while the project is running. This may lead to many faults, as peoples get to know more the organization business and functionalities while project running, so replacing some of project team while project runs, will cause either involve experienced peoples or train another new resource which necessarily effects the

project time, cost or both together.

No clarity of the scope:

If scope is not quantified, not clear enough or could be interpreted in more than one mean then it is ambiguous.

6 Effective planning start with the proper project scope management which includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. The proper definition and clarification of work required by clients/stakeholders and of the project team is essential, as projects operate within set financial and resource allocations.

Absence of accompanying CM works with the ERP implementation:

Missing an important part, which is change management (CM) while managing the project, may lead to poorly manage stakeholders and user interaction with the project.

7 There is a need for a proper change management as part of an ERP project implementation. As businesses are reengineering their business processes, they are expected to readjust their business methodology to suit the need or demands of market. Business will need a highly reliable ERP application to support their daily business processes, to reduce inefficiency and inaccuracy within the organization business process. During the project implementation process, organization will commonly faces unwanted resist from the potential users. Thus change management plan should be built carefully prior to start the project, and should be maintained during the project run.

Improper ERP selection (it wasn't chosen for the same industry):

8 Failure in selecting a proper ERP to be implemented, with a good fit for the same business and industry, may lead that the ERP is not qualified for the same environment, industry or business.

The selection of improper ERP applications may lead to the failure of a project. If the organization is not able to produce desired ERP to the people within the organization, there is a chance of the resistance to the technology which according to exchange relation model is a reason for ERP failure.

Lack of integration among subsidiaries:

9 No smooth workflow or document flow among different departments (business

units) within the same organization which wish to implement the ERP.

ERP can have a negative impact on its implementation due to the complexity in the integration of the ERP applications. Integrating of the ERP application parties is the reason for problems as the difference in management and working the subsidiaries lead to merging of several applications in single ERP system.

No clarity of Project governance structure with clear roles and responsibilities?

Insufficient clarification of roles and responsibilities to the project for some or all of a project's stakeholders. The governance of project management concerns those areas of corporate governance that are specifically related to project activities. Effective governance of project management ensures that an organization's project portfolio is aligned to the organization's objectives, is delivered efficiently and is sustainable. Governance of project management also supports the means by which the board, and other major project stakeholders, is provided with timely, relevant and reliable information. Poor understanding of project governance by key stakeholders involved in major organizational projects can lead to resources not being distributed effectively, misalignment of project and organizational objectives and miscommunication between business and project staff. Good governance is characterized by the participation of all stakeholders and is established through effective information interchange.

Second Group: Executive Management Support included the following elements:

Table 2.2:

Definition for the elements under "Executive Management Support" group

-
- 1 Lack of upper management support for the project as it is not of the management's top priorities:

Lack of knowledge of ERP importance and ERP expected positive results may impact on the top management interest, so priority goes down and support accordingly.

Factors like working skills, knowledge, and experience will affect the outcome of the ERP project implementation. Typical potential risk factor is the resistance to change. People who are going to run the business or potential user may not see how the benefits of the ERP will help in their own work and, may not be fully committed to the new business model. With the mindset of

resistance to change in place, people will not be using the system in a disciplined manner. Normal daily business activities also disturb the ERP implementation, and people working on the ground may not be willing to put time or effort to assist the development work due to busy schedule. Without realization of ERP importance and strong support from top management, the project is in trouble.

- 2 Scope creep due to senior management's lack of ERP awareness which implies scope ambiguity:

Lack of knowledge of ERP functionalities and general specs may impact to negative dealing with the agreed scope; which leads to scope changes along the project phases.

Scope creep is a term which refers to the incremental expansion of the scope of the ERP project, which may include and introduce more requirements that may not have been a part of the initial planning of the project, while nevertheless failing to adjust schedule and budget. Scope creep management is important for effective project management. Projects are expected to meet strict deadlines with resource restraints, and unapproved change in the scope can affect the success of the project.

-
- 3 Lack of senior management/executive support; project sponsors not fully committed to the objectives, budgeted money, resources or even actively involved.

Top management should create more effective awareness to the workers by communicating the benefits of ERP systems. In so many cases the ERP implementation failed due to lack of top management involvement. In the other way the management should give a general description of the ERP system how it will work in the organization. The strategy used by management is to minimize the cost. The main think is top management support is critical and crucial part on the whole implementation of ERP which leads to the success. Top management should be clear that the introduction or implementation of ERP system should not be introduced to users until they get a positive attitude is built and sustained among them. ERP Implementation can be accomplished or successful when the senior employees or the management should be committed to take initiation. Management commitment and support is the

ultimate strategy that will secure the necessary conditions for successfully introducing the change brought by ERP into the organization.

- 4 Lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success:

Key performance indicators (KPIs), input and output criteria for each phase of the project and the success criteria should be set up-front in order to allow project management to measure properly the progress along the project phases.

- 5 Nonalignment of IT project initiatives to business strategy:

As outcomes of ERP implementation, it is expected to have some of initiatives during and after the ERP implementation project; these initiatives should be aligned with the goals of business strategy.

Organizational alignment examines the corporate philosophy, structure, management practices, business processes, and culture and provides the means for management to align and accomplish their company's objectives. IT strategy should be aligned to the organization strategy.

- 6 Change in management staff might have a significant impact on ERP implementation:

Changing some of decision makers in the organization during the project run is sensitive as it may affect dramatically on the project. Thus, approval and support of top management is a strategic necessity. Management should invest time and energy to convince group leaders that they are the key players of the system, who will be the catalysts for any change in the organization, and the success of the change program will significantly depend on them. If they fail to sustain the main players, they should replace them immediately with active players.

Third Group: Solution provider (Consultant, Implementer, or Internal staff), included the following elements:

Table 2.3:

Definition for the elements under "Solution provider" group.

Instability for service provider (limitation of visit visa for consultants due to government regulations).

1

Well known that there is shortage in ERP implementation specialists for some ERP systems in the local market for some of business industries, the need arise

accordingly to fill this gap by bringing to the client side some external resources from abroad, while there are some regulations and restrictions currently in the local market which cause some obstacles to bring some peoples onboard which dramatically affect the project run.

Undedicated qualified consultants:

Qualified consultants should be available and dedicated to the project as per the agreed plan.

2 The dedication of skilled functional and technical consultants should be guaranteed by the service provider, as the ERP implementation project needs to have such qualifications; qualified consultants are able to progress rapidly, adequately and with a satisfactory level of quality. So they should be available along the project as per the project plan; meanwhile it is highly recommended not to replace qualified consultants as much as possible to avoid rework and time consuming.

Lack of partnership concept between client and the consultant:

Both the client and ERP solution provider should be mutually cooperative to each other as the project success is crucial for both of them and the project success is credited for all participated individuals.

3 The relation between the two parties should be built on the base of partnership win-win situation. As lose for one of them means that some turbulence might be happen from his side trying to recover and minimize the losing volume. So each part should be in support to the other in order to allow him to fulfill his obligations and achieve the required.

Installing technology without a business strategy:

The business case should be available to support the need for implementing an ERP application and its IT prerequisites.

4 The Business Case is an important tool used to present the quantifiable business value of the determined approach to ERP. It aims to provide a detailed assessment of the direct and indirect benefits of maintaining an existing system or implementing a new one, and, in the latter case, will project the expected return on investment and payback period. The Business Case should compare data points with various industries and similar implementation benchmarks, Provide guidance about which factors will create the major benefits of a new

system. It is a key decision-making component in the decision process for executive sponsors and other key stakeholders, helping gain their support and Create consensus by providing quantified information, including insight into cash flow and budget. If indications are for change or replacing the existing ERP with new technology, then the next step is to select a vendor.

Lack of adequate training of key users/ end users:

A proper change management plan which contains sufficient and suitable training should be set for key users and end users, as well.

In order for users to run ERP applications efficiently, thorough training of key and end users must be done. Users must acquire specific background knowledge to utilize the ERP system adequately. In order to achieve comprehensive training of users, training plans and adequate training support is needed. Installing an ERP application without adequate end user preparation could lead to drastic consequences. One of the most significant reasons of ERP failure is the lack of training. Training plays a pivotal role in the acceptance of an ERP application.

5

Internal training has a significant impact on perceived usefulness and external training has an effect on perceived ease of use. Training also provides valuable experience to users by the users interacting with the ERP system. It provides users to explore the ERP application and the impact of their decision on business processes that training should commence in the implementation phase of an ERP application, as it will affect the shared belief of benefits of an ERP application. Employees that have different roles in an organization are expected to accept different responsibilities. This ensures that new skills are shared and learnt by employees. Shared beliefs in the benefits of an ERP system will also have a considerable effect on the perceived ease of use of the system to a user.

Lack of staff communication skills to get properly the business requirements:

Business requirements should be gathered properly, as the lack of collecting requirements may impact in rework or non-conformance to the requirements which may lead to project time or cost adjustment.

6

Team members who are responsible for this should be selected carefully from both client and solution provider sides with very high official and non-official communication skills.

Communication plays a pivotal role in any ERP implementation project and

organization. Lack of communication can cripple an organization; also communication is essential to minimize uncertainty and conflicts present while running ERP implementation project. In ERP applications, the communication flow is complex and vital in implementation as well as the user acceptance of the system. Perceived usefulness is also dependent on the quality of communication provided. Open communication may promotes a common culture as well as innovative behavior in a company; as common culture is encouraged through open communication, a higher level of trust and acceptance of technology can be achieved. This affects the attitudes and acceptance of ERP application because if a positive common culture exists, a strong belief in the benefits of an ERP system will be established.

Local support no availability for the ERP:

ERP solution provider should have a permanent representative in the local market; remote staff is normally have limited ability to effectively manage the situation at client side and the regularly shallow effect is done with the absence of physical existence.

7

Poor local support to incorporate changes as the vendor will not respond on the desired time span and when he responds, it sometimes will be at unrealistic charges. Local support as evaluation factor, while selecting and deciding the ERP application, should be with high weight, as it is a crucial for project success and for post implementation support.

Fourth Group: Business Requirements and Environment Readiness included the following elements:

Table 2.4:

Definition for the elements under "Business Requirements and Environment Readiness" group.

Poorly defined or unclear of business requirements:

If scope is not quantified, not clear enough or could be interpreted in more than one meaning, then it is ambiguous and there is high potential for rework.

- 1 Scope definition results in the breakdown of the project into more manageable units ensuring it contains all tasks to be carried out. However, scope management involves collection of requirements from clients or stakeholders, defining the scope, creation of a work breakdown structure which collectively results in
-

inputs to other processes within the project.

Scope change during the run of the project due to non-clarity of business requirements, is a very inflexible method which does not entertain any change in requirements, during the ERP implementation runs, and which makes any subsequent functionality changes required extremely difficult and expensive cost to implement.

Unclear of business processes' policies and procedures:

Ambiguity of business processes' steps impacts the automation of such process (ERP implementation) which may affect negatively the workflow which lead to rework.

- 2 Implementing business process re-engineering (BPR), for example, is considered as cleaning house prior to implement an ERP application; whilst the standard business processes which, accompanied by technology, as best practice, is not enough (in most of the cases) to be mapped as-is to the business. Organization's policies and procedures should be reviewed and made available for automation.

Facing the difficulties of changing the current situation, politics and cultural issues:

Change management should take place with any ERP implementation project since the beginning, especially with big volume projects, until after the project closure.

- 3 Change management focuses on coordinating and integrating key leadership, organizational, technology, and cultural issues to achieve their goals and objectives. It helps the leadership and change agents in the organization anticipate any surprises so they will understand the psychology of change and its effect on the employees.

Weak or unconvincing business case for implementing an ERP:

The business case should be available to support the need for implementing an ERP application and its IT prerequisites .Absence of business case leads to potential struggling after the project started.

- 4 The Business Case is an important tool used to present the quantifiable business value of the determined approach to ERP. It aims to provide a detailed assessment of the direct and indirect benefits of implementing a new ERP application. The Business Case should provide guidance about which factors will
-

create the major benefits of a new ERP. It is a key decision-making component in the decision process for executive sponsors and other key stakeholders, helping gain their support and create consensus by providing quantified information, including insight into budget.

Poor definition of project scope and objectives:

Full comprehension of why project was undertaken should be documented and shared with all concerned project stakeholders at the proper time.

- 5 Unclear goals and objectives of a project may be clear partially due to poor requirements gathering in the definition stage of a project. Defining clear requirements need time and lots of communication but sometime due to project sponsors fail to describe what they really require?, the project start struggling.
-

Poor of requirements definition which lead to instability of project scope while implementing the ERP:

Ambiguous project scopes may lead to change in it during the project run, which impact the project stability. Change in requirements during the run of the project due to non-clarity of business requirements in the definition stage of a project, is a very inflexible method which does not entertain any change in requirements, during the ERP implementation runs, and which makes any subsequent functionality changes required extremely difficult and expensive cost to implement.

Wrong or inappropriate technology selection:

ERP selection criteria should be transparently made very clear and factors should be built carefully according to business need.

- 7 A profit of an organization depends heavily on many factors like choosing ERP application correctly, implementing it properly and using it effectively. But many organizations fail in this because of inappropriate selection of ERP application, unskilled and random implementation and inefficient usage. ERP success can be achieved through successful implementation of the application. In fact, long lasting feasibility and achievement of ERP depend on its constant functioning, maintenance and improvement during the system post-implementation stage. A wide range of obstacles rooted in the organization and the ERP application itself may distress long lasting success in ERP utilization. However, the presence of these obstacles may in fact lead to the happening of an array of risks during ERP
-

post implementation. These obstacles and risks may rotate initial success of ERP into a failure, and hence contribute to critical business misfortune.

Unfamiliar or changing technologies may impact the project success:

- Long implementation plans may impact in technology change while project run,
- 8 so the validity of the technology products should be checked prior to start the project to make sure it is not outdated and well tested in the market, moreover, it should last valid at least until the project is finished.
-

No clarity of project goals:

Project goals should be quantified, clear enough and shared with all concerned parties in the project.

- 9 Lack of well-defined project goals and objectives which is a key to the success of any ERP application implementation is major project failure reason. There is also need to state clearly the business need of an organization and also the adoption process before attempting to introduce an ERP application.
-

Poor product testing may cause troubles at the start point:

Some of technology products should be tested and authorized from some official government agencies or trusted organizations prior to include them in the project plan.

- 10 Tight schedules, nonqualified users, inappropriate testing environment can lead to poor testing, so there is no evidence to show that real data been shown from the ERP application is of good quality, supports business processes or can cope with the daily business operations, if it is actually not. Poor testing is very costly to the organization should the live project stage started.
-

Misunderstanding of integration's importance among modules or functions:

Consolidated picture of the whole project parties must be set while planning the project; moreover sharing such picture with consensus on it, from all parties will make the change easier and allow concerned peoples to support and participate in solving issues.

- 11 The benefits of an ERP application are limited unless it is seamlessly integrated with other information systems. Organizations face many challenges in ERP integration, like the challenges of integrating various functional ERP modules, the challenge of integration with other e-business software applications, the challenge of integration with legacy systems. The success of ERP
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implementation is the success of ERP integration. Packaged ERP application consists of many functional modules (like production planning, inventory control, financial, HR, etc.). Organizations tend to install modules from the same ERP vendors in the initial ERP implementation. Not all companies will purchase all ERP modules from a single ERP vendor. The implementation of ERP application could last many years. The Integration of E-Business applications practice is the combination of strategies, technologies and processes to electronically coordinate both internal and external business processes, and manage enterprise-wide resources. Integration with legacy systems over the years have accumulated vast amount of data vital to the survival, operations, and expansion of corporations and non-profit organizations. Integration of ERP systems with legacy systems is more complex than the integration of ERP modules and Integration of e-business applications. It routinely requires the installation of third-party interface software for the communication between ERP software systems and legacy systems.

Lack of business knowledge for the business requirements collectors:

12 Skilled team members should be there for business requirements gathering with strong communication skills and business knowhow. Business requirements collectors should have hands-on experience in the business industry and better have strong experience in ERP applications, as they mostly will participate heavily in design the new business case for the organization.

No clarity of data responsibility for its quality, cleansing, collection, and migration:

Responsibility for data collection, cleansing and way of transference should be set carefully and clearly either part of the project (client, solution provider, or others).

13 The responsibility of the organization's data should be cleared enough whether is it a responsibility of the service provider or the conducting organization? And this throws up a lot of issues for an organization to consider before and after migrating data to the ERP application. Another important issue is the data cleansing and security, if it is given to the service provider, it must be reviewed and approved by the organization prior the ERP project goes live.

Fifth Group: ERP Fitness to Business/ Industry included the following elements:

Table 2.5:

Definition for elements under “ERP Fitness to Business/ Industry” group.

Mass of customizations to the ERP:

Mass number of customizations to an ERP application makes the ERP application miss the standardization and some of its original functionalities that built for the same business industry.

- 1 It is expected and accepted that any ERP implementation project has to be adapted to the organization needs, but over customization impact in project failure; the implementation exceeds the planned time. The adoption of ERP takes typically few months for organization to adapt the new business process for the organization attempting to make major modifications. Experts emphasize that due to the non-flexibility nature of ERP solutions forces organizations to customize the package and abandon their way of doing business.
-

Lack of ERP localization consideration:

Local setup is essential to be uploaded to the ERP, so any ERP should have the ability to configure and consider local settings.

The products went through localization, i.e. customizing to cater to local markets, for the localization of the basic model as per country needs. Localizations are means of adapting ERP applications to different languages, regional differences and technical requirements of a target market.

- 2 Internationalization is the process of designing an ERP application so that it can potentially be adapted to various languages and regions without changes. Localization is the process of adapting international ERP for a specific region or language by adding local-specific components and translating text. Localization (which is potentially performed multiple times, for different locals) uses the infrastructure or flexibility provided by internationalization (which is ideally performed only once, or as an integral part of ongoing development).
-

Limitation of ERP functionality according to specific industry requirements:

ERP should have the ability to configure, consider and cover special functionalities according to the business industry and needs.

- 3 As each organization has different business needs there has to be a level of customization to ensure that all factors those are relevant to the industry are considered. This may call for changing the ERP application structure to match the business workflow which is generally not allowed by the ERP vendors. ERP
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applications are built as per industry standards and when company wants to implement the system, it may have to change its way of functioning to match these standards. This can either be beneficial or can lead to the business losing its competitive advantage. So, it is important that some kind balance applied here.

Missing of integrating the product (ERP) with other systems:

Ease of ERP interface to front-end and other applications is crucial to the ERP initial evaluation and success.

The benefits of an ERP application are limited unless it is seamlessly integrated with other information systems. Organizations face many challenges in ERP integration, like the challenge of integration with other e-business software applications and the challenge of integration with legacy systems. The success of ERP implementation is the success of ERP integration. Not all companies will
4 purchase all ERP modules from a single ERP vendor. The implementation of ERP application could last many years. The Integration of E-Business applications practice is the combination of strategies, technologies and processes to electronically coordinate both internal and external business processes, and manage enterprise-wide resources. Integration with legacy systems over the years have accumulated vast amount of data vital to the survival, operations, and expansion of corporations and non-profit organizations. Integration of ERP systems with legacy systems is more complex than the integration of ERP modules and Integration of e-business applications.

Lack of ERP user friendly interface and ease of use:

Ease of ERP usage for users are one of the crucial factors to the success of ERP implementation.

ERP systems need to be user friendly; the fact that the users are poorly educated, it causes a decrease in the efficiency of the company, In addition to the training
5 of the company's staff to overcome this obstacle, as they would train the staff beforehand, in accordance to their experience and knowledge. User friendly allowing people to use it without difficulty and trouble, as they are an important aspect to the company and it is their use of the system that affects the efficiency of the company. it should be carefully designed to be user friendly, considering screen design, user interface, page layout, help facilities, menus, etc.

6 Lack of business knowledge or ERP full functionalities by implementers:

Implementation specialists should have great knowledge about the ERP functionalities that they implement and business know-how, as well.

It is crucial that the implementation is led by qualified implementers who can interpret the business needs and automate those needs either by the direct ERP built-in functions or through around solution. It is better that implementer being technical and functional or being business analyst and systems analyst which is the optimum qualification could be trait of the successful consultant. As well, the implementer should be fully aware of the ERP functionalities which will allow him to cover most of business either directly or through around solution.

Limited upgrade support level:

ERP support levels should be available in order to allow the client to deal with different severities of ERP issues and be able to get levels of support while operating the ERP.

7

During the ERP implementation and after handover to the operation, there should be different levels of technical and functional supports; as during the implementation, most likely there is an urgent need for instant technical and sometimes functional support.

Limited ERP reporting capabilities:

Reporting is the soul of ERP applications as it is a way of representing the business execution results.

8 ERP reporting capabilities are vary from vendor to another, some of the reporting tools are basic and some others are advanced tools. Business intelligence (BI) component is a solution for the companies with ongoing advancements and ever increasing amount of data. It is a solution for wide data warehousing, querying, reporting and analysis. With some BI tools, reports can be easily created, distributed and printed in multiple formats.

Sixth Group: Key Users/ Users included the following elements:

Table 2.6:

Definition for the elements under "Key Users/Users" group.

1 Users resistance to the change, due to old persons those don't like change or young ones who afraid of disclosing information:

Human resistance to any new matter is normal, so change management should be

associated with the implementation and take place in order to minimize the resistance and make it clear to each department head “what is in-it for his department?”, to encourage and facilitate implementation.

Reasons for change and resistance are either lack of motivation if employees are not well informed on the purpose of the change and how it may be beneficial for them, people will not feel motivated to change and support the new system so good communication and vision sharing are needed to resolve these issues, Lack of ability to work on ERP, as people may understand and agree on the reasons on why there is a need for change, but if they do not have the needed ability, this will add unnecessary resistance and anxiety to all the mist of changes around them, so good and proper structure job base training is needed for individual who will be operating the business on the ground within the organization, or Change in habit, as people who are so used to do their daily job in a familiar business process, will find it a hesitant and hard to break out of it and need some time to adjust to the new system and business process. Majority of people by default would prefer to do their jobs in ways they used to, instead of being innovative or to find a better way to get things done.

Lack of technology awareness and cross-functional business cycles for key users: Project key users should be aware of the latest technology available and its role toward developing the business operation’s performance and have cross-functions knowledge among organization’s departments and good awareness of cross-functional business cycles.

2 Key users should be convinced of the system utility; moreover they must be confident and expert so that they can aid future users in training sessions. User commitment and a project champion, who has the vision to get the project going and pushes for the project to be accepted where there are competing priorities, are useful in the early stages of the project and during the implementation phase. So special care should be given to key users in order to keep them up to date with the associate technology and should have some privilege and granted to access and know more about the organization’s business cycles, policies and procedures.

3 Lack of skilled project team members in areas of soft skills, ability to adapt, and business experience:

Project team members who are involved in business requirements gathering, as an example, and in direct interaction on daily basis with end users are required to have strong business knowhow and soft skills.

As project manager and his team are managing the project and don't directly control people. The day-to-day work for a project manager includes effective speaking and active listening skills, managing vast amounts of information from end users and clients, comprehending complex topics and presenting them to nontechnical stakeholders, preparing crisp summaries, and preparing complex technical reports all. Soft skills required include negotiation, conflict management, communication, and managing difficult people.

Lack of business processes' ownership and accountability:

Each process has to have an owner, so processes' accountabilities should be clear enough prior ERP implementation take place.

- 4 Each business process is ideally assigned to an individual as owner of the process, as he normally has full description and awareness of that process. The process owners regularly are required to participate in determining the business requirements for ERP application. Process owners or superior key user may have the accountability to represent one or more of business processes.

Lack of qualified functional user involvement while collecting business requirements (resulting in expectation issues):

- 5 Skilled and knowledgeable persons in organization's business processes should be there to collect business requirements properly.

As explained above, key users should participate in determining the business requirements for the ERP where appropriate, as they have great awareness of the organization business processes and business cycles.

Undedicated key users to project:

- 6 Qualified key users should be available and dedicated to the project along the project time (according to the plan) to avoid rework, misunderstanding, and quality deficiency.

Project team lacks authority or decision making ability:

- 7 Support from decision makers should be instantly available to avoid delays or stops.

Business will need a highly reliable management system to support their daily

business processes, to reduce inefficiency and inaccuracy within the organization business process during the project implementation process. Organization will commonly face unwanted resist from the potential users during the ERP implementation, as well. So without strong top management support for the ERP project, the project is set for failure. If the level of commitment and support for the project from the top management, started to diminish the project will clearly running into problems. So, active involvement from top management should be there while EPR project runs.

Poor collaboration, communication and teamwork between project team and key users:

Team members should have strong communication skills and accordingly the management should facilitate collaboration and interaction among them.

- 8 It is essential to involve key users to an appropriate extent in the implementation of ERP applications. Regular communication with users can help the team to design and in implement the project as desired by the end user. Avoiding this factor within the implementation of the ERP applications may lead to user resistance.

Inadequate resources for the project:

Team members should be selected carefully and made available according to the project plan.

- 9 Skilled and knowledgeable peoples should be selected or nominated from the organization different departments to participate in executing the ERP project, as inadequate peoples will the cost project more time and money and may not be able at the end to achieve and progress the project deliverables.

Terminology inconsistency between business and ERP:

Functional consultants expected to be business experts and use the same terminology for the industry and align ERP captions (screens' labels, fields' names, reports' names, etc.) with the industry terminology.

- 10 Terminology is the study of terms and their use. Terms are multi-word expressions that in specific contexts are given specific meanings which may deviate from the meanings the same words have in other contexts. So, ERP vendors are expected use standard terminology while building their products, while ERP consultants and implementers are expected to be familiar with the
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business and ERP terminologies and try match the inconsistent ones.

Key user resistance due to not participating in ERP selection:

Managing project stakeholders and the role of change management should be planned and executed properly to reduce resistance and facilitate ERP implementation.

11

ERP selection better be shared and announced with concerned peoples before ERP is selected. Should this is not the case and the project is already started then the ERP should be demonstrated to different categories and types of users and illustrated on the base of “what is in it for you?”

Lack of key user familiarization with the ERP:

Familiarization sessions and adequate training should be conducted to allow key users to play their role properly.

Key users should be convinced of the system utility. User commitment and a project champion, who has the vision to get the project going and pushes for the project to be accepted where there are competing priorities, are useful in the

12

early stages of the project and during the implementation phase. So special care should be given to key users in order to keep them up to date with the associate technology. Training also provides valuable experience to users by the users interacting with the ERP system. It provides users to explore the ERP application and the impact of their decision on business processes that training should commence in the implementation phase of an ERP application, as it will affect the shared belief of benefits of an ERP application.

Seventh Group: Project Management Capabilities, included the following elements:

Table 2.7:

Definition for the elements under “Project Management Capabilities” group.

Insufficient communication:

Different independent resources, recommending that the project manager should spend around 90% of his time in communicating with project stakeholders, so enough care should be given to communication.

1

Lack of communication to create awareness of the ERP application makes users end up either having unrealistic expectations from the system, or mistrusting the

performance and capability of the ERP application. Communication plays a pivotal role in any ERP implementation project and organization. Lack of communication can cripple an organization, also communication is essential to minimize uncertainty and conflicts present in ERP implementation projects. In ERP application, the communication flow is complex and vital in implementation as well as the user acceptance of the ERP application. Communication affects the benefits of the beliefs of an ERP application by acting as a passageway through which benefits of the technology flows in an organization. This causes an increase in shared beliefs about the benefits of an ERP application. Perceived usefulness is also dependent on the quality of communication provided. Open communication promotes a common culture as well as innovative behavior in a company. As common culture is encouraged through open communication, a higher level of trust and acceptance of technology can be achieved. This affects the attitudes and acceptance of the ERP application because if a positive common culture exists, a strong belief in the benefits of an ERP system will be established. Top management should create more effective awareness to the workers by communicating the benefits of the ERP application. In so many cases the ERP implementation failed due to lack of communication. In the other way the management should give a general description of the ERP application how it will work in the organization. Top management can easily create a better awareness for ERP application and about the changes to their employees by communicating with them. In majority of the cases ERP application got failed because of lack of communication. They must have knowledge about what exactly ERP application can deliver to their organization, so that they would be able to build a positive expectation for the system. Lack of communication from top management instantly for urgent matters will cause sometimes to react to any potential issues as the notice period is too short. The ERP project is large project and the support from top manager is necessary. Lack of communication between manager levels or lack of proper management control structure could be the reason for communication deficiency. Lack of communication is a common factor in the cause for many project failures. There should be appropriate communication between the different department heads and their respective subordinates. Team members should be

well informed as to the current status of the project as well as the status of other parallel process running alongside.

Lack of effective change, risk, financial, time and performance management:

Skilled project management team with proper soft skills works in the proactive manner should be available onboard to plan for these factors.

Change management normally explains the current position and lead to go to the expected position in the future after implementing the ERP application. This can be express as a competitive advantage to a firm and its functions. There are different types of change management techniques. Those are depending on the organizational factors. The planned change is a top down change. The management is planned the vision of the change and the change is taken place to strengthen the uncontrollable circumstances from the environment in an unplanned way. This change can be start from any level of the organization. The organizational culture is ready to the change. Due to external forces (economic, political, life style, international events, social context) and internal forces (uncertainty, groups in the organization) the organization has to use emergent change.

2

Risk management is the complete process of identifying, measuring and minimizing the chance of uncertain events affecting resources. Effective assessment and management of risks is a major professional practice in ERP implementation projects. It is the main part of any organization's strategic management. Effective risk management should be able to identify and treat the project risks and treat them during project's run as to increase the probability of project success, and reduce the potential for failure. Risk management has to be a continuous and developing process which runs throughout the organization's strategy and its ERP implementation. Any effective risk management plan should begin with identifying the potential risks in all its manifestations. Once risk is identified, it must be assessed as to its likelihood of occurrence and the extent of any possible damage. After that, all risks should be prioritized so that each can receive the appropriate time and resources, if it happens. In order to achieve a meaningful and efficient assessment, it must be done thoroughly and accurately and in a timely manner.

3 Lack of effective management of stakeholders (some or all of them) and their

need is failure to manage expectations:

The Project management team should have stakeholders' management skills and accordingly should analyze stakeholder expectations while planning for the project.

Project stakeholders are individuals and organizations who have valuable interest in the project. This interest could be positive as well as negative. An inventory of all stakeholders, their interest, and their power to influence the project is the beginning point to manage stakeholders. Stakeholders necessarily involve those who plan, execute, control, manage, and deliver the project. A stakeholder could also be a customer waiting for successful completion of a public project, a service or a commercial product. As stakeholders have varied interest in the project, a project manager has to manage all of them by identifying each stakeholder's role and responsibility. Internal stakeholders are to be monitored so that their negative influence does not cost delay in the project execution. In case of external stakeholders like clients for whom project is executed might bring unplanned or additional requirements at the execution time. They should be managed by the project manager. They are to be categorized in terms of their power to influence the project deliverables, and care has to be taken to keep the most important stakeholders in loop and communicate with them effectively.

Poor or missing implementation methodology and tools:

Most ERP applications have more than a methodology to implement; proper one should be selected carefully for the same industry.

4 The different phases of an ERP implementation and the methodology adopted by the service provider. ERP application implementation methodology provides the project team members with skills, and tools in order to effectively and efficiently plan, conduct and control project steps. The different stages are coordinating, monitoring and controlling the execution of the project. Implementation methodology could include project preparation which cover initial planning and preparation, drawing the business blueprint which is the documentation of the business process requirements of the company, the realization which cover implementing all business and process requirements based upon the business blueprint, final preparation before going live with ERP which complete testing, user training, and system management and finally go live with the ERP

application which includes transition from implementation. Successfully implementing ERP from the first time requires a structured methodology that is strategy, people and process focused. This is the only way to manage the risk effectively. One very common mistake is not having project teams prepared to use the new processes and support system. Achieving the ERP implementation right from the first time is the only cost-effective way.

Unclear exit criteria for ERP's implementation phases and fail in obtaining approvals:

- 5 Planning for the project should obviously cover the entry and exit criteria for each phase of the project in order to facilitate the measure of progress while executing the project activities and consider easily moving to the next task, activity, or phase of the project. How project or phase of the project would be deemed finished, should be defined while planning for the project.
-

Inadequacy of managing project's scope which leads to scope creep:

Gold plating and promising the moon is the best way to reach the scope creep; so stick to the agreed scope, as much as possible, and documenting changes to scope is the ideal situation.

- 6 Scope creep refers to the incremental expansion of the scope of the ERP project, which may include and introduce more requirements that may not have been a part of the initial planning of the project, while nevertheless failing to adjust schedule and budget. Scope creep management is important for effective project management. Projects are expected to meet strict deadlines with resource restraints, and unapproved change in the scope can affect the success of the project.
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Poor or insufficient testing before go-live:

ERP functions should be properly tested as full cycles across departments and as independent processes; many cases and scenarios should be tested.

- 7 ERP implementation strategy ranges from a phased approach and big bang approach. Big bang approach requires simultaneous implementation of multiple modules along with large amount of testing before the actual implementation of the new ERP application over from the legacy systems.
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Lack of defining and QA the key deliverables:

- 8 As the quality assurance is defined as conformance to the requirements; so it is
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expected that the required standardization should be defined properly while plan for the project deliverables, thus the specifications for project management deliverables and project deliverables are to be defined and described well, prior to start executing, as to have clear road map and measure for the accepted quality for project's deliverables.

Inadequate tracking and reporting by not reviewing progress regularly or diligently enough:

Communication plan should include the reporting mechanism, "what reports?", "to whom?", "when to send?" and "how to be sent?" should be defined clearly.

ERP application implementation project information reporting is the process of
9 collecting and submitting data to stakeholders concerned with compiling statistics. Accurate data reporting gives rise to accurate analysis of the facts on the ground; inaccurate data reporting can lead to vastly uninformed decisions based on erroneous evidence. When information is not reported, the problem is known as underreporting. Information reporting can be an incredibly difficult endeavor.

Poor collaboration, communication and teamwork among project teams:

Team members should have strong communication skills and accordingly the management should facilitate collaboration and interaction among project teams.

Teamwork is defined as those behaviors that facilitate effective team member interaction with team, which defined as a group of two or more individuals, who
10 perform some work related task. Each team should interact actively with other project teams in order to achieve the target and deliverables required from each team as well as to achieve the required from all of them together, which is the whole project objective. Accordingly, teams are required to collaborate positively toward each other and communicate in timely manner to achieve the required within the planned time and cost.

Weak ongoing management; inadequately trained or inexperienced project managers:

11 Project management is fatal to the project's success, so he, she, or they should be selected carefully with proper skills required for the project.

Experience defined as the knowledge or mastery of an event or subject gained through involvement in or exposure to it. It is used to refer to knowledge based

on experience. A person with considerable experience in a specific field can gain a reputation as an expert. The concept of experience generally refers to know how or procedural knowledge, rather than propositional knowledge. So inexperienced project manager is big factor for project failure, as many skills is required for project manager to have, so if he miss some of them, the project is expected to run in trouble.

Lack of leadership and communication skills:

Project management should play the strong leadership role and direct the project clearly and timely on the right track.

12 Leadership can be defined as the process of social influence in which a person can enlist the aid and support of others in the accomplishment of a common task, or motivating and organizing a group of people to achieve a common goal. The project manager should have leadership skills to be able to move his project toward achieving the project goal.

Paying insufficient attention to user needs and benefits:

13 Users' needs and requirements should be managed properly along the project time; as users are the peoples who will take over the project's functionalities after the project is concluded. Should the user involvement is suitable and enough throughout the project phases, this will facilitate the project handover and makes it easy to switch to operation; otherwise, and should the attention to their needs wasn't paid enough and their participation was managed poorly, then it seems to have some difficulties when it comes to the project closeout and deliverables handover process.

Using ambiguous (non-existent or non-realistic) measures of project completion and success:

14 Realistic metrics and criteria should be stated during the project planning phase and defined carefully in order to facilitate measurement and reporting during project execution. Realistic key performance indicators should be set and defined well during planning for the project to facilitate phases closeout; as well, phase's entry and exit criteria should be defined and measurably set to facilitate phases closing and next phase startup; and at the very beginning stage of the project, the project success criteria should be settled in order to allow judgment, at the end of the project, to be realistic and fair for all participated parties.

Absence of establishing a supportive project management office to oversee ERP implementation:

Project management office (PMO) in the most big volume project is effective to oversee all project activities and serve as solid background and support for all project management aspects.

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PMO is a group or department within a business, agency or enterprise that defines and maintains standards for project management within the organization. The PMO is the source of documentation, guidance and metrics on the practice of project management and execution. So it should be defined for big projects or programs.

Lack of integration among project parties:

One big picture of the projected work at the project's beginning should be built and agreed upon; which will facilitate the project's product execution and delivery; it will make participants feel responsible toward what they participated in, and agreed upon upfront. Project manager should put all project components in a cohesive pool and keep monitoring them in order to make sure that they run in consistent, as sometimes, the output of some parties are input to other parties. Accordingly, they should run on timely manner to avoid late in delivering some of project deliverables.

2.12 Chapter summary

In the research titled "10 major causes of project failure ", as an example, the writer was clear about categorizing the major causes of project failure into ten groups and clarified the problem and accordingly propose some solution for them.

One of this study sources for determining the failure reasons (dependent variables) is the old researches and essays, like what's been attached in this chapter. The three independent variables chosen for these study, i.e. Business environment readiness, project integration and communication has been widely reported in the past literature and is therefore adopted in this study so as to test their applicability.

Business environment readiness, should be well prepared prior to the implementation of the technology, as for example outcomes of implementing business process re-engineering (BPR) project is considered as cleaning house prior to implement the technology; whilst the standard business processes which, is

accompanied by technology, as best practice, is not enough (in most of the cases) to be mapped into the business.

In order to develop and finally deliver the project service (s) or product (s), project interrelated parties must be put in a cohesive pool to be watched, monitored and controlled all together to make the goal achieved and project succeed; and as well, the big picture (blue print) should be clarified and approved prior to the start of the project.

Project manager and PMO members' soft skills (communication); which reflects their ability to communicate well and build proper bridges and channels among project parties and with teams in order to facilitate information transition.

Moving forward the above three factors are considered the source of root-cause problems, as managing these factors badly will make them or some of them the source for projects' failure reasons.

To sum up and summarize the articles done on this field, most of articles been read by author concerning this subject, are covering either factor(s), reason(s) or symptom(s) of ERP implementation success or failure, but neither one of them obviously mentioned or look for root-cause factors effect on ERP implementation project success or failure.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter explains the research methodology, including showing the research propositions, those needs to be either approved or denied, research design, operational definition and instrumentation, data collection, sampling and procedure, and the technique of data analysis used to reach the results.

3.2 Variable selection

Quantitative research type was used as methodology for this research; the variables selected for this study were pilot tested through conducting interview of a sample of CIOs, ERP managers, project managers, etc. The interview from the pilot study enable the researcher to identify variables that are mostly related to local market, moreover, additional variables were thought out through the researchers long years of working experience (twenty years) in the same field and local market; The variables were then used to develop the instruments that were used in the next step, which is the main survey for collecting the respondents' perspectives on the relation between root-cause problems and failure reasons.

However, other variables that explain the root-cause problems and failure reasons were theoretically identified through the review of past and recent studies conducted by reliable and specialized independent organizations in IT industry across the entire world, some of these variables were however, adopted in this study.

The interviews conducted locally, with different chief information officers (CIO), IT managers, enterprise resource planning (ERP) managers, project management office (PMO) managers, ERP implementation managers, etc. was aimed at obtaining and focusing on the identification of potential failure reasons for ERP implementation projects based on their experiences in this field. This will help to find out what concerns the local market.

After the verbal interview, the information generated were used to design the instrument for the main survey which were at last distributed to various the interviews

IT managers, CIOs and ERP implementation project manager; to get their feedback about the relation between failure reasons and root-cause problem

Then the data was analyzed first by categorizing failure reasons into groups based on different factors like root-cause problem based on where each belong to; taking into consideration that enhancing project communication, business environment readiness and project integration are key solutions for root-cause problems, as these three factors are considered as major root-cause problems for ERP project's failure.

Failure reasons have been analyzed further to allow the researcher to offer a suitable general solution to each one of the root-cause problem which at the end will lead to minimizing the potential failure while project managers manage such projects successfully in the future.

In principle, and for simplification purposes, most gathered failure reasons were categorized under one of the following groups:

- Project Setup
- Executive Management Support
- Solution provider (Consultant/ Implementer/ Internal staff)
- Business Requirements and Environment Readiness (BPM)
- ERP Fitness to The Business/ Industry
- Key Users/ Users
- Project Management Capabilities (integration, communication and project management soft skills)

A model was built for analyzing the collected data and identifies proper statistics to assist in analyzing the research results. Survey results were analyzed and presented in a graphic chart and sent to all survey respondents. The survey's results, as well, being distributed across this document where applicable for reference.

Business environment readiness, should be well prepared prior to the implementation of the technology, as for example outcomes of implementing business process re-engineering (BPR) project is considered as cleaning house prior to implement the technology; whilst the standard business processes which, is accompanied by technology, as best practice, is not enough (in most of the cases) to be mapped into the business.

In order to develop and finally deliver the project service (s) or product (s), project interrelated parties must be put in a cohesive pool to be watched, monitored

and controlled all together to make the goal achieved and project succeed; and as well, the big picture (blue print) should be clarified and approved prior to the start of the project.

Project manager and PMO members' soft skills (communication); which reflects their ability to communicate well and build proper bridges and channels among project parties and with teams in order to facilitate information transition.

Moving forward the above three factors are considered the source of root-cause problems, as managing these factors badly will make them or some of them the source for projects' failure reasons.

3.3 Research Design

By browsing the internet and visiting website of some research center (like consulting firms and some other technology website like GARTNER company) across the world to look for recent statistics from reliable, independent firms so as to get accurate data about ERP project failure reasons and their chances of occurrence; a sample of 10 people were selected, as a pilot study, to refine failure reasons that are mostly related to the Saudi Arabia local market; interviews were followed by designing a survey, including distinct failure reasons after doing proper filtering and consulting many peoples who are in the field; questionnaires were then distributed to get more accurate information about the results of recent finished ERP implementation projects; checking their achievement comparing to their initial goals; have they completed on time?, within the drawn budget, which was set at the beginning of the project? Whether project achieved its goals that were agreed upon before proceeding with the project?

For publishing the survey to get responses, it was placed on many of websites, sent as link available within the professional network and sent through the researcher colleagues who work for consulting firms.

Gathered data being collected in a model which has been designed to analyze various variables used in the survey to allow the researcher look for the data from different angles and get better analysis of the results.

The area for this study is a Saudi Arabia local market. After classifying business industries, sectors and business sizes; the survey was:

1. Sent directly to the candidates list (three hundreds prospective respondents).
2. Expected to get more than a feedback from each of the selected industries.

However, survey's questions were designed in a simple way so that ordinarily people in the field can understand; whilst common practices among ERP projects, industry, and business size being considered while designing the survey questions.

As expected, some errors in survey's filling the questionnaire were noticed as a result of misunderstanding for some questions or the question not applicable to the respondents' practices being asked.

3.4 Instrumentation Frame and Questionnaire Development Processes

A questionnaire has been used mainly to determine the local common failure reasons of ERP implementation projects and determined the relation among root-cause problems and each one of failure reasons; which is beneficial to get out the most effective painful areas and focus on them to propose solution hints to minimize the potential failure for future ERP implementation projects.

A satisfactory response rate was obtained due to the processes used in order to achieve appropriate level of quality during all the questionnaire stages, planning through implementation steps.

Factors that reflect how questionnaire was developed are as the following:

- i. The quality of the questionnaire form was adequate and easy to use.
- ii. Sampling Validity was used; by asking arbitrators to validate the questionnaire. Arbitrators were of specialists in the ERP implementation field.
- iii. Method of data collection used was a web based questionnaire named www.SurveyMonkey.com, as the questionnaire was placed on the web and the link being sent to candidates to fill out the questionnaire.
- iv. Length of the collection period, two weeks was given whilst email reminder was sent every four days.
- v. Questionnaire design and layout was attractive.
- vi. A questionnaire was sent by email to the targeted peoples (IT managers, CIOs and ERP implementation related roles), and by placing the questionnaire on professional network media (like LinkedIn) and communicating with friends in some of service provider companies to assist in publishing the questionnaire.
- vii. Protection of confidentiality of information being provided to assure respondents that their information will be kept secret.

- viii. Communication strategy was set, follow-up emails and follow-up by telephone (when possible) was used.
- ix. The language of the questionnaire was English.
- x. An incentive being given to respondents, as to provide them a copy of the questionnaire statistics results after concluding the questionnaire.

The questionnaire was:

1. As short as possible.
2. Asked short, simple, and clearly worded questions.
3. Used multiple choice questions.
4. Questionnaire arbitration was made by more than one of specialized persons.
5. The questionnaire was pre-tested on a small number of people.

Inter-rater reliability is used for questionnaire measurement to assess the degree to which different judges or raters agree in their assessment decisions.

3.5 Data Collection, Sampling Frame and Procedure

The survey had targeted IT department heads in many industries, and different sizes of businesses in each industry.

Data collection procedure:

1. Prepared proper preface illustrating the purpose of the research and promise respondents with a copy of the survey statistic results.
2. Prepared the survey and placed it on a website (“SurveyMonkey”); means that a central database (DB) used to collect data.
3. The survey was sent as an internet link (URL) to the targeted peoples and placed a summary about a survey on professional networking website like LinkedIn. A link to the survey website being placed there.
4. Received the survey from the respondent, and kept sending reminder every four days for filling the survey.
5. Sent the respondent a thank you message.
6. Kept toke frequent backup of the database of the survey results.

Three hundred and fifty survey questionnaires were distributed to targets and then the filled ones were filtered whilst uncompleted survey forms were taken out. So, the number of surveys’ respondents completely was around 20% of the three hundred and fifty distributed ones. Therefore, the total sample used for this study was actually seventy (70) respondents.

The researcher ensured that he received at least more than one feedback from each industry.

3.6 Technique for Data Analysis

A model on excel sheet been designed for data analysis. All gathered information, out of the survey results, were entered into the built model; and reviewed to make sure of their data-entry completeness. Different dimensions were built into the model to allow examining the data and then produced relations that research look forward to proof.

“SurveyMonkey” which is the tool placed over the internet was used for publishing, gathering and analyzing the data.

3.7 Chapter Summary

The quantitative research type was used as methodology for this research; the variables were collected from the pilot study, by interviewing some of ERP concerned peoples, to collect and refine the independent variables; The website for some of the reliable and specialized independent organizations in IT industry that are located over the entire world, been visited as they are the main source for ERP implementation project’s failure reasons.

A satisfactory response rate was obtained. Method of data collection used was a web based survey named www.SurveyMonkey.com; More than three hundred surveys were distributed to targets and then the filled ones have been filtered whilst uncompleted survey forms were taken out. So, the number of surveys was filled completely was around 10% of the distributed ones. The author ensured that he received more than a feedback from each industry. A model on excel sheet been designed for data analysis. Different dimensions were built into the model to allow examining the data and then produced relations that research look forward to prove. The study area is Saudi Arabia local market.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 The survey's results

4.1.1 General information for respondents' work details

The main survey was conducted through a web survey, and a total of 70 responses were received. Among the valid responses, 57% of respondents are working for medium to big volume firms which could be feasible to run tier one ERP applications, like SAP, Oracle and MS Dynamics. Of those participated respondents, 84% are direct ERP specialists or related to ERP, which means that responses are accurate to a reasonable extent. Respondents from different industries were participated, as 13% from manufacturing, 4% from Health, 7% from Construction, 23% from Government, 14% from retail, 11% from Information Technology and Telecommunication, 7% from Financial Services, 3% from Distribution whilst 31% from Other industries.

Figure 4.1: Shows the business industry percentages for respondents to survey

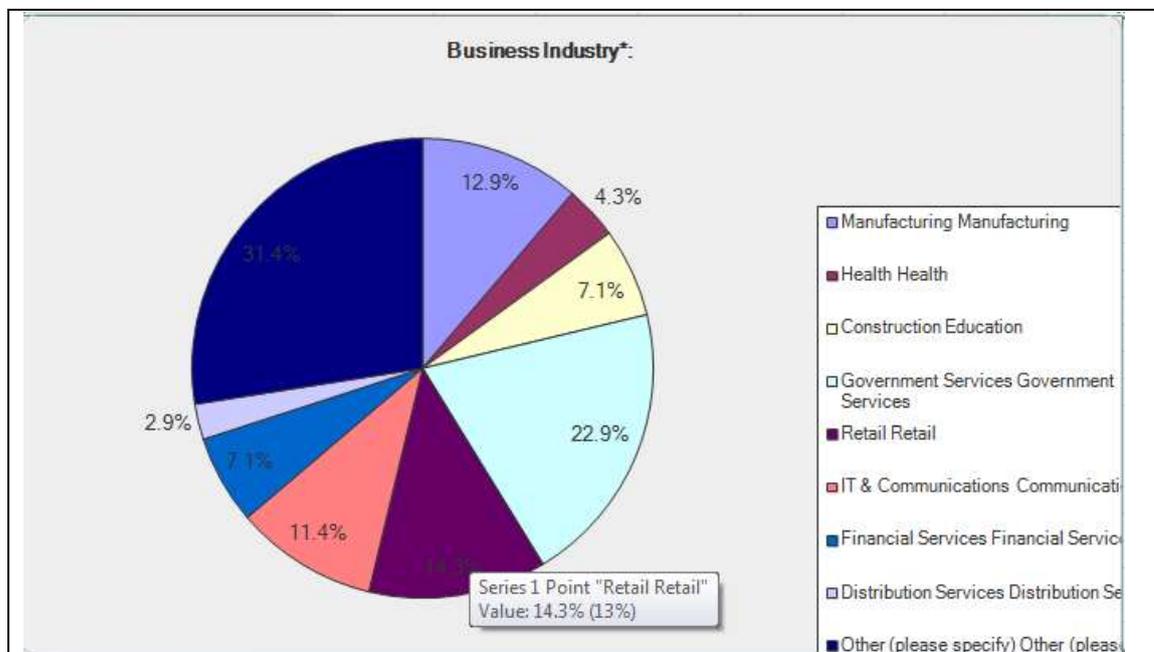


Figure 4.1: Business industry percentages for respondents to survey

The industries to which respondents are working for, to show the volume of the sample for each of the participated industries to the questionnaire.

Figure 4.2: Job title percentages for respondents to survey

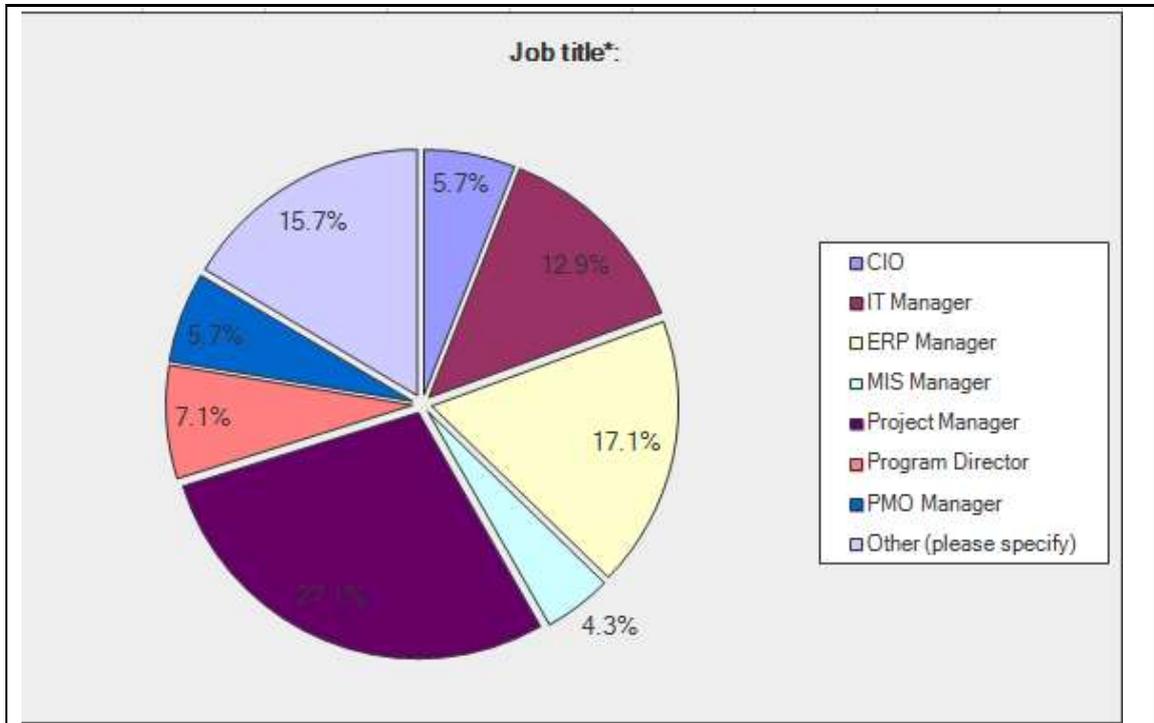


Figure 4.2: Job title percentages for respondents to survey

The job title for respondents to the questionnaire.

Figure 4.3: No of employee's percentages for organizations participated in the survey

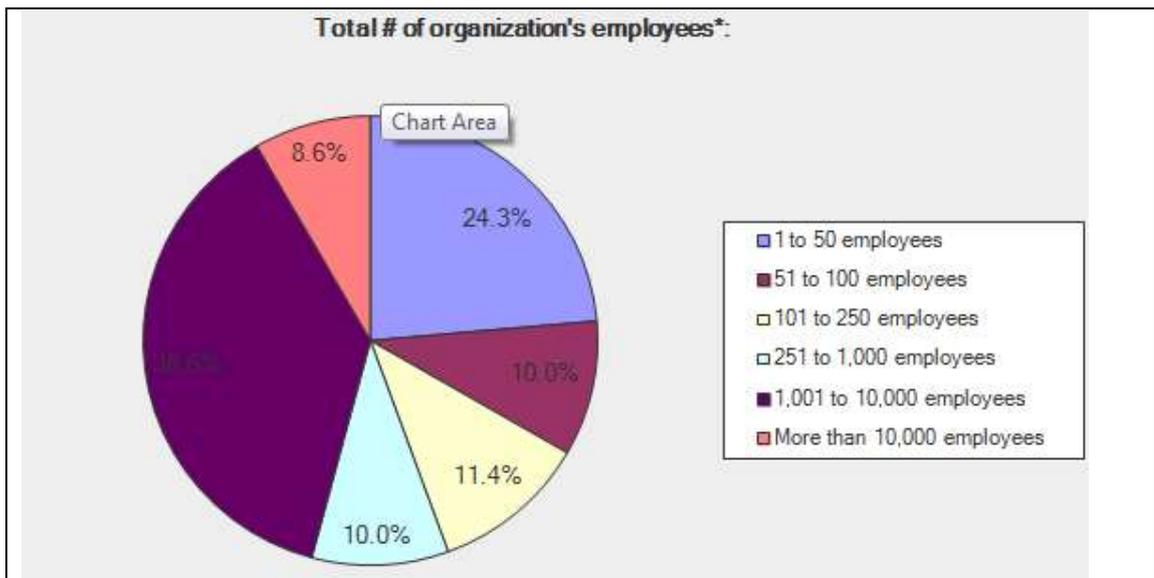


Figure 4.3: No of employee's percentages for organizations participated in the survey

The respondents' organizations volume, as the number of employees at the organization is one of the indicators.

4.1.2 Project management maturity measurement for respondents' organizations

The main survey was conducted through a web survey, and a total of 70 responses were received. 22% of respondents' organizations were implemented SAP, 65% of respondents use MS Dynamics, 80% of respondents use Oracle, and 34% of respondents use different software other than SAP, MS Dynamics or Oracle; with a note that an organization could implement more than an ERP. The project management deliverables that are actively used while implementing the ERP applications were in average about 50%. The importance of the implementation for some factors those participate in ERP implementation success is clear, like documenting and applying business processes manually prior the ERP implementation is taking place; the average shown about 65% of responses.

Figure 4.4: Shows Project management maturity inquiries for organizations

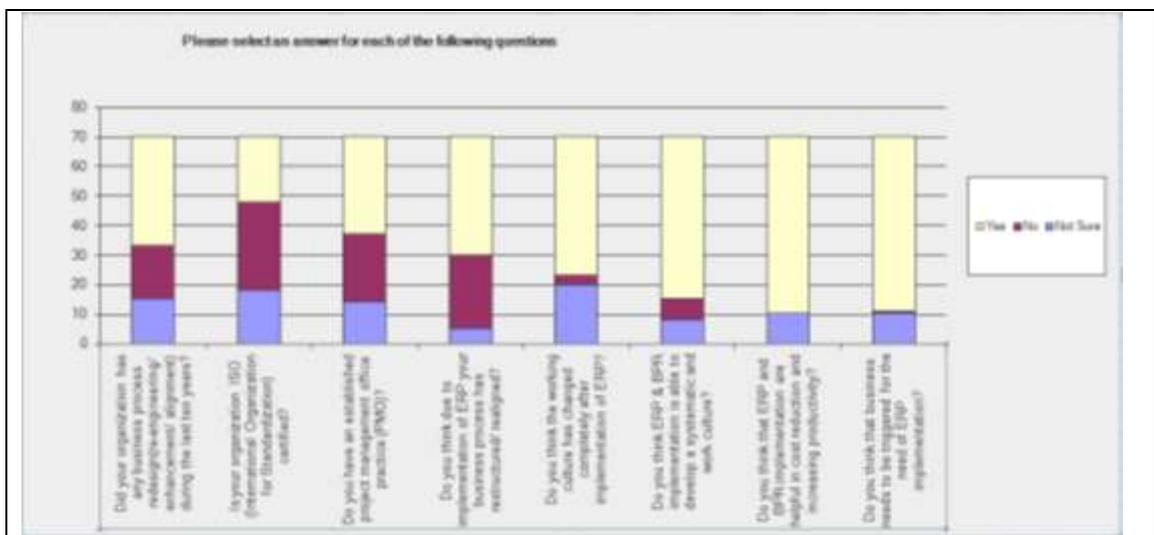


Figure 4.4: Project management maturity inquiries for organizations

Show the implementation for some factors those participate in ERP implementation success at the concerned organization.

Figure 4.5: Shows ERP systems applied in the participated organizations

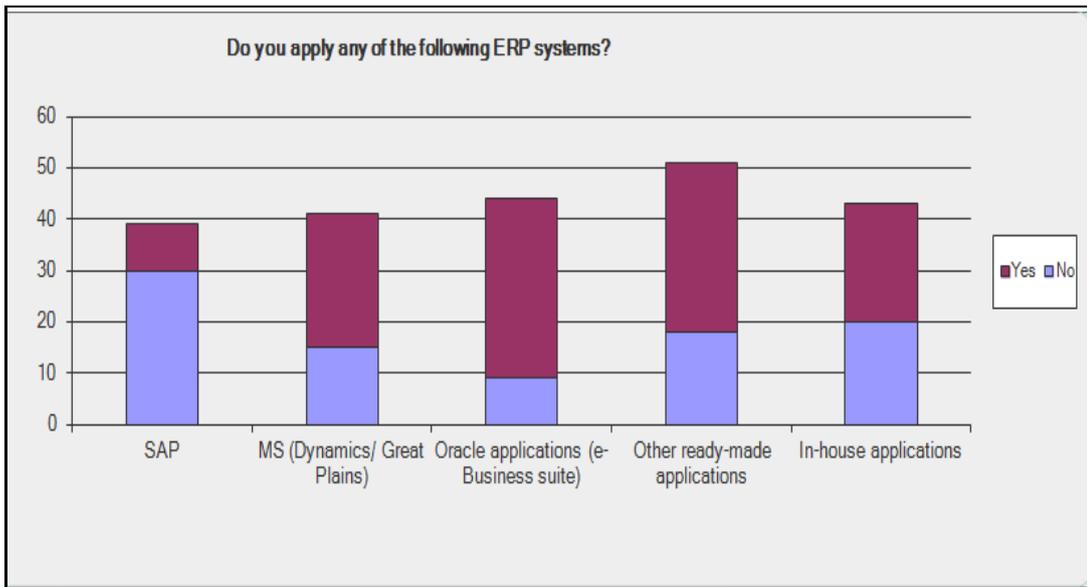


Figure 4.5: ERP systems applied in the participated organizations

Show the tier level of the ERP which is implemented at the organization, meanwhile show the participated ERPs in name.

Figure 4.6: Shows applied project management deliverables in organizations

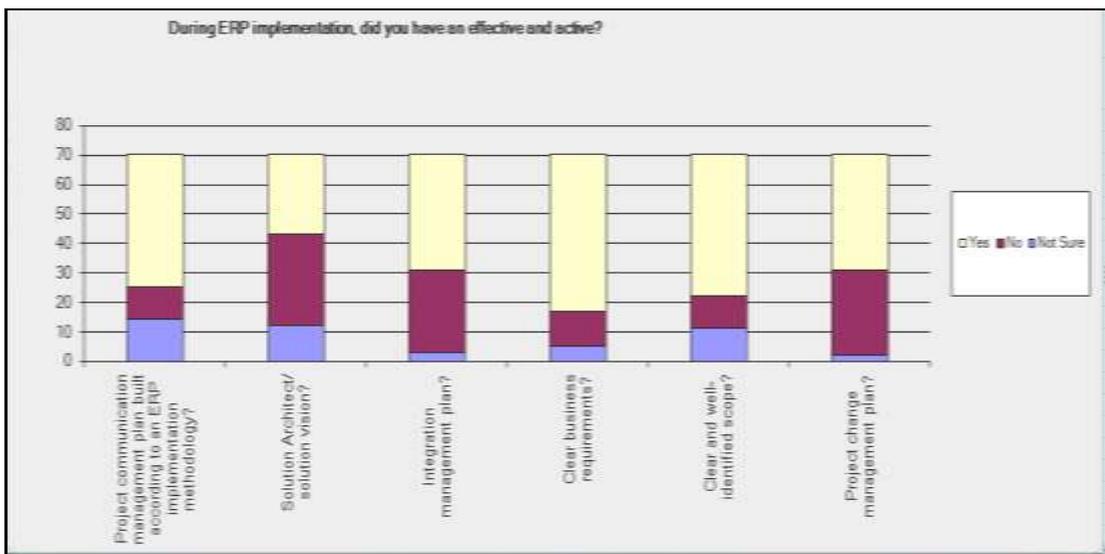


Figure 4.6: Applied project management deliverables in organizations

Show what are project management deliverables that are actually used while implementing the ERP applications, as they participate in ERP success.

4.1.3 Measure the impact for elements under the seven groups to the ERP success

The group “project setup” has ten elements those are effecting project success, the element “un clarity of the project scope” was of highest voted element in the group with 58% to effect the project and may cause its failure. “executive management support” group has six elements those are affecting project success, the element ”lack of upper management support” was the highest voted element in the group with 55% to effect the project and may cause its failure. “solution provider” group has seven elements those are affecting project success, the element ”undedicated qualified consultants” was the highest voted element in the group with 50% to effect the project and may cause its failure. “business requirements and environment readiness” group has thirteen elements those are affecting project success, the element” poorly defined/ unclear of business requirements” was the highest voted element in the group with 48% to effect the project and may cause its failure. “ERP fitness to the business industry” group has eight elements those are affecting project success, the element” Mass of customizations to the ERP” was the highest voted element in the group with 57% to effect the project and may cause its failure. “Key users/ users” group has twelve elements those are affecting project success, the elements ”Lack of business process ownership and accountability” and “Lack of technology awareness and cross-functional business cycles for key users” were the highest voted elements in the group with average 50% to effect the project and may cause its failure. Furthermore, the group “project management capabilities” has eight elements those are affecting the project success, the element” Insufficient communications” was the highest voted element in the group with 60% and ever in the survey to effect the project and may cause its failure.

Figure 4.7: Shows the rating for the impact of “project setup” elements to the success/ failure of the project

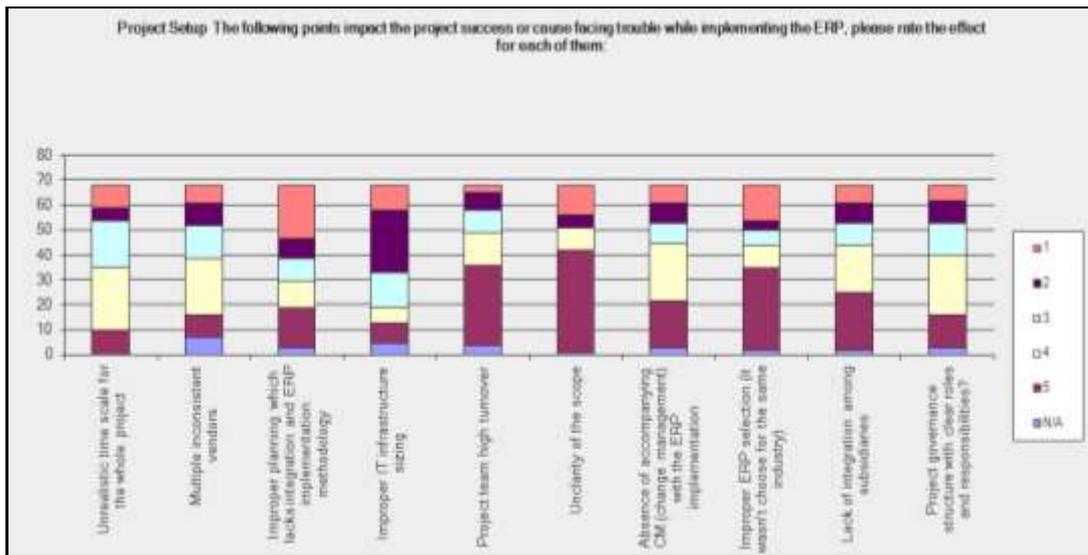


Figure 4.7: Rating for the impact of “project setup” elements to the success/ failure of the project

Illustrate the impact of each element under the group named “project setup” to the dependent variable – Project Success, and graphically showing the ratio

Figure 4.8: Shows the rating for the impact of “executive management support” elements to the success/ failure of the project

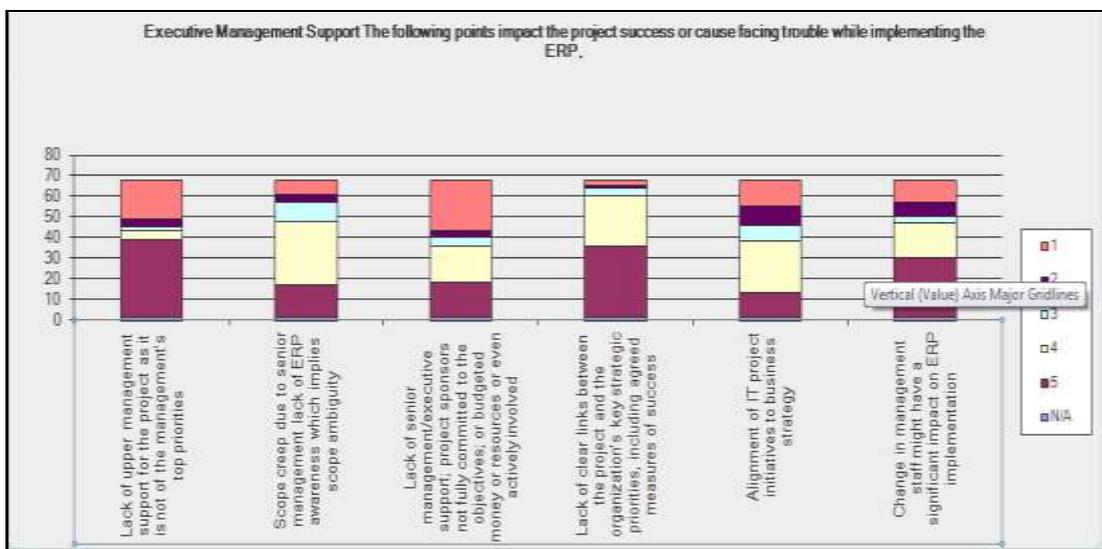


Figure 4.8: Rating for the impact of “executive management support” elements to the success/ failure of the project

Illustrate the impact of each element under the group named “executive management support” to the dependent variable – Project Success, and graphically showing the ratio

Figure 4.9: Shows the rating for the impact of “solution provider” elements to the success/ failure of the project

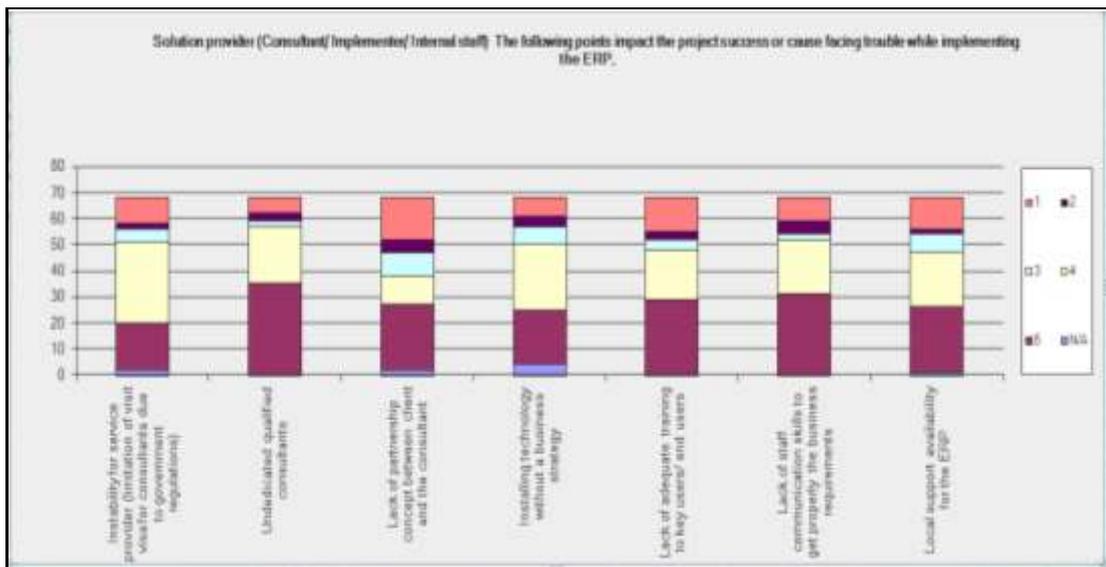


Figure 4.9: Rating for the impact of “solution provider” elements to the success/ failure of the project

Illustrate the impact of each element under the group named “solution provider” to the dependent variable – Project Success, and graphically showing the ratio

Figure 4.10: Shows the rating for the impact of “business requirements and environment readiness” elements to the success/ failure of the project

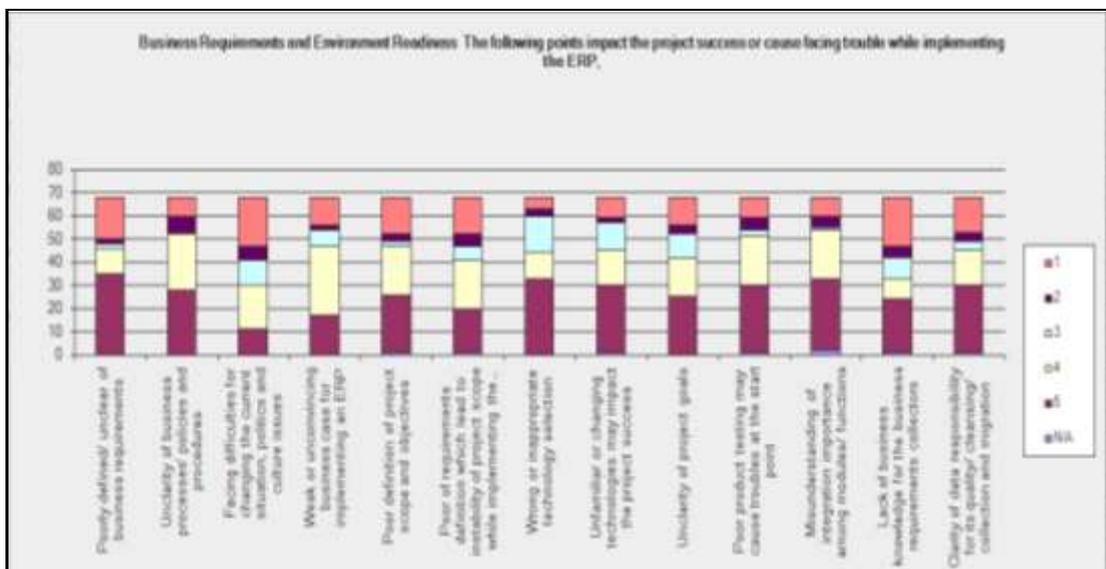


Figure 4.10: Rating for the impact of “business requirements and environment readiness” elements to the success/ failure of the project

Illustrate the impact of each element under the group named “business requirements and environment readiness” to the dependent variable – Project Success, and graphically showing the ratio

Figure 4.11: Rating for the impact of “ERP fitness to the business industry” elements to the success/ failure of the project

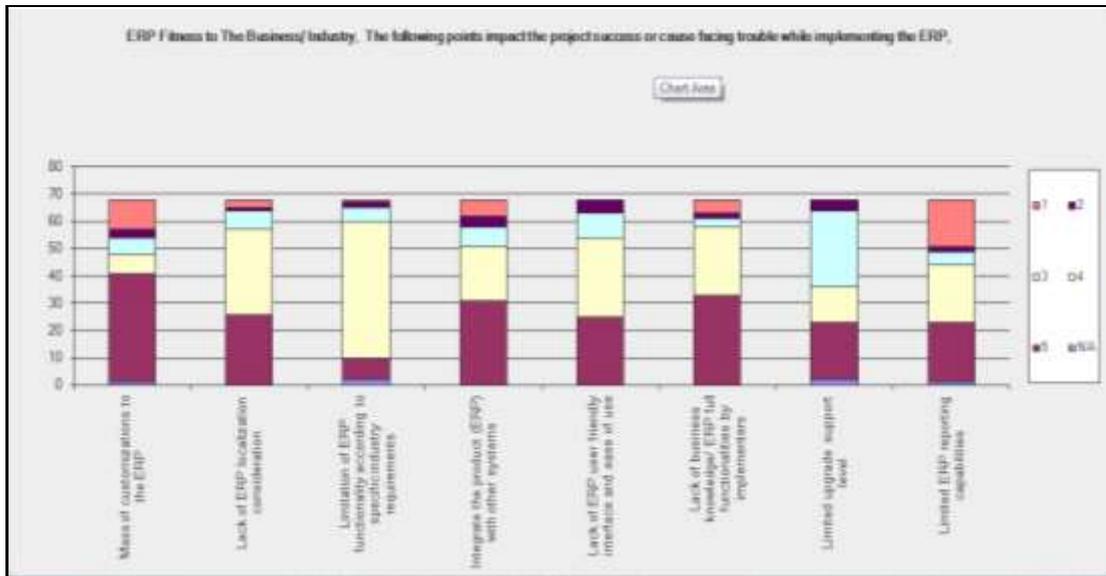


Figure 4.11: Rating for the impact of “ERP fitness to the business industry” elements to the success/ failure of the project

Illustrate the impact of each element under the group named “ERP fitness to the business industry” to the dependent variable – Project Success, and graphically showing the ratio

Figure 4.12: Shows the rating for the impact of “key users/ users” elements to the success/ failure of the project

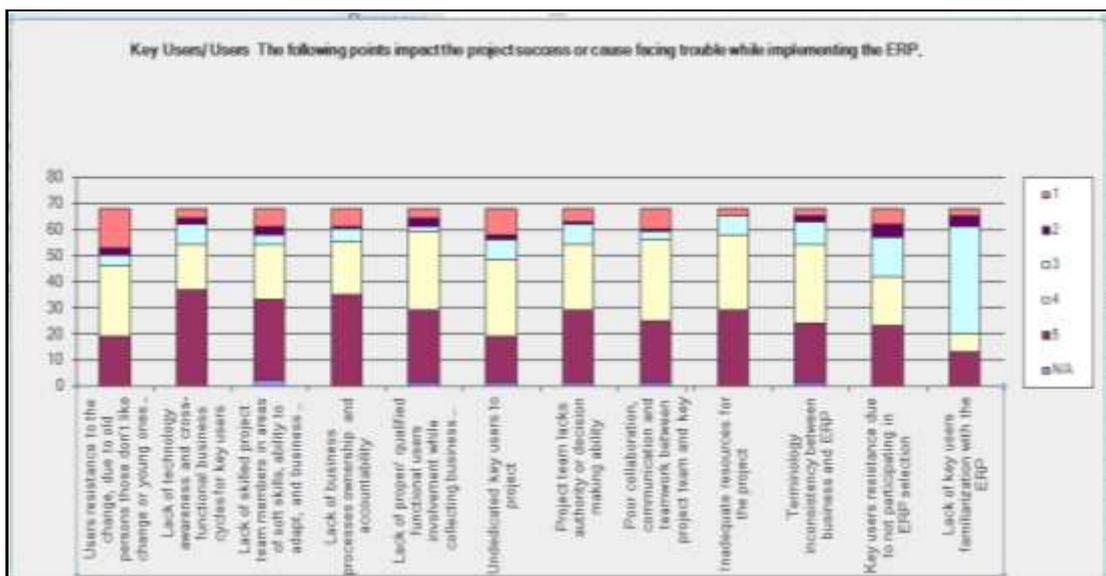


Figure 4.12: Rating for the impact of “key users/ users” elements to the success/ failure of the project

Illustrate the impact of each element under the group named “key users/ users” to the dependent variable – Project Success, and graphically showing the ratio
 Figure 4.13: Shows the rating for the impact of “project management capabilities” elements to the success/ failure of the project

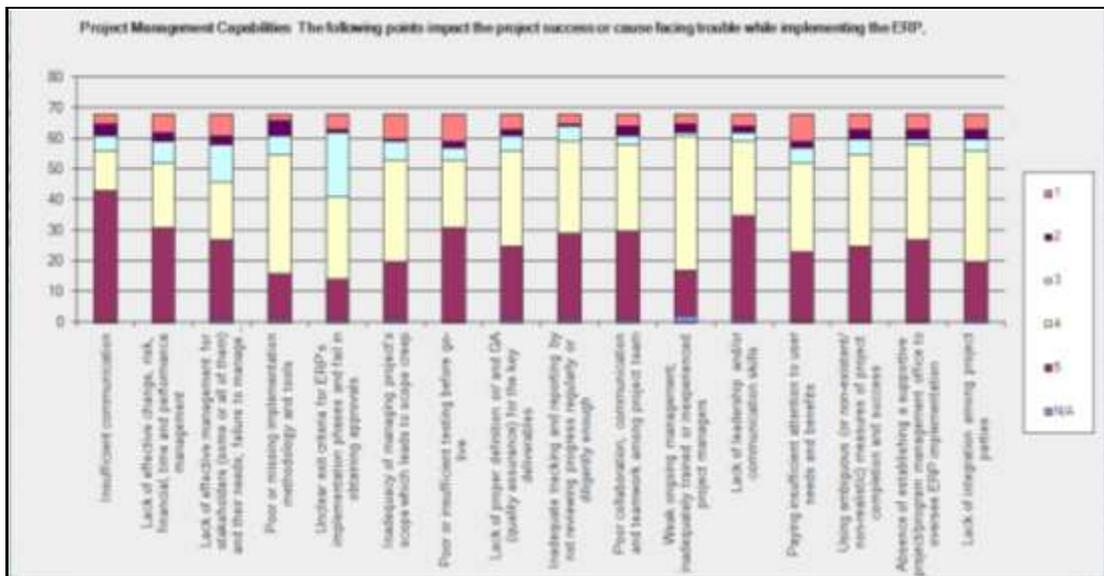


Figure 4.13: Rating for the impact of “project management capabilities” elements to the success/ failure of the project

Illustrate the impact of each element under the group named “project setup” to the dependent variable – Project Success, and graphically showing the ratio

4.1.4 Measure the relation for elements under the seven groups and each of root-cause problems

For “Project Setup” group, 39% of all failure reasons mentioned in the group’s figure 4.14 is rooted due to “communication” deficiency, while 39% of them are rooted due to “business environment readiness” deficiency, and only 22% are rooted due to “Integration” deficiency.

“Executive Management Support” group, 43% of all failure reasons mentioned in the group’s figure 4.15, are rooted due to “communication” deficiency, while 43% are rooted due to “business environment readiness” deficiency, and 14% are rooted due to “Integration” deficiency.

“Solution Provider” group, 43% of all failure reasons mentioned in this figure 4.16 is rooted due to “communication” deficiency, however, 41% are rooted due to “business environment readiness” deficiency, and 16% are rooted due to “Integration” deficiency.

For “Business Requirements and Environment” group, 42% of all failure reasons mentioned in the group’s figure 4.17 is rooted due to “communication” deficiency, while 34% are rooted due to “business environment readiness” deficiency, and 24% are rooted due to “Integration” deficiency.

“ERP Fitness to Business/ Industry” group, 34% of all failure reasons mentioned in the group’s figure 4.18 are rooted due to “communication” deficiency, while, 43% are rooted due to “business environment readiness” deficiency, and 23% are rooted due to “Integration” deficiency.

“Key Users/ Users”, 39% of all failure reasons mentioned in the group’s figure 4.19 are rooted due to “communication” deficiency, while, 51% are rooted due to “business environment readiness” deficiency, and 10% are rooted due to “Integration” deficiency.

For the last group, the “Project Management Capabilities”, 49% of all failure reasons mentioned in the group’s figure 4.20 are rooted due to “communication” deficiency, while 34% are rooted due to “business environment readiness” deficiency; and 17% are rooted due to “Integration” deficiency.

Figure 4.14: Shows the rating for the relation between “project setup” elements and root-cause problems

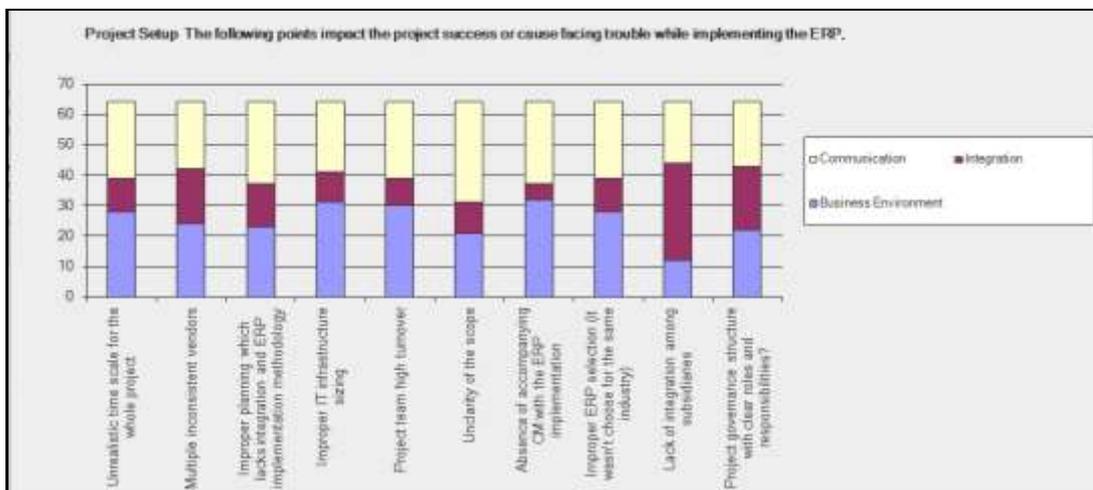


Figure 4.14: Rating for the relation between “project setup” elements and root-cause problems

Illustrate the relation between each element under the group named “project setup” and the three root-cause problems, and graphically showing the ratio

Figure 4.15: Shows the rating for the relation between “executive management support” elements and root-cause problems

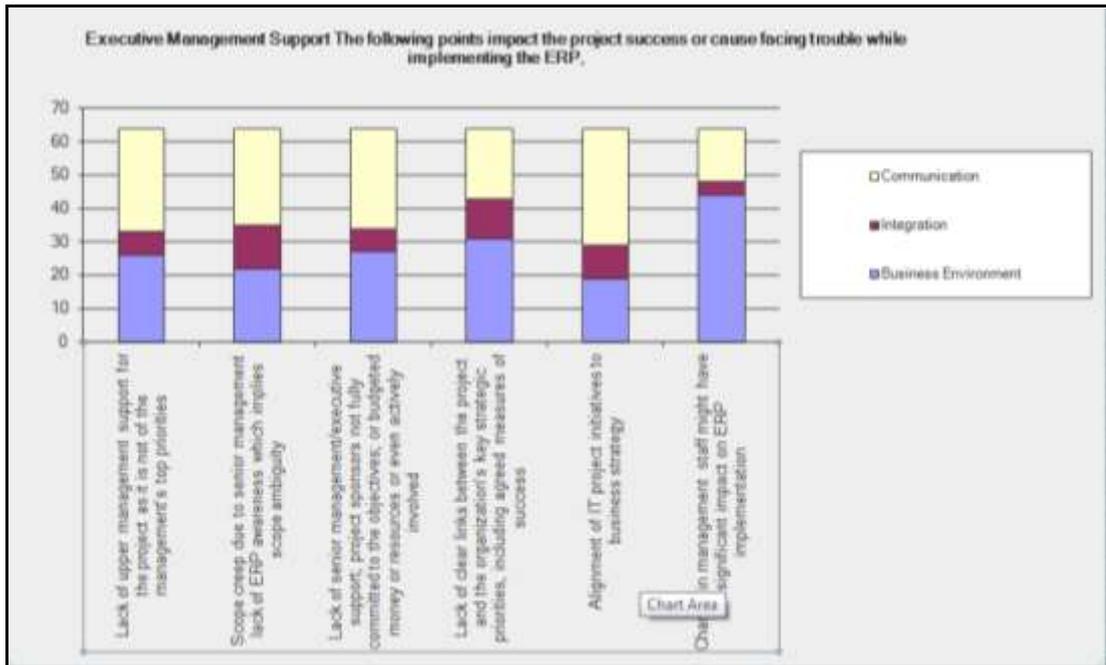


Figure 4.15: Rating for the relation between “executive management support” elements and root-cause problems

Illustrate the relation between each element under the group named “executive management support” and the three root-cause problems, and graphically showing the ratio

Figure 4.16: Shows the rating for the relation between “solution provider” elements and root-cause problems

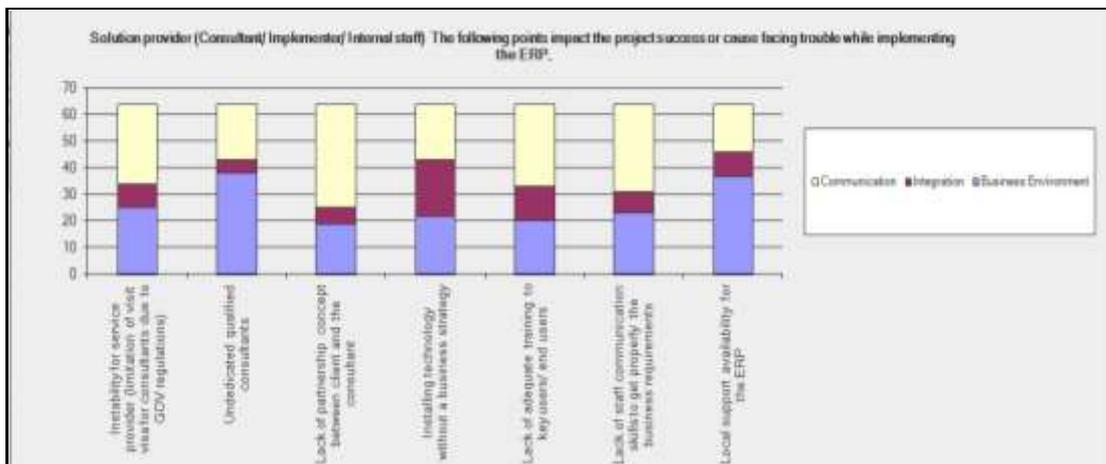


Figure 4.16: Rating for the relation between “solution provider” elements and root-cause problems

Illustrate the relation between each element under the group named “solution provider” and the three root-cause problems, and graphically showing the ratio

Figure 4.17: Shows the rating for the relation between “business requirements and environment readiness” elements and root-cause problems

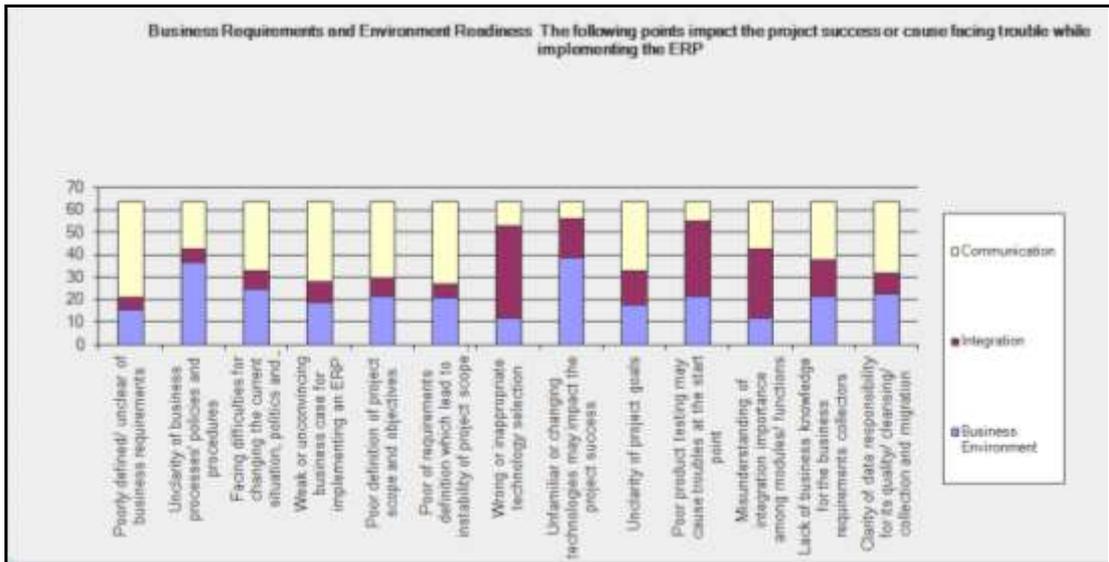


Figure 4.17: Rating for the relation between “business requirements and environment readiness” elements and root-cause problems

Illustrate the relation between each element under the group named “business requirements and environment readiness” and the three root-cause problems, and graphically showing the ratio

Figure 4.18: Shows the rating for the relation between “ERP fitness to the business industry” elements and root-cause problems

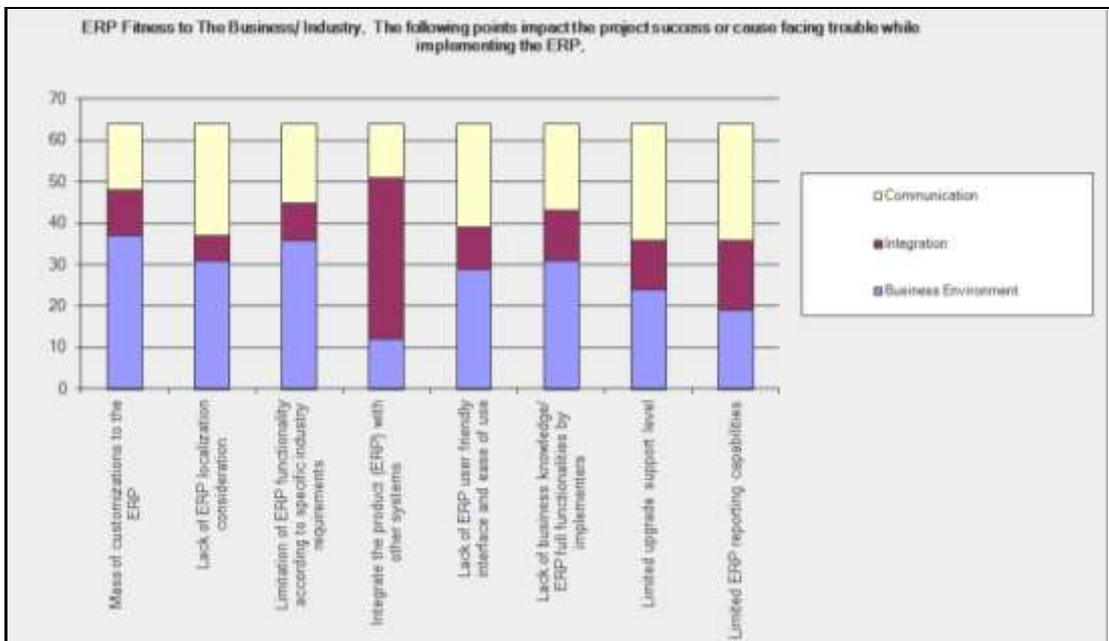


Figure 4.18: Rating for the relation between “ERP fitness to the business industry” elements and root-cause problems

Illustrate the relation between each element under the group named “ERP fitness to the business industry” and the three root-cause problems, and graphically showing the ratio

Figure 4.19: Shows the rating for the relation between “key users/ users” elements and root-cause problems

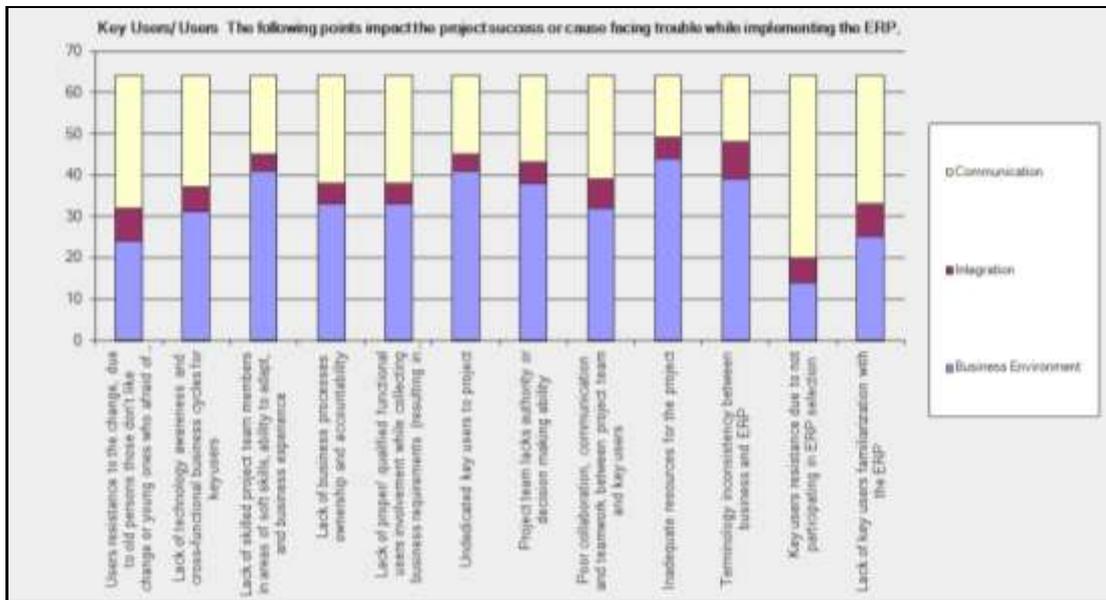


Figure 4.19: Rating for the relation between “key users/ users” elements and root-cause problems

Illustrate the relation between each element under the group named “key users/ users” and the three root-cause problems, and graphically showing the ratio

Figure 4.20: Shows the rating for the relation between “project management capabilities” elements and root-cause problems

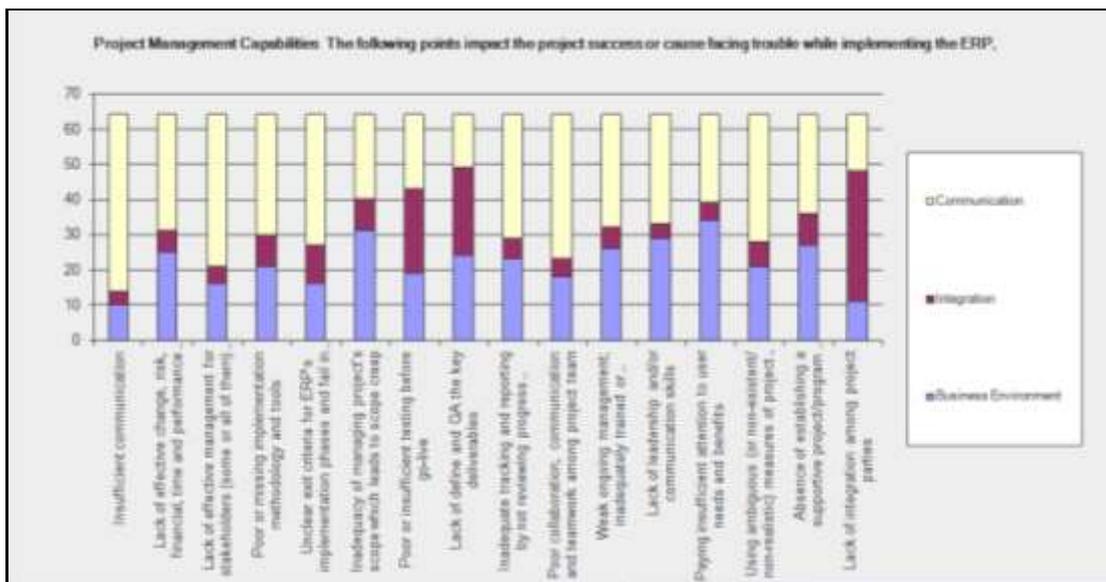


Figure 4.20: Rating for the relation between “project management capabilities” elements and root-cause problems

Illustrate the relation between each element under the group named “project management capabilities” and the three root-cause problems, and show the ratio

Figure 4.21: Shows the statistics for root-cause problems as result of the survey

Some Observations for the results of root-cause problems		
Communication was rated	60% - 80%	as the root cause problem for the listed elements under the category "Project Setup"
Integration was rated	10% - 55%	as the root cause problem for the listed elements under the category "Project Setup"
Business readiness was rated	35% - 65%	as the root cause problem for the listed elements under the category "Project Setup"
Communication was rated	50% - 85%	as the root cause problem for the listed elements under the category "Executive Management Support"
Integration was rated	15% - 30%	as the root cause problem for the listed elements under the category "Executive Management Support"
Business readiness was rated	55% - 80%	as the root cause problem for the listed elements under the category "Executive Management Support"
Communication was rated	45% - 80%	as the root cause problem for the listed elements under the category "Solution Provide"
Integration was rated	10% - 50%	as the root cause problem for the listed elements under the category "Solution Provide"
Business readiness was rated	40% - 60%	as the root cause problem for the listed elements under the category "Solution Provide"
Communication was rated	35% - 80%	as the root cause problem for the listed elements under the category "Business requirements and environment readiness"
Integration was rated	20% - 70%	as the root cause problem for the listed elements under the category "Business requirements and environment readiness"
Business readiness was rated	45% - 80%	as the root cause problem for the listed elements under the category "Business requirements and environment readiness"
Communication was rated	40% - 60%	as the root cause problem for the listed elements under the category "ERP Fitness to Business/ Industry"
Integration was rated	25% - 75%	as the root cause problem for the listed elements under the category "ERP Fitness to Business/ Industry"
Business readiness was rated	25% - 75%	as the root cause problem for the listed elements under the category "ERP Fitness to Business/ Industry"
Communication was rated	40% - 75%	as the root cause problem for the listed elements under the category "Key users/ users"
Integration was rated	10% - 30%	as the root cause problem for the listed elements under the category "Key users/ users"
Business readiness was rated	50% - 80%	as the root cause problem for the listed elements under the category "Key users/ users"
Communication was rated	55% - 85%	as the root cause problem for the listed elements under the category "Project management capabilities"
Integration was rated	15% - 55%	as the root cause problem for the listed elements under the category "Project management capabilities"
Business readiness was rated	25% - 70%	as the root cause problem for the listed elements under the category "Project management capabilities"
"Communication" rated in a range between 45% - 80% as root cause problem for all listed elements under all categories		

"Integration was rated" rated in a range between 15% - 50% as root cause problem for all listed elements under all categories	
"Business readiness" rated in a range between 40% - 70% as root cause problem for all listed elements under all categories	
Note:	Survey filler was able to select more than a root cause for each of the elements

Figure 4.21: Statistics for root-cause problems as result of the survey

A reading for the questionnaire percentages range per each of the seven groups with each one of the three root-cause problems, so it illustrate the relation between the root-cause problem and collective results for elements under the seven groups.

4.1.5 Measure for project quality, baselines plans and success judgment

Most of ERP implementation projects are run over the budgeted time, as the figure 4.22 shows, that 77% of the feedback for projects had run over the planned time; while 62% of respondents said that their projects run over initially budgeted money; and around 69% responded that projects had scope creep. Which means that most of ERP projects are not within project contracted baselines for either one or more of the triple triangle elements which are scope, time and cost.

63% of respondents said that “client’s top management is the suitable criteria to measure the success or failure of the project”, which means that above percentages for triple triangle factors is not accurate and precisely the organization’s top management is the only way to judge the project success or failure.

Figure 4.22: Shows the rating for ERP implementation results comparing to project based lines

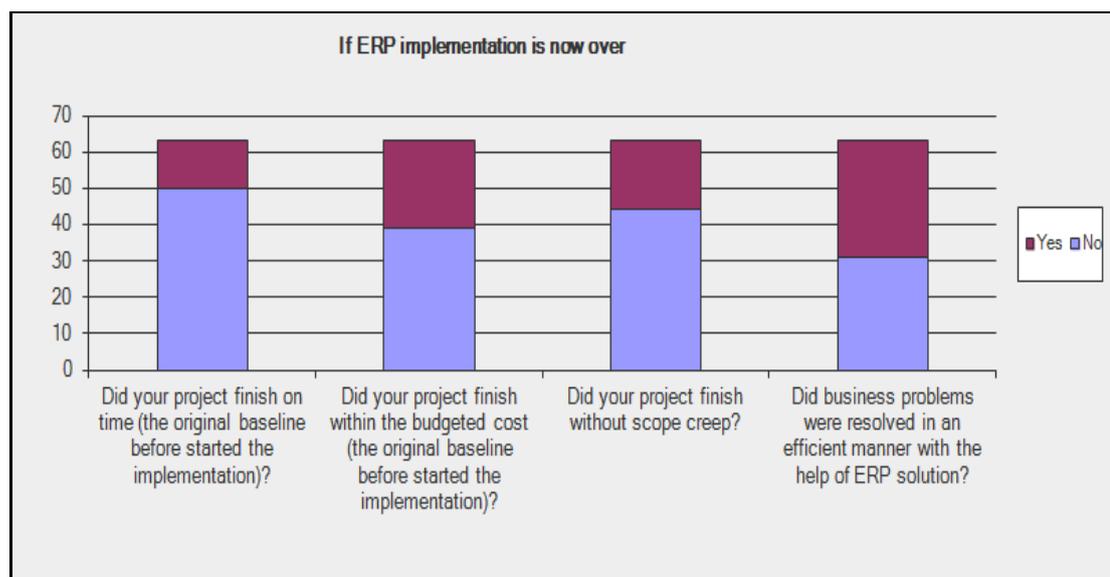


Figure 4.22: Rating for ERP implementation results comparing to project based lines

Several questions that are related to the project baseline plans to measure whether they were achieved?

Figure 4.23: Shows the rating for the criteria of success/failure ERP implementation

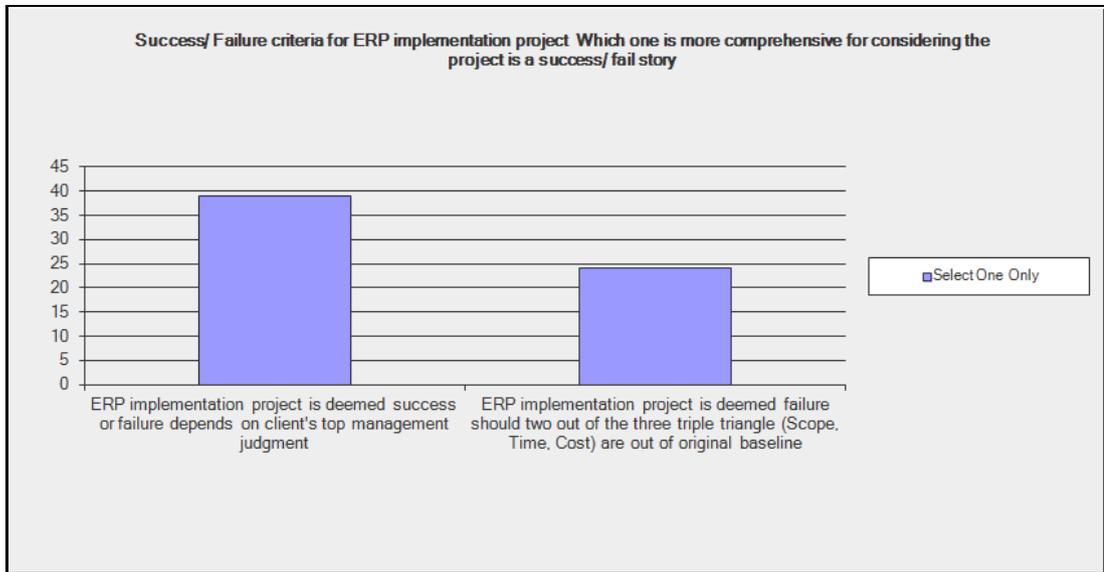


Figure 4.23: Rating for the criteria of success/failure ERP implementation

Inquiry on the criteria of judging the project success whether related to the client's top management judgment or depends on the triple triangle

Figure 4.24: Rating for survey respondents about their satisfaction of some quality aspects of ERP implementation project

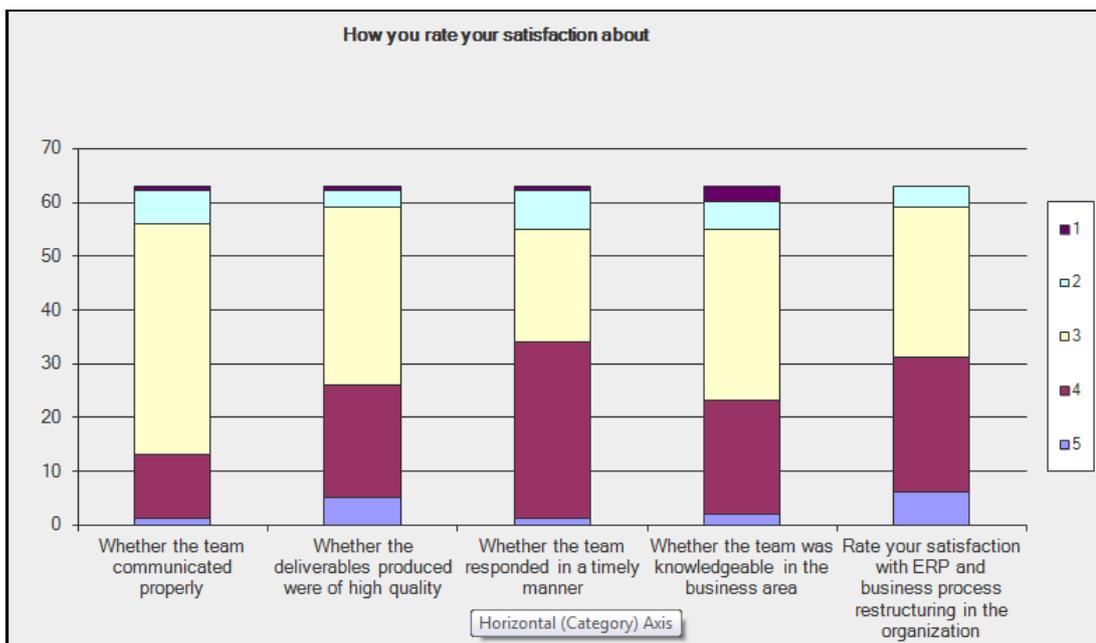


Figure 4.24: Rating for survey respondents about their satisfaction of some quality aspects of ERP implementation project

Related quality assurance questions about the ERP implementation environment

4.2 Analyzing and Linking Failure Reasons to The Defined Root-Cause Problems

Hereunder, are the seven groups of failure reasons (categorized and defined above in (4.4) with their elements). Percentages are mentioned as per the survey results.

The percentages mentioned below, inside each cell, show the relation between each one of the failure reasons with each one of the root-cause problems; and the ratio indicates how each failure reason is rooted by the root-cause problem. So, the highest ratio indicates the highest potential for failure.

Note: let us agree that the mentioned percentages and ranking hereunder are rational and not necessarily accurate, and it is used for clarifying matters. They are a result of survey's respondents' statistics.

4.2.1 The relation between failure reasons under “Project Setup” group and root-cause problems.

Table 4.1:

Summary: as an outcome of the presented results in the table above, the whole group tends to be rooted by communication and business environment readiness according to the survey results.

S/N	Element Description	Communication	Integration	Business Environment Readiness
1	Unrealistic time scales for the whole project	25	11	28
2	Multiple inconsistent vendors	22	18	24
3	Improper planning, which lacks integration and ERP implementation methodology	27	14	23
4	Improper IT infrastructure sizing	23	10	31
5	Project team high turnover	25	9	30

6	No clarity of the scope	33	10	21
	Absence of accompanying			
	CM works with the ERP	27	5	32
7	implementation			
	Improper ERP selection (it			
8	wasn't chosen for the same	25	11	28
	industry)			
9	Lack of integration among			
	subsidiaries	20	32	12
	No clarity of Project			
10	governance structure with			
	clear roles and	21	21	22
	responsibilities?			
	Average	27	16	27

Understanding of the result: Going by the presented results in (Table 4.1); we can read clearly that the following shows the percentages how each one of the three root-cause problems is in average participating in the failure of the project, for elements fall under the group “Project Setup”:

- a. 39% (27/70) of all failure reasons mentioned in this table, as an outcome of the survey results, is rooted due to “communication” deficiency.
- b. 39% (27/70) of all failure reasons mentioned in this table and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 22% (16/70) of all failure reasons mentioned in this table and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Thus, failure reasons within this group those are fall under the communication and business environment readiness root-cause problems are to be given a highest priority and attention, while implementing an ERP application, in order to avoid project failure.

4.2.2 The relation between failure reasons under “Executive Management Support” group and root-cause problems.

Table 4.2:

Summary: as an outcome of the presented results in the previous table, the whole group tends to be rooted by communication and business environment readiness according to the survey results.

S/N	Element Description	Communication	Integration	Business Environment Readiness
1	Lack of upper management support for the project as it is not of the management's top priorities	31	7	26
2	Scope creep due to senior management lack of ERP awareness which implies scope ambiguity	29	13	22
3	Lack of senior management/executive support; project sponsors not fully committed to the objectives, budgeted money, resources or even actively involved	30	7	27
4	Lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success	21	12	31
5	Nonalignment of IT project initiatives to business strategy	35	10	19
6	Change in management staff might have a significant impact on ERP implementation	16	4	44

Average	30	10	30
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Understanding of the result: Going by the presented results in (Table 4.2); we can read clearly that the following shows the percentages how each one of the three root-cause problems is in average participating in the failure of the project, for elements fall under the group “Executive Management Support”:

- a. 43% (30/70) of all failure reasons mentioned in this table, as an outcome of the survey results, is rooted due to “communication” deficiency.
- b. 43% (30/70) of all failure reasons mentioned in this table and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 14% (10/70) of all failure reasons mentioned in this table and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Thus, failure reasons within this group those are fall under the communication and business environment readiness root-cause problems are to be given a highest priority and attention, while implementing an ERP application, in order to avoid project failure.

4.2.3 The relation between failure reasons under “Solution Provider” group and root-cause problems.

Table 4.3:

Summary: as an outcome of the presented results in the previous table, the whole group tends to be rooted by communication and business environment readiness according to the survey results.

S/N	Element Description	Communication	Integration	Business Environment Readiness
1	Instability for service provider (limitation of visit visa for consultants due to government regulations)	30	9	25
2	Undedicated qualified consultants	21	5	38
3	Lack of partnership concept between client and the	39	6	19

consultant				
4	Installing technology without a business strategy	21	21	22
5	Lack of adequate training of key users/ end users	31	13	20
6	Lack of staff communication skills to get properly the business requirements	33	8	23
7	Local support no availability for the ERP	18	9	37
Average		30	11	29

Understanding of the result: Going by the presented results in (Table 4.3); we can read clearly that the following shows the percentages how each one of the three root-cause problems is in average participating in the failure of the project, for elements fall under the group “Solution Provider”:

- a. 43% (30/70) of all failure reasons mentioned in this table, as an outcome of the survey results, is rooted due to “communication” deficiency.
- b. 41% (29/70) of all failure reasons mentioned in this table and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 16% (11/70) of all failure reasons mentioned in this table and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Thus, failure reasons within this group those are fall under the communication and business environment readiness root-cause problems are to be given a highest priority and attention, while implementing an ERP application, in order to avoid project failure.

4.2.4 The relation between failure reasons under “Business Requirements and Environment” group and root-cause problems.

Table 4.4:

Summary: as an outcome of the presented results in the previous table, the whole group tends to be rooted by communication and business environment readiness according to the survey results.

S/N	Element Description	Business	
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		Communication	Integration	Environment Readiness
1	Poorly defined or unclear of business requirements	43	5	16
2	Unclear of business processes' policies and procedures	21	6	37
3	Facing the difficulties of changing the current situation, politics and cultural issues	31	8	25
4	Weak or unconvincing business case for implementing an ERP	36	9	19
5	Poor definition of project scope and objectives	34	8	22
6	Poor of requirements definition which lead to instability of project scope while implementing the ERP	37	6	21
7	Wrong or inappropriate technology selection	11	41	12
8	Unfamiliar or changing technologies may impact the project success	8	17	39
9	No clarity of project goals	31	15	18
10	Poor product testing may cause troubles at the start point	9	33	22
11	Misunderstanding of integration's importance among modules or functions	21	31	12
12	Lack of business knowledge	26	16	22

	for the business requirements			
	collectors			
	No clarity of data			
13	responsibility for its quality, cleansing, collection, and migration	32	9	23
	Average	29	17	24

Understanding of the result: Going by the presented results in (Table 4.4); we can read clearly that the following shows the percentages how each one of the three root-cause problems is in average participating in the failure of the project, for elements fall under the group “Business Requirements and Environment”:

- a. 42% (29/70) of all failure reasons mentioned in this table, as an outcome of the survey results, is rooted due to “communication” deficiency.
- b. 34% (24/70) of all failure reasons mentioned in this table and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 24% (17/70) of all failure reasons mentioned in this table and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Thus, failure reasons within this group those are fall under the communication and business environment readiness root-cause problems are to be given a highest priority and attention, while implementing an ERP application, in order to avoid project failure.

4.2.5 The relation between failure reasons under “ERP Fitness to Business/ Industry” group and root-cause problems.

Table 4.5:

Summary: as an outcome of the presented results in the previous table, the whole group tends to be rooted by communication and business environment readiness according to the survey results.

S/N	Element Description	Communication	Integration	Business Environment Readiness
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1	Mass of customizations to the ERP	16	11	37
2	Lack of ERP localization consideration	27	6	31
3	Limitation of ERP functionality according to specific industry requirements	19	9	36
4	Missing of integrating the product (ERP) with other systems	13	39	12
5	Lack of ERP user friendly interface and ease of use	25	10	29
6	Lack of business knowledge or ERP full functionalities by implementers	21	12	31
7	Limited upgrade support level	28	12	24
8	Limited ERP reporting capabilities	28	17	19
	Average	24	16	30

Understanding of the result: Going by the presented results in (Table 4.5); we can read clearly that the following shows the percentages how each one of the three root-cause problems is in average participating in the failure of the project, for elements fall under the group “ERP Fitness to Business/ Industry”:

- a. 34% (24/70) of all failure reasons mentioned in this table, as an outcome of the survey results, is rooted due to “communication” deficiency.
- b. 43% (30/70) of all failure reasons mentioned in this table and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 23% (16/70) of all failure reasons mentioned in this table and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Thus, failure reasons within this group those are fall under the business environment readiness and communication root-cause problems are to be given a

highest priority and attention, while implementing an ERP application, in order to avoid project failure.

4.2.6 The relation between failure reasons under “Key Users/ Users” group and root-cause problems

Table 4.6:

Summary: as an outcome of the presented results in the previous table, the whole group tends to be rooted by communication and business environment readiness according to the survey results.

S/N	Element Description	Communication	Integration	Business Environment Readiness
1	Users resistance to the change, due to old persons those don't like change or young ones who afraid of disclosing information	32	8	24
2	Lack of technology awareness and cross-functional business cycles for key users	27	6	31
3	Lack of skilled project team members in areas of soft skills, ability to adapt, and business experience	19	4	41
4	Lack of business processes' ownership and accountability	26	5	33
5	Lack of qualified functional user involvement while collecting business requirements (resulting in expectation issues)	26	5	33
6	Undedicated key users to project	19	4	41

7	Project team lacks authority or decision making ability	21	5	38
8	Poor collaboration, communication and teamwork between project team and key users	25	7	32
9	Inadequate resources for the project	15	5	44
10	Terminology inconsistency between business and ERP	16	9	39
11	Key user resistance due to not participating in ERP selection	44	6	14
12	Lack of key user familiarization with the ERP	31	8	25
	Average	27	7	36

Understanding of the result: Going by the presented results in (Table 4.6); we can read clearly that the following shows the percentages how each one of the three root-cause problems is in average participating in the failure of the project, for elements fall under the group “Key Users/ Users”:

- a. 39% (27/70) of all failure reasons mentioned in this table, as an outcome of the survey results, is rooted due to “communication” deficiency.
- b. 51% (36/70) of all failure reasons mentioned in this table and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 10% (7/70) of all failure reasons mentioned in this table and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Thus, failure reasons within this group those are fall under the business environment readiness and communication root-cause problems are to be given a highest priority and attention, while implementing an ERP application, in order to avoid project failure.

4.2.7 The relation between failure reasons under “Project Management Capabilities” group and root-cause problems

Table 4.7:

Summary: as an outcome of the presented results in the previous table, the whole group tends to be rooted by communication and business environment readiness according to the survey results.

S/N	Element Description	Communication	Integration	Business Environment Readiness
1	Insufficient communication Lack of effective change,	50	4	10
2	risk, financial, time and performance management Lack of effective management of stakeholders	33	6	25
3	(some or all of them) and their need is failure to manage expectations Poor or missing	43	5	16
4	implementation methodology and tools Unclear exit criteria for	34	9	21
5	ERP's implementation phases and fail in obtaining approvals Inadequacy of managing	37	11	16
6	project's scope which leads to scope creep Poor or insufficient testing	24	9	31
7	before go-live Lack of defining and QA the	21	24	19
8	key deliverables Inadequate tracking and	15	25	24
9	reporting by not reviewing	35	6	23

	progress regularly or diligently enough			
10	Poor collaboration, communication and teamwork among project teams	41	5	18
11	Weak ongoing management; inadequately trained or inexperienced project managers	32	6	26
12	Lack of leadership and communication skills	31	4	29
13	Paying insufficient attention to user needs and benefits	25	5	34
14	Using ambiguous (non- existent or non-realistic) measures of project completion and success	36	7	21
15	Absence of establishing a supportive project management office to oversee ERP implementation	28	9	27
16	Lack of integration among project parties	16	37	11
	Average	34	12	24

Understanding of the result: Going by the presented results in (Table 4.7); we can read clearly that the following shows the percentages how each one of the three root-cause problems is in average participating in the failure of the project, for elements fall under the group “Project Management Capabilities”:

- a. 49% (34/70) of all failure reasons mentioned in this table, as an outcome of the survey results, is rooted due to “communication” deficiency.
- b. 34% (24/70) of all failure reasons mentioned in this table and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.

c. While only 17% (12/70) of all failure reasons mentioned in this table and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Thus, failure reasons within this group those are fall under the communication and business environment readiness root-cause problems are to be given a highest priority and attention, while implementing an ERP application, in order to avoid project failure.

4.3 Chapter Summary

Root-cause problem and related vocabulary defined and importance to the project management and categorization been clarified. Categorizing for the mentioned failure-reasons in previous researches and refined followed the definition; then failure reasons been analyze and categorize and divided into seven groups, according to the survey's results.

To sum it up, the following table shows the relation between each group of the seven groups, and each one of the root-cause problem, as follows:

Table 4.8:

Consider The relation between the seven groups and Root-Cause Problems

Group	1	2	3
Project setup	39% (27)	22% (16)	39% (27)
Executive management support	42% (30)	14% (10)	44% (30)
Solution provider (consultants/ implementer/ internal staff)	43% (30)	16% (11)	41% (29)
Business requirements and environment readiness	40% (29)	25% (17)	35% (24)
ERP fitness to the business/ industry	25% (24)	23% (16)	42% (30)
Key users/ users	39% (27)	9% (7)	52% (36)
Project management capabilities	49% (34)	17% (12)	34% (24)
Average	42% (29)	18% (13)	40% (28)

Going by the presented results in the previous table; we can read clearly that:

1. 42% of the whole groups (all failure reasons under all groups) and their elements rooted by “communication” deficiency.
2. 40% of the whole groups (all failure reasons under all groups) and their elements rooted by “business environment readiness” deficiency.
3. While only 18% of the whole groups (all failure reasons under all groups) and their elements rooted by “Integration” deficiency.

Discussion:

Going by the presented results in (Table 4.8); we can read clearly that the following shows the percentages how each one of the root-cause problems is participating in ERP project failure:

- a. 42% of all failure reasons mentioned in this study and as an outcome of the survey results is rooted due to “communication” deficiency.
- b. 40% of all failure reasons mentioned in this study and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 18% of all failure reasons mentioned in this study and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Research propositions were explained deeply through this document; and the survey’s results illustrated the relation between the three proposed root-cause problems and the project failure; here under, the conclusion for each the proposition, as follows:

- a. Business environment readiness; preparing the business environment prior to implement an ERP has positive relations with the project success. So, this proposition is ACCEPTED.

It was clear enough, as an outcome of the survey’s results, that there is a direct relationship between, preparing the business environment to be ready to receive the automation and the ERP implementation project’s success. So as much as the business environment is ready, the potential for success project increases; illustrated in (4.3) tables.

- b. Project consolidated view (integration); the clarity of the project’s vision and goal to project’s stakeholders has positive relations with the project success. So, this proposition is ACCEPTED.

As an outcome of the survey's results, the better project parties are managed all together, the better potential of the whole project to succeed; illustrated in (4.3) tables.

c. The better project manager, in terms of communication skills; the best potential for project to success. So, this proposition is ACCEPTED.

The communication skills is the sole of the project success, so the better the project's information exchanged between parties, the highest potential of project success is expected; illustrated in (4.3) tables.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter shows the early detection for symptoms of project failure and treatment, general solution for issues and problems, proposed solution hints for root-cause problems, and recommended steps to deal with issues raised during the project run.

5.2 Summary of Findings: Answer the Research Questions

Most of research questions answered throughout this research; however, they will be repeated hereunder to highlight the importance of their answers.

Q1: Why most of ERP implementation projects across Saudi Arabia country fail?

As known, the zone of this study is Saudi Arabia market; and by reviewing the seventy two (72) failure reasons those being mentioned in the survey and concluded in (4.2).

Observer can find what failure reasons that are mostly participating more than others in project's failure. However, the local market local market has more chances of failing due to its business attitude toward deployment of technology; like some project sponsors and key users look to dramatically customize standard technology, for the ready-made applications, to satisfy their businesses rather than try to accommodate business operations with the standard technology, which is regularly built based on best practices in the same industry in the global.

Q2: “Are there common reasons for ERP implementation project failure? And can they be categorized considering some project properties and business environment factors?”

The great part that this research is leading to learn is the factors that increase the success potential for ERP implementation projects, which falls under strengthening communication, make sure of goals' clarity to all concerned parts, and prepare the entire environment of business where ERP implementation will take place.

In this document, (4.2) are illustrating factors and their rating for participating in project failure, based on the survey results. Failure reasons were categorized under seven groups to distinguish among them, according to their natures.

Q3: “What are factors that increase the success potential for ERP implementation projects?”

By knowing opposites, we can discover factors that impact ERP success, and that’s illustrating what makes project fail? Knowing that, will make the review of the survey’s results (4.2) easier to find factors that encourage ERP project success. So, the lowest rated failure reasons in cells within tables in (4.2) indicate that it has the lowest potential for project failure, and that necessarily means the highest potential for success.

Q4: “What is the relation between the business environment readiness and ERP implementation projects’ success?”

As detailed in (5.6.3), the business environment, where the ERP implementation will take place, is a major part of the project and should be prepared and ready for automation, prior to even start selecting the ERP application.

Q5: “What is the relation between integrating project’s parties and the project success?”

As seen and detailed in (5.6.2), the integration is an important ingredient for project success and the absence or lack of project integration may result in an independent running for some modules or project failure.

5.3 Discussion of the Hypothesis/ Proposition

This section presents the interpretations of the results about the relation between the dependent variable along with its independent variables, based on its relevant data from the survey.

5.3.1 The relation between business environment readiness and the ERP project success

The vast literature has identified the importance of making sure of the readiness of the business environment to the project success, prior starting the ERP implementation.

The full setup for the project, before and after it starts in the organization and the good project management planning would be mandatory, as well. Moreover, it is supported with 39% of the questionnaire votes. We can conclude that according to the right ERP applications selection, the success of ERP adoption, and defining the necessary functions properly based on the business industry, will finally influence heavily on the final dependent variable, "Project Success".

Another finding should be noted with 43% respondents vote; that Executive management (decision makers) in the company should pay attention to choose the right consultant when they consider implementing an ERP application and should keep supporting it while the implementation is running.

Moreover, Key users and end users should be considered while build the change management plans to be trained and prepared well for using the ERP, as it has 51% of respondents vote.

The project manager soft skills should be strong enough to facilitate the project activities and fulfill project requirements, by being proactive not only reactive toward project issues, which obtained 34% of respondents vote.

At last, choosing strong solution provider/ implementer is required for ERP project success. They can lead the company in the right direction to have a successful ERP implementation project.

Therefore and out of the above mentioned findings, and based on the average for all seven groups and based on the questionnaire results, 40% of failure reasons are rooted due to "business environment readiness" deficiency, so the enhancement of the business environment would participate in project success, which supports the research initial proposition; the better "business environment readiness" has no relation with project failure.

This proposition is ACCEPTED.

5.3.2 The relation between project consolidated views (integration) and the ERP project success

The results indicate that 56% responded that failing in the integration between the ERP and other systems can increase the failure potential of ERP. While 53% responded that the lack of integration among project parties may cause the project failure. Moreover, 44% of the respondents voted that the misunderstanding of integration's importance among modules or functions would increase the failure potential of ERP.

However, the interesting finding here, which is the skill set of the project manager and his project management team toward the project or project management integration's deficiency, have no huge impact on the failure of the project. This indicates that although an ERP pieces are not integrated well, a company still has a chance to succeed, but realistically, this may not happen frequently; as some project's parties may finish successfully, while others are not, and in case the project is composed of multi-dependent sub-projects then all sub-projects must be successful to have a success project.

Therefore and based on the average for all seven groups and based on the questionnaire results, 18% of failure reasons are rooted due to "Integration" deficiency, so the enhancement of the integration related matters would decrease the potential for project failure and necessarily would participate in project success, which supports the research initial proposition; the better "integration" has no relation with project failure.

This proposition is ACCEPTED.

5.3.3 The relation between project manager soft skills and the ERP project success

All members in any company should be encouraged to use the ERP system, because their use can increase the company's business value. The company should clearly define what positive results can be expected from the use of the ERP system before or during the ERP implementation. This can make the ERP applications more useful, and help users understand why they should use the ERP system. The project manager and his team should have enough communication skills and should interact with all concerned parties to facilitate or execute theses activities, by clarifying the target of implementing the project and how to achieve it.

As for failure reasons that are participating in project failure like “No clarity of the scope” perform 47% of respondents votes, while “Nonalignment of IT project initiatives to business strategy” is 50%, “Lack of partnership concept between client and the consultant” is 58%, “Poorly defined or unclear of business requirements” is 61%, “Key user resistance due to not participating in ERP selection” is 63%, “Insufficient communication” among project stakeholders and parties is 71% and “Key user resistance due to not participating in ERP selection” is 63%; and all of these are good indicators for lack of, or improper communication with project’s parties to clarify matters.

Soft skills with the communication on the top of them are fatal to the project success, so it is essential to plan for communication and execute carefully and strongly along all project phases, with all project parties to make thing more clear and achievable.

Therefore and out of the above mentioned findings, and based on the average for all seven groups according to the questionnaire results, there is 42% of failure reasons are rooted due to “Communication” deficiency, so the enhancement of the communication would effectively participate in the project success, which supports the research initial proposition; the “better project manager, in terms of communication skills” has no relation with project failure.

This proposition is ACCEPTED.

5.4 Early Detection of Project Failure’s Symptoms

No magic behind this part, the project manager role is not to sit and wait for issues to trigger him to start looking for a solution then deal with the issue, he should:

- Have good and long experience in his project’s field and in the industry
- Be proactive and not reactive only
- Have a good sense toward what’s going on in his project and around

Under different knowledge areas of project management, some symptoms that need direct involvement from project manager and project management team could be, as follows:

1. Project integration management:

- i. Inability to reach a consolidated view or picture among project parties early, which lead to disputes or inconsistency among project parties (or ERP modules),and facing difficulties when the project is executed

- ii. The difficulty or impossibility of consolidating or interfacing ERP with other parties or systems
- iii. The low quality of a phase or project's output, which is an input to another part (phase or project)
- iv. The Inability to match with all or some of project stakeholders to build the targeted view

2. Project scope management:

- i. Change in project's scope while the project is running, due to any reason, like lack of gathering adequately the business requirement in early stages of the project, etc.
- ii. Adding new major module to the implementation plan, after it was approved, or require major modification or customization to the ERP
- iii. Creating or adding a new department (business unit) to the organization and impose it into the ERP implementation plan, without changing the project time or cost
- iv. Gold plating, which is absorbing some project issues by promising more work to the agreed and baseline scope
- v. Project time management:
- vi. Major deviation from project timeline (baseline)
- vii. Imposing some non-approved change request(s) while the project is running

3. Project cost management:

- i. Add major parts to the agreed scope without charging the client more money, most impact the project cost
- ii. Major change request, which impacting project's scope or time or both of them without considering the effects on the project's cost

4. Project quality management:

- i. Absence of an accepted standard for the deliverables will cause keep approval for project's products (deliverables) debatable
- ii. Fail to agree on determining the specifications for the deliverables, allow the project manager to fail in conformance to the required level of product's quality, when it comes to deliver the final product

5. Project human resources management:

- i. Undedicated qualified consultants
- ii. High human resource turnover
- iii. Unqualified business key users/ users
- iv. Unqualified and unskilled project team
- i. Lack of top management support

6. Project communication management:

- i. Unskilled project management team
- ii. Lack of defining or fail in approving communication management plan
- iii. Inability to communicate with some of project stakeholders or concerned parties

7. Project risk management:

- i. Fail in early detecting/ assessing threats to the project
- ii. Improper follow-up or treatment for some of project's issues

8. Project procurement management:

- i. Ambiguity in defining financial installments and exit criteria for each phase of the project which relates to payment

5.5 General Solution for Issues and Problems

“Generally the Root-Cause Analysis Process. RCA has five identifiable steps.

Step One: Define the Problem

- i. What do you see happening?
- ii. What are the specific symptoms?

Step Two: Collect Data

- i. What proof do you have that the problem exists?
- ii. How long has the problem existed?
- iii. What is the impact of the problem?
- iv. You need to analyze a situation fully before you can move on to look at the factors that contributed to the problem.

Step Three: Identify Possible Causal Factors

- i. What sequence of events leads to the problem?
- ii. What conditions allow the problem to occur?
- iii. What other problems surround the occurrence of the central problem?
- iv. During this stage, identify as many causal factors as possible.

- v. Use these tools to help identify causal factors:
- vi. Appreciation, use the facts and ask "So what?" to determine all the possible consequences of a fact.

Five whys, ask "Why?" until you get to the root of the problem?

- i. Drill Down, break down a problem into small, detailed parts to better understand the big picture.
- ii. Cause and Effect Diagrams, create a chart of all of the possible causal factors, to see where the trouble may have begun.

Step Four: Identify the Root-cause(s)

- i. Why does the causal factor exist?
- ii. What is the real reason the problem occurred?
- iii. Use the same tools you used to identify the causal factors.

Step Five: Recommend and Implement Solutions

- i. What can you do to prevent the problem from happening again?
- ii. How will the solution be implemented?
- iii. Who will be responsible for it?
- iv. What are the risks of implementing the solution?
- v. What are associated failure reasons could be raised?
- vi. Analyze your cause-and-effect process, and identify the changes needed for various systems. It's also important that you plan ahead to predict the effects of your solution. This way, you can spot potential failures before they happen.

A general framework to solve any problem regardless whether it belongs to the project or operation is mentioned in the previous five steps; now the general solution for each of the three major root-cause-problems would be proposed then a solution would be offered for each of the top ranked reasons.

Let us agree that there is NO one ideal solution for each issue, it varies depending on the situation, the nature and circumstances of the issue.

Key points:

- i. KISS is a term and stand for "Keep it simple, stupid" or "Keep it simple and small" or "Keep it simple and short". So solution starts with correct and proper analysis; accordingly, the simplification of matters is the first step toward a solution
- ii. Document. Document. Document!

Everything should be well and properly documented either officially or unofficially or both of them; as verbal agreement is not enough, even if the project is small and short, as noting taken for sure.

Remember, things change.

iii. Top-down approach to planning is mostly high level and lower in details and accuracy; however, it is faster and allows the whole solution to be imagined and may be simulated; in addition to that, the integration among parts becomes clear enough to all concerned parties prior to start execution, so the targeted picture is clear

iv. ERP functions should be properly tested as full cycles across departments and vertically for each department; many cases and scenarios should be tested on ERP. Should this be available prior to sign the agreement with the solution provider; it will give great evidence and support for the project to succeed

v. Try as much as possible to shorten the time labeled for ERP implementation, as long time spent to implement the ERP becomes boring for most people and leads for some of them to start losing interest.

5.6 Recommended Solutions' Hints for Root-Cause Problems

This part will offer some solution hints for some selected failure reasons, top ranked reasons, according to the survey's results, under each one of the root-cause problems.

5.6.1 Communication

As per PMI, 90% of project manager's time should be spent in communicating with all concerned parties and project stakeholders.

Following are nine of the top ranked reasons for project failure reasons those rooted by communication that result from the conducted survey with hints and recommendations for solution:

1. Insufficient communication (78% as per the survey of project failure reasons are rooted due to communication deficiency); could be treated with some points, like:
 - i. Open channels, by identifying all concerned peoples and stakeholders then analyzing them.
 - ii. Gather information, by getting all kinds of information required for the project.
 - iii. Verify information, by making sure of information validity, accuracy and suitability.

- iv. Confirm the gathered information, by approving the gathered information and data from the top level of concerned parties.
 - v. Build consensus on the targeted project's product, by identifying the target picture for the whole project or phase and agree upon by all concerned parties.
 - vi. Set phases' inputs and outputs and agree on KPIs, by defining properly what inputs and outputs expected of each phase of the project and how to consider it done?
 - vii. Plan communication, by analyzing what to be communicated, to whom, when and how?
 - viii. Keep measure and monitor project products, by defining metrics and by keeping measuring the projects for the part to be implemented, before starting and along the project run and after it is completed.
 - ix. Reporting project progress and status, frequent and adequate reporting should be achieved along the project run.
 - x. Keep top management engaged and aware of project progress, by engaging top management, once their interference is crucial.
2. Lack of staff communication skills to get properly the business requirements (52% as per the survey of project failure reasons are rooted due to communication deficiency); could be treated with some points, like:
- i. Nominating proper peoples from within the organization's departments who are good influences and have great communication skills.
 - ii. Selecting skilled and knowledgeable persons who are able to communicate properly and get the business requirements on the level of both cross-functional and vertical dimensions.
 - iii. Train talented project team by allowing them to attend some of soft skills training course.
3. Poor collaboration, communication and teamwork between project team (39% as per the survey of project failure reasons are rooted due to communication deficiency); could be treated with some points, like:
- i. Make sure to build qualified teams to facilitate their internal and external communications to allow them collaborate internally and externally.
 - ii. Coach, mentor and encourage the interaction among project teams.

4. Lack of leadership and/or communication skills (48% as per the survey of project failure reasons are rooted due to communication deficiency); could be treated with some points, like:

- i. Project management, who is qualified for leading and managing project properly with enough skills that suit nature and volume of the project, should be selected carefully.
- ii. Project manager's responsibilities shouldn't exceed the given authority limits.

5. Lack of effective management of stakeholders (some or all of them) and their needs, failure to manage expectations (67% as per the survey of project failure reasons are rooted due to communication deficiency), could be treated with some points, like:

- i. Enough stakeholder analysis should be done properly prior to interact with them.
- ii. Disseminate project information on frequent or demand basis and keep concerned stakeholders aware of project progress.

6. Absence of accompanying CM with the ERP implementation (42% as per the survey of project failure reasons are rooted due to communication deficiency); could be treated with some points, like:

- i. Change management (CM) is a journey starts before the project's started; and end sometime after the project is completed. So CM should be planned and embedded in the project plan. Change management activities are planned according to project volume, time and circumstances.
- ii. Adequate study for all business environment's circumstances and factors that might affect project success should be considered in project risk management and subsequently should be monitored, as well; however, sometimes executed as part of change management activities.

7. Non clarity of project goals (48% as per the survey of project failure reasons are rooted due to communication deficiency), could be treated with some points, like:

- i. Project goals and big picture should be clear and communicated well to all project stakeholders.
- ii. Consensus on project goals is valuable facilitator for transformation and makes most of stakeholders act as enablers for change, and not resistors.

8. Poor collaboration, communication and teamwork between project team and key users (39% as per the survey of project failure reasons are rooted due to communication deficiency), could be treated with some points, like:

- i. Strengthening the relation among teams is highly advised, and different types of workshops should be conducted especially at the beginning of the project, as it facilitates harmonizing teams.

9. Lack of upper management support for the project as it is not about the management's top priorities (48% as per the survey of project failure reasons are rooted due to communication deficiency), could be treated with some points, like:

- i. Clarification of project goals and benefits for every one of stakeholders is a reasonable facilitator as it will touch "what is in it for me?" concept.

5.6.2 Integration

The integration is to pay more attention and prepare for project success, by focusing on understanding the different parts of the project early and plan for the blueprint by clarifying the picture of the project's goal and share it with all stakeholders. In addition to that, finalizing and settling the business processes and project management processes as well, and share it with all stakeholders after getting the proper approvals, and finally keep all project aspects in a coherent pool and communicate carefully with all concerned parts during all project stages.

Following are six of the top ranked reasons for project failure reasons those rooted by integration that are resulting from the conducted survey with hints and recommendations for solution:

1. Integrate the product (ERP) with other systems (61% as per the survey of project failure reasons are rooted due to integration deficiency), could be treated with some points, like:
 - Plan for integration, consolidation or interface with other systems and applications is essential while checking the ERP validity for the organizations, as checking the availability for interface is crucial to allow all systems interact by away or another with each other to facilitate data transmission and flow.
2. Lack of integration among subsidiaries (50% as per the survey of project failure reasons are rooted due to integration deficiency), could be treated with some points, like:
 - i. Most of traditional businesses are not connected among organization's subsidiaries and sometimes among its departments. So, the workflow

among subsidiaries should be drawn and make sure that it flows in harmony.

- ii. Business process cycles should be drawn and tested among subsidiaries and cross-functional.
3. Misunderstanding of integration's importance among modules or functions (48% as per the survey of project failure reasons are rooted due to integration deficiency), could be treated with some points, like: Well established interface among modules is in need of proper understanding for the importance of integration and should be planned for it early, even if it is not about to implement. So, integration with other systems or between ERP modules should be considered and planned with the first implemented module.
4. Lack of integration among project parties (50% as per the survey of project failure reasons are rooted due to integration deficiency), could be treated with some points, like: In some programs, it is crucial to plan and integrate among program parties, as the output of a part, is an input for another part; hence the planning for integration is essential at the beginning.
5. Wrong or inappropriate technology selection (64% as per the survey of project failure reasons are rooted due to integration deficiency), could be treated with some points, like: Valid and proper ERP must be selected for the organization/ industry and business, based on the maturity of the business environment to allow all systems interact by away or another with each other and gives a high potential for ERP success.
6. Poor product testing may cause troubles at the start point (52% as per the survey of project failure reasons are rooted due to integration deficiency), could be treated with some points, like: Enough testing for ERP should be done and accepted by business users prior to go live and run the ERP as the starting time is fatal to ERP success. So testing should be done vertically (for each department) and horizontally (cross-functional).

One of the research questions is asking "What is the relation between integrating project's parties and the project success?"

As seen above, the integration is a crucial ingredient for project success and absence or lack of integration may cause independent running modules or project failure.

5.6.3 Business Environment Readiness

Build and invest in proper IT infrastructure like proper data center, hardware and network among business units, and train properly IT resources and key users are important factors in preparing the environment for ERP implementation.

Top management supports for ERP implementation, by making things happen, facilitate and enforce change are keys to the required business transformation.

Clear business processes, policies and procedures, roles and responsibilities and non-overlapped processes are considered as cleaning house prior to start ERP implementation.

Clear goals, targets, project vision should be communicated properly with concerned parties to the project; however, the big targeted picture (solution architecture) should be in place and agreed upon among organization's representatives to facilitate the change and ERP implementation.

Following are eight of the top ranked reasons for project failure reasons those rooted by business environment readiness that are resulting from the conducted survey with hints and recommendations for solution:

1. Lack of skilled project team members in areas of soft skills, ability to adapt, and business experience (64% as per the survey of project failure reasons are rooted due to business environment readiness deficiency), could be treated with some points, like:
 - i.) Project team from within the organization should be selected carefully as to have, as much as possible, both business knowledge and required soft skills, like communication, time management, negotiation, training, influencing others, etc. to play their role properly.
 - ii.) Lack of business process ownership and accountability (52% as per the survey of project failure reasons are rooted due to business environment readiness deficiency), could be treated with some points, like:
 - a. Ideal business processes have an owner and accountability for each process. Should this is not the case with the organization that implement the ERP, then nominated peoples who have good knowledge of the business should be assigned responsible and accountable for business processes especially for ERP implementation purposes.
2. Inadequate resources for the project (69% as per the survey of project failure reasons are rooted due to business environment readiness deficiency), could be

treated with some points, like: Project team from within the organization and from the solution provider should be selected carefully and should be kept dedicated to the project, according to its plan, so teams must have the most required skills and knowledge.

3. Undedicated key users to project (64% as per the survey of project failure reasons are rooted due to business environment readiness deficiency), could be treated with some points, like: Key users who are responsible for gathering business requirements, end user training, ERP testing, etc. are required to be dedicated to the project activities and continue until the project end.
4. Change in management staff might have a significant impact on ERP implementation (69% as per the survey of project failure reasons are rooted due to business environment readiness deficiency), could be treated with some points, like: A different understanding and interest in implementing the ERP applications may affect badly the ERP implementation, so it is important that ERP implementation decision is strategic.
5. Undedicated qualified consultants (59% as per the survey of project failure reasons are rooted due to business environment readiness deficiency), could be treated with some points, like: Solution providers should dedicate qualified consultants to the project, according to its need and phase's importance. Consultants shouldn't be changed for the reason of unavailability as this will badly affect the project, as the new consultant need time to understand the status and may not be of the same qualifications of the previous consultant. In some cases, it could be dealt with consultants like employees at client site for some phases or even along project time, depends on the phase's sensitivity, so attendance is a matter here.
6. Non clarity of business processes' policies and procedures (58% as per the survey of project failure reasons are rooted due to business environment readiness deficiency); could be treated with some points, like: Prior to implementing an ERP application, business processes' policies and procedures should be documented and ready for treatment for automation. Running a business process enhancement, re-engineering, or restructuring (BPR) project is an independent step as this project is normally carried out by business functional consultants and the output of this project is an input to ERP implementation project.

7. Limitation of ERP functionality according to specific industry requirements (56% as per the survey of project failure reasons are rooted due to business environment readiness deficiency), could be treated with some points, like: Selecting an ERP application is a journey and need to have criteria for selection. Thus, functionality coverage should consider all related business parts, departments, and involved subsidiaries, while selecting an ERP. One of the research questions is asking “What is the relation between the business environment readiness and ERP implementation projects’ success?”.

As detailed above, the business environment where the ERP implementation will take place is a major part of the project and should be prepared and ready, prior to even start selecting the ERP application.

1.7 Recommended Steps to Deal with raised Issues

1. While start analyzing an issue, ask simple questions, as if you don’t know anything about it. The issue should be back to basics and don’t assume any inputs, just listen and ask the speaker to simplify; means request parties explain from scratch and slowly.

Note: Most of raising issues is coming up due to people who don’t think how to solve or even thinks of issues. Some people are great courier without understanding what it talks about, whilst they wait for the magic solution for everything!

2. Ask issue’s raiser(s) to propose solution before bring it to your office; regardless of the solution fitness.
3. Link the issue to one of the root-cause problems and try finding multiple solutions for the same issue.
4. Categorize the issue, according to its size and seriousness
 - a. If it is serious, start finds the solution and action it
 - b. If it is not, just log it in your risk sheet and keep monitoring it frequently.
5. If the issue is concerned more than a part, then call for a meeting; ask them to think about it and propose a solution prior to sit in the meeting.
6. If the problem nature is:
7. Technical: after getting the proper functional solution, ask team to propose solution(s) and pick the best of them.

8. Functional: proper business case should be explained and strong justification must be there.
9. Techno-functional: execute (step 5) and start with functional to get the correct business need then discuss the technical solution(s).
10. Management: if it is within the project team, then project manager or team member should take care of it, but if the issue is with the project manager or cannot be solved on his level, then senior level management should take care of it. Project communication plan should clarify to whom issues should be escalated.
11. Make sure the solution is fitting and fulfilling the targeted action.

1.8 Study Results and Recommendations

1. **The Results:** Going by the presented results in (Table 4.8); we can read clearly that the following shows the percentages how each one of the root-cause problems is participating in ERP project failure:

- a. 42% of all failure reasons mentioned in this study and as an outcome of the survey results is rooted due to “communication” deficiency.
- b. 40% of all failure reasons mentioned in this study and as an outcome of the survey results are rooted due to “business environment readiness” deficiency.
- c. While only 18% of all failure reasons mentioned in this study and as an outcome of the survey results, are rooted due to “Integration” deficiency.

Research propositions were explained deeply through this document; and the survey’s results illustrated the relation between the three proposed root-cause problems and the project failure; here under, the conclusion for each the proposition, as follows:

- a. Business environment readiness; preparing the business environment prior to implement an ERP has positive relations with the project success.
- b. It was clear enough, as an outcome of the survey’s results, that there is a direct relationship between, preparing the business environment to be ready to receive the automation and the ERP implementation project’s success. So as much as the business environment is ready, the potential for success project increases; illustrated in (4.2) tables.
- c. Project consolidated view (integration); the clarity of the project’s vision and goal to project’s stakeholders has positive relations with the project success.

- d. As an outcome of the survey's results, the better project parties are managed all together, the better potential of the whole project to succeed; illustrated in (4.2) tables.
- e. The better project manager, in terms of communication skills; the best potential for project to success.

The communication skills is the sole of the project success, so the better the project's information exchanged between parties, the highest potential of project success is expected; illustrated in (4.2) tables.

2. **Recommendations:**

The following are the recommendations for ERP project managers and future researchers, who are interested in what makes ERP implementation projects fail.

a. **For researchers:**

1. Subsequent researchers will be able to assess the relation between root-cause problems, proposed herein, and ERP implementation projects failure reasons; and as well, this will give a great base for a reasonable framework, which properly categorize the failure reasons and build relation between them and root-cause problems, like the one offered in this study; meanwhile, will keep the door open in the future for adding to the root-cause problems or offer solutions for them, as well as to add to the failure reasons.
2. As the failure reasons mentioned in this study are a collection and refinement of global and local study's results, they could be considered as a bank of failure reasons, and could be taken as great start and base to build on, for development and further studies.

b. **For Practitioners:**

1. Pay more attention and be careful when it comes to dealing with any party working for your project; before communicating with others, you should think what exactly you want from others?, how do you want it to be done?, when you need it and why?, how to communicate with others?, what time to communicate and why?, and why you should communicate with others?.

2. Make sure the project blueprint (goal and objective) is determined and clear for project manager and others. Put all project's parties in a cohesive pool and plan properly for it and monitor and control the project carefully.
3. Make sure that the business environment is ready for what the project needs to implement, and make sure it is ready prior to start the implementation, by enough time.
4. The project manager should be proactive, not just reactive. Don't wait until the problem comes to him. He should look for it always and in all circumstances.
5. Project managers, as practitioners, should keep their eyes open for symptoms of potential failures that might arise during the project run; as the detection of the failure reasons in its beginning stage will allow the project team to diagnose the real disease and try to minimize or eliminate the consequences, prior the problem becomes serious.

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APPENDICES

Appendix A: The Survey

<p>“Gentlemen:</p> <p>I would like to take this opportunity to invite you to share your experiment in implementing ERP (enterprise resource planning) applications at your organization. This questionnaire is meant to measure your organization experiment in implementing ERP applications against others in the region, taking into consideration the size of the organization and industry. It is intended to find out all factors that impact the project success/ failure.</p> <p>This assessment is very simple and takes only few minutes to complete. Once you participate, I will provide you with a FREE report pertaining to your status. I assure you that all the data will be treated in a confidential manner. I hope that you will take advantage of this free offer by clicking on "NEXT" below.</p> <p>I look forward to your participation.</p> <p>Thank you.</p> <p>Best regards</p> <p>Hassan Jamal</p>
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A. 25

Survey – page 1

This assessment is made of five major parts, general information part, organization part, rating for success/ failure factors part, root-cause problem for success/ failure factors part and criteria of project success/ failure part.

PART 1: General Information	
Business Industry*:	
Job title*:	
Total # of organization employees*:	
E-mail address:	
Tel/Mobile	

A. 26

Survey – page 2

		Y	N	Not Sure
	PART 2: The Organization			
1	Did your organization had any business process redesign(re-engineering/ enhancement/ alignment) during the last ten years?			
2	Is your organization ISO (International Organization for Standardization) certified?			
3	Do you have an established project management office practice (PMO)?			
4	Do you think due to implementation of ERP your business process has restructured/ realigned?			
5	Do you think the working culture has changed completely after implementation of ERP?			
6	Do you think ERP & BPR implementation is able to develop a systematic and work culture?			
7	Do you think that ERP and BPR implementation are helpful in cost reduction and increasing productivity?			
8	Do you think that business needs to be triggered for the need of ERP implementation?			

A. 27

Survey – page 3

	Do you apply any of the following ERP systems?	Yes	No
1	SAP		
2	MS (People Soft/ Dynamics/ Great Plains)		
3	Oracle applications (e-Business suite)		
4	Other ready-made applications		
5	In-house applications		

A. 28

Survey – page 4

	During ERP implementation, did you have an effective and active?	Y	N	Not

				Sure
1	Project communication management plan built according to an ERP implementation methodology?			
2	Solution Architect/ solution vision?			
3	Integration management plan?			
4	Clear business requirements?			
5	Clear and well-identified scope?			
6	Project change management plan?			

	During ERP implementation, did you have an effective and active?	Y	N	Not Sure
1	Project communication management plan built according to an ERP implementation methodology?			
2	Solution Architect/ solution vision?			
3	Integration management plan?			
4	Clear business requirements?			
5	Clear and well-identified scope?			
6	Project change management plan?			

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Survey – page 5

PART 3: Success/ Failure Factors Rating

Rate relevance for each of the following factors to project failure. (5 is the highest).

Example: "No clarity of the scope ",

may highly cause project failure, as it may need that the scope is rewritten in a later stage of the project which will impact project's time and cost. So it could be rated "5"

S/N	Category/ Point	1	2	3	4	5	N/A
*	Project Setup The following points impact the project success or cause facing trouble while						

	implementing the ERP, please rate the effect for each of them:						
1	Unrealistic time scale for the whole project						
2	Multiple inconsistent vendors						
3	Improper planning which lacks integration and ERP implementation methodology						
4	Improper IT infrastructure sizing						
5	Project team high turnover						
6	No clarity of the scope						
7	Absence of accompanying CM with the ERP implementation						
8	Improper ERP selection (it wasn't choose for the same industry)						
9	Lack of integration among subsidiaries						
10	Project governance structure with clear roles and responsibilities?						

A. 30

Survey – page 6

*	Executive Management Support The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:						
1	Lack of upper management support for the project as it is not of the management's top priorities						
2	Scope creep due to senior management lack of ERP awareness which implies scope ambiguity						
3	Lack of senior management/executive support; project sponsors not fully committed to the objectives; or budgeted money or						

	resources or even actively involved						
4	Lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success						
5	Alignment of IT project initiatives to business strategy						
6	Change in management staff might have a significant impact on ERP implementation						

*	Solution provider (Consultant/ Implementer/ Internal staff) The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:						
1	Instability for service provider (limitation of visit visa for consultants due to GOV regulations)						
2	Undedicated qualified consultants						
3	Lack of partnership concept between client and the consultant						
4	Installing technology without a business strategy						
5	Lack of adequate training to key users/ end users						
6	Lack of staff communication skills to get properly the business requirements						
7	Local support availability for the ERP						

A. 31

Survey – page 7

*	Business Requirements and Environment Readiness						
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	The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:						
1	Poorly defined/ unclear of business requirements						
2	No clarity of business processes' policies and procedures						
3	Facing difficulties for changing the current situation, politics and culture issues						
4	Weak or unconvincing business case for implementing an ERP						
5	Poor definition of project scope and objectives						
6	Poor of requirements definition which lead to instability of project scope while implementing the ERP						
7	Wrong or inappropriate technology selection						
8	Unfamiliar or changing technologies may impact the project success						
9	No clarity of project goals						
10	Poor product testing may cause troubles at the start point						
11	Misunderstanding of integration importance among modules/ functions						
12	Lack of business knowledge for the business requirements collectors						
13	Clarity of data responsibility for its quality/ cleansing/ collection and migration						

A. 32

Survey – page 8

*	ERP Fitness to The Business/ Industry, The following points impact the project						
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	success or cause facing trouble while implementing the ERP, please rate the effect for each of them:						
1	Mass of customizations to the ERP						
2	Lack of ERP localization consideration						
3	Limitation of ERP functionality according to specific industry requirements						
4	Integrate the product (ERP) with other systems						
5	Lack of ERP user friendly interface and ease of use						
6	Lack of business knowledge/ ERP full functionalities by implementers						
7	Limited upgrade support level						
8	Limited ERP reporting capabilities						

A. 33

Survey – page 9

*	Key Users/ Users The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:						
1	Users resistance to the change, due to old persons those don't like change or young ones who afraid of disclosing information						
2	Lack of technology awareness and cross-functional business cycles for key users						
3	Lack of skilled project team members in areas of soft skills, ability to adapt, and business experience						
4	Lack of business processes ownership and accountability						

5	Lack of proper/ qualified functional users involvement while collecting business requirements (resulting in expectation issues)						
6	Undedicated key users to project						
7	Project team lacks authority or decision making ability						
8	Poor collaboration, communication and teamwork between project team and key users						
9	Inadequate resources for the project						
10	Terminology inconsistency between business and ERP						
11	Key users resistance due to not participating in ERP selection						
12	Lack of key users familiarization with the ERP						

A. 34

Survey – page 10

*	Project Management Capabilities The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:						
1	Insufficient communication						
2	Lack of effective change, risk, financial, time and performance management						
3	Lack of effective management for stakeholders (some or all of them) and their needs; failure to manage expectations						
4	Poor or missing implementation methodology and tools						
5	Unclear exit criteria for ERP's implementation phases and fail in obtaining approvals						

6	Inadequacy of managing project's scope which leads to scope creep						
7	Poor or insufficient testing before go-live						
8	Lack of define and QA the key deliverables						
9	Inadequate tracking and reporting by not reviewing progress regularly or diligently enough						
10	Poor collaboration, communication and teamwork among project team						
11	Weak ongoing management; inadequately trained or inexperienced project managers						
12	Lack of leadership and/or communication skills						
13	Paying insufficient attention to user needs and benefits						
14	Using ambiguous (or non-existent/ non-realistic) measures of project completion and success						
15	Absence of establishing a supportive project/program management office to oversee ERP implementation						
16	Lack of integration among project parties						

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Survey – page 11

PART 4: Success/ Failure Factors Root Cause Problem

Note:

Communication: clarification of matters, and convey proper messages in proper time to proper destination in proper way (channel)

Integration: a collection of processes required to ensure that the various elements of the project aspects are properly coordinated

Business environment: belong to the client environment where the ERP

implementation will take place.

Example: "No clarity of the scope ",

may highly cause project failure, as it may need that the scope is rewritten in a later stage of the project which will impact project's time and cost. So it may be rooted to both "communication" and "business requirement"

Select one (or more) of the three choices to which you believe the point is rooted (i.e. what root-cause problem of the point?)

S/N	Category/ Point	Communi cation	Integrati on	Business Environ ment
*	Project Setup The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:			
1	Unrealistic time scale for the whole project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Multiple inconsistent vendors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Improper planning which lacks integration and ERP implementation methodology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Improper IT infrastructure sizing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Project team high turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	No clarity of the scope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Absence of accompanying CM with the ERP implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8	Improper ERP selection (it wasn't choose for the same industry)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Lack of integration among subsidiaries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Project governance structure with clear roles and responsibilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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*	Executive Management Support The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:			
1	Lack of upper management support for the project as it is not of the management's top priorities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Scope creep due to senior management lack of ERP awareness which implies scope ambiguity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Lack of senior management/executive support; project sponsors not fully committed to the objectives; or budgeted money or resources or even actively involved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5	Alignment of IT project initiatives to business strategy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Change in management staff might have a significant impact on ERP implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*	Solution provider (Consultant/ Implementer/ Internal staff) The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:			
1	Instability for service provider (limitation of visit visa for consultants due to GOV regulations)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Undedicated qualified consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Lack of partnership concept between client and the consultant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Installing technology without a business strategy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Lack of adequate training to key users/ end users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Lack of staff communication skills to get properly the business requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Local support availability for the ERP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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*	<p>Business Requirements and Environment Readiness</p> <p>The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:</p>			
1	Poorly defined/ unclear of business requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	No clarity of business processes' policies and procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Facing difficulties for changing the current situation, politics and culture issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Weak or unconvincing business case for implementing an ERP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Poor definition of project scope and objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Poor of requirements definition which lead to instability of project scope while implementing the ERP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Wrong or inappropriate technology selection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Unfamiliar or changing technologies may impact the project success	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	No clarity of project goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Poor product testing may cause troubles at the start point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Misunderstanding of integration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	importance among modules/ functions			
12	Lack of business knowledge for the business requirements collectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Clarity of data responsibility for its quality/ cleansing/ collection and migration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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*	ERP Fitness to The Business/ Industry, The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:			
1	Mass of customizations to the ERP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Lack of ERP localization consideration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Limitation of ERP functionality according to specific industry requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Integrate the product (ERP) with other systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Lack of ERP user friendly interface and ease of use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Lack of business knowledge/ ERP full functionalities by implementers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Limited upgrade support level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8	Limited ERP reporting capabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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*	Key Users/ Users The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:			
1	Users resistance to the change, due to old persons those don't like change or young ones who afraid of disclosing information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Lack of technology awareness and cross-functional business cycles for key users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Lack of skilled project team members in areas of soft skills, ability to adapt, and business experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Lack of business processes ownership and accountability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Lack of proper/ qualified functional users involvement while collecting business requirements (resulting in expectation issues)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Undedicated key users to project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Project team lacks authority or decision making ability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Poor collaboration, communication and teamwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	between project team and key users			
9	Inadequate resources for the project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Terminology inconsistency between business and ERP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Key users resistance due to not participating in ERP selection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Lack of key users familiarization with the ERP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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*	Project Management Capabilities The following points impact the project success or cause facing trouble while implementing the ERP, please rate the effect for each of them:			
1	Insufficient communication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Lack of effective change, risk, financial, time and performance management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Lack of effective management for stakeholders (some or all of them) and their needs; failure to manage expectations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Poor or missing implementation methodology and tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Unclear exit criteria for ERP's implementation phases and fail in obtaining approvals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Inadequacy of managing project's	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	scope which leads to scope creep			
7	Poor or insufficient testing before go-live	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Lack of define and QA the key deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Inadequate tracking and reporting by not reviewing progress regularly or diligently enough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Poor collaboration, communication and teamwork among project team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Weak ongoing management; inadequately trained or inexperienced project managers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Lack of leadership and/or communication skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Paying insufficient attention to user needs and benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Using ambiguous (or non-existent/ non-realistic) measures of project completion and success	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Absence of establishing a supportive project/program management office to oversee ERP implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Lack of integration among project parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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PART 5: Criteria of Project Success/ Failure
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If ERP implementation is over	Y N
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1	Did your project finished on time (the original baseline before started the implementation)?		
2	Did your project within the budgeted cost (the original baseline before started the implementation)?		
3	Did your project finished without scope creep?		
4	Did business problems were resolved in an efficient manner with the help of ERP solution?		

Success/ Failure criteria for ERP implementation project			
Which one is more comprehensive for considering the project is a success/ fail story		1	2
1	ERP implementation project is deemed success or failure depends on client's top management judgment		
2	ERP implementation project is deemed failure should two out of the three triple triangle (Scope, Time, Cost) are out of original baseline		

	How you rate your satisfaction about	1	2	3	4	5
1	Whether the team communicated properly					
2	Whether the deliverables produced were of high quality					
3	Whether the team responded in a timely manner					
4	Whether the team was knowledgeable in the business area					
5	Rate your satisfaction with ERP and business process restructuring in the organization					

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