

## **Reducing ICT Project Failure With Scope Management**

Ato Kwamena Dum Acquah

Bachelor's Thesis

Degree Programme in Business

Information Technology(BIT)

2012



Degree programme

<p><b>Author</b> Ato Acquah</p>	<p><b>Group</b> X</p>
<p><b>Title of report</b> Reducing ICT Project Failure With Scope Management</p>	<p><b>Number of pages and appendices</b> 47+ 4</p>
<p><b>Supervisor</b> Jarmo Peltoniemi</p>	
<p>Over the years, Information Communications and Technology projects have had a high rate of failure according to previous research findings. The aim of this thesis is to investigate the various factors causing project failure and to show how the problem can be eliminated or reduced by effectively managing the scope of projects.</p> <p>The research approach used was a qualitative method with an empirical investigation. The thesis was divided into two parts, the Theoretical part and Empirical part. The theoretical part introduces the reader to some important literature in ICT project management and knowledge areas. The theoretical part also introduces the various factors of success and failure as published by the Standish Group, in the Chaos Reports. The Empirical part of the thesis further investigates the reasons of failure and shows the role of Scope Management in ICT projects through the interview of professional project managers.</p> <p>The results of this thesis established the important nature of scope management in ICT projects. The results of the thesis further indicated that there was the need for scoping of the project to begin as early as the procurement stage. The result further showed that Scope should be prioritized as a major constraint above the other constraints in project management.</p> <p>The results of this thesis will be useful to all stakeholders involved in ICT projects.</p>	
<p><b>Keywords</b> Scope Management , ICT Project Management , Project Management Knowledge areas.</p>	

## Table of contents

1	Introduction .....	1
1.1	Aims and Objectives .....	2
1.2	Scope of Project .....	2
1.3	Research Methodolgy.....	2
2	Theoretical Framework .....	4
2.1	What is a project.....	5
2.2	What is Project Management.....	6
2.3	Project Manager.....	7
2.4	Process Groups .....	8
2.4.1	Initiation Process Group .....	8
2.4.2	Planning Process Group.....	9
2.4.3	Executing Process Group.....	9
2.4.4	Monitoring and Control Process Group.....	10
2.4.5	Closing .....	10
2.5	Project Knowledge Base.....	10
2.5.1	Project Integration Management.....	10
2.5.2	Project Time Management .....	11
2.5.3	Project Cost Management .....	11
2.5.4	Project Quality Management.....	11
2.5.5	Project Human Resource Management.....	11
2.5.6	Project Communications Management .....	12
2.5.7	Project Risk Management.....	12
2.5.8	Project Procurement Management.....	12
2.6	Project Scope management.....	13
2.6.1	Collect Requirements .....	13
2.6.2	Define Scope.....	14
2.6.3	Create Work Breakdown Structure (WBS) .....	14
2.6.4	Verify Scope .....	15
2.6.5	Control Scope .....	15
2.7	Discussion on Scope management .....	15

3	Standish Group Chaos Reports.....	18
3.1	Chaos Reports.....	18
3.1.1	Cost Overruns 1994 survey.....	20
3.1.2	Time Overruns 1994.....	21
3.1.3	Content Deficiencies.....	21
3.2	Establishing Reasons of Success and Failure .....	22
3.2.1	Factors accounting for Challenged Project.....	24
3.2.2	Impaired Projects.....	25
4	Empirical Part (Interviews).....	28
4.1	Data collection Procedure.....	28
4.2	Data Analysis .....	29
5	Findings on Research.....	30
5.1	General Demographic questions.....	30
5.2	Communication in Project.....	31
5.3	Scoping in Projects.....	33
5.4	Scope Changes.....	34
5.5	Work Break Down Structure .....	35
5.6	Project Requirements.....	36
5.7	Executive support.....	37
5.8	Stakeholder Objectives .....	38
5.9	Successful Project.....	39
5.10	Summary of scope.....	40
5.11	Success Factors.....	41
6	Conclusion and Discussions.....	43
6.1	Answer to research question.....	43
6.2	Limitations of thesis.....	45
6.3	Future Research.....	45
6.4	Concluding Remarks.....	45
7	Bibliography .....	46
8	Appendices.....	48
8.1	Appendix 1- Letter Of Notification of Participation In Interview .....	48
8.2	Appendix 2 -Interview Questions.....	49

## Figures

Figure 2-1 Different perspectives on requirements (Wysocki 2009, 59) .....	4
Figure 2-2 Project Constraints (Schwalbe 2008, 9) .....	6
Figure 2-4 Project Process Group (PMI 2008, 40).....	8
Figure 2-5 Coverage of scope management concept (Dekkers and Forselius 2007, 3). 16	

## Tables

Table 3-1 Cost Overruns (Standish Group 1995, 3) .....	20
Table 3-2 Time overruns (Standish Group 1995, 3) .....	21
Table 3-3 Content Deficiencies (Standish Group 1995, 3) .....	21
Table 3-4- Success Factors (Standish Group 1995, 4) .....	22
Table 3-5 Success factors – Scope based.....	24
Table 3-6 Factors causing Challenged Projects (Standish Group 1995, 4) .....	24
Table 3-7 Impaired Projects (Standish Group 1995, 5) .....	26
Table 3-8 Impaired Projects- Scope based .....	27
Table 5-1 Manager experience summary .....	31
Table 5-2 Managers factors of success .....	41

# 1 Introduction

Project Management is a relatively old discipline. However, it was only until the 1950's that organizations made project management a core discipline in their scheduled operations. As a discipline, project management developed from the various fields and industries of application, including construction, engineering and other major fields. Further still, project management in Information and Communication Technology (ICT) industry considering the introduction of PC's is only a couple of decades old. This brings about various challenges for the young industry as companies strive to apply the most secure practice for ensuring the success of their projects. Despite its young nature, key strides have been made in identifying and applying the best practices and processes to achieving success in the area of project management. Several organizations, standards and structures have been put in place to serve as guides to ICT organizations undertaken these projects.

One such institute is the Project Management Institute (PMI). The PMI is a nonprofit organization that advances the project management profession through globally recognized standards and certifications, collaborative communities, an extensive research program, and professional development opportunities. The Project Management Body of Knowledge (PMBOK) is one of the standards published by the PMI. The approach used in the PMBOK describes work being executed in processes and thus conforms to other international standards such as the International Standards Organization 9000 (ISO 9000) which deals with the fundamentals of quality management systems.

However, despite the availability of readymade guidelines, processes, tools and activities many ICT projects show a high rate of failure according to the Chaos Reports (Standish Group 1995, 1). Various analysts in the light of this have attributed failure to various reasons including insufficient requirements, unrealistic schedules amongst others. The most popular research in this area to ascertain the outcome of projects have been conducted by the Standish group, a Boston based research company, having over the years conducted surveys and interviews as to why projects fail and succeed known as the Chaos Reports.

## **1.1 Aims and Objectives**

The main purpose of this thesis is to investigate the various factors that cause projects to fail or succeed. This thesis will further show that these factors are mostly scope related factors. It is the aim of this thesis to show that the likelihood of success can be increased through scope management and further the likelihood of failure of ICT projects can be reduced through scope management.. The Aim of this thesis to show the importance of scope management as the central or key knowledge area in project management.

The main research questions in this thesis are;

- What are the factors causing ICT project failures and success?
- What is the role and influence of ICT Scope Management on IT success and failure?

## **1.2 Scope of Project**

This thesis will cover some general literature in Project Management. It will introduce the knowledge areas in project management and not go into precise detail in the areas. Through the introduction of the knowledge area, the thesis will show how most factors responsible for success or failure of projects are based in the scope management knowledge area. The thesis will also make use of empirical evidence to support the assertion that scope management can reduce the likelihood of ICT project failures and increase the chance of success.

## **1.3 Research Methodolgy**

This thesis will employ the qualitative method of research. There is the need to interpret previous research findings and further conduct an empirical study concerning the research questions. The qualitative method of research best suites this endeavor.

The thesis is made of two parts. The theoretical framework and the empirical part. The theoretical framework will cover literature studies in various areas of project management to get a broader picture of the domain of the thesis. The theoretical framework

will also introduce and investigate the factors that cause projects to fail and succeed as presented by the Standish Group . A concrete content analysis will be made into these factors to further show and interpret how most factors causing projects to fail or succeed are scope based.

The empirical part of the thesis will contain the reports of an interview conducted to further confirm the role and contribution of scope management in ICT project management. The report further shows the opinions and practices and as such reflects the experience of two certified project managers.



## 2 Theoretical Framework

This chapter will introduce the various elements and attributes involved in project management. The theoretical frame can be found in both chapters 2 and 3. Chapter 2 introduces some common literature in project management and further lays foundation for empirical part with discussions on the 9 knowledge areas in ICT projects.

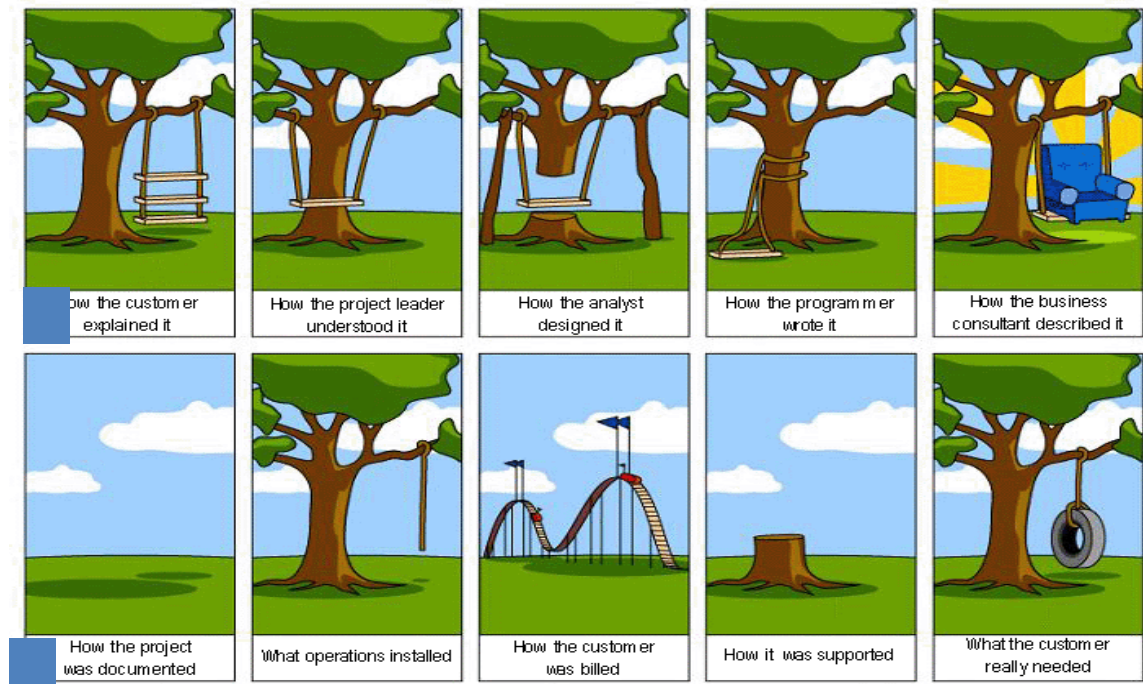


Figure 2-1 Different perspectives on requirements (Wysocki 2009, 59)

The figure above is a graphical representation of misunderstanding or wrong scope could affect the project. When this diagram is analyzed carefully, it is realized that getting the wrong requirements, insufficient information or understanding can send a simple project into the wrong path. This further explains why scoping is of utmost importance. Many of the factors that cause projects to succeed including user involvement, clear business objectives, minimized or clearly defined scope, and firm basic requirements are all elements of scope management (Schwalbe 2008, 178). Defining the scope is seen as one of the most difficult aspects of project management (Schwalbe 2008, 178).

The figure above is a representation of how misunderstood requirements could affect the product. In the diagram the customer request for a specific product. However due

to various factors which is shown in table 3, the customer is billed for a product not needed and which does not satisfy the customers wants. This picture summarizes the importance of scope management and its processes. It is a constant reminder to all stakeholders involved in a project on the importance of collecting accurate requirements. The summary of this illustration is that once the scoping process goes wrong, then the product is transformed into a product that may not be needed or wanted by the customer.

## **2.1 What is a project?**

There have been various definitions of a project. However all the definitions seem to arrive at the parallel conclusions? The Project Management Institute (PMI 2008, 5) defines a project as a temporary activity undertaken to create a unique product, service or result. Temporary meaning the project has a beginning and an end not necessarily meaning short in duration. PMBOK further goes on to clarify this definition with temporary not being related to the product generated from a project but on the contrary, products of projects have a long lasting outcome (PMI 2008, 5). From another perspective a project is said to have the following attributes, that is timescale, uniqueness, budgeted, has limited resources, involves a level of risks because of the element of uncertainty, and brings about beneficial change in the organization (Westland 2006, 1) Projects range in size, cost, schedule among others. Some projects take a few days to complete where as others may take years to complete. An ICT project typically results in the installation of a new software product (Dekkers and Forselius 2007, 2).

A project may have a customer or a sponsor who is paying for the project (Schwalbe, 7). Because all projects are unique, it is very difficult to define its objectives, estimate its cost, or determine its schedule (Schwalbe 2008, 7). Dekkers and Forsellius assert that in construction industry, pricing is done by per unit of building cost such as square feet or square meters but in ICT projects, there is no history of unit cost models (Dekkers and Forselius 2007, 2). This makes ICT projects unique from other projects in other industries.

## 2.2 What is Project Management?

Project management is the activity of organizing and managing project resources and constraints with the aim of producing a successful completion and achievement of specific project goals and objectives. Westland defines project management as a set of skills, tools and processes needed to undertake a project successfully (Westland 2006, 1). No matter the definition, it must be noted here that every project is constrained in different ways by its scope, time and cost goals (Schwalbe 2008, 8). These constraints are known as the triple constraint. This is represented in the figure below.



Figure 2-2 Project Constraints (Schwalbe 2008, 9)

The scope constraint refers to the activities that need to be done to ensure that the project deliverables have been reached. It is a statement that defines the boundaries of the project (Wysocki 2009, 10). There have been various names given to scope. It is referred to as functional specification in the systems industry, statement of work in the engineering profession amongst others (Wysocki 2009, 10). However, whatever its name is it is important that the scope is correct since it defines what the project is really about.

The Schedule or time constraint refers to the time needed for the project. The client usually specifies a period in which the project must be completed.

The cost constraint refers to the budgeted amount available for the project. Cost and time are inversely related (Wysocki 2009, 9). When the time needed for a project is decreased, it increases the cost.

It must be noted that these three constraints are somehow interdependent on each other. A change in one constraint can require a change in another constraint in order to restore balance of the project (Wysocki 2009, 9).

The scope triangle practically allows the project manager to ask the question ‘who owns what?’ .The client and senior management own time budget and resources.

The project team owns how the time budget and resources may be used. Usually in solving project challenges, project managers try to find solutions within the constraints of how time, budget and resources are used (Wysocki 2009, 10).

### **2.3 Project Manager**

The project manager is responsible for leading the project team towards the desired outcome (Kerzner 2009, 19).

The project manager is the person assigned by the performing organization to accomplish the set project objective and deliverables. The project manager is ultimately responsible for making decisions in the project and thus must possess certain essential qualities and skills. The general responsibility of the project manager is to plan, execute and control all resources available to the project to increase the likelihood of success of the project. By doing this, the project manager has to oversee management all areas of Project Management knowledge areas. The project manager is responsible for coordinating and integrating activities across multiple functional lines (Kerzner, 2009, 12).

These integrative activities include converting inputs such as resources into outputs of products, services and profits (Kerzner 2009, 13). The project manager is held accountable for the success or failure of the project.

The general responsibility of the project manager is planning (Kerzner 2009, 19).

Project managers are administrators and therefore must have the right to establish their own policies, procedures, guidelines and others to conform to overall company policy (Kerzner 2009, 20).

## 2.4 Process Groups

The PMBOK group identifies 42 project management processes and categorically groups these 42 processes under five process groups.

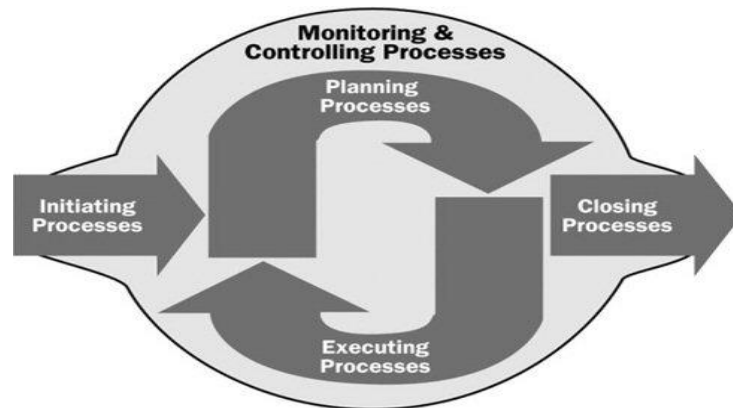


Figure 2-3 Project Process Group (PMI 2008, 40)

The five basic process groups are common to every project management life cycle (PMLC). They are the building blocks in every PMLC. In the simplest cases, the process groups occur once in the diagram flow shown here but in more complex situations they occur more than once. These process groups are not isolated from each other. For example, project managers must perform monitoring and controlling throughout the whole project (Schwalbe 2008, 72).

### 2.4.1 Initiation Process Group

The initiation process group consists of all the processes undertaken to define a new project or a new phase of a project by obtaining authorization from stakeholders. It is also referred to as the scoping process group since it mostly deals with what is needed to be done in the project (Wysocki 2009, 27).

In this process group, the initial scope must be defined, outlined and documented. The initial financial resources available for the project must be committed for the commencement of the project or phase. Furthermore, this process group makes identification of both internal and external stakeholders who will interact and influence the outcome of the project. This process group makes identification and selection of a suitable project manager to control the project if not already assigned.

Large projects are usually broken down into different smaller phases. All this information must be recorded in the project charter and the stakeholder register. The project charter is a document that formally authorizes a project or a project phase and contains initial requirements that satisfy the stakeholder's needs. The inputs needed to achieve the project charter include the project statement of work, business case, contract, enterprise environmental factors and organizational process assets.

#### **2.4.2 Planning Process Group**

The planning process group consists of the processes undertaken to establish the scope, define and refine the objectives of the project. The main deliverable in this process group is the Project Management plan. Planning is an iterative and a constantly ongoing process. Several essential documents are produced in this stage including the project plan, resource plan, financial plan, quality plan, the risk plan, acceptance, communication and procurement plans (PMI 2008, 3). So planning here is the definition of requirements, quality and quantity of work, resources, time and evaluating various risks (Kerzner 2009, 3)

#### **2.4.3 Executing Process Group.**

This process group consists of those processes that are undertaken to carry out and implement those activities defined in the project management plan. The process group involves organizing and utilizing people and resources as has been documented in the project management plan. During this process group entire team may come together for the first time (Wysocki 2009, 27).

#### **2.4.4 Monitoring and Control Process Group.**

The monitoring and controlling Process group comprises those processes that are undertaken to track, review and regulate the status, progress and performance of the project (PMI 2008, 32). These processes are able to identify and update changes to the project plan.

The main functionality of this process group is that it is responsible for measuring and observing the performance of the project.

#### **2.4.5 Closing**

This process group consists of those processes that ensure the finalization of all activities across all project management process groups. They are undertaken to complete the project or project phases. Closing the project involves releasing the final deliverables to the customer, handing over project documents, terminating supplier contracts, releasing project resources and communicating the closure to all stakeholders (Westland 2006, 3).

### **2.5 Project Knowledge Base**

Project knowledge bases are the identified areas of project management defined by its knowledge requirements and described in terms of its component processes, practices inputs, outputs tools and techniques (PMI 2008, 443). According to the PMBOK guide, there are 9 knowledge areas in project management.

#### **2.5.1 Project Integration Management**

Project Integration management consist of the various processes and activities that aim to unify the other various processes and activities within the project management.

These processes have a purpose of identifying, defining and combining and coordinating the various processes and activities within the project management process groups. Project integration includes making key choice and decisions about resource coordination and control on competing objectives and differing alternatives. Many people consider integration the key to project management success (Scwalbe 2008, 131). Project

integration ensures that all elements of project come together to achieve a successful project (Schwalbe 2008, 130).

### **2.5.2 Project Time Management**

The project time management knowledge base comprises the processes that are undertaken with respect to the project time line to ensure and facilitate the completion of the project at the stipulated and stated schedule. Because a project is a temporary endeavor this knowledge base helps to manage who is working on what, and how much time is needed to complete tasks and other process in the other process groups. Project time management involves the processes that are required to ensure timely completion of the project (Schwalbe 2008, 123).

### **2.5.3 Project Cost Management**

Project cost management is the project management knowledge base area that deals with the budgeting, controlling and estimating of cost to be incurred in the project. Information technology projects have a poor track record in meeting budget goals (Kerzner 2009, 254) .Cost are normally measured in monetary amounts that must be paid to acquire goods or services. Project cost management involves the processes that are required to ensure that the project is completed within the approved budget.

### **2.5.4 Project Quality Management**

Project Quality management involves those processes that are undertaken and performed to ensure and determine that the quality objectives and responsibilities satisfy and conform to the stipulated project deliverables.

### **2.5.5 Project Human Resource Management**

The human resource body knowledge is the aspect of project management that deals with those processes that are meant for organizing, managing and administering leadership to the project team. Each member of the team is assigned specific roles and



parts to play .The size of the team could vary depending on the phase and the stage of the project.

### **2.5.6 Project Communications Management**

Project communications management is the area of project management that ensures the dissemination of information is timely and appropriate to the both the team and stakeholders involved in the project. It also deals with the efficient storage and collection of information. This knowledge area is responsible for communicating vital information timely to team members. Efficient dispensation of information goes a long way to influence the project with respect to schedule and overall quality of the project. In this area, stakeholders must be identified and the influence and impression they have over the project are documented.

In addition, a communication plan is made documenting the process of communication and the content of communication with stakeholders.

Furthermore, stakeholder expectations are managed by the constant communication with them to address any occurring issues.

Performance of the project is periodically reported to the stakeholders in the form of status reports, progress measurement and future forecasts.

### **2.5.7 Project Risk Management**

Project risks management involves the processes that identify, monitor and control, and prepare against risks occurrences in projects. The main purpose of this knowledge area is to plan against the possibility of risks. The impact of such risks will be reduced in any such occurrence.

### **2.5.8 Project Procurement Management**

Project procurement management in summary involves all those processes that are deemed necessary to acquire and obtain products services and results by means of purchase outside the project team. The empirical part later emphasis how decisions and transactions during the procurement affect the project throughout its lifecycle,

## 2.6 Project Scope management

Scope management includes all those processes that are absolutely and necessary required to ensure that the project is streamlined to only the required necessary work in order to achieve a necessary product or service. Scope means what is needed to be done and scope management is the managing of what needs to be done (Wysocki 2009, 50). There are five fundamental processes relating to scope management. These processes interact with each other and interact with other processes in other knowledge areas. You will find that effective scoping of a project is much of an art as it is a science (Wysocki 2009, 51). The 5 processes of scope management are discussed next.

### 2.6.1 Collect Requirements

Requirements was defined by the IEEE in 1990 as

1. A condition or capability needed by a user to solve a problem or objective.
2. A condition or capability that must be met or possessed by a system or component of a system to satisfy a contract, standard, specification or other formally imposed document.
3. A documented representation of a condition or capability as in 1 or (Schwalbe 2008 ,179).

Collect requirements is the process whereby the customer and stakeholder expectation of the project is recorded. The captured information must be elicited and analyzed in concrete detail. Requirement becomes the foundation of the work to be done and serves as a guide to the cost schedule and the quality of the project.

Requirements is usually classified into project requirement which include project management requirements amongst others and the product requirement which include technical detail of the product such as the security and performance requirements.

The project charter serves as a foundation for collecting requirements because it holds documented information on stakeholder and customer expectations and needs.

Requirement is usually collected in the form of interviews, by the use of focus groups and through facilitated workshops. Other methods maybe through group creativity techniques such as brainstorming among others. Requirements can further be collected through questionnaires, surveys, and observations. Another modern method of obtaining results is through the feedback on prototypes .This helps at an early stage to have a good picture on the product.

The main output of collecting requirements is to produce the requirement documentation, which describes how collected information qualifies the business need for the project. Another output of this process is the requirement management plan, which effectively describes how requirements will be managed and analyzed.

### **2.6.2 Define Scope**

Define scope is the process of implementing a detailed documentation and description of the project and product. Define scope process usually qualifies major deliverables assumptions and initial constraints documented during the project initiation stage or phase.

Defining the scope needs high-level documents such as the project charter and the requirement documentation to fundamentally expand the project details.

This process makes use of expert judgment, product analysis and facilitated workshops in essentially defining the scope.

The major outcome of this process includes but is not limited to the project scope statement and an update to other various documents such as the project charter and the requirements document.

### **2.6.3 Create Work Breakdown Structure (WBS)**

This is a process of subdividing the project goals and deliverables and work to be done into smaller, more manageable units.

Creation of the WBS requires the scope statement, requirement documentation and organizational process assets.

The method used to breakdown and subdivide task and deliverables into smaller units is known decomposition. The result of this process is the WBS, which effectively di-

vides goals and tasks by setting milestones, cost estimates schedule activities among others. (PMI 2008, 113)

There are various identified ways of creating the WBS. Sometimes organizations have already developed and established guidelines. It is important to follow these guidelines in developing the WBS.

Another approach is by analogy where a similar projects starting point may be used (PMI 2008, 113).

Another method is by using the top down approach where the largest items of the project are broken down into subordinate items.

One other possible method is to use the bottom-up approach where the team first identifies tasks related to the project (PMI 2008, 113).

#### **2.6.4 Verify Scope**

Scope verification involves the official acceptance of the completed project scope by the customer or stakeholders (Schwalbe 2008, 198)

This process is involved with formalizing the acceptance of the project deliverables. Reviews are made with the customer concerning deliverables and the sponsor to ensure that the scope is in line with the initial goals of the sponsor. Several documents may be used to achieve this process including project management plan, requirements documentation and validated deliverables. The main method of achieving this process is by review and inspection.

#### **2.6.5 Control Scope**

This is the process of monitoring and controlling the status of the project and product scope. Control is used to monitor the actual changes as they occur and integrated into the change control process. Controlling scope is a challenge to many ICT projects (Schwalbe 2008, 179).

### **2.7 Discussion on Scope management**

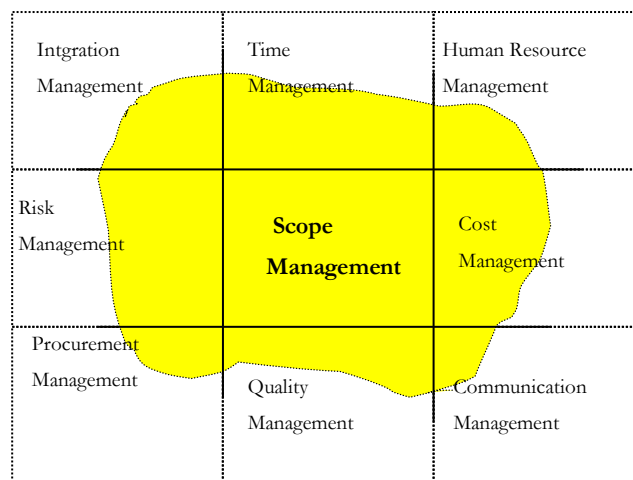
Scope management can be more important to project success than any other individual knowledge area (Dekkers and Forsellius 2007, 3). Scope management has been proven

to effectively address five out of the six most common factors cited for cost overruns and uncontrolled project growth (Dekkers and Forselius 2007, 5).

These factors are:

- lack of user input,
- incomplete requirements,
- changing requirements,
- technology incompetence, and
- unrealistic expectations.

Scope management has strong relations to the other knowledge areas. According to Dekkers and Forsellius, scope management interacts and interfaces with the other 8 knowledge areas (Dekkers and Forsellius 2007,3) The most important interactions occur with time, cost, quality and risks management knowledge areas (Dekkers and Forsellius 2007, 4). There can be no changes without affecting the time, cost, quality and risks of the project and vice versa (Dekkers and Forselius 2007, 4)



**Figure 2-4 Coverage of scope management concept (Dekkers and Forselius 2007, 3)**

The figure 2-5 shows the interaction of scope management with the other knowledge areas in project management. Scope management knowledge areas boundary is depicted by the yellow or shaded portion. Although a knowledge base in itself, scope management plays a central role in ICT project management. The figure here shows how the boundary of scope management knowledge base extends through all the 8 other

knowledge bases. This is a depiction of the central nature of scope management in ICT project management (Dekkers and Forselius 2007, 3).

### **3 Standish Group Chaos Reports**

Over the years there has been numerous research undertaken to ascertain the reasons of ICT project failures by research groups and contracted parties. Various reasons have been lined as factors that cause IT project to fail or success. One such notable research into the causes and reasons of IT projects success and failure has been undertaken by the Standish group, a research organization based in Boston, USA. The Standish groups definition of a success based on its original estimates with time cost and functionality (Eveleens and Verhoef 2009, 2). Although many researchers have questioned the methodology of such a study their popularity have prompted managers around the world to re-examine their processes in managing projects (Schwalbe 2008, 4).

#### **3.1 Chaos Reports**

Over the years the Standish Group have been well known for their surveys into the causes of failures of IT software Projects and why many investigated projects fail or succeed (Eveleens and Verhoef 2009, 1). The respondents have been mainly IT executive managers and the sample includes large, medium and small-scale companies across major industry segments. The figures indicate large problems with software engineering projects and have had an enormous impact on application software development. They also conducted focus groups and numerous interviews to provide qualitative context for the survey results. The first research was undertaken in 1994 and has been conducted on regular basis. The sample of their research included large, medium to small-scale companies (Standish Reports 1995, 2). The total sample size of the respondents was 365, which represented 830 software applications (Standish Reports 1995, 2).

**Table 3-1. Chaos reports 1994-2009(Eveleens and Verhoef 2009, 1)**

Standish Report	Project Success	Project Chal- lenged	Project Failure
1994	16%	53%	31%
1996	27%	33%	40%
1998	26%	46%	28%
2000	28%	49%	23%
2004	29%	53%	18%
2006	35%	46%	19%
2009	32%	44%	24%

Above is a table of collected results of an organized survey undertaken by the Standish group from the periods shown to determine the outcome of projects. The table shows how many of the surveyed project personnel responded to the various subjects of success, challenged and failed projects.

The projects were classified into 3 resolution types (Eveleens and Verhoef 2009, 1)

- Resolution type 1 or Project success
- Resolution type 2 or challenged projects
- Resolution type 3 or impaired projects

The Standish group’s definition of successful projects was projects that were delivered on time, on budget and with all features and functions as initially specified. The Standish definition of challenged projects was projects that were completed, operational but over time, and over budget and offered fewer features and functions as originally specified. Standish’s definition of failed or impaired projects was projects that were cancelled at some point during the development cycle (Standish Group 1995, 2).

By analyzing these results we can readily observe the high-impaired rates, though the current situation may be better in recent years, nevertheless there has been a tremen-



dous likelihood of failure or challenged projects in earlier times when this study had been conducted. The decline of challenged projects and the increase of successful projects can be attributed to the awareness created in the project management relating the causes that of project failure. This is represented by the percentage of failed projects, which stood at 31 % in 1994 and had reduced to a significant 22% in 2009. Furthermore, the percentage of challenged projects had decreased from 53% in 1994 to a 44% in 2009. On the other hand the likelihood of success has also increased over the years as the subject of project management has been refined and investigated from a percentage of 16 in 1994 to 32% in 2009 as shown in table 3-1.

The Standish Group further segmented the results by large, small and medium companies. Large companies have more than 500 million dollars in revenue per year. A medium company is defined as having between 200 – 500 million dollars a year and a small company has 100-200 million dollars per year (Standish Group 1995, 3).

### 3.1.1 Cost Overruns 1994 survey

Further studies were undertaken to establish and explain the failure situation .Cost overrun may be defined as the unexpected cost incurred in excess of a budgeted amount due to the underestimation of actual cost during budgeting.

For cost overruns 15.5 % of respondents answered that they had a cost overrun of fewer than 20%. Also 31.5% reported that they had exceeded the initial cost by 21-50%. The remaining 53% had experienced a cost overrun of 51% and above.

**Table 3-1 Cost Overruns (Standish Group 1995, 3)**

Cost Overruns	% of responses
Under 20%	15.5%
21-50%	31.5%
51-100%	29.6%
101-200%	10.2%
201-400%	8.8%
Over 400%	4.4%

### 3.1.2 Time Overruns 1994

Time overrun may be defined as the additional time used in excess of the actual estimated time. The figures here show only 13.9% of respondents had a time overrun of less than 20%.

Table 3-2 Time overruns (Standish Group 1995, 3)

Time Overruns	% of responses
Under 20%	13.9%
21-50%	18.3%
51-100%	20.0%
101-200%	35.5%
201-400%	11.2%
Over 400%	1.1%

### 3.1.3 Content Deficiencies.

This will be defined as percentage of missing initial features and functions planned for the product. It can be noticed that 68,2% of respondents had the greatest percentage of the initially planned features missing and unavailable up from 50% and above.

Table 3-3 Content Deficiencies (Standish Group 1995, 3)

%Percentage of Features /Functions	% of responses
Under 25%	4.6%
25-49%	27.2%
50/74%	21.8%
75-99%	39.1%
100%	7.3%

According to the Standish reports, the number one leading cause of cost and time overruns was due to the restarts of the project. For every 100 projects, there were 94 restarts. Some of the projects however had more than 1 restart.

### 3.2 Establishing Reasons of Success and Failure

The main aim of the survey however was to investigate the cause of failures of IT Projects. To do this Standish Group surveyed IT executives for their opinions on why projects fail and succeed. Below is the respondent response on reasons why projects succeed.

Table 3-4- Success Factors (Standish Group 1995, 4)

Success Factor	Respondent Percentage
1. User involvement	15.9%
3. Clear statement of requirements	13.0
4. Proper Planning	9.6
5 Realistic expectations	8.2
6. Smaller project milestone	7.7
7. Competent staff	7.2
8. Ownership	5.3
9. Clear vision and objectives	2.9
10. Hard working /focused staff	2.4
Other	13.9

Out of the total number of executives interviewed 15.9 % attributed successful projects to user involvement. During the project cycle, user involvement is present during the collecting requirements process. It is therefore most essential that there is good communication at this phase of the project to enable the user relate the intended purpose of the product to the project team. Furthermore, to enable the project team define correctly the scope of the project it is essential that the user communicates correctly the intended functionality of the product. During the course of the project, it

is also crucial to keep communication between the user and the project team. This is done so as to control and verify the scope to guarantee that the project is heading in the right direction . Thus the first investigated reason for success, user involvement is a scope related issue.

The second reason attributed to successful projects was executive support at 13.9% of the respondents. Throughout the project, executive support is fundamentally needed during most processes. In essence executive management support is heavily present during the verification and controlling phase of the project. This helps to keep the project in check. Once again, verifying and controlling scope ensures that management is in touch with the project and is kept up to date about the path of the project because without verification the project will be stagnant i.e. The project will not be moving from milestone to milestone. On the basis, that executive support is mostly present during the controlling and verification of scope, this success factor should be noted as a scope based factor.

The third success factor was clear statement of requirements. During the requirement soliciting and analysis phase it is vital that all stakeholders are involved here to accurately communicate the necessary information, functionality and purpose of the product. Any misinformation or over information here may result in the product having needless features and undesired functionality. This may further more increase the budget and the allocated time to produce unwanted features or undesired functionality. One of the central interest of scope management is collecting requirements. We can thus also place this factor as a scope-based factor.

The next three success factors were attributed to proper planning, realistic expectations and smaller project milestone. Planning as a factor is common to all the 9- knowledgebase areas of project management with most of the developmental planning being done in the scope management knowledgebase through the collecting of requirements process. Setting realistic expectations should be achieved in the defining scope process. Realistic expectations are often associated directly with the schedule and budget of the project. In addition, as a factor of success, setting smaller project milestones can be achieved during the creation of the work break down structure. From

this discussion, it can also be established that setting realistic expectations and setting smaller project milestones are scope-based factors.

The last remaining scope based factor is setting clear vision and objectives. This can be tackled during the scope definition process.

From this analysis of the reasons of success, we can attribute most success factors presented through the findings or the chaos reports to be scope based factors.

**Table 3-5 Success factors – Scope based**

Success Factors part of Scope Management
1. User involvement
2. Executive support management
3. Clear statement of requirements
4. Realistic expectations
5. Smaller project milestone
6. Clear vision and objectives

### 3.2.1 Factors accounting for Challenged Project

Furthermore, executives were interviewed on why projects were challenged

**Table 3-6 Factors causing Challenged Projects (Standish Group 1995, 4)**

Factors causing projects to be challenged	Respondents Percentage
1. Lack of user input	12.8%
3. Changing Requirements and specifications	11.8
4. Lack of executive support	7.5
5. Technology incompetence	7.0
6. Lack of resources	6.4
7. Unrealistic expectations	5.9
8. Unclear objectives	5.3
9. Unrealistic time frames	4.3
10. New technology	3.7
Other	9.9

On the contrary, the executives recognized the factors that caused challenged projects with lack of user input as the first cause of challenged projects. It must be noted that challenged projects did not fail were faced with time over runs and cost over runs. This further goes on to explain that having heavy user input at the start of the project although a very important factor does not necessarily guarantee a successful project. The user's contribution and involvement must be sustained throughout the life cycle of the project to ensure that the product has all functionalities specified by the user. This is necessary because of fast rate at which technology changes. Long scheduled projects sometimes have their products being no more desired or are rendered obsolete by the end of the project cycle. To guard against this scenario, it is essential that recognize that product functionality and technology travel in a parallel nature. Thus, it is important for the user to keep contribution throughout the project to ensure that the final product is still needed by the user.

A close study at the factors causing projects to be challenged will reveal that most of the factors that cause projects to be challenged can be corrected by essentially practicing scope management (Dekkers and Forselius 2008,4).

### **3.2.2 Impaired Projects**

Finally, the executives were interviewed on the factors that cause projects to be impaired and ultimately cancelled at some point in the project cycle. The results of which are in the next table.

**Table 3-7 Impaired Projects (Standish Group 1995, 5)**

Factors causing projects to be impaired	Respondents Percentage
1. Incomplete Requirements and specifications	13.1%
3. Lack of Resources	10.6
4. Unrealistic Expectations	9.9
5 Lack of executive support.	9.3
6. Changing Requirements and specifications	8.7
7. Lack of Planning	8.1
8. Lack of change management	7.5
9. Lack of IT management	6.2
10. Technology illiteracy	4.3
Other	9.9

Again, the top most reason for projects being impaired or cancelled was in the area of incomplete requirements and specifications. Requirements again is one of the main processes in scope management.

It is closely followed by the lack of user input. Again, user involvement is very high during the requirement collection process. Thus, user input is also a scope based factor.

Another scope-based factor is unrealistic expectations. Again, this can be prevented during the defining scope process where attributes affecting the project should be considered including time and budget.

Lack of executive support also accounts for one of the top factors of project failures. As already, established, executive support is present in controlling and verifying the scope. This factor can also be considered as a scope based factor.

The next factor accounting for project failure is changing requirements and specifications. This factor clearly is a scope-based factor since requirement collection occurs in the scope management knowledge base.

Thus from these factors causing projects to be impaired we can see clearly that about half of these factors are from the scope management knowledge base whilst the other half can be related to the other 8 knowledge bases.

**Table 3-8 Impaired Projects- Scope based**

Scope based factors causing projects to be impaired
1. Incomplete Requirements and specifications
2. Lack of user input
3. Unrealistic Expectations
4. Lack of executive support.
5. Changing Requirements and specifications



## **4 Empirical Part (Interviews)**

Qualitative research is concerned with developing explanations for social phenomena (Hancock 1998, 2). The approach chosen for this study was a qualitative approach. The aim of the empirical part was to conduct interviews to show the influence of scope management to project success. In the theoretical part, factors causing project failure and success were investigated and most of these factors were scope based. The interviews will add supporting evidence through the experience and practices of 2 professional project managers.

### **4.1 Data collection Procedure**

For the purpose of this thesis, the personal face-to-face method of interviewing was selected. This was because the questions needed full explanations to avoid incomplete answers and misunderstandings.

The interview was conducted in the early part of December 2011. The participants for this interview were required to be project managers with a good experience in the field because it was important to have their experience and take on the various subjects of the thesis.

Open-ended questions were used for the interview in order to allow participants to fully express their views and not to force the interviewer's perspective on the interviewees. The questions for the interview were sent beforehand to the interviewees to enable them prepare and to shorten the estimate length of the interviews.

The justification for interviewing the project managers is because as established in the theoretical part the project manager is responsible for making the decisions in a project and has some special skills and quality, which enables him to steer the project into the right direction. It was thus essential that our interviewees were professional project managers who had a good experience in order that their answers reflected their experience.

Since there were only 2 interviewees there was enough time to properly report the proceedings of the interview. Each interview lasted between one and a half to two hours.

The face-to-face interviews were organized at the work place of the interviewees in order to make the process as comfortable as possible. Although the interviewees were organized at the interviewees working place, there were no interruptions during the interviewing process and this was because the interviews had reserved time and place of their schedule. The interviewees wished to remain anonymous and thus will be referred to by pseudo names. The first interviewee will be referred to as Manager A and the second interviewee will be referred to as Manager B. Both interviewees worked for multinational organizations and were involved in ICT project management.

The first interviewee answered the questions in very precise detail to his best interpretation of the question. In the second interview, there was the need to constantly explain the questions to make sure that the interviewee understood them clearly.

## **4.2 Data Analysis**

Analyzing the data of a qualitative research involves summarizing the mass of data collected and presenting the results in the way that communicates the most important features (Beverley 1998, 16). Content analysis is a method of analyzing qualitative research data for categorization of verbal or behavioral data for purpose classification, summarization or tabulation (Beverley 1998, 17). For analyzing the data from the interviews, the content analysis method was used. Both levels of content analysis were used in this thesis. The basic level, which is the descriptive accounts of data, and the higher level of analysis, which is interpretive. The interpretive uses inference and implication where as the descriptive analysis uses the direct description from the transcript with no additions or subtractions (Beverley 1998, 17). This was necessary because to answer the research questions there was the need to interpret the meaning of answers given by the interviewees.

After the interviews there was approximately four hours of interview recoding to transcribe. After the transcription there was about 17 pages of data to be analyzed. After thorough sorting and categorization of the data the transcript was reduced to around 10 pages.

The findings of the research are published in the next chapter.

## **5 Findings on Research**

This chapter is a presentation and analysis of the interview conducted to support the assertion that effectively managing scope reduces the likelihood of ICT project failures. The objective of this study was to gain support on the previously investigated factors that causes project failure and to discuss how scope management can be used in eliminating or reducing the factors of project failure.

The questions of the interviews were open-ended questions and structured under the various themes and factors that cause projects to fail or succeed.

### **5.1 General Demographic questions**

The first set of questions that were asked the interviewees were demographic. The interviewees were required to indicate their positions, number of years of experience, size of organization in terms of human resource and revenue. For the purpose of this we will refer to them as Manager A and Manager B.

Manager A's official title was program director. The company employed roughly 18,000 people. Manager A has been involved as a project manager for approximately 30 years.

Manager B was a certified project manager who had been working as a consultant with reputable firms. He had held the project manager title for approximately 20 years.

**Table 5-1 Manager experience summary**

	<b>Manager A</b>	<b>Manager B</b>
<b>Title</b>	Project Manager Certified (Program Manager Consultant)	Project manager Consultant
<b>Experience</b>	Project Management and Program Management	Project Management
<b>Number of years</b>	30	20
<b>Organization size</b>	18 000	3000

From this information, it is clear that both interviewees had a good number of years in as experience. Both managers were broadly involved in large-scale software project management. The purpose of this question was to show the level and responsibilities of the interviewees. As already established in the theoretical frame, the project manager is held responsible for the success or failure of the projects. The interviewees both had a good number of years in working as Project managers.

## **5.2 Communication in Project.**

The interviewees were asked to comment on communication with the client during the project and how communication affected the scope of the project.

Manager A clearly stressed on communication in the project being a key vital factor of success. Manager A continued that communication was not only to be a ceremonial or formal thing but it was in intricate and important tool in management .It is a day to day and everyday subject that goes beyond just in projects but also in our everyday life. The manager stressed the importance of both communication with the client and communication within the project team. About communication with the client the manager stated that there was the need to find the common communicative language between the client and the project team. The manager also emphasized that communication did

not just happen on its own, but needed to be thoroughly planned during the project. Tools and the various methods of communication needed to be stated and clarified.

Manager B also stated and emphasized the importance of communication during the project. Manager B felt that the project success was highly dependent on how well communication was done. The manager also stated that communication with the client was very important, as this was the only way to know what the customer really wanted. The manager emphasized that communication at this level should be very frequent and in a very agreeable atmosphere for both the client and supplier. Manager B also stated that communication had to be thoroughly planned to know whom, how and for what was to be communicated. The manager stated that a project that had poor communication was most likely to run into several problems and deficiencies in the product.

The purpose of this question was based broadly on how communication in the project with the client affects the outcome of the project and most importantly the scope of the project. Both managers stated the effects of poor communication in projects. One of the main challenges facing projects as shown in the theoretical phase is lack of user input. Both managers here stressed on the importance of the customer being a central part of the project from the beginning to the end. The managers both stressed the need to have good communication channels for proper and effective communication to take place. This went a long way to guarantee a successful project in the sense that the product as suites the customer's needs. Communication interfaces with scope management during the collecting requirement process. Here it is essential that there is a good communication environment between the project sponsor or the customer and the project body. This creates a good platform for all detailed necessary requirements to be collected by the project team. The collecting requirements process involves very heavy communication between the customer or sponsor and the project team to enable the later develop what the customer desires.

Although communication is not a direct factor causing projects to fail, it can be inferred from the statement of the interviewees that communication occurs in all level of the project.

### 5.3 Scoping in Projects

The interviewees were also asked on how much importance and attention they paid to developing of the scope.

Manager A stated that the subject of scoping was one of the most challenging in the project management sector. Manager A explained that the definition of scope in related book literature was not totally inclusive of real practical life scoping. To the manager scoping of the project would begin right down from the phase of acquiring the project and pointed out the disadvantage here that during procurement the project manager is usually not present. Thus, in acquiring the project, decisions made on the project turn to affect the project during its whole life cycle. If decisions do not suite the real time implementation of the project the project manager has very little chance improving the decisions made. This made the jobs of the project managers harder because they were faced with managing projects with unrealistic time lines and unrealistic budget allocations. The manager also added that with the freedom of the customer, it is a difficult area to set limitations to the project as to what can be achieved and under what budget and period.

Project manager B on his part also indicated the difficult nature in developing the scope of the project. He indicated that scoping became even more difficult when the customer does not settle for the initial scope but keeps changing the functionality of the product during the project. He continued that different functionality would utilize different time schedule and budget allocation and this would course various other effects on the project. He further declared that it is in the light of this problem that companies had refrained from using the traditional software developmental cycle to rather modern and free agile methods. He said the usage of these agile methodologies have been able to tackle the problem created in changing scopes.

It is important to note here that both managers with their vast experience readily admitted the problem of scoping. Our managers also here point out that scoping of the project does indeed begin during procurement when the project is acquired. However, during this phase the project manager has not been appointed here. At this phase, the

procurement manager who is not familiar with the realistic implementation of the project may set unreachable goals and time limits. This factor according to theoretical part is one of the 10 most highly rated factors of projects failure.

The purpose and rationale behind this question is to once again show the relevance and importance of scope. From the figure 2-1, we can examine the effects when the scope is wrong.

#### **5.4 Scope Changes.**

The interviewees were both asked how much attention paid to changes in scope that occur during the project.

Manager A asserted that change was rather positive than negative and continued that there would be something wrong with the project if no change occurred during the project. It is thus up to project managers to use correct integration tools to make use of the changes in the project. Manager A said that in working as a manager it was always important to expect changes to the project. The manager stated that there was the need for project managers to be flexible in the sense that they could handle and integrate changes that occur. The manager stated that the issue of change was always mentally tough on the project members and they needed to embrace it and accept them when it occurred.

Manager B also commented on the inevitability of change during the project. The manager stated that to satisfy the customer it was most important to be able to embrace the changes that occurred. The manager stated that being able to integrate changes that occurred is an important aspect of the project management. The manager further stated that in the light of these changes most companies had not migrated from the traditional methodology of software development, and had now settled for more flexible methodologies that allowed and easily integrated project changes into the project.

From the pitch of the project managers, it is very clear that change in every project is inevitable. However, the inevitability of change should not guarantee the projects fail-

ure. As one of the most important factors of projects being impaired, it is a good reason for project management to make proper change management solutions. In managing scope, change is tackled through the verification and the control scope process.

The verification and control scope process allows changes that occur to be integrated into the project through verification meetings with the client and the executive sponsor. The purpose of this question was to investigate the phenomenon of scope changes in projects. A scope change is one of the direct causes investigated as causing project failures. When requirements continue to change and are not integrated into the project it is most like to cause the project to fail.

## **5.5 Work Break Down Structure**

The managers were also queried on the use of the work break down structure as a tool in implementing the project.

Manager A emphasized that project working was not some artistic formal work but most of all was a 'people' work and as such it was important to know the team. The manager further more explained that the use of the work break down structure was very challenging in large-scale projects. Manager went on to explain that the use of the WBS was a very achievable and reliable tool in small-scaled IT projects. Here the manager stated that there were 'pitfalls' in using this tool in large IT projects. The manager stated that vary often the theory I that the large IT projects can be decomposed into small project units but further stated that this creates more problems when it comes to integrating those smaller units. The manager sited as a referral that, the building of a cruise ship was very different from the building of several canoes to serve the purpose of the cruise ship.

Manager B also stressed the importance of the work break down structure. The manager said that it allowed the project manager to see the project in small achievable deliverables. This helped in seeing deliverables as achievable targets. The manager stated that sometimes it was challenging to see an achievable product, but when the work was decomposed into smaller fractures, it became easier to see the set goals as achievable.



The common vibe from the project managers here indicate that there is the need to further decompose small scaled projects through the work break down system. From the theory, one of the causes that lead to project success is setting smaller project milestones. Our managers further echoed this message by affirming the use of work break down structure. From the theory work break down structure is a process under scope management. Both managers recommended the WBS as a good tool in utilizing human resources and personnel available. Further still, it is important to note that the managers had different view when it came to using this tool in large-scale projects.

The purpose of the WBS interrogation was to find out the practice in real time projects. Although not a direct cause of project failure, the WBS as explained in the theoretical part gives identification to resources, schedules and milestone. Thus working with the WBS can eliminate the factors of failure such as unrealistic expectations and not enough resources because the by setting milestones it is easy to see who is doing what, and when it will be completed.

## **5.6 Project Requirements**

The interviewees were also asked to comment on the importance of project requirements.

Manager A stated that the importance of developing correct requirements for the product and the project could not be over emphasized. Manager A also stated that there was the problem of creeping requirements in traditional software project management. The manager defined creeping requirements as changes in the project that was initially planned. Manager A also stated that there were various influential elements that could divert the focus of the project. The manager stated that it was very important to keep the project within the requirements and the scope and to prevent 'gold plating' of the product , that is adding more to what was previously bargained for in the project , in what the manager described as pleasing the customer. Manager A further stated that, there is the real need for transparency for the customer to see how the project is being implemented and this has necessitated the use of most agile methods as the number one project methodology to pursue projects in recent years.

Manager B also stated by emphasizing that software projects were undertaken across various fields. He continued that most of the time the project team did not know anything about the field of the product they were endeavoring. He continued that requirements served as the most important tool to educate the project team on the product. He said requirement needed to be detailed and precise, and to be especially clear to the project team. The manager cited unclear requirements as one of the pitfalls of ICT projects. He also emphasized that the process of collecting these requirements was to be well planned and managed.

This question on requirements was one of the core subjects of the research. From the theory, a clear statement of requirement is one of the top factors why according to the chaos reports projects succeed. On the other hand incomplete and changing requirements account for most challenges faced by projects. The managers further echoed the importance of requirements in realizing successful projects. From the interview, it is clear that close attention should be given to developing requirements. In the theoretical part, requirements is one of processes under scope management. The issue of project creeps was raised here. The issue of scope creep was a constant to Manager A. Another issue that was raised here was effort creep. Manager A termed this as gold plating where the project was given extra features, which are not found in the requirement. It is important to know that the introduction of any extra feature may be more of a problem than an advantage. When not in the requirements it will create problems in the phase of testing because the function does not logically exist.

### **5.7 Executive support.**

Being regarded as one the most important success factors the participants were asked to explain how executive support helped in project success.

Manager A stated that by previous indication, executive support was personally the top most rated factor of success. The manager further explained that good communication between the project manager and the senior management ensured that changes and risks that occurred in the project are successfully and timely controlled. The manager cited the example of a bad relationship in the project when the project manager and the executive support have a standoff. This can cause the project to be steered of in

the wrong direction since risks and changes will not be well informed and communicated.

On his part manager, B identified executive sponsorship as a necessary catalyst to project success. He said it was always important to have the top management as close as possible. This he further stated helps in communicating immediate project defects and conflicts during the project. He said it was also important for the executive to be involved to be able to control some unforeseen risks that may occur during the project.

Executive support from the theoretical part is considered one of the most important reasons why projects succeed. The managers also confirmed the importance of the sustained relationship with the executive. One of the reasons for its importance was for its motivational effects on the project team. Besides this, the managers have echoed the inevitability of change in a project. The executive sponsor is also needed during the various phases of the project to endorse and verify that the deliverables of the project are in line with initial documentation.

## **5.8 Stakeholder Objectives**

The interviewees were also asked to share their views on the project meeting the stakeholder's objectives.

Manager A described it as being the most important because at the end of the project the only thing left is the product, and the project team and manager may not be remembered but the product remains the only evidence of the project. To the manager as much as the project process was important during the project, the only thing that is born after the project process is the product, and as such, the customer has to live with the product. To the manager it was most importance that the stakeholder accepted the product.

On his part manager, B also emphasized that in the long run the product was for the customer, and it will be no good if the customer had no use for the end product. It was

thus important to keep a good communication channel with the customer in order to direct the product to suite what is needed by the customer.

The purpose of this question was to show how this factor interacts with scope management. From the theoretical part, most important factor of success is user involvement. The managers have clearly shown how important it is to have the client continuously cooperating with the project body. This is to make sure that the user clearly communicates the intended product to the contracting project body. The theory also shows that lack of user involvement results in project failure. From the theoretical part in figure 2-4 , we can study how the product specified by the customer in the procurement phase can change to be a product not even close to what the customer specified.

## **5.9 Successful Project**

The participants were also asked to share their views on what a successful project was.

Manager A started by asserting that successful project had little to do with time and budget but true success is when the product is what the customer wanted.

Manager A also added that true success included the processes involved, tools phases and applying various methodologies to achieve what the customer desired.

Manager A also stated that success began from the onset of the project, from the time of procurement to the end of the project cycle. To the manager, time or budget were risk issues matters that needed to be managed during the project.

Here manager B admitted that the success of a project was primarily the product of the project. The project needs to be wanted by the client. That to manager B is ultimate success.

It was important to know from the managers' experience the realistic definition of a successful project. According to both managers, a successful project was not about schedule or budget, but solely increasingly dependent on the clients acceptance of the product. Although the definition of the project was bound by time, budget and scope

the pitch of the interviewees can be translated to mean that, time and budget may change but the scope must include what is desired by the customer. This means during the project it may not be possible to compromise the scope whereas the schedule and budget may be compromised to achieve customer satisfaction.

### **5.10 Summary of scope**

The Managers were finally asked to comment on the subject that scope management when managed effectively increased the rate of success of projects and reduced the likelihood of project failure.

Manager A promptly affirmed the statement but was however quick to add that scope wasn't the only factor. The manager stated that project becomes easier when the deliverables, goals and limitations are known. To the manager the first and most important part of defining these attributes was in the procurement agreement. The manager stated the scope of the project should be properly defined in the agreement of the project.

On his part manager, B concluded that scope was one of the most challenging aspects of project management. He directed that a good control of the scope went a long way in increasing the likelihood of success. He also added that although it was not only scope that could guarantee success, he stated that a good control of the scope meant that the project was heading in the right direction.

The purpose of this question was investigated from a practical point of view and from and experience setting what real success is. It is clear here that both managers have prioritized the competing constraints in project management. From the theoretical part it was established that the project constraints are competing elements. Both project managers here are implying that the constraints of time and budget although are very important but may not be as important as the scope. We can infer from the discussion here that scope encapsulates what the customer wants. However, to give the customer what they want the other constraints must be sacrificed.

### 5.11 Success Factors.

The participants were also further asked to prioritize and explain the most important success factors for projects.

Here manager A, opted for the most important factor of success being executive management support and further explained how through experience it was absolutely necessary to have good support from the executives in project management. The second most important factor was a capable project team followed by clearly communicated project and objectives. The least important factor here was project being completed on time and budget.

**Table 5-2 Managers factors of success**

Success Factor	Manager A	Manager B	Total
Completed on time and on budget	1	1	2
Aligned with client specific goals	2	5	7
Clearly communicated project vision goals and objectives	3	4	7
Capable project team	4	2	6
Executive sponsorship throughout project life cy	5	3	8

The interviewees were asked award points on the scale 1 -5 to the most influential factors of project success. 1 being the least important and 5 being the most important. The managers had different viewpoints on these factors as a reflection of their personal experience. When these points are added, the most important factor of success is Executive sponsorship throughout the project according to the interviewed managers. It is closely followed by clearly communicated project vision goals and objectives as well as the project being aligned with the client specific goals. The next important on the list is capable project team. These factors are similar to the chaos findings on what causes projects to succeed. The least point was awarded to the project being completed on time and budget. Although this is not one of the factors of success of the chaos study , it was a fundamental point in defining what is a successful project. The purpose of this interrogation was to tap into the manager's experience as they shared what to them were the best factors of success. It again must be noted here that

the factor or importance of the project being completed on time or on budget were of very minimal importance to the criteria for successful projects.

## 6 Conclusion and Discussions

A summary of the research is provided in this chapter. The thesis investigated what factors caused projects to fail or succeed and the role scope management plays in these factors. The research was divided into two parts, the theoretical frame and the empirical part.

The theoretical part was further divided into two parts. The first part introduced the reader to important literature in project management. The second part presented and investigated the previous research results organized by the Standish group, known as the Chaos reports. The reports revealed what interviewed project management and personnel thought to be the common reasons of project success and failures.

The second part of the thesis was the empirical part that was organized to investigate qualitatively the results of the chaos causes of project success and failure and their relationship with scope management. The empirical part also sought to collect best practice information on scope management and its effects on projects by the interviewing of 2 certified project managers.

### 6.1 Answer to research question

The thesis answered the various research questions being sought for.

The thesis first investigated the various factors that caused projects to fail and succeed according to the Standish Group Reports.

It was discovered that from the reasons given for software failure, at least 50% are scoped based reasons. The other 8 knowledge areas account for the other 50% of reasons (chapter 3.2). The figure is highly significant and the area of scope should be given extra attention. On the other hand, the factors that accounted for successful projects were more than 50% scope related factors (Chapter 3.2)

The empirical part also added some quality and direction to the research area. The interviewees expressed their concern on the difficult subject of scope management (chapter 5.3) and shared their personal knowledge and experience relating to the area



of scope. Through the various questions answered relating to factors that cause projects to succeed, the interviewees also echoed the former research findings of the chaos reports (5.11) on the factors that caused projects to fail or succeed.

Furthermore, the interviewees prescribed further means of checking the scope problem by the use of more interactional developmental methods such as the agile methodology (chapter 5.3). It was important that this admittance came from the interviewees. With respect to the background of the interviewees, this confirmation of the scope problem is very important. The interviewees both had a good number of years with project management and all acknowledged the same problem. According to Dekkers and Forselius, scope management is best carried out by an independent scope manager who is trained in project management, customer relations (communications), software estimating, requirements articulation and documentation, functional size measurement, change management and how to divide projects into sub projects (Dekkers and Forselius 2007 ,4).

From the empirical investigations, the interviewees also hinted the central nature of scope to the other 8 knowledge bases. As illustrated by Dekkers and Forselius, the boundary of Scope management interacts with the other 8 knowledge areas (Dekkers and Forselius 2007 ,3).

One unique finding of the empirical investigation was in the area of procurement and was established to be an indirect cause of project failure. It was shared by Manager A that the transactions that occur when acquiring the project goes a long way to affect the outcome of the project. It was established that at most times during procurement, the project manager may have not been yet appointed. The decisions here concerning the schedule, cost and scope of the project maybe unrealistic as found to be one of the factors of project failure. It is thus important for organizations to review the procurement process and consult with the project manager during this phase.

The theory of project management sets all the constraints that is time, scope and budget on the same level. The findings of this research reveal that whereas time and budget may be compromised the issue of scope cannot be compromised because it is concerned with what the customers' needs and wants. It is therefore important for

organizations to prioritize scope as the most important constraint. For this reason, future research on factors of failure of projects must eliminate budget and cost over runs as failure criteria.

## **6.2 Limitations of thesis**

The research attempted to find out if effectively managing the scope could reduce the likelihood of ICT project failures, thereby increasing the likelihood of success. However due to the small size of interviewed professionals the results is limited and subject to the experience and area of expertise of the professionals.

Furthermore, the chaos research is subject to the definitions and practices of the Standish group.

A further limitation is the young nature of ICT project management. Although there is available information on ICT project, management each project must be taken as a unique endeavor and thus is purely subject to the conditions of the project.

## **6.3 Future Research**

There is the need to pursue further research as to why projects fail with the current knowledge available to ICT project managers. The new research should take into consideration the various methodologies involved in software project development.

There is the further need to investigate the necessity of a new role as advocated by Dekkers and Forselius known as the scope manager (Dekkers and Forselius 2007, 3).

## **6.4 Concluding Remarks**

The whole process of this research was a huge learning process for me. I learnt a lot about using my own constraints: Scope, time and budget. I learnt that whereas I was always bounded by scope, my thesis project far exceeded my estimated time.

Furthermore, at the start of the project, it was hard to envision the whole project but work became easier when the project was divided into the various parts and preliminary milestones were set.

I have personally understood the subject area of project management and the process of writing a research.

## 7 Bibliography

### Book Publications

Dekkers C. and Forselius P. 2007, Increase ICT Project Success with Concrete Scope Management.

Kerzner H. 2009, Project Management: A Systems Approach to Planning, Scheduling, and Controlling, John Wiley and Sons Inc.

Project Management Institute 2008, A guide to the project Management Body of Knowledge (PMBOK guide), 4<sup>th</sup> Edition.

Schwalbe K. 2008, Introduction to Project management, 2<sup>nd</sup> Edition.

Westland J 2007, The Project Management Life Cycle: A Complete Step-by-step Methodology for Initiating Planning Executing and Closing the Project.

Wysocki R.K 2009, Effective Project Management: Traditional, Agile, Extreme. 5<sup>th</sup> Edition.

### Web sources

Eveleens J.L and Verhoef C. 2009 (Vrije University Amsterdam ), Rise and Fall of The Chaos Reports, Published by IEEE computer society.

[http://ieeexplore.ieee.org/xpl/freeabs\\_all.jsp?arnumber=5232804](http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=5232804)

Quoted 04.09.2009

Hancock B 1998, An Introduction into Qualitative Research,

<http://ebookbrowse.com/introqualitativerearch-pdf-d81106699>

Quoted: 15.12.2011

Standish Group – 1995, the Chaos Reports

[www.projectsmart.co.uk/docs/chaos-report.pdf](http://www.projectsmart.co.uk/docs/chaos-report.pdf) -

Quoted 13.11.2011

## 8 Appendices

### 8.1 Appendix 1- Letter Of Notification of Participation In Interview

Dear PMO Personnel or Project Manager,

Thank you for your participation in this research study exploring the relationship between effective scope management and IT project success. The importance of scope management as a knowledge base in IT projects cannot be over emphasized. Your participation is very important in understanding possible influential elements between effective scope management and successful project.

Your valuable participation will involve a 1 -1.5 hours face-to-face recorded and transcribed interview at a mutually agreed upon date, and place.

The interview will be recorded and transcribed to ensure accuracy

I will also take notes during the interview to assist me in understanding your comments during the analysis phase of the study.

The results of the research study may be published, but your name will not be used and your interview will be maintained in confidence, as only comprehensive data will be reported. Although brief quotations may be used as illustrative examples, but these will not be attributed to any specific individual.

Thank you in advance for your consideration to participate in this study, your unique perspectives, and experiences are highly valued.

In this research, there are no foreseeable risks to you. Benefits will include professional and leadership skill development. The results of the research study will be published, but your name will not be used and your results will be maintained in confidence.

Thank you for your participation.

Sincerely,

Ato Acquah.

## 8.2 Appendix 2 -Interview Questions.

1. What is your current working position?
2. Roughly how many employees is employed by your company
3. Years of experience you attained in current working position
4. Years of experience you attained in project management environment
5. What is the annual revenue of your organization?
6. How would you describe the attention paid to the development of the project management plan?
7. How would you describe the Performance rating for managing of critical change management?
8. How would you describe the attention paid to the development of the project scope?
9. How would you classify the attention given to managing of scope changes.
10. How would you describe the importance of the Work Break Down Structure in a project team
11. What would u rate the importance of developing Project requirements.
12. Statements most important and least important. Give in order highest points to the best success factor.

IT project success	1	2	3	4	5
Completed on time and on budget	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Aligned with client specific goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
clearly communicated project vision goals and objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Capable project team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Executive sponsorship throughout project life cy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Describe the relationship between PMO and Senior management support.

14. Describe the relationship between PMO and Senior management support.

15. Comment on importance of end product meeting stakeholder objectives

16. Comment on importance of communication with client during project.

17. How would you define a successful IT project?

18. What is your impression of the effective scope management toward the IT project success rate?

