University of KwaZulu-Natal

Lean Project Management during the Construction Phase of South African Public Sector Projects: The Perspective of Construction Project Managers

2015

Neil Sirbadhoo

I dedicate this work to my,

Family & Friends

Lean Project Management during the Construction Phase of South African Public Sector Projects: The Perspective of Construction Project Managers

Neil Sirbadhoo

A Thesis submitted in fulfillment of the requirements for the degree of Master of Science in Construction Management in the College of Agriculture, Engineering and Science,
University of KwaZulu Natal,
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PREFACE

The research contained in this thesis was completed by the candidate while based in the Discipline of Construction Management, of the College of Agriculture, Engineering and Science, University of KwaZulu-Natal, Howard College, South Africa. The research was financially supported by the Researcher.

The contents of this work have not been submitted in any form to another university and, except where the work of others is acknowledged in the text, the results reported are due to investigations by the candidate.

_____

Signed: Prof T. Haupt

Date: _____

COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE
DECLARATION - PLAGIARISM

I, Neil Sirbadhoo, declare that:

1. The research reported in this thesis, except where otherwise indicated or acknowledged, is my original work;
2. This thesis has not been submitted in full or in part for any degree or examination to any other university;
3. This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons;
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_____

Signed: Mr N. Sirbadhoo

Date: _____

As the candidate's Supervisors we agree to the submission of this thesis.

_____

Signed: Prof T. Haupt

Date: _____

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ABSTRACT

In construction, the progress of the project is driven primarily by the programme and the Construction Project Manager (CPM). The project programme sets out the basis upon which the project is monitored and controlled by the CPM. Many construction projects in the public sector are subject to late completion, cost overruns and poor quality as a result of inadequate management of the programme. Poor management of the programme stems from failure to adequately programme the work and properly execute the programme, failure to provide adequate qualified human resources to manage the programme, failure to develop an efficient programme and to effectively maintain the programme throughout the project execution, and failure to control cost changes that impact the programme throughout the execution of the project. Lean Project Management (LPM) is the inclusive adoption of other lean concepts such as lean construction, lean manufacturing and lean thinking into the project management context. During the construction phase of projects, there are many opportunities for the CPM to implement lean tools and techniques that will have a positive impact on the project from a programming perspective. This research aimed to investigate impacts of implementing LPM tools and techniques by CPM's during the construction phase of public sector projects on the successful delivery of the programme. A comprehensive literature review was done on the concepts of LPM, the public sector, the CPM profession, the construction phase and the project programme and the relationship between these areas of concern. A survey questionnaire directed at a sample of all professionally registered CPM's in Kwa-Zulu Natal involved in the public sector was used to: determine whether CPM's were aware of LPM; how important LPM was to CPM's and how often they use it during the construction phase and whether poor programme management during the construction phase impacted the successful delivery of the programme. Out of 234 registered CPM's that were selected in the research sample, 72 registered CPM's responded to the survey questionnaire, representing a 31 per cent response rate. The research established a link between the project programme during the construction phase of projects and the implementation of LPM by CPM's during this phase towards overcoming the obstacles of poor delivery of the programme on public sector projects. It further presented the integration between the areas of concern in a practical way through the research findings from the literature and data collection and analysis that portrayed the relationship between the programme and LPM. It was concluded that CPM's were aware of LPM and that poor programme management during the construction phase negatively impacted the successful delivery of the programme. In addition, LPM was important to CPM's and its principles and techniques were being implemented during construction on public sector projects.

Keywords: Construction Phase, Construction Project Managers, Lean Project Management, Project Programme, Public Sector.

Table of Contents

List of Figures

List of Tables

List of Tables (Continued)

List of Terms

ASGISA	Accelerated and Shared Growth Initiative of South Africa
BEE	Black Economic Empowerment
CBE	Council for the Built Environment
CBPP	Construction Best Practice Programme
CEASA	Cost Engineers Association of South Africa
CIC	Construction Industry Council
CIDB	Construction Industry Development Board
CIIs	Construction Industry Indicators
CIOB	Chartered Institute of Building
CPM	Construction Project Manager
CSIR	Council for Scientific and Industrial Research
CSSA	Computer Society of SA
DPW	Department of Public Works
ETQA	Education and Training Quality Assurance
JIT	Just-in-Time
KPI's	Key Performance Indicators
KZN	Kwa-Zulu Natal
LCI	Lean Construction Institute
LPM	Lean Project Management
PPPs	Public Private Partnerships
PERT	Programme Evaluation Review Technique
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PMSA	Project Management South Africa
RIBA	Royal Institute of British Architects
SACPM's	South African Construction Project Managers
SACPCMP	South African Council for the Project and Construction Management Profession

List of Terms (Continued)

SETA	Skills Education Training Authorities
SGB	Standards Generating Body
SPSS	Statistical Package for the Social Sciences
UKZN	University of Kwa-Zulu Natal

Chapter 1 - Introduction

1.1 Introduction

This chapter introduces the concept of lean thinking and lean construction with specific reference to the implementation of lean project management (LPM) tools and techniques by Construction Project Managers (CPM). The importance of implementing these tools and techniques towards improving the successful delivery of the project programme in the construction phase is briefly overviewed. Furthermore, the chapter brings to light the importance of implementing lean project management tools and techniques in achieving the successful delivery of public sector projects.

1.2 Research Background and Problem

The South African construction industry which comprises building and civil sectors plays an integral role in the national economy. In addition, the construction industry provides infrastructure which is fundamental to the continuous development of the country (South African Government News Agency, 2015). The Public Sector in South Africa refers to the part of the economy concerned with providing basic government services such as the police, public roads, public transit, education and healthcare, services which benefit society rather than individuals who use the service (Lane, 1995).

A key stimulator of economic growth is the construction industry (National Treasury, 2015). This stimulation is accomplished by increasing the productive capacity of the economy through the provision of infrastructure to both private and public sectors. Infrastructure spending in the public sector is a good indicator of the industry's performance (CIDB Building and Construction Sector Report, 2015). The South African government's infrastructure development plan and the Presidential Infrastructure Coordinating Commission which has been set up to coordinate infrastructure expenditure between the three different spheres of government (national, provincial and local) are highlighted as positive signals for future growth in the industry (PwC Report: SA Construction, 2014).

One of the fundamental challenges of the South African government is service delivery in the construction sector. Some of these challenges are highlighted by the SA Government New Agency Report (2015) as delays and disruptions during construction, poor site management, time and cost variations, skills and competence issues, lack of quality improvement processes and lack of worker participation. While it is evident that there are challenges, the government's contribution to the industry plays a vital role in meeting the demands of infrastructure requirements, housing, clinics, hospitals and schools to under developed areas of the country. Kaul (1998) supports this role by indicating that since the transformation of the government in 1994, government has implemented numerous turn-around strategies towards improving service delivery within the country such as collaborations/partnerships also known as Public Private Partnerships (PPPs), Black Economic Empowerment (BEE), the Accelerated and Shared Growth Initiative of South Africa (ASGISA), the National Skills Development Strategy, the Employment Equity Programme and the Affirmative Action Programme.

There are numerous performance indicators regarding service delivery in the construction industry. Chan and Ada, (2004) highlight that time, cost and quality are the three most commonly cited performance indicators in construction projects followed by others which are just as critical such as health and safety, functionality, human resourcing, procurement, communication, integration, satisfaction and the environment. Time, as one of the important factors in the successful delivery of construction projects in the industry it has to be monitored and measured against the construction programme on public sector construction projects during the construction phase. The construction programme as defined by the PMBOK (2004) includes the processes required to accomplish timely completion of the project.

Construction usually involves the interpretation of the brief of the Client into a design and then translation into reality. This translation requires a design or consultant team selected by the Client/ Employer. More specifically, some of the major consultant team role players usually consist of surveyors, engineers, quantity surveyors, fire protection engineers, planning consultants, architects, project managers, health and safety specialists and construction project managers (Davies et al., 2008). Construction consultants play a

multifaceted part in construction projects and are usually involved from project inception to its completion (Clark and Wilson, 2008). More specifically, consultants involved in public sector projects are usually employed through the procurement policy of the relevant sector for the specific duration of the project (National Treasury Supply Chain Management Guideline, 2004).

Construction Project Management is defined by the South African Council for the Project and Construction Management Profession (SACPCMP) in terms of the Project and Construction Management Professions Act (2000) as the management of projects within the Built Environment from conception to completion, including the management of related professional services. The CPM is the single point of responsibility in this regard. The 3rd International Construction Project Management forum held in Berlin (2003) highlighted that CPM was project management applicable to the construction industry aimed at meeting the Clients requirements in order to produce a functional, feasible and financially viable project. The CPM's roles involve overall planning, co-ordination and control of a construction project from initiation to completion. More specifically this research makes reference to CPM's appointed by the Public Sector to manage and deliver successful construction programmes during the construction phase of projects in the industry.

Truman and King (2013) note that the successful delivery of construction projects in the public sector generally hindered by poor management of the programme. These are failure to adequately programme the work and properly execute the programme, failure to provide adequate qualified human resources to manage the programme, failure to develop an efficient programme and to effectively maintain the programme throughout the project execution, and failure to control cost changes that impact the programme throughout the execution of the project.

Pfeiffer and Weiβ (1994) define lean project management as a system for organizing and managing all aspects of a project function by creating principles, practices and tools in order to develop goods and services with higher quality and fewer defects. The general

outcome is to do this by using less effort, space, capital and time. In construction, lean project management is delivering more value with less waste in a project context.

A study conducted by Rust and Koen (2011) further revealed that the South African construction industry is renowned for low levels of innovation towards stimulating technological solutions to provide and maintain future growth of the industry. As a result, the research conducted in this study aims to identify and highlight lean project management and its implementation as an innovative initiative towards the successful delivery of the project programme during the construction phase of public sector projects.

In construction, experience has shown that the selection of the CPM is a key appointment which can influence the success or failure of the project. As the single point of responsibility, it is the CPM who integrates and co-ordinates all the contributions, and guides them to successfully complete the project (Burke, 2003). As a result, the progress and success rate of the project is driven primarily by the programme and the CPM. The project programme sets out the grounding upon which the project is monitored and controlled by the CPM. Many construction projects in the public sector are subject to late completion, cost overruns and poor quality as a result of inadequate/poor management of the programme (Truman and King, 2013). During the construction phase of projects, there are many opportunities for the CPM to implement lean tools and techniques that will have a positive impact on the project from a programming perspective. This research aims to investigate impacts of implementing lean project management tools and techniques by CPM's during the construction phase of public sector projects towards the successful delivery of the programme.

1.3 Problem Statement

The research problem may be stated as:

Poor management of the programme CPM's during the construction phase of public sector projects hinders the successful delivery of the project programme.

1.4 Research Hypothesis

The research hypotheses are:

1. CPM's are not aware of lean project management tools and techniques.
2. Lean project management tools and techniques are not important to CPM's.
3. Lean project management tools and techniques are not used often by CPM's during the construction phase towards the completion of the programme.
4. Poor programme management during the construction phase does not impact the successful delivery of the programme.

1.5 Objectives of the Research

The research aims to achieve the following objectives:

1. To determine if CPM's are aware of lean project management tools and techniques.
2. To determine the lean project management tools and techniques importance to CPM's.
3. To determine how often CPM's use lean project management tools and techniques during the construction phase towards the successful completion of the programme.
4. To determine whether poor programme management during the construction phase impacts the successful delivery of the programme.

1.6 Research Motivation and Rationale

The motivation and rationale behind the research emerged from poor programme management on public sector projects during the construction phase. Prolonged management techniques and processes that result in delays of construction progress which hampers the successful completion of the programme. The lack of a pro-active approach by CPM's on public sector projects, poor turnaround time, the lack of effective communication including poor information flow and inadequate human resources deployed on public sector projects by both CPM's and Public Sector Government bodies that directly impact the progression and delivery of the construction programme.

1.7 Research Methodology

In order to achieve the research objectives, the following research approaches will be adopted:

- A comprehensive literature review will be aimed at investigating the concepts of LPM, the public sector, the CPM profession, the construction phase and the project programme and the relationship between these areas of concern. This will require a critical review of academic journals, text books, conference proceedings, research publications, professional magazines, past dissertations and theses including internet related web sites which will assist in determining any gaps in the research area. These studies will also be used to determine the appropriate research approach including the selection and design of the research instruments to be utilized for data collection.
- Survey questionnaires will be conducted with Construction Project Managers to determine whether lean project management tools and techniques assist CPM's in the delivery of the project programme, identify the causes of poor programme management during the construction phase that impact the successful delivery of the programme and highlight whether lean project management tools and techniques assist in the delivery of public sector projects.
- The data will be analyzed using pertinent statistical techniques and software such as SPSS version 23.
- Finally, conclusions will be drawn from the research findings and recommendations for implementation and future research will be formulated.

1.8 Research Limitations

The limitations and constraints of the research are:

- The study will only target all professionally registered CPM's with the SACPCMP within the province of Kwa-Zulu Natal, in South Africa.
- The research will be conducted within a time frame of 1 calendar year.
- The research will be limited to Kwa-Zulu Natal due to resource and financial constraints including the limitation of the research time frame.

1.9 Research Assumptions, Ethical Considerations and Delimitations

1.9.1 Assumptions

The assumptions made on the research are:

- The survey questionnaires carried out will be answered truthfully and accurately.
- In order to enhance and reinforce the accuracy and validity of the information provided, the participants will be notified that their anonymity and confidentiality will be preserved. In addition, their participation is on a voluntary basis and may withdraw from the study at any time with no ramifications. Participants will also be assured that the questionnaires will get to the heart of the research problem and enable them to answer the research questions.
- The participants identified for the study are professionally registered construction project managers with the South African Council for Construction and Project Management Profession (SACPCMP). This will be achieved by identifying professionals listed in the Professions and Projects Register (2015).

1.9.2 Ethical Considerations

Ethical clearance will be sought from the relevant structure at UKZN (Refer to Appendix A). Ethical considerations made on the research:

- The research aims at identifying a flaw/problem within a specific area of interest in the built environment that could be improved on towards benefiting a particular project deliverable in the industry.
- The research does not aim to harm or advertise any individual, company or organization that has participated. All participants were notified that their information will be strictly confidential.
- Participation in the study will be of each individual's free will, no one will be forced to participate.
- Participants may withdraw from the study at any time. However, the ramifications regarding inadequate data collection will be explained should this occur.

1.9.3 Delimitations

The research has been restricted to:

- The implementation of lean project management tools and techniques by CPM's during the construction phase of public sector projects towards the delivery of the project programme.
- The study will only target all professionally registered CPM's with the SACPCMP within the province of Kwa-Zulu Natal, in South Africa.
- The study uses the nine project management areas of expertise listed by the Project Management Body of Knowledge 2004 as this was the literature available at the commencement of the study.

1.10 Research Significance

This research seeks to establish a link between the construction programme during the construction phase of projects and the implementation of lean project management by CPM's during this phase towards overcoming the obstacles of poor delivery of the programme on public sector projects. It further presents the integration between the areas of concern in a practical way through the research findings from the literature review and survey questionnaires that portrays the relationship between the programme and lean project management. Furthermore:

- This research investigates and discusses an area which has not been explored well in construction in South Africa;
- It deals with imperative issues which face the public sector towards delivering successful projects such as poor programme management on public sector projects during the construction phase. Delays in the construction process which hamper the successful completion of the programme which include the lack of proactive approaches, poor turnaround time for information flow and ineffective communication by CPM's and Public Sector Government bodies.

1.11 Structure of the Thesis

Chapter 1: Introduction

This chapter introduces the research and provided the background and problem of the study, the research hypothesis, the research objectives, motivation and rationale, the research methodology, limitations, assumptions, ethical considerations, delimitations and final the significance of the research.

Chapter 2: Literature Review

The second chapter will entail a critical review of the literature. Firstly the concept of lean, lean principles, lean production, lean construction and lean project management will be reviewed to highlight the benefits of lean and identifying the principles that may be implemented by CPM's in the South African context. This will then lead to an investigation of the construction phase and its importance in a project together with the management tool utilized for monitoring and controlling this phase which is the project programme, highlighting the causes of poor programme management and related impacts. Thereafter the public sector and the CPM profession will be reviewed leading to a critical assessment of the relationship between LPM, the Construction Phase, the Programme, the Public Sector and the CPM Profession.

Chapter 3: Research Methodology

This chapter describes the research methodology used to test the hypotheses. It will provide definitions and brief descriptions of what research methodology will be followed. The chapter then identified and described the population and the sample drawn from it. Furthermore, it stated how the data was analyzed and presented in order to assess the data collected. The chapter finally included information on the reliability and validity of the data collected.

Chapter 4: Data Collection and Analysis

This chapter presents the analysis of the collected data. The analysis will be executed using pertinent statistical techniques and software using SPSS version 23. The coded data will be analyzed in order to identify trends and general view points of the respondents which could be extrapolated over the sample population identified.

Chapter 5: Conclusions and Recommendations

The final chapter presents the conclusions drawn based on the research findings. Thereafter, recommendations for implementation and further research will be included.

1.12 Summary

This chapter introduced the concept of lean thinking and lean construction with specific reference to the implementation of lean project management tools and techniques by the CPM. The importance of implementing these tools and techniques towards improving the successful delivery of the project programme in the construction phase was also overviewed. Furthermore, the chapter highlighted the importance of implementing lean project management tools and techniques towards assisting in the successful delivery of public sector projects. The next chapter presents a comprehensive literature review. More specifically, the areas and link between lean project management, the construction phase, the project programme, the construction management profession as well as the public sector are investigated.

Chapter 2 – Literature Review

2.1 Introduction

This chapter provides a review of relevant literature and previous studies on the research topic. The following topics will be covered:

- Lean Project Management (LPM)
- The Public Sector
- The Construction Management Profession (CPM)
- The Construction Phase and Project Programme
- The relationship between Lean Project Management, the Public Sector, the Construction Management Profession the Construction Phase and Project Programme.

2.2 Lean Project Management

2.2.1 Definition

The concept of lean or lean production/manufacturing was formally pioneered by Toyota in Japan following the Second World War. The term "lean" was coined by the research team working on international auto production to reflect both waste reduction nature of the Toyota production system and to contrast it with craft and mass forms of production (Womack et al., 1990). Lean thinking is the creation of a continuous stream which delivers customer value with the least waste of resources within the shortest possible time (PMI, 2000).

Lean Construction is defined by the Lean Construction Institute (LCI) as the application of lean thinking to the design and construction process creating improved project delivery to meet client needs and improved efficiency for constructors. This is further supported by Howell (1999) that Lean Construction has the goal of better meeting client needs while using less of everything.

The term "lean construction" is an adaptation of lean production techniques applied in the construction industry. Broadly it is characterized as techniques aimed at maximizing value and minimizing waste (Womack et al., 1990). Lean in construction is therefore a combination of operational research and practical development in design and construction with an adaptation of lean manufacturing principles and practices to the end-to-end design and construction process. Due to construction being a project-based production process, lean construction is concerned with the alignment and holistic pursuit of concurrent and continuous improvements in all dimensions of the built and natural environment (Abdelhamid, 2007, Abdelhamid et al., 2008).

2.2.2 Principles and Features

According to several authors such as Womack et al., (2003), Brookfield (2004), Bjornfot (2006) and Jansson, et al., (2009), Lean Theory can be presented under five principles, namely

1. The **Value** principle that focuses on identifying customer values and understanding their requirements and constraints. In addition, it aims to define the internal and external factors that may affect the customer decision and find alternative solutions and the most appropriate way to fulfil customer requirements in the most cost effective manner.
2. The **Value Stream** principle that maps the activities that, when done correctly and in the right order, will produce the product or service that achieves the customers value. Activities can be classified as:
    a. Non-value adding activities which should be eliminated;
    b. Supporting the value adding activities that should be reduced as far as possible; and
    c. Value adding activities, which should be continuously improved.
3. The **Flow** principle aims to ensure that flow of work is steady and without interruption from one value adding or supporting activity to the next. Flow of work speeds the development process and hence, every effort should be made to eliminate obstacles that prevent such flow.

4. The **Pull** principle establishes to produce only products that have been ordered. In non-lean organizations, work is pushed (the system produces outputs that are not required). Most lean services react to customer demand, adapt to their changes and so pull the work through the system.
5. The **Perfection** principle seeks to deliver exactly what the customer needs, when needed and at the most cost effective manner. In a perfect process, every step is value adding, cable (produces a good result every time), available (produces the desired output, not just the desired quality, every time), adequate (does not cause delay), flexible and linked by continuous flow. If one of these factors fails some waste is produced. Perfection is a journey of continuous improvement and Lean organizations have to strive for perfection and develop strategies and procedures to set up quality controls and achieve perfection.

Based on these principles, Koskela (1992) identified 14 principles to lean thinking organized in four categories: (1) Philosophy, (2) Process, (3) People and Partners and (4) Problem Solving. These 14 management principles of the lean way are listed as in Table 2.1.

Table 2.1: Principles of the Lean Way

Category	Lean Principles
Philosophy	1. Base decisions on long term philosophy even at the expense of short term financial goals;
Process	2. Create continuous process flow to bring problems to the surface; 3. Use "Pull" systems to avoid over production; 4. Level out the first time; 5. Build a culture of stopping to fix problems to get quality right the first time; 6. Standardized tasks are the foundation for continuous improvement and employee empowerment; 7. Use visual control so no problems are hidden; 8. Use only reliable, thoroughly tested technology that serves people and processes;
People and Partners	9. Grow leaders who thoroughly understand the work, live the philosophy and teach it to others; 10. Develop exceptional people and teams who follow your company's philosophy; 11. Respect your extended network of partners and suppliers by challenging them and helping them improve;
Problem Solving	12. Go and see for yourself to thoroughly understand the situation; 13. Make decisions slowly y consensus, thoroughly considering all options, implement rapidly; and 14. Become a learning organization through relentless reflection and continuous improvement.

Source: Koskela (1992)

Ballard and Howell (1997: 3) support Koskela (1992) by noting that Lean Production continues to evolve but the basic outline is clear: "design a production system that will deliver a custom product instantly on order but maintain no intermediate inventories". The concept includes:

- Identify and deliver value to the customer value: eliminate anything that does not add value;
- Organize production as a continuous flow;
- Perfect the product and create reliable flow through stopping the line, pulling inventory, and distributing information and decision making; and
- Pursue perfection: Deliver on order a product meeting customer requirements with nothing in inventory.

Therefore, lean production aims to optimize performance of the production system against a standard of perfection to meet unique customer requirements (Ballard and Howell, 1997). It is a continuous process that applies through design, procurement, manufacture and construction. It is an integrated process in which Clients, Designers, Contractors and Suppliers must be committed to working together, focusing on delivering value and striving to get it right the first time (Lean Construction Institute, 2015).

Some of the principles unpinning lean construction are:

- Improving planning and communication.
- Eliminating waste and errors.
- Direct intervention to drive immediate and apparent change.
- Improving work planning and forward scheduling.
- Specifying value from the perspective of the customer/ client.
- Eliminating activities that do not add value.
- Ensuring the work environment is clean, safe and efficient.
- Critical path analysis and programme management.
- Continuous improvement (Ibid).

Additionally, techniques that may be adopted from these principles include:

- Early planning to improve workflow.
- Focusing of defining achievable tasks and avoiding errors, duplicated effort, out of sequence work and activities that do not add value. The aim is to maximize the workflow and minimize the performance variation rather than focus on speed only.
- Value management techniques.
- Benchmarking techniques including the use of key performance indicators.
- Critical path analysis and management.
- Risk management techniques.
- Implementing continuous improvement from one project to another.

Koskela, et al., (2002: 217), holistically summarizes lean construction as a "way to design production systems to minimize waste of materials, time and effort in order to generate the maximum possible amount of value."

2.2.3 Lean Construction

Getting work to flow reliably and predictably on a construction site requires the perfect alignment of the entire supply chain responsible for constructed facilities such that value is maximized and waste is minimized. Lean construction draws upon the principles of project level management and upon the principles that govern production level management. Lean construction recognizes that any successful project undertaking will inevitably involve the interaction between project and production management (Abdelhamid, 2007).

According to Koskela and Huovila (1997) managing construction under lean is different from the typical contemporary practice because it

- Has a clear set of objectives for the delivery process.
- Is aimed at maximizing performance for the customer at the project level.
- Designs concurrently product and process
- Applies production control throughout the life of the project

What kind of production is construction? According to Koskela (1992) construction is the design and assembly of objects fixed in place and possesses the characteristics of site production, unique product and temporary teams. Making construction lean entails two parts, namely:

1. Claiming from construction what actually belongs to product manufacturing and minimizing constructions peculiarities in order to take advantage of lean techniques in manufacturing.
2. Developing lean techniques adequate to dynamic construction, the remainder that resists the first approach. A shared challenge for both is coordination of the specialist installers who occupy the front line and through whom engineering and fabrication expertise is best applied.

Construction sites reflect prototypical behavior of complex chaotic systems, especially in the flow of both material and information on and off site. According to Bertelsen (2003) construction should be modeled using chaos and complex systems theory. As a result, construction could be understood in three complimentary ways, namely

- As a project-based production process;
- As an industry that provides autonomous agents; and
- As a social system (Ibid).

It is noted that while the aims of lean construction and lean production may be similar, the approaches are different. This is due to the fact that a construction project has a start and end date and is usually a one off, where as a production line usually follows a set programme on an ongoing basis (Womack et al., 1990). Lean construction results from the application of a new form of production management to construction. Essential features of lean construction include a clear set of objectives for the delivery process, aimed at maximizing performance for the customer at the project level, concurrent design of the product process, and the application of the production control throughout the life of the product from design to delivery (Howell, 1999).

2.2.3.1 Barriers to Adopting Lean Principles in Construction

The construction industry has previously rejected many ideas from manufacturing because of the belief that construction is different, as projects in construction are one-off project-based, more complex and take place under lots of uncertainties and constraints (Salem et al., 2006). There is a repeated claim that the construction industry is very different than manufacturing because every product is unique. Egan (1998) does not agree as he believes that the construction industry has two options, namely:

1. To ignore all this in belief that construction is so unique that there are no lessons to be learned; or
2. Seek improvement through re-engineering construction, learning as much as possible from those who have done it elsewhere (Egan, 1998).

Similarly, Koskela (2000) believes that these types of barriers are just temporary. They may slow down the diffusion but will not impede it. Several studies have been carried out in different countries worldwide to identify the barriers in implementing the Lean Construction approach. Some studies investigated barriers preventing the diffusion and implementation of lean construction (Johansen & Walter, 2007; Olatunji, 2008; Senarate & Wijesiri, 2008; Abdullah et al., 2009; Mossman, 2009). Others focused on identifying barriers that exist during the execution of lean construction practices (Seymour, 1998; Garnett, 1999; Alarcon et al., 2002; Jøhansen & Porter, 2003; Jorgensen et al., 2004; Alacaron et al., 2005; Ansell et al., 2007). These barriers could affect the application process of lean construction and hinder the project performance, if not properly managed. By not understanding the factors that affect the successful implementation of lean construction, organizations will not be able to know what improvement efforts need to be made, where these efforts should be focused, or which efforts could obtain best results (Leong & Tilley, 2008).

Many similar factors in the construction industry of both developed and developing nations act as an obstacle to the adoption of lean construction concepts (Forbes et al., 2002). Fragmentation and sub-contracting in construction hinder the incentive for project participants to co-operate and learn together (Mossman, 2009). These participants have different circumstances and priorities, but with one shared objective of successfully

completing the related project (Abdullah et al., 2009). Therefore, it is essential to establish effective communication between all parties by embarking on the partnering and integrated team working route (Thomas & Thomas, 2005). That is because, in the process of implementing lean construction concepts, poor communication will have a negative impact on the effectiveness of the project delivery and coordination system (Abdullah et al., 2009). Additionally, contractors usually hire sub-contractors who generally do not have contracts with the client. As a result, they sometimes have to work with insufficient budgets even if the main contractor receives a fair price from the client (Forbes et al., 2002). This leads to compromised quality of work (Mossman, 2009).

Traditional procurement methods and contracts undermine the application of lean principles because they seem to create adversarial relationships between parties involved (Mossman, 2009) and can waste process contract forms that allow one party to impose power over another create adversarial relations (Cullen et al., 2005). These adversarial relations create transaction costs which are considered waste and are opposing the lean philosophy. Johansen and Walter (2007) note that any procurement form that tends to delegate design work to external designers, without any follow up or incorporation, separates the design from the construction process, missing the lean aim of collaboration and integration.

Other barriers hindering the implementation of lean construction and principles are listed below:

- Applying lean thinking into the construction industry requires a fresh approach in thinking about the complete process, in order to remove waste, create continuous flow and radically enhance value to the customer. Therefore changing traditions and behavior seems to be a necessary prerequisite for implement lean construction into the construction industry (Seymour, 1998; Garnett, 1999; Common et al., 2000).
- One of the main barriers of implementing lean construction is the tendency of construction firms to apply traditional management concepts as opposed to productivity and quality initiatives (Abdullah et al., 2009)

- The successful implementation of lean construction required adequate funding to provide relevant tools and equipment, sufficient professional wages, incentives and reward systems, investment in training and development programmes and employing a lean specialist to provide guidance to both employers and employees during the initial implementation (Bashir et al., 2010). Some financial barriers include, inflation, inadequate funding of projects, unstable markets for construction and a lack of social amenities required for facilitating lean implementation (Dulaimi and Tanamas, 2001).
- The lack of top management commitment and support. Top managers have to provide sufficient time and resources to develop an effective plan, and manage chances arising from the implementation process (Bashir et al., 2010).
- Design and planning are identified as major attributes of the process of lean construction. Any ignorance to the importance of these could lead to disastrous loss of time, cost and the overall process (Common et al., 2000).
- Finally, the lack of adequate lean awareness and understanding in the construction industry is identified as another main contributor barring its implementation. Lean has introduced to the construction industry the usage of new tools which have a distinct difference when compared to those used in traditional practices. According to Abdullah et al., (2009) these differences have to be clearly understood in order for these tools to be optimally used.

2.2.3.2 Lean Construction in South Africa

The concept of lean and its principles are increasingly being applied in the South African construction industry as well. A recent research paper published by Shakantu and Emuze (2012) at the 20th Annual Conference of the International Group for Lean Construction highlights the advancement of an efficient reverse logistics system in construction. The research argues that building material and waste removal operations could be optimized by the application of reverse logistics in a construction context through the implementation of lean construction principles. While it is clearly evident that lean is being utilized globally, the concept is fairly new in South Africa.

2.2.4 Lean Project Management

Lean Project Management (LPM) builds on the understanding that no other project has been or will be exactly the same as the one currently being worked on or being prepared to work on. It takes a practical approach with simple steps to demonstrate how to complete projects in half the time, all the time. LPM assists project managers taking on more projects, wanting to complete them faster with less team stress (Leach, 2006). The Project Management Institute (2000) identifies some of the comparisons between Lean Goals and Project Management Goals in Table 2.2.

Table 2.2: Lean Goals vs. Project Management Goals

Lean Goals	Project Management Goals
• Improve Quality	• Complete on Time
• Eliminate Waste	• Complete on Budget
• Reduce Lead Time	• Meet Performance Requirements
• Reduce Total Costs	• Quality
• Focuses on Behaviors, Change and Improvement.	• Focuses on Tools, Techniques, Methods and Results.

Source: (Leach, 2006)

There are many differences highlighted between the Lean Construction approach by Howell (1999) and Ballard (2000) and the Project Management Institute (PMI) approach to construction. Some of these are listed in the Table 2.3.

Table 2.3: Lean Approach vs. PMI Approach

Lean Construction Approach	Project Management Institute Approach
• In lean construction, optimization efforts focus on making the work flow reliable (Ballard, LPDS, 2000).	• In contrast PMI focuses on improving productivity of each activity which may make errors and reduce quality resulting in rework.
• Managing the interaction between activities and combined effects of dependence and variation is the first concern of lean construction as these highly affect the time and cost of projects.	• These interactions are not considered in PMI.
• The project is structured and managed as a value generating process, value being defined as satisfying the customer requirements.	• PMI considers less cost as value.
• Pull techniques govern the flow of information and materials from upstream to downstream.	• Push techniques govern the release of information and materials.
• Project control has the job of execution (Ballard, 2000).	• Control in PMI relies on variance detection after-the-fact.
• Capacity and inventory are adjusted to absorb variation. Feedback loops included at every level help ensure minimal inventories and rapid system response.	• PMI does not consider adjustments.
• Aims to mitigate variation in every aspect (product quality, rate of work) and manage the remaining variation.	• PMI does not consider variation mitigation and management.
• Lean approach aims to implement continuous improvement in the process, workflows and product.	• The PMI approach doesn't pay much attention to continuous improvement.
• In lean construction, decision making is distributed in design production control systems.	• In PMI decision making is centered to one manager some times.
• Lean construction aims to increase transparency between stakeholders, managers and laborer's in order to know the impact of their work on the project as a whole.	• PMI does not consider transparency methods.
• In lean construction a buffer of sound assignments is maintained for each crew or production unit.	• The PMI method does not consider a backlog for crews.
• Lean construction develops new forms of commercial contracts to give incentives to suppliers for reliable work flow and optimization at the deliverable to client level.	• PMI does not have such policy.
• Lean construction production system design resists the tendency toward local sub-optimization.	• PMI persists on optimizing each activity.
• Lean construction encompasses project and production management. It formally recognizes that any successful project undertaking will inevitably involve the interaction between project and production management (Abdelhamid et al., 2008)	• The PMI driven approach only considers managing a project at the macro level. This is necessary but not sufficient for the success of projects.

Additionally, PMI (2000) further exemplifies some of the differentials between Lean Principles and Lean Project Management in the Table 2.4.

Table 2.4: Lean Principles vs. Lean Project Management Goals

Lean Principles	Lean Project Management Principles
• Specify Value	• Eliminate Waste
• Identify the Value Stream	• Empowerment, Respect, Integrity
• Flow	• Decide Later, Deliver Fast including Risk Management
• Pull	• Amplify Learning
• Perfection	• See the Whole

Leach (2006) notes that Lean Project Management aims to increase productivity, reduce project durations and minimize quality defects. In addition, some of the benefits of the Lean Project Management Approach are listed:

- More successful projects (satisfied Clients and project team, full scope, on time, under budget);
- Faster project completion;
- Simple project status;
- Reduced unnecessary paperwork;
- Clear signals on when to take action on the project;
- Reduced pressure on project team members; and
- Reduction of the waste that causes project delays.

LPM is the inclusive adoption of other lean concepts such as lean construction, lean manufacturing and lean thinking into the project management context. LPM has numerous ideas in common with other lean concepts. However, the fundamental principle of LPM is delivering more value with less waste in the project context. LPM has many techniques for implementation to projects and one of the main methods is standardization (Leach, 2006). This then highlights the importance the role LPM has towards providing CPM's with the unique tools and techniques available, for delivering construction projects in the South African Public Sector through the successful delivery of the project programme.

2.3 The Public Sector

2.3.1 Public Sector Defined

The Public Sector is defined by the Department of National Treasury in South Africa as the part of the economy that is controlled by the state (National Treasury, 2015). Dube and Danescu (2011) highlight that in general terms, the public sector consists of governments and all publically controlled or publically funded agencies, enterprises and other entities that deliver public programs, goods or services. Public Sector organizations may exist at any of the four levels listed below:

- International – multistate entities or partnerships.
- National – an independent state.
- Regional – a province/state within a national state.
- Local – a municipal level body such as a city or country.

More specifically, the Public Sector is the part of the economy concerned with providing basic government services. The composition of the public sector varies by country, but in most countries the public sector includes such services as the police, military, public roads, transit, primary education and health care for the poor (National Treasury, 2015).

One of the resources of public administration is human resource. For services to be rendered by a department there is a need for personnel to be employed and attached to specific posts within the organizational structure of the particular department. Such personnel employed, sometimes referred to as functionaries are charged with the task of ensuring that a departments or municipalities goals are achieved through efficient, effective performance duties (Shafritz and Russell, 2005).

2.3.2 Public Sector in the South African Construction Industry

The Public Sector is the group of public institutions operating under the auspices of the South African Public Service Administration by the Public Administration Act. The South African Public Sector operates from an environment different from that of the private organizations. Fox et al., (1991) identify the some of the key characteristics of the Public Sector as, for example,

- Public institutions are exposed to greater public scrutiny as well as unique public expectations.
- The environment of public institutions is more legal, formal and has more judicial restraints than private organizations.
- Public organizations function in an environment where there is lesser degree of market exposure and a greater degree of reliance on appropriations from authoritative bodies.

The characteristics, growth and development of the construction industry in South Africa are measured and tracked with the use of indicators. Cost, time and quality are the three basic and most important performance indicators in construction projects followed by others such as safety, functionality and satisfaction (Chan and Ada, 2004). Based on the Egan report the Movement for Innovation and Construction Best Practice Programme (CBPP) was formed and is now recognized as a leading organization involved in the production of Key Performance Indicators (KPI's) within the industry (Beatham et al, 2004).

Construction Industry Indicators (CIIs) have been developed by the Department of Public Works (DPW) and the Construction Industry Development Board (CIDB) with the assistance of the Council for Scientific and Industrial Research (CSIR) to play a useful role in developing a sustainable industry and to be adopted as a tool for improving performance in the South African Construction Industry. Annual monitoring of the condition of the South African Construction Industry by using construction indicators is vital to enable government and other role players to evaluate the impact of current interventions for timely and pro-active implementation of revised legislation, strategies and development programs to act as an updated roadmap for the future wellbeing and growth of the industry (CIDB Industry Indicators Report, 2014).

After more than 25 years of decline, the South African Construction Industry is currently experiencing significant growth, which was predicted to be well sustained after 2010. This growth in infrastructure investment is being driven by both public and private sector

demand. Forecasts for the construction sector are less certain. The public sector accounts for 65% to 70% of the investment in construction works. Consequently the infrastructure programme of government is of the utmost importance in stimulating growth in this sector (CIDB Building and Construction Sector Report, 2015).

2.3.3 Public Sector Construction Projects and Challenges

Project risks highlighted by the PwC Report: SA Construction (2014) includes project execution, noting the challenges as:

- The competitive nature of the market as well as skill shortages, places pressure on companies to deliver projects. This then poses a risk to companies' ability to start projects efficiently, manage changes in projects, manage limited resources and complete and handover projects.

The report further identifies the proposed actions required by the industry as:

- Implementation and monitoring of project management procedures and policies over the life cycle of a project; and
- Assignment of accountability is imperative in mitigating the risk posed to project execution.

The South African News Agency published a recent report presented by Public Enterprises Minister in 2015 which highlighted that, although the government considers the public sector to be part of the countries economic fibre, the sector is confronted with major delivery challenges. Some of these challenges faced during the course of executing construction projects include:

- Delays and disruptions;
- Poor site management;
- Time and cost variations;
- Skills and competence issues;
- Lack of quality improvement processes and a lack of worker participation.

As a result, there is no doubt that substantial improvements in quality and efficiency are needed and are possible (South African Government News Agency, 2015).

2.4 The Construction Project Management Profession

2.4.1 History of Project Management

Traditionally the management of projects was considered more of an art than science, but with the growing number of project management institutions, associations and academic establishments, project management has become more of a science and discipline as accepted practices are captured and formalised in the global body of knowledge and certificate programmes (Burke, 2013).

Throughout history, vast projects of different magnitudes have been successfully undertaken across generations. Project management first emerged in the early fifties on large defense projects. Gradually small organizations took to adapting the idea and currently the smallest construction firms are to operate project management in some way. A great deal of project management involves avoiding problems, tackling new ground, managing a group of people and trying to achieve very clear objectives quickly and efficiently (Reiss 1992).

Today, rapidly changing technology, fierce competitive markets and a powerful environmental lobby have all encouraged companies to change their management systems, in this sink or swim, adopt or die environment; project management and management-by-projects are offering real solutions (Burke, 2013).

2.4.2 Project Environment in the Built Environment

The successful accomplishment of a project generally requires a significant sensitivity to, and appreciation of, the context in which it is based. Projects and their management both affect and are affected by their environment, often significantly. The project environment comprises both the internal and external environments in which the project is carried out. The project environment can be of various kinds such as, for example: political, ecological (often termed environmental), economic, technological, regulatory and organizational. These environments, or contexts, shape the issues that project management has to deal with and may assist or restrict the attainment of the project objective (APM PMBOK, 2000).

2.4.3 Consultants in the Built Environment

A consultant is defined as an experienced professional who provides expert knowledge for a fee. The consultant works in an advisory capacity only and is usually not accountable for the outcome of a consulting exercise (Business Dictionary, 2015).

In construction, a consultant is someone who is hired to assess and advise on building projects. These consultants are experts in construction, with some form of degree in engineering or a related field. They usually have several years of experience in construction and are familiar with all aspects of the construction trade. Most work for consulting firms, legal firms, government agencies and also as individual contractors (Weiss, 2009). Construction cost consultants help Clients make sound preparations for their upcoming projects and ensure that contractors complete the project on cost. They provide cost estimates, draw budgets, as well as select contractors and project owners (Gaskell, 2015).

During construction, the role of the consultant is to administer the contract as described in the "Contract Documents". However, the Contract Documents do not reference the agreement between the owner/ client and consultant which outlines the professional services to be provided to the project. The impact of the services provided by the consultant can be significant (Ip and Hanson, 2012). Some of the services provided by consultants include:

- Construction consultants are excellent planners with strong cost estimation skills assisting the client in establishing a sound construction budget;
- They need strong speaking skills to explain technical information to clients in an understandable manner including teamwork skills to effectively collaborate with contractors and other personnel involved in the project from inception to completion;
- They need to be able to prepare contracts as well as assist in the selection of contractors;
- Construction consultants need to be able to administer construction contracts; and

- At the completion of the project, they are responsible for inspecting the works and querying any uncertainties regarding inferior quality workmanship and the rectification of same. The completion inspection is comprehensive and includes structural, mechanical and electrical inspections. Once the consultant considers the works to be complete, they issue the final certificate and payment for the project.

It is clear that the consultant has a wide variety of roles to play during the construction process, because the consultant plays a multifaceted part in the construction project, and is usually involved in project from the project's inception to its completion (Ip and Hanson, 2012). As a result, this position is usually suited for Engineers, Architects and Project Managers with extensive construction experience (Gaskell, 2015).

2.4.4 Construction Project Management Profession

2.4.4.1 CPM Defined

Construction Project Management is the planning, control and coordination of a project from conception to completion including commissioning on behalf of a client. It is concerned with the identification of the client's objectives in terms of utility, function, quality, time and cost, and the establishment of relationships between resources. The integration, monitoring and control of the contributions to the project and their output, and the evaluation and selection of alternatives in pursuit of client's satisfaction with the project outcome are fundamental aspects of Project Management (Walker, 1984).

In the South African context, the South African Council for Project and Construction Management Profession (SACPCMP) defines Construction Project Management as the management of projects within the Built Environment from conception to completion, including management of related professional services. The Construction Project Manager can be seen as one point of responsibility in this regard (SACPCMP, Act No.48 of 2000).

2.4.4.2 CPM Attributes and Area of Expertise

Experience has shown that the selection of the Construction Project Manager is a key appointment which can influence the success or failure of the project. As the single point of responsibility, it is the CPM who integrates and co-ordinates all the contribution, and guides them to successfully complete the project (Burke, 2013).

Attributes of CPM's

According to Burke (2013) a Construction Project Manager should exhibit some of the following desirable attributes; namely

- Ability to select and develop an operational team from a standing start;
- Leadership and management ability;
- Ability to anticipate problems, solve problems and make decisions;
- Ability to integrate project stakeholders;
- Operational flexibility;
- Ability to plan, expedite and get things done;
- Ability to negotiate and persuade;
- Understand the environment within which the project is being managed;
- Ability to review monitor and apply control;
- Ability to administer the contract, the scope of work and scope changes;
- Ability to manage within an environment of constant change; and
- Ability to keep the client happy.

Nine Areas of Expertise

The PMBOK (2004) states that project management requires the project manager to adopt and show expertise in the following areas of knowledge, commonly known as The Nine Project Management Knowledge Areas. These areas of expertise are presented in Table 2.5.

Table 2.5: Project Management Nine Knowledgeable Areas of Expertise

PM Area of Expertise	Description
1. Project Integration Management	is the heart of project management and is made up of the day-to-day processes the project manager relies on to ensure that all of the parts of the project work together. It is the art and science of ensuring that the project moves forward, that the project plan is fully developed and properly implemented and requires the project to mesh with the existing operations of the organisation.
2. Project Scope Management	is the process required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.
3. Project Time Management	is the process employed by using techniques and tools to schedule and use up time in the most effective way possible, so as to generate the maximum value for every second spent. It is required to accomplish timely completion of the project.
4. Project Cost Management	is the process required to ensure that the project is completed within the approved budget. It is more than just calculating the cost of overall project. It also consists of creating budget (the cost of individual elements of work) and the time scaling of overall project expenditure.
5. Project Quality Management	is the process necessary to ensure that the project will satisfy the need for which it was undertaken. It addresses both the management of the project and the product of the project. It improves project management as well as the quality of the product and ensures the delivery of both a high quality and a high grade of product.
6. Project Human Resources Management	is the ability to lead, direct, and orchestrate the project team, the customers, project partners, contributors, and any other stakeholders to achieve the desired results for the project purpose.
7. Project Communication Management	is the management of the transfer of information from one person to another person. Communication management aims to have the receiver understand the message as it was intended.
8. Project Risk Management	is the process comprises identification, analysis and response strategy to all significant project risks with the aim of reducing the opportunity for and consequence of loss.
9. Project Procurement Management	is the process of purchasing the products necessary for meeting the needs of the project scope and involves: planning, soliciting sources, choosing a source, administering the contract, and closing out the contract.

Project management can and should be applied throughout the project lifecycle, from the earliest stages of concept definition into operations and maintenance. It comprises the management of all that is involved in achieving the project objectives safely and within agreed time, cost, technical, quality and other performance criteria. Project management provides the "single point of integrative responsibility" needed to ensure that everything on the project is managed effectively to ensure a successful project deliverable. While projects should ideally be managed by a project manager this may not happen all the

time. Whatever the title of the person, projects are most likely to be successful where someone has been clearly designated as accountable for its satisfactory accomplishment (APM PMBOK, 2000).

According to the APM PMBOK (2000) project management is widely regarded as the most efficient way of introducing unique change. Essentially, project management achieves this by:

- Defining what has to be accomplished, generally in terms of time, cost, and various technical and quality performance parameters;
- Developing a plan to achieve these and then working this plan, ensuring that progress is maintained in line with these objectives;
- Using appropriate project management techniques and tools to plan, monitor and maintain progress; and
- Employing persons skilled in project management – including normally a project manager – who are given responsibility for introducing the change and are accountable for its successful accomplishment.

2.4.4.3 CPM Project Processes and Project Work Stages

Processes are a series of actions bringing about a result (PMBOK, 2004). According to the PMBOK (2004) there are five project process that form part of the project life cycle for Construction Project Managers. These are listed and defined in Table 2.6.

Table 2.6: Project Work Stages

Project Work Stages	Description
1 - Initiating	Defines and authorizes the project or a project phase.
2 - Planning	Defines and refines objectives and plans the course of actions required to attain the objectives and scope that the project was undertaking to address.
3 - Executing	Integrates people and other resources to carry out the Project Management plan.
4 - Monitoring and Controlling	Ensuring that the project objectives are met by monitoring and measuring processes regularly to identify variances from plan so that corrective action can be taken when necessary.
5 - Closing and Evaluation	Formalising acceptance of the project or phase and bringing it to an orderly end.

These five process groups have clear dependencies and are performed in the same sequence on each project. They are interdependent of application areas or industry focus. CPM process groups are linked by the objectives they produce. The output of one process generally becomes an input to another process or is a deliverable of the project (PMBOK, 2004).

The process groups are seldom either discrete or one-time events. They are overlapping activities that occur at varying levels of intensity throughout the project. Figure 2.1 illustrates how these processes overlap during the project life cycle.

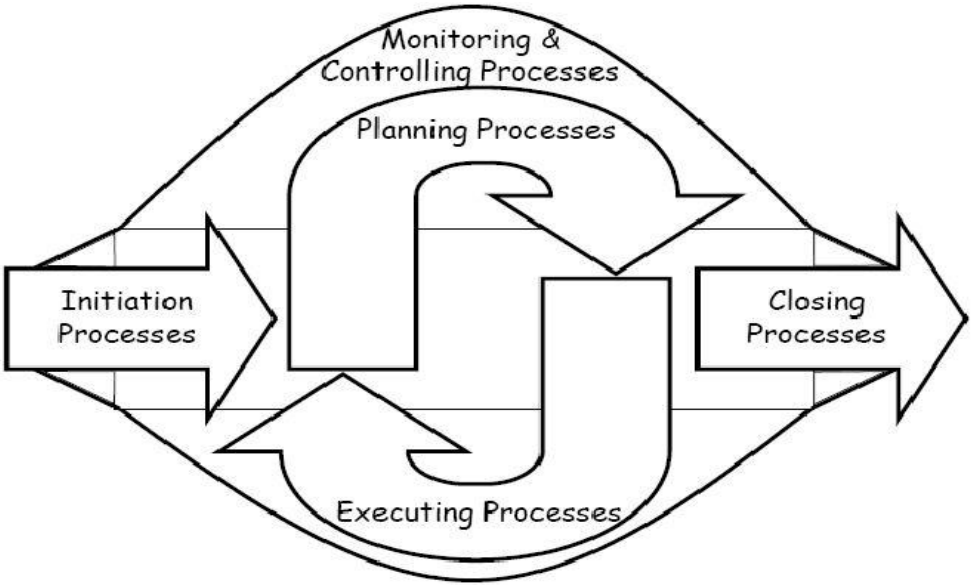

Figure 2.1: Overlapping Project Management Processes (PMBOK, 2004)

In South Africa, the Project Management Processes exemplified above by the PMBOK are executed under six work stages as governed by the SACPCMP. According to the SACPCMP (Act No.48 of 2000), Construction Project Managers perform or execute their standard services over the project life cycle under the following Project Work Stages listed in Table 2.7.

Table 2.7: CPM Project Work Stages and Target Deliverables

Work Stage	Work Stage Description	Work Stage Deliverables
1 Inception	Agreeing client requirements and preferences, assessing user needs and options, appointment of necessary consultants in establishing project brief, objectives, priorities, constraints, assumptions and strategies in consultation with the client.	• Project Brief • Project Procurement Policy • Signed Consultant/ Agreements • Project Initiation Programme • Record of all meetings • Approval by Client to Proceed to Stage 2
2 Concept and Viability	Finalization of the project concept and feasibility.	• Signed Consultant/ Client Agreements • Indicative Project Documentation and Construction Programme • Approval by Client to Proceed to Stage 3
3 Design Development	Manage, co-ordinate and integrate the detail design development process within the project scope, time, cost and quality parameters.	• Signed Consultant/ Client Agreements • Detailed Design and Documentation Programme • Updated Indicative Construction Programme • Record all Meetings • Approval by Client to Proceed to Stage 4
4 Documentation and Procurement	The process of establishing and implementing procurement strategies and procedures, including the preparation of necessary documentation, for effective and timeous execution of the project.	• Contractors, sub-contractors and suppliers Procurement Strategy • Project Procurement Programme • Project Tender/Contract Conditions • Record of all Meetings • Approval by Client of Tender Recommendation(s)
5 Construction	The management and administration of the construction contracts and processes, including the preparation and co-ordination of the necessary documentation to facilitate effective execution of the works.	• Signed Consultant/ Client Agreements • Agreed Contract Programme • Adjudication and award of contractual claims • Construction Documentation Schedule • Monthly Progress Payment Certificates • Monthly Project Progress Reports • Record of all Meetings • Certificates of Completion
6 Close Out	The process of managing and administrating the project close out, including preparation and co-ordination of the necessary documentation to facilitate the effective operation of the project.	• Works Completion Certificate • Certificate of Final Completion • Record of all Meetings • Project Closeout Report

In contrast to the PMBOK Project Management Processes, the SACPCMP notes that the listed Project Work Stages may overlap. In addition, the standard services may be required to be undertaken during any one of the Project Work Stages and that the order of the standard services does not necessarily reflect the actual sequence of implementation (SACPCMP, Act No.48 of 2000).

2.4.4.4 CPM Role in the Project Life Cycle

The life cycle of a project (Project Life Cycle) in construction is defined by the Project Management Institute (PMI 2000) as the steady progression of a project from its beginning to its completion.

According to the Royal Institute of British Architects (RIBA, 2000), the project life cycle is divided into a number of stages each of which has assigned project management practices and project managers with defined responsibilities. In general, the following project life cycle stages are defined: Inception, Feasibility Studies, Schematic Design, Detail Design, Production Information, Bills of Quantities, Tendering, Project Planning, Construction and Project Completion.

Figure 2.1 identifying the Project Management Processes together with Table 2.7 listing the Project Work Stages provide an indicative awareness of the project life cycle on construction projects.

The Code of Practice for Project Management for Construction and Development (Charted Institute of Building, 2003) describes CPM as the overall planning, coordination and control of a project from inception to completion aimed at meeting a client's requirements. This is further supported by the SACPCMP (Act No.48 of 2000) which lists the CPM's roles and responsibilities over the six identified Project Work Stages confirming that the CPM's involvement is required throughout the Project Life Cycle.

2.4.4.5 Benefits, Importance and Maturity of CPM

CPM Benefits

The CPM is responsible for developing a plan through which the project can be tracked and controlled towards ensuring the project meets the predefined objectives. In order to achieve this effectively, the CPM requires accurate and timely information for the project. This information is supplied by the planning and control system which outlines the scope of works and measures the performance against its original plan. While it is clear that planning and control systems will incur additional management costs, it must be noted that lack of information could be more expensive which can lead to poor

management decisions, errors, rework and overruns. As a result, the benefits of using a CPM approach follows from addressing the needs of the project (Burke, 2013). Some of the main benefits associated with the fully integrated CPM approach as highlighted by Burke (2013) are listed in Table 2.8.

Table 2.8: Benefits of CPM

Description	CPM Benefit
Client	The CPM is the single point of responsibility and the company's representative to the client. Clients prefer to deal with one person, the CPM, who is accountable. This gives them confidence that problems will be addressed and the project will be completed on time.
Single Point of Responsibility	With the CPM responsible the complete project, this should limit scope overlap and under lap.
Project Integration	Co-ordinates and integrates the contribution of all project participants.
Response Time	Timely response on project performance is essential for effective project control.
Procedures	The planning and control system enables the CPM to develop procedures and work instructions which are tailored to the specific needs of the project

The PMBOK (2004) describes other advantages to CPM, such as, for example

- There is considerable variety, no two days are alike;
- There is significant freedom of choice;
- It affords the opportunity to effect change across the organization;
- It provides a strong sense of accomplishment; and
- It can often be a stepping stone for promotion.

The Importance of CPM

Construction Project Management, once considered nice to have, is now recognized as a necessity. As progress is made into the future, the perception of project management has changed. Organizations that were opponents of CPM are now advocates. Management educators of the past, who preached that CPM could not work, are now staunch supporters. CPM is now here to stay (Kerzner, 2003). CPM is no longer a special need management. It is rapidly becoming a standard way of doing construction projects (Larson and Gray, 2011).

CPM offers a structured approach to managing projects. There are more and more managers entering the field of project management and their success will be helped by

their ability to develop a fully integrated information and control system plan, instruct, monitor and control large amounts of data, quickly and accurately facilitate the problem solving and decision making process. To achieve these goals the project manager needs a comprehensive set of tools such as organization charts, work breakdown structures, bar charts, resource histograms and cash flow statements (Burke, 2013).

The project management approach is relatively modern. It is characterized by methods of restructuring management and adopting special management techniques, with the purpose of obtaining better control and use of existing resources. Forty years ago project management was confined to United States Department of Defense contractors and construction companies. Today, the concept behind project management is being applied in such diverse industries and organizations as defense, construction, pharmaceuticals, chemicals, banking, hospitals, accounting, advertising, law, state and local government and the United Nations (Kerzner, 2003). As project management has become more popular the need to train people in understanding the philosophy of project management as well as the tools and techniques used by project managers has also grown (Burke, 2013).

There are powerful environmental forces contributing to the rapid expansion of project management approaches to business problems and opportunities. A project is defined as a non-routine, one-time effort limited by time, resources and performance specifications designed to meet customer needs. One of the distinguishing characteristics of project management is that is has both a beginning and an end and typically consists of defining, planning, executing and closing. Effective project management begins with selecting and prioritizing projects that support the firm's mission and strategy. Successful implementation requires both technical and social skills. Project managers have to plan and budget projects as well as orchestrate the contributions of others (Larson and Gray, 2011).

Truman and King (2013) highlight that the application of sound project management practices provides construction project stakeholders with the means to their objectives. These include that the project, namely the building or facility is:

- Constructed to meet its intended purpose and only its intended purpose.
- Constructed to meet the level of quality that was intended.
- Completed when it is supposed to be done.
- Completed for its intended cost, and
- Completed safely and while protecting the environment.

The lack of sound project management by owners or contractors on projects leads to construction delays and extra costs for both parties. In addition to the problems that occur during construction, poor project management can also result in a completed facility that fails to meet the specified quality and suitability of materials, fails to produce the intended products, or cannot be operated for its intended life (Truman and King, 2013). This highlights the importance of the CPM and the crucial role they play in the successful delivery of the project, further reinforcing that the implementation of LPM tools and techniques by the CPM is key for improving the successful delivery of the project programme on public sector projects.

CPM Maturity

The Oxford Dictionary (2010: 1093) defines mature as, "mentally and physically well developed, grown up, and completely worked out", and thus defines maturity as, "full development". Some executives consider gray hair to be a sure indication of maturity, but this is not the type of maturity needed for project management (Kerzner, 2003).

Maturity in project management emanates from exposure to many types of projects in a variety of project office positions. In aerospace and defense, it is possible for a project manager to manage the same type of project for ten years or more. When placed on a new project, the individual may try to force personnel and project requirements to adhere to the same policies and procedures that existed on the ten-year project, thus the project manager may only know one way of managing projects.

According to Kerzner, (2003) there are sixteen points to project management maturity, namely

1. Adopt a project management methodology and use it consistently;
2. Implement a philosophy that drives the company toward management maturity and communicate it to everyone;
3. Commit to developing effective plans at the beginning of each project;
4. Minimize scope changes by committing to realistic objectives;
5. Recognize that cost and schedule management are inseparable;
6. Select the right person as the project manager;
7. Provide executives with project sponsor information, not project management information;
8. Strengthen involvement and support of line management;
9. Focus on deliverables rather than resources;
10. Cultivate effective communication, cooperation, and trust to achieve rapid project management maturity;
11. Share recognition for project success with the entire project team and line of management;
12. Eliminate non-productive meetings;
13. Focus on identifying and solving problems early, quickly, and cost effectively;
14. Measure progress periodically;
15. Use project management software as a tool, not as a substitute for effective planning or interpersonal skills; and
16. Institute an all-employee training program with periodic updates based upon documented lessons learned.

2.4.5 CPM in South Africa

Project Management South Africa (PMSA) was started in 1997 to provide a local, independent and affordable association for South African project management enthusiasts. It works closely with the PMI SA Chapter but also has strong affiliations with many other associations. PMSA members comprise of project practitioners, subject matter experts and project enthusiasts. Locally, PMSA has co-operative agreements with CEASA (Cost Engineers Association of SA), the SACPCMP (South African Council for

Project and Construction Management Professions), the CSSA (Computer Society of SA), and CIOB (Chartered Institute of Building) (LJ Project, 2008).

South Africa covers a large geographic area, has 11 official languages and a foot in both the first and third worlds. Post 1994 has led to major change in the country and the start of many international aid funded projects to assist in achieving our dreams. In 1997 the Minister of Public Works challenged PMSA to assist government and the country to develop effective project personnel, practices and results. PMSA took up that challenge. PMSA (2008) describes some of the results of the key government projects since 1997:

- Formation of a Project Management Standards Generating Body (SGB);
- Contribution to and communication of the local Project Management standards and national qualifications;
- Contribution to the development of the Construction Professions Act;
- Liaison and observer status on the Project Management Chamber in the Services SETA; and
- Discussions on the establishment of an Education and Training Quality Assurance (ETQA) for project management under the Services SETA.

The current association that governs the Construction and Project Management profession in South Africa is the South African Council for the Project and Construction Management Professions known as the SACPCMP. The SACPCMP is a statutory body established by section 2 of the Project and Construction Management Act, 2000 (Act No.48 of 2000). The council is one of two newly enacted built environment councils, together with the Landscape Architect Council. In addition, the Council for the Built Environment (CBE) was established in terms of the Built Environment Act, 2000 (Act No.43 of 2000) as the overarching body of the six built environment councils. SACPCMP was established to provide for statutory professional certification, registration and regulation of Project and Construction Management Professions in order to project public interest and advance construction and project management education (SACPCMP, Act No. 48 of 2000).

2.5 The Construction Phase and the Project Programme

2.5.1 Definitions

2.5.1.1 The Construction Phase

The SACPCMP (Act No. 48 of 2000) defines the construction phase as the management and administration of the construction contract and processes, including the preparation and co-ordination of the necessary documentation to facilitate the effective execution of the works.

2.5.1.2 Projects and Programmes

A project in construction is defined by the SACPCMP (Act No.48 of 2000) as the total development envisages by the client, including the professional services. The Project Management Institute (PMI, 2000) definition of a project from the Guide to the Project Management Body of Knowledge (PMBOK, 2004) defines a project as a temporary endeavor undertaken to create a unique project or service. Examples provided by PMI include, developing a new product or service, effecting change in structure, staffing or style of an organization and constructing a building or facility and others.

A construction programme is defined by the SACPCMP as, the programme of works indicating the logic sequence and duration of all activities to be completed by the contractors, sub-contractors, and suppliers, in appropriate detail for the monitoring of progress of the works (SACPCMP, Act No.48 of 2000).

2.5.2 Project Work Stages

Depending on the size and scope of a project, there are different stages it must undergo, starting with an idea or concept and ending in construction. The timeline varies in each phase depending on the complexity of the project. Table 2.9 highlights the various project work stages recognized by the Royal Institute of British Architects (RIBA), Construction Industry Council (CIC), Project Management Institute (PMI) and the South African Council for Project and Construction Management Profession (SACPCMP):

Table 2.9: Various Project Work Stages

Work Stage No.	Various Project Work Stages			
	RIBA	CIC	PMI	SACPCMP
	RIBA, (2000)	CIC, (2015)	PMI, (2000)	Act No.48 of 2000
1	Preparation	Brief	Initiating	Inception
2	Concept Design	Concept	Planning	Concept and Viability
3	Developed Design	Developed Design	Executing	Design Development
4	Technical Design	Production	Monitoring and Controlling	Documentation and Procurement
5	Specialist Design	Installation	Closing and Evaluation	Construction
6	Construction	As Constructed	-	Close-Out
7	Use and Aftercare	In Use	-	-

In the South African construction industry, the project work stages applicable to public sector construction projects as prescribed by the SACPCMP (highlighted above) are described in Table 2.10.

Table 2.10: SACPCMP Project Work Stages

Work Stage No.	Work Stage	Work Stage Description
1	**Inception**	Agreeing client requirements and preferences, assessing user needs and options, appointment of necessary consultants in establishing project brief, objectives, priorities, constraints, assumptions and strategies in consultation with the client.
2	**Concept and Viability**	Finalization of the project concept and feasibility.
3	**Design Development**	Manage, co-ordinate and integrate the detail design development process within the project scope, time, cost and quality parameters.
4	**Documentation and Procurement**	The process of establishing and implementing procurement strategies and procedures, including the preparation of necessary documentation, for effective and timeous execution of the project.
5	**Construction**	The management and administration of the construction contracts and processes, including the preparation and co-ordination of the necessary documentation to facilitate effective execution of the works.
6	**Close Out**	The process of managing and administrating the project close out, including preparation and co-ordination of the necessary documentation to facilitate the effective operation of the project.

2.5.3 Stage 5 – Construction Phase

2.5.3.1 Nature and Characteristics of the Construction Phase

There are many different methods to manage the construction delivery system process. The most common is to contract with a general contractor, who will then enter into sub-contracts with trade contractors to perform certain parts and then perform the remainder with its own forces. The owner hires a project management firm to manage the contractors accordingly. For effective productive management of the construction phase, the contractor, owner/client, owner's representative/project manager and consultant team establish a communication and decision making process (project communication plan). The processes established provides the means and methods for design queries to be answered and resolved, progress payments to be processed, unforeseen conditions or changes to be documented and resolved, schedule meetings, quality of work controlled, delays and disruptions documented and additional works to be added to the contract (Anderson et al., 2006).

Contractors and CPM's use computer based programs available to produce construction programmes or scheduling software to track and monitor the progress of the project in relation to a defined time frame. Usually the critical path method network scheduling is used to show the sequences and interdependences of activities. The critical path is the sequence of activities that indicates the shortest time path for completion of the project and determines the optimum sequence and duration of operations. There are certain milestones that apply within the construction phase that identify key stages of the construction process, from site mobilization through to the finishing stage which are exemplified by Anderson et al. (2006) in Table 2.11.

Table 2.11: Construction Phase Key Milestones

Key Milestones	Description
Mobilization	After receiving the notice to proceed, prior to construction the contractor and sub-contractors mobilize resources, plant and equipment, etc. and physically occupy the construction site.
Out of Ground	Depending on the nature of the project, construction usually occurs from the ground up. Site clearance including preparing the site for construction and setting the follows. There after the construction process commences.
Topping Out	Placement of the highest structural member, roof truss, etc. is referred to as topping out. At this point the buildings structural framing is complete and the exterior enclosure including all other fit outs commence.
Weather Tight	Once the structure is weather tight, upon the installation of the roof and exterior enclosure, doors and windows, etc. The structure is now ready for internal fit-out and finishes.
Ready to Close In	This stage is often referred to as completion of rough-in. All framing is completed and inspected, all internal fit outs and finishes are complete. Co-ordination is most critical at this time. Many trades work in close proximity or on-top of each other at stage.
Finish Stage	All internal finishes such as final painting to walls, floor finishes, ceilings, etc. are now complete. The project is now complete and ready for handover and occupation.

Watt (2014) further notes that during the construction or implementation phase, the project plan is put into motion and the work of the project is performed. Progress is continuously monitored and appropriate adjustments are made and recorded as variances from the original plan. The programme is updated and communicated on a regular basis. In any project, a project manager spends most of the time in this phase. Throughout the construction phase, project sponsors and other key stake holders are kept informed of the projects status according to the agreed frequency and format of communication. Once all deliverables have been produced and the client has accepted the final solution, the project is ready for closure (University of Minnesota Project Delivery Model, 2013).

2.5.3.2 Importance of the Construction Phase

The objective of the construction phase, is to build the project to drawings and specifications at the quality level included in the documents within the budget, programme and scope defined and approved by the client and consultant team. The general or main contractor is responsible for facilitating delivery, installation and construction of the capital project in coordination with the client, project manager and consultant team (University of Minnesota Project Delivery Model, 2013). In order for these objectives to be met, there needs to be certain factors that are implemented towards ensuring success.

2.5.3.2.1 Construction Phase Success Factors

Project success can be defined in many ways. Although projects must meet their cost, time and quality targets, broader success criteria need to relate to the projects primary objectives (Rawlinson, 2006). Some of the key construction phase success factors are presented in Table 2.12.

Table 2.12: Key Construction Phase Success Factors

Construction Phase Success Factors	Study Source
Construction activities programming, Design Planning, Project Manager commitment to the goals, Project team motivation, Project manager technical capabilities, Control systems, Definition of work and its field, Budget performance, Schedule/Programme performance, Employer satisfaction, Task orientation, Contractor satisfaction, Project manager satisfaction.	Ashley (1986)
Project mission, scheduling/ programming, technical tasks, user consultant, user reception, feedback and reports, communication, fault detection, senior manager/ project manager support, personnel utilized on projects.	Pinto and Slevin (1987)
Project dependent factors, Team members and project manager dependent factors, organizational structure dependent factors, external environment dependent factors. The project manager, management skills, team members, project schedule/programme, teamwork, their technical field, project properties, viable environmental factors are all considered critical success factors.	Belassi and Icmeli (1996)
Project result, customer effects, project schedule, management support, commercial success and conduction and preparation for the future, identifying the beneficiary groups (clients, stake holders, etc.) which are significant as well as critical success factors until different people wants to see success in different ways.	Belout and Gauvereau (2003)
Competent project manager, providing adequate financial resources to the end of the project, competent and multidisciplinary project team, commitment to the project and programme, access to resources.	Nguyen et al, (2004)

Through the various studies conducted by the respective authors, it is clear that the following key areas are common to the successful delivery of projects during the construction phase. These are namely:

- A sound and reliable Project Programme to highlight the targeted milestones and layout the map for completing the project; and
- Competent Senior Management, in construction, a competent Project Manager to drive, and manage including coordinate and control the project towards completion through the successful delivery of the programme.

2.5.3.2.2 Construction Phase Challenges and the Impacts on the Project

Construction projects represent a unique set of activities that must take place to produce a unique product. The success of a project is judged by meeting the criteria of cost, time, safety, resource allocation, and quality as determined by the owner. The purpose of project management is to achieve goals and objectives through planned expenditure of resources that meets the projects quality, cost, time, scope and safety requirements. However, not all projects are successful. There are many construction projects which experience an array of challenges that impact their completion (Bob Muir, 2005).

Delays to a construction project result from the occurrences that impact the program or critical path. Delays can result from weather, material delivery delays, labor inefficiencies, owner influences and unilateral changes to the scope. Rawlinson, (2006) highlights some of the causes of construction phase challenges and impacts of the project, namely

- Lack of a clear link between the project and the organizations key strategic priorities, including agreed measures of success;
- Lack of effective engagement with stakeholders;
- Lack of skills and proven approach to project and risk management;
- Failure to breakdown projects into manageable steps;
- Consideration of projects on the basis of initial cost rather than whole-life value;
- Lack of client understanding and contact with the supply chain;
- Poor project team integration; and
- Poor management of the project programme.

A recovery programme is the result of delays encountered that have impacted the initial or baseline programme. A revised programme usually includes overtime or other streamlined procedures and that represents the contractors best effort to recover from the delay and still complete the project on time within the originally anticipated completion date (Anderson et al., 2006). This then reinforces that poor management of the programme is a direct contributor to the unsuccessful delivery of the project.

2.5.3.3 CPM Construction Phase Deliverables and Outputs

There are numerous deliverables and outputs required to be implemented and achieved by the CPM during the construction phase of public sector projects. However, the SACPCMP Guideline Scope of Services (Act No. 48 of 2000) highlights the project programme as a key deliverable and output for the CPM to manage effectively during the construction phase towards the successful delivery of the project. These are as follows:

- The CPM is responsible for monitoring, reviewing and approving the preparation of the Contract Programme by the Contractor;
- Regularly monitoring the performance of the Contractor against the Contract Programme;
- Reviewing and adjudicating circumstances and entitlements that may arise from any changes required to the Contract Programme; and
- Agreeing the Contract Programme.

2.5.4 The Project Programme

A project is said to be successful when it is completed within budgeted cost, specified quality, stipulated time and delivered safely (Mbamali et al., 2004). The use of programme management systems by CPM's is critical. The increasing complexity of multiple construction projects require information and service delivery systems that are more effective and efficient in order for the CPM to be able to achieve the business objectives or benefits (Bowden et al., 2006). There are various different types of planning, scheduling or programming tools used to manage the construction work stages of projects. Some of these are listed in Table 2.13.

Table 2.13: Programming Tools

Programming Tool	Programming Tool Description
1. Gantt Charts	According to Nicolas and Steyn (2012), the Gantt Chart is the simplest and most commonly used scheduling technique. They further state that it is sometimes called a bar chart. This chart shows a list of activities and a bar that indicates the start and end dates of each activity. It has both horizontal and vertical divisions. The horizontal scale is divided into time units (days, weeks or months) and the horizontal scale shows project work elements such as tasks, activities and work packages (Patrick, 2004).
2. Critical Path Method	The primary use of a network is for scheduling/ programming, that is to determine how long the project will take when each activity should be scheduled. A network consists of several paths. A path is any route comprising one or more activities connected in a sequence. The longest path from the origin node to the terminal node is called the critical path. Activities on this path are called critical activities. If one or more critical activities take longer to complete than was planned, the whole project will take longer than planned. Therefore, it is important to identify the critical activities (Nicolas and Steyn, 2012).
3. Line of Balance	This is a planning tool that is best suited for repetitive works. It is used for planning house building, to a lesser extent for jetty work and in conjunction with networks for road construction. The basis technique is an identification of the required resources for each stage or operation so that it does not interfere with the next and the process is continued until the operations are complete (Nicolas and Steyn, 2012).

Independently from the tools, techniques and methods to capture construction knowledge and transform it into a construction programme, a number of questions remain associated to what the construction scheduling core process should be:

- What will at the end need to be constructed?
- How much of this or that will be constructed?
- When will it be constructed?

Construction scheduling is usually a task that involves specialized estimators and schedulers (now formally prepared by the CPM) concentrating on everything related to the construction programming process rather than various departments or functions and support or enabling processes working together to deliver value. The resulting programme is then passed to the contractor who must convert the schedule into practical tasks. Existing scheduling methods and techniques used by the construction industry are an important part of every project. Most of the built environment that exists today has been constructed using these methods (Ghassan et al., 2006).

2.5.5 The Importance of the Programme in the Construction Phase

There is consensus among practitioners and academics that construction projects involve a high degree of uncertainty that ideally could be reduced if timely, effective and efficient construction planning and programming is carried out.

Project controlling techniques indicate the direction of the project at each time and reveal progress. Burke (2013), reinforces that there are numerous types of planning tools, namely the Gantt (Bar) Chart, Network Diagrams, the Critical Path Method and the Programme Evaluation Review Technique (PERT). These are utilized in the construction industry for the planning and control of materials, labour, plant, machinery and equipment. Harris et al., (2006) note that two types of planning tools are generally used on any kind of project, these are the CPM and the Bar Chart.

Pongpeng and Liston (2002) identify project planning as one of the five criteria that a contractor is required to fulfil. Faridi and El-Sayegh (2006) identify forty four factors causing delays in construction projects and of these, inadequate early planning of a project is rated the second most influential factor. Similarly, Dvir and Lechier (2004) assert that project success is positively affected by the quality of planning. Sambasivan and Soon (2007), state that contractors improper planning tops the ten most important factor causing delays on project delivery. Trauner et al., (2009) declare that in order to ascertain the efficiency of a planning tool, particularly the bar chart, and the as-built diagram should be compared with as-planned diagram.

2.5.6 Project Programme Success Criteria

Planning is a tool used to provide information required to react to deviations or missed milestones, but does not assist much in preventing the problems and deviations from occurring in the first place (Alaskini et al., 2004). Planning the construction duration to ensure adequate construction speed is important for project success (Stoy et al., 2007).

Steyn et al., (2003) argues that project scheduling or programming, is necessary to determine what work must be done and the information to determine what resources such as human resources, equipment, facilities, and funds should be available at any time. One

objective of project programming is to provide plans that are well thought out and realistic. If programming is not done properly, delays and inefficient use of resources may eventuate, such as certain resources might be left idle because other activities have not been completed on time.

Some of the key project success criteria as a result of successful programme management are highlighted by Songer et al., (1997) below:

- On Budget – the project is completed at or under the contracted budget;
- On Schedule – The project is completed on or before the contracted finish date;
- Meets Specifications – The project meets or exceeds all technical performance specifications provided by the owner;
- Conforms to User's Expectations – The completed project meets or exceeds the user's envisioned functional goals (fitness for purpose);
- High Quality of Workmanship – The completed project meets or exceeds the accepted standards of workmanship in all areas; and
- Minimizes Construction Aggravation – The construction process does not unduly burden the owner's project management staff.

The success of a construction project rests ultimately with the team charged with its delivery of the programme. The project team comprises some of the following attributes: strategic thinkers result focused, rigorous analyzers and planners, and pragmatists. Furthermore, in the delivery role, project teams need people who are capable of analysis and judgment. By rigorous planning, identifying trends, links and themes in construction projects, they take calculated risks to add value. They are also skilled at business and programme planning, able to coordinate, organize, direct and implement a portfolio of activities (Gardner, 2015). This role as highlighted by the SACPCMP is for the CPM further emphasizing the important role they play towards the successful delivery of the programme during construction.

2.5.7 Delays in the Construction Phase and Impacts on the Programme

The theory behind Gantt bar charts and similar programming approaches has led to focusing first in the efficiencies of individual activities, using historical productivity rates to support time estimates, floats, resources allocation and costs. The focus is then changed to the relationships between activities in which early or late starts escapes the minds capacity to review, understand and use the Gantt bar chart to control and reschedule the project if necessary during construction execution. This neither induces parts to do what is good for the system as a whole nor directs managers to the point that needs their attention, steering the project leader away and sometimes leading to even failure of projects. Other techniques and approaches to carry out construction scheduling such as line of balance, last planner systems, etc. conceived under solid theoretical frameworks suffer from the same lack of 100% practical applicability and the emerging levels of uncertainty, complexity and variability inevitably lead to move away from proactive and reactive behaviors increasing as project managers, programmers, etc. come near to the jobsite and workface (Alarcon and Ashley, 1999).

Unlike in production where work centers are protected with inventory, in construction projects, scheduled activities are protected with safety time. In production if there is a stoppage, inventory does not disappear. In construction projects, time is gone, forever. Previous studies conducted around the world have highlighted the most common problems causing construction delays during the construction phase of projects. These are listed in Table 2.14.

Table 2.14: Common Delays in Construction around the Globe

Country	Delays in Construction Impacting the Programme	Study Source
United Kingdom	• Waiting for information. • Change orders. • Machinery, equipment and plant procurement. • Materials procurement.	Sullivan and Hans (1986)
Nigeria	• Contractors receiving delayed payments from public agencies. • Deficiencies in planning and scheduling. • Frequent variation/ change orders. • Deficiencies in public agencies organizations. • Unrealistic contract duration imposed by public agencies.	Okpala and Anikekwu (1988)
Thailand	• Materials procurement. • Waiting for information. • Design delays. • Planning and scheduling deficiencies. • Change orders.	Ogunlan et al., (1996)
Indonesia	• Design changes. • Inadequate planning. • Equipment shortage. • Materials shortage. • Inaccurate prediction of equipment production rate.	Kaming et al., (1997)
Hong Kong	• Poor site management. • Delays in design information. • Lack of communication between consultant and contractor. • Low speed of decision making involving project teams. • Improper control over site resource allocation.	Chan and Kumaraswamy (1997)
Saudi Arabia	• Delays in progress payments by the owner. • Delay in mobilization. • Changes in scope of the project. • Ineffective planning and scheduling of the project.	Assaf et al., (1995)
Malaysia	• Inadequate planning.	Lim and Mohamed (2000)
Ghana	• Poor contract management. • Planning and scheduling deficiencies.	Frimpong et al., (2003)
Vietnam	• Inaccurate time estimating. • Improper planning and scheduling.	Long et al., (2004)
UAE	• Inadequate early planning of the project. • Slowness of the owners decision making process.	Faridi and El-Sayegh (2006)
Saudi Arabia	• Ineffective planning and scheduling of the project.	Assaf and Al-Hejji (2006)
Malaysia	• Improper planning. • Lack of communication between parties. • Mistakes during the construction stage.	Sambasivan and Soon (2007)

Based on the problems listed in Table 2.14, it is clear that there are some similarities experienced which contribute to delays in the construction phase of projects, all of these directly impacting the programme resulting in poor programme management.

2.5.8 The Need for Change

The construction scheduling process in its traditional form to a great extent is the result of the traditional tools and techniques used for their preparation combined with the related working process. This traditional approach has to some extent led focus in the efficient preparation of complex bar charts and other forms of representation but not necessarily at its practical use. While there is nothing wrong in the logic behind traditional construction planning and programming, there are new efforts tending to build around themselves meanings, contexts and lines of development that represent conscious efforts to pick out the dominant ideas in the construction industry projects processes and development, acting as active changing agents trying to push the construction industry to adopt new technology, tools and techniques (Sawyer, 2004).

Construction programming as it is carried out today has not provided a truly proper control mechanism that can help keep project managers focused. As a result, if project leaders are not focused or do not maintain focus, the probability that emergencies will turn the project into a fiasco is high. A control mechanism measures the progress of the project. The problem is that by the time the progress report indicates that something is wrong, it is usually too late. The traditional solution for this problem has been the addition of safety such as, for example contingencies, floats and buffers in project programmes. The safety introduced in programmes is not the result of bad assumptions but they are the result of the lack of ability to consider multiple dimensions involved in the construction execution (Ghassan et al., 2006).

2.6 The Relationship between: LPM, the Public Sector, the CPM Profession, the Construction Phase and Project Programme

Lean thinking is a philosophy based on the concepts of lean production (Koskela, 1992; Koskela, 2000). According to Common et al., (2000) and Mossman (2009) lean principles date back to the early 1900's when Henry Ford introduced the principle of the assembly line that revolutionized car production. In the early 1950's lean production management principles were developed by Toyota led by engineer Ohno (Womack et al., 1990). As stated by Womack et al., (1990) the term 'lean' was invented by the research team working on the international Motor Vehicle Programme at Massachusetts Institute of Technology to reflect both the waste reduction nature of the Toyota production system and to contrast it with craft and forms of production.

Alternatively, the first consideration of the ideas of lean production for use within construction is attributed to Koskela (1992) as cited by (Garnett et al., 1998; Mossman, 2009). This seminal technical report carefully considered the ideas expressed in the Machine that Changed the World within the construction context (Garnett et al., 1998). Koskela (1992) formulated the transformation flow value generation model of production which could lead to improved performance when applied to construction.

Lean Construction is a different project management approach because it has a clear set of objectives for the delivery process, is aimed at maximizing performance for the customer at the project level, designs concurrently product and process, and applies production control throughout the life of the product from design to delivery (Howell, 1999). Abdel-Razek et al., (2007) note that the core idea of lean construction is to reduce or eliminate waste, represented in non-value adding activities, and increase the efficiency of value adding activities. However, according to Koskela (1992) lean construction includes practice of just-in-time (JIT), use of pull driven scheduling, reduction of variability in labour productivity, improvement of flow reliability, elimination of waste, simplification of the operation and implementation of benchmarking.

Evidence of the use of lean thinking has shown that there are many benefits to be made from applying lean principles to construction (Lehman & Reister, 2004; Mossman, 2009). These benefits claimed include:

- Improved productivity and increased reliability;
- Improved quality and more client satisfaction;
- Increased predictability and shortened schedules;
- Less waste and reduced cost; and
- Enhanced build-ability improvements to design and improved safety (Lehman & Reister, 2004; Mossman, 2009).

A study conducted on behalf of Scottish Executive, by Warwick University in 2005/2006 identified that lean methods were applicable to the public sector. However, most results had been achieved using a more restricted range of techniques than lean provides (Fillingham, 2007)

Government, industry and clients are all seeking to bring about a change in the construction industry to improve quality, competitiveness and profitability, and to increase value to clients. Where the emphasis has traditionally been on the need to manage the interface between the project and the client's organization, it is now shifting towards the need to manage the flow of activities through the whole life cycle of the project, concentrating on those activities that actually add value (Matheu, 2005).

One of the key tools identified in order to aid CPM's towards achieving the goal of a successfully completed project is the project programme. Determining what work must be done, what resources including human resources are to be used, together with the identification of equipment, facilities and funds needed for projects reinforces the need and importance of having a sound project programme to manage these deliverables. The aim of the programme is to provide a plan that is well thought out and realistic which can be achieved. Improper programming including poor management of the programme can result in delays and inefficient use of resources hampering the progress and successful completion of the project.

The application of sound project management practices provides construction stakeholders with the means to meet their objectives. When sound project management is lacking, the consequences are delays and extra costs for all parties, typically resulting in the unsuccessful delivery of the project. The application of sound project management principles on a project is not only the means to the project ends, but aids in guiding and managing the project towards its successful completion while meeting the client's needs within the defined budget (Truman and King, 2013).

The South African construction industry plays a major role in contributing towards the gross domestic product (GDP), highlighting its major role of adding towards the growth and development of the country. Various construction professionals in the industry are already providing the public sector with support mechanisms (within the confinements of their respective professions) towards improving the delivery of construction projects in the country. It has been identified that the construction management profession in the industry is one of the key roles and is the single point of contact between other consultant professionals on a project and the client. As a result, the success of the project ultimately rides on the unique management skills of the CPM.

This therefore highlights the ability of CPM's to provide the public sector with the unique management skills they require such as LPM to assist in improving the delivery of the project programme. One of the key management areas highlighted that can be implemented by CPM's is LPM. CPM's need to implement LPM tools and techniques during the construction phase of public sector projects as an initiative towards improving the delivery of the project programme. Figure 2.2 illustrates the relationship between LPM, CPM, PS, CP and PP where LPM = Lean Project Management, CPM = Construction Project Management, PS = Public Sector, CP = Construction Phase and PP = Project Programme.

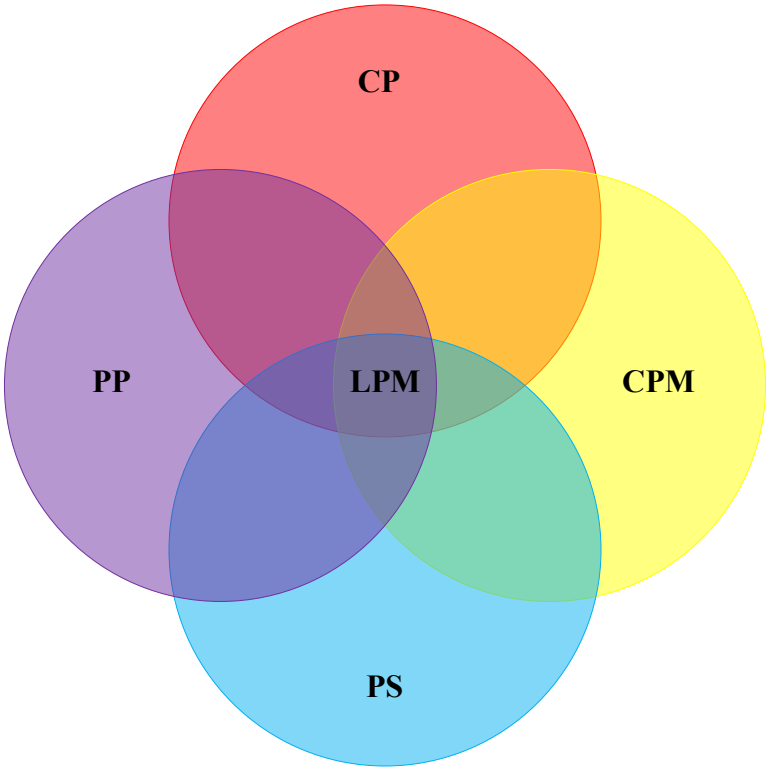

Figure 2.2: Relationship between LPM, CPM, PS, CP & PP

2.7 Summary

This chapter provided an in-depth review of the literature studied for this research. The chapter was made of five sub-sections and discussed the research topic, building a strong foundation to assist in the understanding of the important issues related to the research. The first sub-section discussed Lean Project Management, which was then followed by the second sub-section which brought to light the Public Sector in South Africa. Sub-section three discussed the Construction Management Profession and sub-section four followed entailing a detailed analysis of the Construction Phase and Project Programme.

The chapter was then brought to conclusion with a discussion involving the relationship between Lean Project Management, the Public Sector, the Construction Project Management Profession, Construction Phase and the Project Programme. The next chapter, Chapter 3 presents the research methodology designed for the study.

Chapter 3 – Research Methodology

3.1 Introduction

This chapter presents the research methodology designed to achieve the research aim and objectives. The chapter explains the research process and approaches including the research methodology and methods used. The relationship between the research methods and objectives, data collection, sampling methodology and hypothesis testing are highlighted. In addition, the data analysis techniques used are discussed and finally the credibility, reliability and validity of the research findings are presented.

3.2 Research Process and Approach

3.2.1 Research and the Research Process

Research in common parlance refers to a search for knowledge. Research is a scientific and systematic search for pertinent information on a specific topic. It is an art of scientific investigation (Kothari, 2004). Welman and Kruger (2001) supports Kothari (2004) by highlighting that research involves the application of various methods and techniques in order to create scientifically developed knowledge by using objective methods and procedures.

According to Goddard and Melville (2001), research is the study of problems through the use of scientific methods and principles. It implies exhaustive study, investigation or experiments following some logical sequence. It is also important to note that because studies differ, the methodology that is appropriate for each study must carefully be selected.

The research process could be defined as, “a systematic investigation to establish facts or principles or to collect information on a subject using defined methods or series of actions” (Leedy and Ormrod, 2015). The precise number of stages varies, but usually includes formulating and clarifying a topic, reviewing the literature, choosing a strategy, collecting data, analyzing data and writing up the research (Saunders et al., 2003). These were the stages that formed the research process in this dissertation.

Kothari (2004) notes that the purpose of research is to discover answers to questions through the application of scientific procedures, as a result research objectives fall into a number of the following broad groupings, namely

- To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as explanatory or formulative research studies);
- To portray accurately the characteristics of a particular individual, situation or group (studies with this object in view are known as descriptive studies);
- To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies); and
- To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis testing research studies).

3.2.2 Research Approach

There are various types of research. These include descriptive, correlative or exploratory. When choosing the correct type of research to employ when attempting to solve a problem, researchers should be guided by the characteristics of the problem, the initial level of knowledge, the properties of the variables, as well as the purpose of the investigation. A research project will more than likely involve the use of theory. This theory may or may not be made explicit in the design of the research, although it will usually be made explicit in the presentations of the findings and conclusions. The extent to which the researcher is clear about the theory at the beginning of the research raises an important question concerning the design of the research project (Saunders et al, 2003).

The deductive approach involves the development of a theory that is subjected to a rigorous test. As such, it is the dominant research approach in the natural sciences, where laws provide the basis of explanation, permit the anticipation of phenomena, predict their occurrence and therefore allow them to be controlled (Gulati, 2009). Pelissier (2008) further indicates that there are five sequential stages that are used through which the deductive approach progresses. This research used these five stages as follows:

1. Deducing a hypothesis (a testable proposition about the relationship between two or more events or concepts) from the theory;
2. Expressing the hypothesis in operational terms (that is, ones indicating exactly how the variables are to be measured), which propose a relationship between the two specific variables;
3. Testing this operational hypothesis (by using the survey questionnaire and literature review);
4. Examining the specific outcome of the inquiry (it will either tend to confirm the form of empirical inquiry); and
5. If necessary, modifying the theory in the light of the findings.

A key characteristic identified with using the deductive approach was that first the casual relationships between the variables had to be explained and then the hypotheses were tested utilizing the collection of quantitative and qualitative data (Saunders et al., 2003).

3.2.2.1 Descriptive Approach

The objective of descriptive research is to portray an accurate profile of persons, events or situations (Robson, 2002). Descriptive research includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs that exists at present. The main characteristic of this method is that the researcher has no control over the variables. The researcher can only report what has happened or what is happening. The methods of research utilized in descriptive research are survey methods, of all kinds including comparative and correlational methods (Kothari, 2004).

This may be an extension of, or a forerunner to, a piece of exploratory research. It is necessary to have a clear picture of the phenomena on which to collect data prior to the collection of the data. The descriptive approach requires in depth research to be provided and to draw conclusions from the data. It encourages the researcher to develop skills of evaluating data and synthesizing ideas (Saunders et al., 2003).

In this research, the descriptive approach was used to describe the topic accurately and in detail through the literature review which required large amounts previous knowledge to be researched. This was accomplished through a critical literature review of related material in the areas concerned. Finally it focused on the how question and used qualitative and quantitative techniques.

3.2.2.2 Applied Approach

Applied research aims at finding a solution for an immediate problem facing a society or industrial/ business organization in this case poor programme management during the construction phase of public sector projects. Research studies aimed certain conclusions (or a solution) facing a concrete social or business problem is an example of applied research. The central aim of applied research is to discover a solution for some pressing practical problem (Kothari, 2004).

3.2.2.3 Quantitative and Qualitative Research Approaches

Quantitative data refers to numerical and statistical data and can be a product of all research strategies (Kothari, 2004). It can range from simple counts namely the frequency of occurrences to more complex data namely test scores or prices. In order for the data to be useful, it needs to be analyzed and interpreted. The quantitative analysis technique assists this process. These may range from developing tables or diagrams that present the frequency of occurrence through establishing statistical relationships between variables to complex statistical modeling (Saunders et al., 2003).

Qualitative data consist of data represented in the format of words, fieldwork notes, interview transcripts, and texts. The nature of qualitative data has implications for both its collection and analysis (Kothari, 2004). In order to be able to capture the richness and fullness associated with qualitative data they cannot be collected in a standardised way. During analysis the non-standardised and complex nature of the data collected will need to be classified into categories before they can be meaningfully analysed (Saunders, et al., 2003). There are many qualitative research traditions with the result that there are different strategies to deal with the data collected (Dey, 1993).

In this research, quantitative analysis used measures of central tendency namely means which are designed to indicate the middle or most typical point of distribution and therefore confirm the homogeneity and quality of the data. The standard deviation was used as a measure of dispersion amongst the mean. The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23.

3.3 Quantitative Research Methodology

3.3.1 Survey Questionnaires

The greatest use of questionnaires is made by the survey strategy. There are various definitions of the term "questionnaire" (Oppenheim, 2000). Some authors such as Kervin (1999) reserve it exclusively for surveys where the person answering the question actually records their own answers. Others such as Bell (1999) use it as a more general term to include interviews that are administered either face to face or by telephone. A more diversified definition of a questionnaire is exhibited by Leedy and Ormrod (2015) as a set of written questions for respondents to complete themselves. It is a data-gathering device that elicits from a respondent the answers or reactions to pre-arranged printed questions presented in a specific order.

The questionnaire is one of the most widely used survey data collection techniques. Because each respondent is asked to respond to the same set of questions, it provides an efficient way of collecting responses from a large sample. However care must be taken when conducting a questionnaire, as the researcher needs to ensure that it will collect the precise data that is required to answer the research question and achieve the desired objectives. This is of paramount importance as the researcher is unlikely to be able to go back to respondents and collect additional data using another questionnaire (Bell, 1999).

3.3.2 Strengths and Limitations of Questionnaires

Kothari (2004) notes that the method of collecting data by mailing the questionnaires to respondent is most extensively employed in various research surveys. The merits as a result are:

- There is a low cost even when the universe is large and is widely spread geographically;

- It is free from the bias of the interview, answers are in the respondents own words;
- Respondents have adequate time to give well thought out answers;
- Respondents, who are not easily approachable, can also be reached conveniently; and
- Large samples can be made use of and therefore the results can be made more dependable and reliable.

The main demerits of this system are also highlighted by Kothari (2004) as follows:

- Low rate of return of the duly filled in questionnaires. Bias due to no response is often indeterminate;
- It can be used only when respondents are educated and cooperating;
- The control over questionnaires may be lost once it is sent;
- There is inbuilt inflexibility because of the difficulty of amending the approach once questionnaires have been despatched;
- There is also the possibility of ambiguous replies or omission of replies altogether to certain questions, interpretation of omissions is difficult;
- It is difficult to know whether wiling respondents are truly representative; and
- This method is likely to be the slowest of all.

3.3.3 The Survey Questionnaire Design

When preparing the survey questionnaire for this research, there were a variety of influencing factors related to the research question and objectives that had to be considered. In particular, these were brought to light by Saunders, et al*.,* (2003) as the:

- Questionnaires were common instruments in quantitative research;
- Characteristics of the respondents from whom the researcher wishes to collect data;
- Importance of reaching a particular person as respondent;
- Importance of respondents' answers not being contaminated or distorted;
- Size of sample the researcher requires for analysis, taking into account the likely response rate;

- Types of question the researcher needs to ask to collect data; and
- Number of questions the researcher need to ask to collect data.

In this research the types of questions included in the survey questionnaire were:

- Closed-ended questions while using paired comparison questions. Here the respondent had to think more carefully and compare the available responses before selecting the response. This was implemented to source higher quality responses.
- Ranking questions, where the respondents would have to rank answers according to what they felt most strongly about in ascending or descending order.
- Scaled questions where the respondents had to indicate their level of agreement towards statements, the level a specific action influences them or the level of importance regarding a statement.

When designing a survey questionnaire, it was crucial to consider the order of questions and length of the questionnaire. Kothari (2004) notes that it is advisable to start with general questions before proceeding into specific topics. Thereafter, the questions should be grouped into themes and must follow a logical pattern. Saunders, et al*.,* (2003) further highlights that the questionnaire should be a reasonable length, brief and concise in order to avoid the possibility of unreliable data stemming from fatigued respondents.

The researcher used a questionnaire survey instrument which comprised of close ended questions. Close ended questions were used in lieu of open ended questions in order to fast track the completion of the questionnaires as the sample consisted of CPM's who did not generally possess a lot of available free time during working hours to complete the survey questionnaires due to their busy schedules (Kothari, 2004).

The research instruments were designed as follows, namely:

- **Section 1** – aimed at identifying how often CPM's worked on public sector projects and consisted of one scaled response.

- **Section 2** – aimed at investigating programme management during the construction phase. More specifically, it intended to determine the CPM's knowledge, understanding and interpretation of the programme including its importance and frequency of use during the construction phase. Finally, this sections aimed at highlighting whether CPM's agreed with the causes of poor programme management and how often they experienced these during the construction phase. This section consisted of six scaled responses.
- **Section 3** – intended to determine how important the principles of LPM were to CPM's including whether they agreed with its implementation during the construction phase of public sector projects. Thereafter this section aimed to investigate how often CPM's used the principles of LPM under the nine project management areas of expertise during the construction phase. This section then aimed to determine whether CPM's agreed with the benefits of implementing LPM and how important were these benefits during the construction phase towards the successful delivery of the programme. Finally, this section intended on determining how often CPM's encountered challenges towards implementing LPM and how important it was to eliminate those challenges for the successful delivery of the programme. This section consisted of seven scaled responses.

The questionnaire was distributed and returned via email to all CPM's that were professionally registered with the South African Council for Construction and Project Management Profession (SACPCMP) listed in the Professions and Projects Register (2015) within the province of Kwa-Zulu Natal. A copy of the survey questionnaire is attached as Appendix B.

3.3.4 Pilot Study

The survey questionnaire was piloted with CPM's that were known by the researcher and worked in the same company. The pilot study aimed at assisting the researcher in identifying ambiguous sections in the questionnaire which might cause confusion and needed clarification. The same survey questionnaire was emailed to other CPM's not in the same office as the researcher. This allowed for comparisons to be made between CPM's within the same office as the researcher and those that were employed in other

companies. The CPM's from the pilot study were referred to as "Sample A". A total number of 20 CPM's participated in the pilot study which was carried out over a period of one calendar month.

3.3.5 Questionnaire Administration

The survey questionnaire was emailed to all registered CPM's in Kwa-Zulu Natal. The participants were issued the survey questionnaire with the covering letter and consent form. The researcher stressed that all data collected would be treated as anonymous and that data would be presented in numerical format in order to protect the CPM's reputations and avoid victimization. The researcher administered the survey questionnaires to the sample via email. Due to the time frame for the collection of responses being restricted to one month due to the time constraints on the research and in order to ensure that a practical response rate is achieved, the researcher aimed at carrying out follow up emails to the sample of participants on a weekly basis.

3.4 Research Methods

3.4.1 Research Methods Definition

Research methods may be understood as all those methods or techniques that are used for conduction of research. Research methods therefore refer to the methods the researchers use in performing research operation. In essence, all those methods which are used by the researcher during the research process are termed research methods (Kothari, 2004).

Methods are defined as," the way, techniques, tools or arrangement of processing or doing something especially systematic or regular one for a particular field or subject" (Leedy and Ormrod, 2015).

Since the objective of applied research is to arrive at a solution for a given problem, the available data and unknown aspects of the problem have to be related to each other to make a solution possible. Kothari (2004) notes that research methods can be put into the following three groups:

1. In the first group, those methods which are concerned with the collection of data are included.
2. The second group consists of statistical techniques which are used for establishing relationships between the data and unknowns.
3. The third group consists of those methods which are used to evaluate the accuracy of the results obtained.

In this study, methodology may be perceived as the overall methods to satisfy the aim of the investigation. Choosing the research methodology used in this study was primarily evolved from two factors and are highlighted by Leedy and Ormrod (2015) as:

1. The specific research aim and objectives and how they could be achieved.
2. The research nature and characteristics.

3.4.2 The Nature and Characteristics of the Research

The research in this study is an investigative study and attempts to answer whether CPM's can implement lean project management tools and techniques during the construction phase of public sector projects towards the successful delivery of the project programme.

3.4.3 The Relationship between the Research Methods and Objectives

In this study, each objective was assigned to a research method, with the intention of meeting that objective. The relationship is presented in Table 3.1:

Table 3.1: The Relationship between the Research Method and Objectives

Research Methods		Research Objectives			
		1	2	3	4
Data Collection Methods	Literature Review	✓	✓	✓	✓
	Survey Questionnaires	✓	✓	✓	✓
Data Analysis Methods	Quantitative	✓	✓	✓	✓

3.5 Data Collection

Data collection is a principal activity in the research process. Data is usually collected from different sources, using different methods to achieve certain objectives. This process is known as "Triangulation" which increases the reliability and validity by verifying findings of data from one source with other sources. Triangulation refers to the use of different data collection methods within one study in order to ensure that the data is providing related, concise and accurate information (Saunders et al., 2003). This strategy reduces the risk and bias associated with using specific methods. Selecting a method or methods to collect data was based on what kind of information was sought to achieve the research objectives, from whom, and under what circumstance. Each method, tool or technique has its unique strengths and weaknesses (Smith, 1975).

There are two types of data, primary and secondary. The primary data are those which are collected afresh and for the first time, and thus are original in character. The secondary data are those which have already been collected by someone else and which have already been passed through statistical process (Kothari, 2004).

The primary data used in this study was acquired by surveying existing literature regarding the five areas of concern presented in Chapter 2. This process marked the development of the framework of the study, after which a survey questionnaire was designed for data collection. The secondary data used in this study were obtained from various sources within the country and around the world, inter alia, conference papers, journals, articles, books, theses, internet and government reports. In addition, this study used quantitative data collection techniques to gather information from various sources. More specifically, in this research data was collected through conducting an in depth literature review and survey questionnaires.

3.6 Sampling Methodology

All items in any field of inquiry constitute a "Universe" or "Population" (Kothari, 2004). The purpose for sampling is to gather data about the population in order to make an inference that can be generalized to the population. Sampling techniques provide a range

of methods that enable the researcher to reduce the amount of data needed to be collected by considering only data from a subgroup rather than all possible cases or elements (Saunders, et al., 2003). Therefore as defined by Key (1997), sampling is "the process of selecting a number of individuals for a study in such a way that the individuals represent the larger group from which they were selected."

A sample design is the framework that serves as the basis for the selection of a survey sample and affects many other important aspects of a survey for some population or universe of interest. The sampling frame must represent the population of interest from which the sample is drawn. The sampling frame may be identical to the population, or it may be only part of it. The sampling design provides the basic plan and methodology for selecting the sample (Lavrakas, 2008).

The sample size of a study refers to the number of units that were chosen from which data were gathered. The sample size can be defined in numerous ways. There is the designated sample size, which is the number of sample units selected for contact or data collection. Then there is the final sample size, which is the number of completed surveys or units of which data are actually collected. The final sample size may be much smaller that the designated sample size if there is considerable non-response, ineligibility, or both (Ibid).

The sample required entailed selecting all South African Construction Project Managers (SACPM's) that are professionally registered with the South African Council for Construction and Project Management Profession (SACPCMP) within the province of Kwa-Zulu Natal as identified in the Professions and Projects Register (2015). The register lists a total number of 234 registered professional CPM's in KZN. Out of 234 registered CPM's that were selected in the research sample, 72 registered CPM's responded to the survey questionnaire, representing a 31 per cent response rate. Akintoye and Fitsgerald (2000) cited in Odeyinka et al., (2008) recommended 20-30 per cent response rate as the acceptable norm in most postal questionnaires in the construction industry. Saunders et al., (1997 cited in Magd, 2006) supports this premise through suggesting a response rate of between 30 and 50 per cent as appropriate. It can therefore,

be argued that the response rate of 31 per cent observed in this study is deemed adequate for the purpose of data analysis.

3.7 Credibility, Reliability and Validity

3.7.1 Credibility of the Research Findings

The credibility of the research findings was based on how the researcher goes about perceiving that the research is actually able to stand up to the closest scrutiny, that in fact the conclusions drawn from the research are actually reliable and valid. How does the researcher know whether the work produced is credible? The answer is expressed by Raimond (1993), in the literal sense of the question that the researcher cannot know, all the researcher can do is reduce the possibility of getting the answer wrong. By reducing the possibility of getting the answer wrong means that attention has to be paid to two particular emphases on research design: reliability and validity.

3.7.2 Reliability and Validity

Reliability is defined as, the extent to which a test would give consistent results if applied by a different researcher more than once to the same people under standard conditions, (Hall and Hall, 1996). The reliability of this research study was assessed by posing two methods. These methods are highlighted by Easterby-Smith, et al., (2002) as:

1. Test-retest.
2. Internal Consistency.

Test-retest reliability required the researcher to conduct the survey twice to the same sample of respondents but on two different dates. Due to time constraints on the research, the size of the sample and logistical complications of surveying various CPM's for a second time, it was not possible to conduct retest reliability on all participants. However, for those that were tested for the second time, the responses to the questionnaires did not deviate from the initial responses received. This tested that the information obtained would not deviate from the initial respondents answers. Thereby the survey questionnaire reliability was tested.

Internal consistency involved ensuring that various items measuring different constructs deliver consistent scores (Kothari, 2004). Cronbach's Alpha Test was used to test not only the average correlations between every possible combination of split halves, but also allows multi-level responses. This test takes into account both the size of the sample and the number of potential responses. The perspective of Cronbach's alpha is that the average item correlation is affected by skewness (in the distribution of item correlations) just as any other average is (Kothari, 2004). Cronbach (1951) provides the following commonly accepted rule of thumb in Table 3.2 for describing internal consistency as follows:

Table 3.2: Cronbach's Accepted Rule of Thumb for Internal Consistency

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$\alpha < 0.5$	Unacceptable

Internal consistency involved administrating the survey questionnaire once. Cronbach's alpha coefficient was used as an indicator of internal consistency. More specifically, it was used to determine whether the scales were all measuring the same underlying construct. In order for the analyzed data to be considered reliable, Cronbach's alpha coefficient scale needed to be above 0.700 (Pallant, 2013).

The degree of internal consistency or Cronbach's Alpha scores for the scale used for the various constructs is shown in Table 3.3. Almost all constructs were found to have statistically high levels of internal reliability, namely Cronbach's Alpha values > 0.700. There were two constructs with values of 0.620 which are indicative of moderate internal consistency.

Table 3.3: Reliability Test

Construct	Cronbach's Alpha	Number of Items
Application of LPM Principles to Projects	**0.929**	15
Agreement of LPM Benefits	**0.915**	7
Experience of Poor Programme Management	**0.911**	7
Awareness of LPM Problems/Drawbacks	**0.892**	6
Awareness of Poor Programme Management	**0.869**	7
Importance of LPM Principles	**0.831**	15
Importance of LPM Benefits	**0.620**	7
Importance of Eliminating LPM Problems/Drawbacks	**0.620**	7

Hammersly (1992) defines validity as another word for truth. It refers to the correctness or credibility of a description, conclusion, explanation, interpretation or other sort of account. Validity means the extent to which a test, questionnaire or other method is really measuring what it is intended to measure (Hall and Hall, 1996). Therefore, validity is concerned with whether the findings are really about what they appear to be about (Saunders, et al., 2003). Kothari (2004) highlight four types of validity examined by researchers:

- Conclusion validity examined the relationship between the programme (the successful delivery of the project programme during the construction phase of public sector projects) and the outcome (implementation of LPM by CPM's towards the successful delivery of the programme);
- Internal validity examined if the outcome was caused by the programme. In other words, does poor programme management by CPM's during the construction phase of public sector projects hinder the successful delivery of the project programme;
- Construct validity required that the instrument used to measure the variable must measure that which it is supposed to measure. Because it was important that conclusions were drawn from what was set out to be measured; and

- External validity examined if the research findings of the sample could be extrapolated over the entire population. Can the findings be representative of the population? The sample of the survey questionnaire was representative of all registered CPM's in the province of Kwa-Zulu Natal, which made it difficult to extrapolate over the other provinces in South Africa. Each province has registered CPM's governed by the SACPCMP that could be surveyed. The responses of these survey questionnaires would differ from one province to another making it difficult to state what was true for one province was true for another.

3.8 Data Analysis

The analysis and interpretation of the collected data is known as data analysis (Leedy and Ormrod, 2015). Upon completion of the survey questionnaires by the samples, the researcher captured the data using SPSS version 23. Measures of central tendency were determined. Scaled responses were ranked by their means and measure of dispersion in the form of the Standard Deviation.

3.9 Summary

This chapter provided and insightful view on the structure and design of the methodology designed to achieve the research aim and objectives. The chapter discussed the research process and approach as well as the research methodology and methods. In addition, the data collection and sampling methodology used was then presented. Furthermore, the chapter discussed the hypothesis testing and data analysis and drew to a close with the credibility, reliability and validity of the research findings being presented. The next chapter analyzes the data collected and tested the hypotheses.

Chapter 4 – Data Collection and Analysis

4.1 Introduction

This chapter presents the research findings after the raw data had been collected, coded and analyzed. The chapter is divided into three sections that deals with the research instrument used. Each section compares the findings to the factors that highlighted the research problem of poor programme management during the construction phase on public sector projects identified in the literature review (Chapter 2). The data was gathered using many strategies and methods. However, data on its own has no value unless subjected to analysis and the outcomes correctly interpreted for conclusions to be drawn. The researcher analyzed the coded data in order to identify trends and general view points of the respondents which could be extrapolated over the sample population identified.

4.2 Public Sector Construction Projects

4.2.1 Experience with Public Sector Projects

The CPM's were asked on a scale of 1 to 5, where 1 = never and 5 = always, to indicate how often they executed public sector construction projects. From Table 4.1, it is evident that 84.4% executed public sector construction projects often or always (Mean = 4.11).

Table 4.1: Experience with Public Sector Projects

N		Scale					Mean	Std. Dev.
		1	2	3	4	5		
Frequency	**72**	-	2	9	40	21	**4.11**	0.72
Valid Percentage	**100%**	-	(2.8%)	(12.5%)	(55.6%)	(29.2%)		

4.3 Programme Management during the Construction Phase

4.3.1 Knowledge of the Project Programme

CPM's were asked on a scale of 1 to 5, where 1 = very poor and 5 = excellent, to rate their knowledge, understanding and interpretation of the programme during the construction phase towards ensuring that the project is delivered on time. Table 4.2

indicates that all respondents rated their knowledge, understanding and interpretation as either good or excellent suggesting that CPM's were well versed in utilizing the programme towards delivery of the project on time (Mean = 4.73).

Table 4.2: Knowledge of the Project Programme

N		Scale					Mean	Std. Dev.
		1	2	3	4	5		
Frequency	72	-	-	-	19	53	4.73	0.44
Valid Percentage	100%	-	-	-	26.4%	73.6%		

4.3.2 Importance of the Project Programme

CPM's were asked on a scale of 1 to 3, where 1 = not important at all and 3 = extremely important, to indicate how important the use of the programme was during the construction phase of public sector projects. From Table 4.3, it is evident that 90.3% of CPM's felt that the use of the project programme during the construction phase of projects was extremely important (Mean = 2.90).

Table 4.3: Importance of the Project Programme

N		Scale			Mean	Std. Dev
		1	2	3		
Frequency	72	-	7	65	2.90	0.29
Valid Percentage	100%	-	9.7%	90.3%		

4.3.3 Usage of the Project Programme

CPM's were asked on a scale of 1 to 5, where 1 = never and 5 = always, to indicate how often they used the project programme within a calendar month during the construction phase. Table 4.4 indicates that 84.7% used the project programme within a calendar month often to always (Mean = 4.20).

Table 4.4: Usage of the Project Programme

N		Scale					Mean	Std. Dev.
		1	2	3	4	5		
Frequency	72	-	-	11	35	26	4.20	0.69
Valid Percentage	100%	-	-	15.3%	48.6%	36.1%		

4.3.4 Challenges Experienced Monitoring and Managing the Project Programme

CPM's were asked on a scale of 1 to 5, where 1 = never and 5 = always, to indicate how often the experienced any challenges within a calendar month during the construction phase. From Table 4.5, it is evident that 69.4% experienced challenges often to always with monitoring and managing the project programme, while 30.6% experienced challenges sometimes (Mean = 3.80).

Table 4.5: Challenges Experienced Monitoring and Managing the Project Programme

N		Scale					Mean	Std. Dev.
		1	2	3	4	5		
Frequency	72	-	-	22	42	8	3.80	0.61
Valid Percentage	100%	-	-	30.6%	58.3%	11.1%		

4.3.5 Awareness of Poor Programme Management

CPM's were asked on a scale of 1 to 5, where 1 = strongly disagree and 5 = strongly agree, to rank their level of agreement with seven causes of poor programme management based on their experience with government during the construction phase of public sector projects. The responses were ranked according to their mean scores in Table 4.6.

Table 4.6: Awareness of Poor Programme Management

Poor Programme Management Areas	N	Scale					Mean	Std. Dev.	Rank
		1	2	3	4	5			
Poor turnaround time for information flow	72 (100%)	-	-	-	32 (44.4%)	40 (55.6%)	4.55	0.50	**1**
Lack of communication resulting in delays to the programme	72 (100%)	-	-	-	38 (52.8%)	34 (47.2%)	4.47	0.50	**2**
Failure to provide adequate qualified human resources to manage the programme	72 (100%)	-	-	2 (2.8%)	35 (48.6%)	35 (48.6%)	4.45	0.55	**3**
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	72 (100%)	-	-	3 (4.2%)	34 (47.2%)	35 (48.6%)	4.44	0.57	**4**
Failure to control cost changes that impact the programme throughout the execution of the project	72 (100%)	-	-	7 (9.7%)	26 (36.1%)	39 (54.2%)	4.44	0.66	**5**
Lack of pro-active approach towards achieving the targeted programme dates	72 (100%)	-	-	3 (4.2%)	37 (51.4%)	32 (44.4%)	4.40	0.57	**6**
Failure to adequately programme the work and adhere to the programme	72 (100%)	-	-	-	44 (61.1%)	28 (38.9%)	4.38	0.49	**7**

According to Table 4.6, the mean responses ranged from 4.38 to 4.55 indicating that CPM's agreed with the listed causes of poor programme management. However, poor turnaround time for information flow (Mean = 4.55) and a lack of communication resulting in delays to the programme (Mean = 4.47) were mostly strongly agreed upon as causes of poor programme management, while failure to adequately programme the work and adhere to the programme (Mean = 4.38) was seen as the cause least agreed upon. This suggests CPM's felt that challenges with the flow and distribution of information including ineffective communication among the project team negatively impacted the delivery of the programme during construction.

From the responses presented in Table 4.6, it is evident that the findings support the poor programme management areas identified by Sullivan and Hans (1986), Kaming et al., (1997), Chan and Kumaraswamy (1997), Long et al., (2004), Assaf and Al-Hejji (2006) and Sambasivan and Soon (2007) confirming that CPM's were aware of the areas of poor programme management.

4.3.6 Experience of Poor Programme Management

CPM's were requested to respond on a scale of 1 to 5, where 1 = never and 5 = always, to indicate how often they experienced the seven causes of poor programme management. The responses were ranked according to their mean scores in Table 4.7.

Table 4.7: Experience of Poor Programme Management

Poor Programme Management Areas	N	Scale					Mean	Std. Dev.	Rank
		1	2	3	4	5			
Failure to adequately programme the work and adhere to the programme	72 (100%)	-	-	3 (4.2%)	45 (62.5%)	24 (33.3%)	4.29	0.54	**1**
Poor turnaround time for information flow	72 (100%)	-	-	5 (6.9%)	42 (58.3%)	25 (34.7%)	4.27	0.58	**2**
Lack of communication resulting in delays to the programme	72 (100%)	-	-	8 (11.1%)	37 (51.4%)	27 (37.5%)	4.26	0.64	**3**
Failure to control cost changes that impact the programme throughout the execution of the project	72 (100%)	-	1 (1.4%)	8 (11.1%)	34 (47.2%)	29 (40.3%)	4.26	0.71	**4**
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	72 (100%)	-	-	8 (11.1%)	41 (56.9%)	23 (31.9%)	4.20	0.62	**5**
Failure to provide adequate qualified human resources to manage the programme	72 (100%)	-	-	11 (15.3%)	37 (51.4%)	24 (33.3%)	4.18	0.67	**6**
Lack of pro-active approach towards achieving the targeted programme dates	72 (100%)	-	-	11 (15.3%)	37 (51.4%)	24 (33.3%)	4.18	0.67	**6**

From Table 4.7, it is evident with the mean scores ranging from 4.18 to 4.29, that CPM's experienced the causes of poor programme management often to always during the construction phase of public sector construction projects. However, areas that were most commonly experienced were failure to adequately programme the work and adhere to the programme (Mean = 4.29) and poor turnaround time for information flow (Mean = 4.27) while failure to provide adequate qualified human resources to manage the programme and a lack of pro-active approach towards achieving the targeted programme dates (Means = 4.18) were both experienced to a lesser extent.

The data presented in Table 4.7, indicated that the findings supported the poor programme management areas identified by Sullivan and Hans (1986), Kaming et al., (1997), Chan and Kumaraswamy (1997), Long et al., (2004), Assaf and Al-Hejji (2006) and Sambasivan and Soon (2007).

4.3.6.1 Discussion

Table 4.8 ranks the mean scores comparing CPM's awareness (level of agreement) in relation to experience (frequency of occurrence) regarding the areas of poor programme management.

Table 4.8: Comparison between Awareness and Experience

Poor Programme Management Areas	Awareness			Experience		
	Mean	Std. Dev.	Rank	Mean	Std. Dev.	Rank
Poor turnaround time for information flow	4.55	0.50	1	4.27	0.58	2
Lack of communication resulting in delays to the programme	4.47	0.50	2	4.26	0.64	3
Failure to provide adequate qualified human resources to manage the programme	4.45	0.55	3	4.18	0.67	6
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	4.44	0.57	4	4.20	0.62	5
Failure to control cost changes that impact the programme throughout the execution of the project	4.44	0.66	5	4.26	0.71	4
Lack of pro-active approach towards achieving the targeted programme dates	4.40	0.57	6	4.18	0.67	6
Failure to adequately programme the work and adhere to the programme	4.38	0.49	7	4.29	0.54	1

According to Table 4.8, CPM's were most aware that the main cause of poor programme management resulted from poor turnaround time for information flow which ranked 1st and that failure to adequately programme the work and adhere to the programme ranked last. In contrast, most CPM's often to always experienced failure to adequately programme the work and adhere to the programme on public sector construction projects which ranked 1st and failure to provide adequate qualified human resources to manage the

programme including a lack of pro-active approach towards achieving the targeted programme dates both ranked last.

It was evident that while CPM's were least aware of failure to adequately programme the work and adhere to the programme, it was often to always experienced, suggesting that there was a shortfall of awareness in relation to experience regarding this area of poor programme management. CPM's need to increase their awareness due to this area being experienced often.

CPM's were aware of the failure to provide adequate qualified human resources to manage the programme but seldom experienced this area of poor programme management. This suggests that due to CPM's being aware it has minimized their frequency of experience as they could be implementing mitigation plans to prevent this poor area from occurring.

However, the overall mean scores provide a clear indication that there was consensus between CPM's awareness and experience. It can be reasonably concluded that CPM's were aware of and experienced all poor programme management areas.

4.4 Lean Project Management

4.4.1 Importance of LPM Principles

CPM's were asked on a scale of 1 to 3, where 1 = not important at all and 3 = extremely important, to indicate how important the 15 principles underpinning lean construction and techniques that may be adopted were towards improving the management and delivery of the programme. The responses were ranked accordingly to their mean scores in Table 4.9.

Table 4.9: Importance of LPM Principles

Lean Principles and Techniques	N	Scale			Mean	Std. Dev.	Rank
		1	2	3			
Improving planning and communication	72 (100%)	-	-	72 (100%)	3.00	0.00	**1**
Eliminating waste and errors	72 (100%)	-	3 (4.2%)	69 (95.8%)	2.95	0.20	**2**
Improving work planning and forward scheduling	72 (100%)	-	5 (6.9%)	67 (93.1%)	2.93	0.25	**3**
Risk management techniques	72 (100%)	-	6 (8.3%)	66 (91.7%)	2.91	0.27	**4**
Implementing continuous improvement from one project to another	72 (100%)	-	7 (9.7%)	65 (90.3%)	2.90	0.29	**5**
Value management techniques	72 (100%)	-	8 (11.1%)	64 (88.9%)	2.88	0.31	**6**
Benchmarking techniques including the use of key performance indicators	72 (100%)	-	9 (12.5%)	63 (87.5%)	2.87	0.33	**7**
Direct intervention to drive immediate and apparent change	72 (100%)	-	10 (13.9%)	62 (86.1%)	2.86	0.34	**8**
Specifying value from the perspective of the customer/ client	72 (100%)	-	10 (13.9%)	62 (86.1%)	2.86	0.34	**8**
Implementing critical path analysis and programme management	72 (100%)	-	10 (13.9%)	62 (86.1%)	2.86	0.34	**8**
Reduce lead time	72 (100%)	-	10 (13.9%)	62 (86.1%)	2.86	0.34	**8**
Maximizing workflow, minimizing the performance variation rather than focusing on speed only	72 (100%)	-	10 (13.9%)	62 (86.1%)	2.86	0.34	**8**
Eliminating activities that do not add value	72 (100%)	-	11 (15.3%)	61 (84.7%)	2.84	0.36	**13**
Reduce total costs	72 (100%)	-	11 (15.3%)	61 (84.7%)	2.84	0.36	**13**
Ensuring the work environment is clean, safe and efficient	72 (100%)	-	15 (20.8%)	57 (79.2%)	2.79	0.40	**15**

According to Table 4.9, with the mean scores ranging from 2.79 to 3.00, it is clear that CPM's agreed that these principles were extremely important in improving the management and delivery of the programme. Improving planning and communication (Mean = 3.00) and eliminating waste and errors (Mean = 2.95) were identified as most important on the list, with ensuring that the work environment was clean, safe and efficient (Mean = 2.79) being reported as the least important. This finding suggests that enhancing the planning and communication protocols together with eliminating waste and areas on the project would be most beneficial towards improving the management and delivery of the programme.

These important principles, identified by Ballard and Howell (1997), Koskela (1992) and the Lean Construction Institute (2015) were supported by the findings presented in Table 4.9.

4.4.2 Application of LPM Principles to Projects

CPM's were then asked on a scale of 1 to 5, where 1 = strongly disagree and 5 = strongly agree, to indicate whether they agree with applying these 15 principles and techniques during the construction phase towards improving the delivery of the project programme. The responses of the CPM's were ranked according to their mean scores in Table 4.10.

Table 4.10: Application of LPM Principles to Projects

Lean Principles and Techniques	N	Scale					Mean	Std. Dev.	Rank
		1	2	3	4	5			
Reduce lead time	72 (100%)	-	-	-	15 (20.8%)	57 (79.2%)	4.79	0.40	**1**
Implementing critical path analysis and programme management	72 (100%)	-	-	1 (1.4%)	16 (22.2%)	55 (76.4%)	4.75	0.46	**2**
Implementing continuous improvement from one project to another	72 (100%)	-	-	1 (1.4%)	18 (25%)	53 (73.6%)	4.72	0.48	**3**
Risk management techniques	72 (100%)	-	-	6 (8.3%)	13 (18.1%)	53 (73.6%)	4.65	0.63	**4**
Eliminating activities that do not add value	72 (100%)	-	-	-	27 (37.5%)	45 (62.5%)	4.62	0.48	**5**
Maximizing workflow, minimizing the performance variation rather than focusing on speed only	72 (100%)	-	-	-	27 (37.5%)	45 (62.5%)	4.62	0.48	**5**
Specifying value from the perspective of the customer/ client	72 (100%)	-	-	1 (1.4%)	25 (34.7%)	46 (63.9%)	4.62	0.51	**7**
Ensuring the work environment is clean, safe and efficient	72 (100%)	-	-	2 (2.8%)	23 (31.9%)	47 (65.3%)	4.62	0.54	**8**
Improving work planning and forward scheduling	72 (100%)	-	-	-	28 (38.9%)	44 (61.1%)	4.61	0.49	**9**
Improving planning and communication	72 (100%)	-	-	-	28 (38.9%)	44 (61.1%)	4.61	0.49	**9**
Eliminating waste and errors	72 (100%)	-	-	-	29 (40.3%)	43 (59.7%)	4.59	0.49	**11**
Reduce total costs	72 (100%)	-	-	1 (1.4%)	28 (38.9%)	43 (59.7%)	4.58	0.52	**12**
Benchmarking techniques including the use of key performance indicators	72 (100%)	-	-	5 (6.9%)	24 (33.3%)	43 (59.7%)	4.52	0.62	**13**
Direct intervention to drive immediate and apparent change	72 (100%)	-	-	1 (1.4%)	32 (44.4%)	39 (54.2%)	4.52	0.53	**14**
Value management techniques	72 (100%)	-	-	5 (6.9%)	26 (36.1%)	41 (56.9%)	4.50	0.62	**15**

With the mean scores ranging from 4.50 to 4.79, Table 4.10 highlights that CPM's agreed with applying these principles and techniques. However, reduce lead time (Mean = 4.79) was identified as most strongly agreed with, while value management techniques (Mean = 4.50) was least agreed with as it ranked last. This suggests that CPM's felt that procurement of long lead items needed to be critically managed in order to reduce lead times and positively impact the delivery of the programme.

These important principles, identified by Ballard and Howell (1997), Koskela (1992) and the Lean Construction Institute (2015) were supported by the findings presented in Table 4.10.

4.4.2.1 Discussion

Table 4.11 ranks the mean scores comparing the importance in relation to application of the 15 principles and techniques of lean construction towards improving the management and delivery of the programme.

Table 4.11: Comparison between Importance and Application

Lean Principles and Techniques	Importance			Application		
	Mean	Std. Dev.	Rank	Mean	Std. Dev.	Rank
Improving planning and communication	3.00	0.00	1	4.61	0.49	9
Eliminating waste and errors	2.95	0.20	2	4.59	0.49	11
Improving work planning and forward scheduling	2.93	0.25	3	4.61	0.49	9
Risk management techniques	2.91	0.27	4	4.65	0.63	4
Implementing continuous improvement from one project to another	2.90	0.29	5	4.72	0.48	3
Value management techniques	2.88	0.31	6	4.50	0.62	15
Benchmarking techniques including the use of key performance indicators	2.87	0.33	7	4.52	0.62	13
Direct intervention to drive immediate and apparent change	2.86	0.34	8	4.52	0.53	14
Specifying value from the perspective of the customer/ client	2.86	0.34	8	4.62	0.51	7
Implementing critical path analysis and programme management	2.86	0.34	8	4.75	0.46	2
Reduce lead time	2.86	0.34	8	4.79	0.40	1
Maximizing workflow, minimizing the performance variation rather than focusing on speed only	2.86	0.34	8	4.62	0.48	5
Eliminating activities that do not add value	2.84	0.36	13	4.62	0.48	5
Reduce total costs	2.84	0.36	13	4.58	0.52	12
Ensuring the work environment is clean, safe and efficient	2.79	0.40	15	4.62	0.54	8

According to Table 4.11, CPM's felt that improving planning and communication was extremely important as it ranked 1st, while ensuring the work environment is clean, safe and efficient ranked last. In contrast, CPM's strongly agreed with the application of reducing lead time which ranked 1st and further ranked value management techniques last.

It was evident that while CPM's felt improving planning and communication was extremely important, it was not applied as often, suggesting that there was a shortfall between the principles importance in relation its application. CPM's will need to increase the application of improving planning and communication as they are aware of it.

CPM's agreed with the application of reduce lead time but indicated that they were not as aware of its importance. This suggests that there is a gap between the principles application in relation to its importance. CPM's will need to increase their awareness of reducing lead time as they apply it often.

However, the overall mean scores provide a clear indication that there is consensus between importance and application. It is evident CPM's agreed that the listed principles were important and that their application would improve the management and delivery of the programme.

4.4.3 LPM comparison with Project Management Areas of Expertise

CPM's were presented with the 15 principles underpinning LPM and asked on a scale of 1 to 5, where 1 = never and 5 = always, to confirm how often they used these principles under the each of the nine project management areas of expertise. The CPM's responses were ranked according to the mean scores presented in Table 4.12.

Table 4.12: LPM comparison with the Project Management Areas of Expertise

Lean Principles and Techniques	N	Mean and Rank	Nine Project Management Areas of Expertise								
			Cost Management	Communication Management	Integration Management	Procurement Management	Human Resource Management	Risk Management	Scope Management	Time Management	Quality Management
1. Improving planning and communication	72 (100%)	Mean	4.29	4.16	4.12	4.12	4.08	4.08	4.04	3.95	3.93
		Rank	**1**	**2**	**3**	**3**	**5**	**5**	**7**	**8**	**9**
			(1)	**(1)**	**(4)**	**(3)**	**(4)**	**(8)**	**(5)**	**(10)**	**(9)**
2. Eliminating waste and errors	72 (100%)	Mean	3.97	3.98	3.54	3.48	4.08	4.09	4.25	4.18	4.01
		Rank	**7**	**6**	**8**	**9**	**4**	**3**	**1**	**2**	**5**
			(6)	**(8)**	**(15)**	**(14)**	**(4)**	**(6)**	**(2)**	**(3)**	**(6)**
3. Direct intervention to drive immediate and apparent change	72 (100%)	Mean	3.95	3.86	4.26	3.75	3.90	3.75	4.54	3.66	3.95
		Rank	**3**	**6**	**2**	**7**	**5**	**7**	**1**	**9**	**3**
			(8)	**(11)**	**(2)**	**(9)**	**(9)**	**(13)**	**(1)**	**(15)**	**(8)**
4. Improving work planning and forward scheduling	72 (100%)	Mean	3.56	3.70	3.79	3.84	4.18	3.97	4.04	3.98	4.27
		Rank	**9**	**8**	**7**	**6**	**2**	**5**	**3**	**4**	**1**
			(15)	**(15)**	**(13)**	**(7)**	**(1)**	**(10)**	**(5)**	**(8)**	**(1)**
5. Specifying value from the perspective of the customer/ client	72 (100%)	Mean	4.06	3.83	4.08	4.01	3.72	4.13	3.94	4.09	4.16
		Rank	**5**	**8**	**4**	**6**	**9**	**2**	**7**	**3**	**1**
			(4)	**(12)**	**(5)**	**(4)**	**(13)**	**(4)**	**(12)**	**(6)**	**(3)**
6. Eliminating activities that do not add value	72 (100%)	Mean	4.22	4.16	3.80	3.65	4.00	4.09	4.01	4.13	3.81
		Rank	**1**	**2**	**8**	**9**	**6**	**4**	**5**	**3**	**7**
			(2)	**(1)**	**(12)**	**(11)**	**(7)**	**(6)**	**(8)**	**(5)**	**(13)**
7. Ensuring the work environment is clean, safe and efficient	72 (100%)	Mean	3.93	4.01	4.23	3.68	3.90	4.33	4.06	3.79	3.97
		Rank	**6**	**4**	**2**	**9**	**7**	**1**	**3**	**8**	**5**
			(9)	**(7)**	**(3)**	**(10)**	**(9)**	**(2)**	**(4)**	**(12)**	**(7)**
8. Implementing critical path analysis and programme management	72 (100%)	Mean	3.90	3.70	3.75	3.97	3.72	4.00	4.04	4.22	3.88
		Rank	**5**	**9**	**7**	**4**	**8**	**3**	**2**	**1**	**6**
			(11)	**(15)**	**(14)**	**(6)**	**(13)**	**(9)**	**(5)**	**(1)**	**(11)**
9. Reduce lead time	72 (100%)	Mean	3.93	4.09	4.01	4.87	3.89	4.13	4.01	4.18	3.72
		Rank	**7**	**4**	**5**	**1**	**8**	**3**	**5**	**2**	**9**
			(9)	**(4)**	**(8)**	**(1)**	**(11)**	**(4)**	**(8)**	**(3)**	**(15)**

Table 4.12: LPM comparison with the Project Management Areas of Expertise (Continued)

10. Reduce total costs	72 (100%)	Mean	3.84	3.73	3.86	3.79	3.79	3.95	4.00	4.08	3.93
		Rank	**6**	**9**	**5**	**7**	**7**	**3**	**2**	**1**	**4**
			(12)	**(13)**	**(11)**	**(8)**	**(12)**	**(11)**	**(11)**	**(7)**	**(9)**
11. Maximizing workflow, minimizing the performance variation rather than focusing on speed only	72 (100%)	Mean	4.04	3.94	3.94	4.00	4.09	3.94	3.93	4.22	4.04
		Rank	**3**	**6**	**6**	**5**	**2**	**6**	**9**	**1**	**3**
			(5)	**(9)**	**(9)**	**(5)**	**(3)**	**(12)**	**(13)**	**(1)**	**(5)**
12. Value management techniques	72 (100%)	Mean	3.97	4.09	4.02	3.41	4.08	4.20	4.09	3.75	3.88
		Rank	**6**	**2**	**5**	**9**	**4**	**1**	**2**	**8**	**7**
			(6)	**(4)**	**(7)**	**(15)**	**(4)**	**(3)**	**(3)**	**(13)**	**(11)**
13. Benchmarking techniques including the use of key performance indicators	72 (100%)	Mean	4.16	4.02	4.36	3.59	3.50	3.34	3.88	3.98	3.75
		Rank	**2**	**3**	**1**	**7**	**8**	**9**	**5**	**4**	**6**
			(3)	**(6)**	**(1)**	**(12)**	**(15)**	**(15)**	**(15)**	**(8)**	**(14)**
14. Risk management techniques	72 (100%)	Mean	3.72	3.90	4.05	4.34	3.94	4.34	3.93	3.68	4.27
		Rank	**8**	**7**	**4**	**1**	**5**	**1**	**6**	**9**	**3**
			(14)	**(10)**	**(6)**	**(2)**	**(8)**	**(1)**	**(13)**	**(14)**	**(1)**
15. Implementing continuous improvement from one project to another	72 (100%)	Mean	3.75	4.12	3.93	3.52	4.15	3.73	4.01	3.88	4.11
		Rank	**7**	**2**	**5**	**9**	**1**	**8**	**4**	**6**	**3**
			(13)	**(3)**	**(10)**	**(13)**	**(2)**	**(14)**	**(8)**	**(11)**	**(4)**

(Note: Ranking in brackets refers to the LPM principles as used within each project management area)

Table 4.12 presented the means of responses to the frequency of the use of 15 LPM principles in each of the nine project management areas of expertise, highlighting the where each principle was most frequently used. The following was noted:

1. Improving planning and communication was most often to always used under cost (1st) and communication (2nd) management and not used as often under quality management.

2. Eliminating waste and errors was used often to always under scope (1st) and time (2nd) management and was used less seldom under procurement management.

3. CPM's indicated that direct intervention to drive immediate and apparent change was used often to always under scope (1st) and integration (2nd) management. In contrast, this principle was least used under time management which was ranked last.

4. Improving work planning and forward scheduling was used often to always under quality (1st) and human resource (2nd) management where as it was used least under cost management which ranked last.

5. Specifying value from the perspective of the customer/ client was used often to always under quality management (1st). It was least used under human resource management.

6. CPM's highlighted that eliminating activities that do not add value were most often to always used under cost management (1st) while it was least used under procurement management.

7. Ensuring that the work environment is clean, safe and efficient was used often to always under risk (1st) and integration (2nd) management. While only used sometimes to often under procurement management which ranked last.

8. CPM's felt that implementing critical path analysis and programme management was used most often to always under Time (1st), scope (2nd) management and used least under communication management.

9. Reduce lead time was used often to always under procurement management (1st). This suggests that reducing lead time played a major role in relation to the management of the programme. It was used least under quality management which ranked last.

10. CPM's indicated that reduce total costs was used often to always under time (1st) and scope (2nd) management. In contrast, communication management ranked last

suggesting that CPM's felt time and scope management were more crucial to reducing costs.

11. Maximizing workflow, minimizing the performance variation rather than focusing on speed only, was used often to always under time management (1st). It was least used under scope management which ranked last.

12. Value management techniques was used most often to always under risk management (1st) whereas used only sometimes under procurement management ranking last.

13. CPM's felt that benchmarking techniques including the use of key performance indicators were used often to always under integration management (1st) and used only sometimes under risk management which ranked last.

14. Risk management techniques was ranked 1st under both risk and procurement management suggesting that CPM's used this principle often to always under these areas of expertise.

15. Implementing continuous improvement from one project to another was used often to always under human resource management (1st) suggesting that CPM's see the need to ensure that implementing continuous improvement from one project to another is carried out through human resource team on the project. In contrast procurement management ranked last.

Table 4.12 presented the means of responses to the frequency of use of the nine project management areas of expertise in each of the 15 LPM principles highlighting were each area of expertise was most frequently used. The following was noted:

1. CPM's indicated that improving planning and communication was most used often to always under cost management, while improving work planning and forward scheduling was least used and ranked last. This suggests that improper

planning and communication will have a negative impact on cost management for the project.

2. Improving planning and communication was also ranked 1st under communication management indicating that CPM's used this principle often to always. It was clear that improving work planning and forward scheduling and implementing critical path analysis were least used as they both ranked last. This suggests that there is consensus with improving communication under communication management as highlighted by CPM's.

3. CPM's often to always use benching marking techniques including the use of key performance indicators under integration management. While eliminating waste and errors was least used and ranked last. This highlights that CPM's are tracking their performance by integrating benchmarking techniques and key performance indicators during the construction phase of the project.

4. Reduce lead time was seen as most often to always used under procurement management ranking 1st and value management techniques was least used as it ranked last. This suggests that reducing the lead time under procurement management plays a vital role towards ensuring that delays in the programme are avoided as long lead items must be ordered timeously so that they are delivered and installed in alignment with the programme.

5. Improving work planning and forward scheduling ranked 1st under human resource management confirming that it is used often to always by CPM's. In contrast, benchmarking techniques including the use of key performance indicators ranked last. This indicates that CPM's prioritize improving the team's work planning and forward scheduling so that any anticipated delays or hold points can be identified prior towards eliminating possible delays so that the programme is delivered on time.

6. Risk management techniques was used often to always by CPM's under risk management confirming that there is consensus between the application of the principle under the respective area of expertise. Benchmarking techniques

including the use of key performance indicators ranked last suggesting that this principle was least used.

7. CPM's felt that direct intervention to drive immediate and apparent change was used often to always under scope management, while benchmarking techniques including the use of key performance indicators was least used as it ranked last. This suggests that CPM's ensure that any changes to the scope that may impact the programme from a cost and time perspective is driven immediately towards understanding the nature of the change, its impact on the programme and then determining the way forward.

8. Implementing critical path analysis and programme management including maximizing work flow, minimizing the performance variation rather than focusing on speed only were seen as most often to always used by CPM's under time management as they both ranked 1st. Direct intervention to drive immediate and apparent change was least used and ranked last. This indicates that CPM's ensure the management of the programme including the execution of the critical path is monitored closely during the delivery of the programme so that the project is delivered on time. In addition, it is also suggestive that CPM's focus on maximizing the workflow towards ensuring more work is executed and completed rather than increasing speed and minimizing performance. As a result, progress of the works is capitalized on towards ensuring the successful and timeous delivery of the programme.

9. CPM's indicated that improving work planning and forward scheduling including risk management techniques were used often to always under quality management. While reduce lead time was least used and ranked last. This indicates that detailed planning of the programme including execution of same was seen as critical by CPM's towards ensuring that risks are mitigated and controlled so that quality is not compromised by abortive work being redone due to poor quality workmanship. This ensures that the programme is delivered on time but at a quality level that is acceptable and satisfactory.

Based on the means scores and rankings presented in Table 4.12, it is clear that CPM's are aware of LPM and are using these principles during construction projects. In addition, the tabled data confirms that CPM's are implementing LPM under the nine project management areas of expertise as an initiative towards improving the delivery of the programme during the construction phase of public sector projects. It was further identified that there is consensus between the principles that were used most often to always under the respective area of expertise. The statistical data did however bring to light that not all principles are being implemented equally under each area of expertise.

4.4.4 Agreement of LPM Benefits

CPM's were asked on a scale of 1 to 5, where 1 = strongly disagree and 5 = strongly agree, to indicate their level of agreement with seven benefits of implementing LPM on public sector projects towards ensuring that the programme is managed and delivered successfully. The responses of the CPM's were ranked according to their mean scores in 4.13.

Table 4.13: Agreement of LPM Benefits

Lean Project Management Benefits	N	Scale					Mean	Std. Dev.	Rank
		1	2	3	4	5			
Faster project completion	72 (100%)	-	-	1 (1.4%)	25 (34.7%)	46 (63.9%)	4.62	0.51	**1**
Increase successful projects	72 (100%)	-	-	1 (1.4%)	29 (40.3%)	42 (58.3%)	4.56	0.52	**2**
Clear signals on when to take action	72 (100%)	-	-	1 (1.4%)	29 (40.3%)	42 (58.3%)	4.56	0.52	**2**
Simple project status	72 (100%)	-	-	1 (1.4%)	30 (41.7%)	41 (56.9%)	4.55	0.52	**4**
Reduced waste that cause delays	72 (100%)	-	-	1 (1.4%)	33 (45.8%)	38 (52.8%)	4.51	0.53	**5**
Reduced unnecessary paperwork	72 (100%)	-	-	1 (1.4%)	34 (47.2%)	37 (51.4%)	4.50	0.53	**6**
Reduced pressure on the team	72 (100%)	-	-	4 (5.6%)	35 (48.6%)	33 (45.8%)	4.40	0.59	**7**

According to Table 4.13, with the mean scores ranging from 4.40 to 4.62, it is clear that CPM's agreed that implementing LPM on public sector projects will be beneficial towards ensuring the programme is managed and delivered successfully. In addition, faster project completion (Mean = 4.62) and increase successful projects (Mean = 4.56) were seen as the principles that were most beneficial. While reduce pressure on the team was seen as least beneficial and ranked last. This suggests that CPM's had consensus with completing projects faster while increasing the number of successful projects indicating that implementing LPM will be beneficial.

The responses in Table 4.13 are supported by the literature indicating that the listed LPM benefits identified by Leach (2006) were seen as beneficial in implementing on public sector projects to ensure the programme was managed and delivered successfully.

4.4.5 Importance of LPM Benefits

CPM's were asked on a scale of 1 to 3, where 1 = not important at all and 3 = extremely important, to indicate how important the benefits of implementing LPM on public sector projects are towards ensuring the project is managed and delivered successfully. The responses of the CPM's were ranked according to their mean scores in Table 4.14.

Table 4.14: Importance of LPM Benefits

Lean Project Management Benefits	N	Scale			Mean	Std. Dev.	Rank
		1	2	3			
Increase successful projects	72 (100%)	-	-	72 (100%)	3.00	0.00	**1**
Faster project completion	72 (100%)	-	2 (2.8%)	70 (97.2%)	2.97	0.16	**2**
Clear signals on when to take action	72 (100%)	-	2 (2.8%)	70 (97.2%)	2.97	0.16	**2**
Simple project status	72 (100%)	-	2 (2.8%)	70 (97.2%)	2.97	0.16	**2**
Reduced unnecessary paperwork	72 (100%)	-	3 (4.2%)	69 (95.8%)	2.95	0.20	**5**
Reduced waste that cause delays	72 (100%)	-	11 (15.3%)	61 (84.7%)	2.84	0.36	**6**
Reduced pressure on the team	72 (100%)	-	12 (16.7%)	60 (83.3%)	2.83	0.37	**7**

According to Table 4.14, with the mean scores ranging from 2.83 to 3.00, it is evident that the benefits of implementing LPM on public sector projects towards ensuring the programme is managed and delivered successfully is seen as extremely important. However, increase successful projects (Mean = 3.00) was identified as extremely important. In contrast, reduce pressure on the team was seen as least important and ranked last. This suggests that CPM's agreed on the importance of completing projects faster indicating that implementing LPM is beneficial towards successfully delivering the programme.

The responses in Table 4.14 was supported by the literature indicating that the listed LPM benefits identified by Leach (2006) were seen as important in implementing on public sector projects to ensure the programme was managed and delivered successfully.

4.4.5.1 Discussion

Table 4.15 ranks the mean scores presenting a comparison between CPM's agreement in relation to the importance of the benefits with implementing LPM on public sector construction projects towards improving the management and delivery of the programme.

Table 4.15: Comparison between Agreement and Importance

Lean Project Management Benefits	Agreement			Importance		
	Mean	Std. Dev.	Rank	Mean	Std. Dev.	Rank
Faster project completion	4.62	0.51	1	2.97	0.16	2
Increase successful projects	4.56	0.52	2	3.00	0.00	1
Clear signals on when to take action	4.56	0.52	2	2.97	0.16	2
Simple project status	4.55	0.52	4	2.97	0.16	2
Reduced waste that cause delays	4.51	0.53	5	2.84	0.36	6
Reduced unnecessary paperwork	4.50	0.53	6	2.95	0.20	5
Reduced pressure on the team	4.40	0.59	7	2.83	0.37	7

According to Table 4.15, CPM's strongly agreed that faster project completion is beneficial which ranked 1st and that reduced pressure on the team was least beneficial and ranked last. Whereas, CPM's felt that increase successful projects was extremely important and ranked it 1st and that reduced pressure on the team was least important as it also ranked last.

Based on this comparison between the ranked mean scores, it is evident that there is consensus between agreement and importance. With the mean scores so close, it indicates that CPM's strongly agree with the benefits of LPM and further confirm that they are extremely important in implementing towards ensuring the successful delivery of the project programme.

4.4.6 Awareness of LPM Problems/Drawbacks

CPM's were asked on a scale of 1 to 5, where 1 = never and 5 = always, to rank how often they encountered problems/drawbacks towards implementing LPM on public sector

projects towards ensuring that the project programme is managed and delivered successfully. The responses of the CPM's were ranked according to their mean scores in Table 4.16.

Table 4.16: Awareness of LPM Problems/Drawbacks

Lean Project Management Problems/ Drawbacks	N	Scale					Mean	Std. Dev.	Rank
		1	2	3	4	5			
Lack of pro-active approach towards achieving the targeted programme dates	72 (100%)	-	-	1 (1.4%)	42 (58.3%)	29 (40.3%)	4.38	0.51	**1**
Lack of communication resulting in delays to the programme	72 (100%)	-	-	1 (1.4%)	44 (61.1%)	27 (37.5%)	4.36	0.51	**2**
Failure to adequately programme the work and adhere to the programme	72 (100%)	-	-	3 (4.2%)	41 (56.9%)	28 (38.9%)	4.34	0.56	**3**
Failure to provide adequate qualified human resources to manage the programme	72 (100%)	-	-	6 (8.3%)	36 (50.0%)	30 (41.7%)	4.33	0.62	**4**
Failure to control cost changes that impact the programme throughout the execution of the project	72 (100%)	-	-	11 (15.3%)	29 (40.3%)	32 (44.4%)	4.29	0.72	**5**
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	72 (100%)	-	-	4 (5.6%)	44 (61.1%)	24 (33.3%)	4.27	0.56	**6**

The mean scores in Table 4.16 ranging from 4.27 to 4.38 indicates that CPM's encountered all of the problems/drawbacks often to always, when implementing LPM on public sector projects. However, a lack of pro-active approach towards achieving the targeted programme dates (Mean = 4.38) was encountered most often to always by CPM's ranking this problem/drawback 1st. In contrast, failure to develop an efficient programme and to effectively maintain the programme throughout the project execution (Mean = 4.27) was least encountered and ranked last. This suggests that on public sector projects a lack of pro-active approach by team members towards achieving targeted programmed dates contributed to delaying the delivery of the project programme.

The responses in Table 4.16 were supported by the literature presented in Chapter 2 by Johansen & Walter (2007); Olatunji (2008); Senarate & Wijesiri (2008); Abdullah et al., (2009); Mossman (2009) including Seymour (1998); Garnett (1999); Alarcon et al., (2002); Jøhansen & Porter (2003); Jorgensen et al., (2004); Alacaron et al., (2005) and Ansell et al., (2007) indicating that the listed problems/drawbacks were all encountered by CPM's when implementing LPM on public sector projects to improve the management and delivery of the programme.

4.4.7 Importance of Eliminating LPM Problems/Drawbacks

CPM's were asked on a scale of 1 to 3, where 1 = not important at all and 3 = extremely important, to indicate how important they felt it was to eliminate these problems/drawbacks towards ensuring the project programme is managed and delivered successfully. The responses of the CPM's were ranked according to their mean scores in Table 4.17.

Table 4.17: Importance of Eliminating LPM Problems/Drawbacks

Lean Project Management Challenges	N	Scale			Mean	Std. Dev.	Rank
		1	2	3			
Failure to adequately programme the work and adhere to the programme	72 (100%)	-	-	72 (100%)	3.00	0.00	**1**
Failure to provide adequate qualified human resources to manage the programme	72 (100%)	-	1 (1.4%)	71 (98.6%)	2.98	0.11	**2**
Poor turnaround time for information flow	72 (100%)	-	2 (2.8%)	70 (97.2%)	2.97	0.16	**3**
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	72 (100%)	-	3 (4.2%)	69 (95.8%)	2.95	0.20	**4**
Failure to control cost changes that impact the programme throughout the execution of the project	72 (100%)	-	4 (5.6%)	68 (94.4%)	2.94	0.23	**5**
Lack of pro-active approach towards achieving the targeted programme dates	72 (100%)	-	6 (8.3%)	66 (91.7%)	2.91	0.27	**6**
Lack of communication resulting in delays to the programme	72 (100%)	-	7 (9.7%)	65 (90.3%)	2.90	0.29	**7**

According to Table 4.17, the mean scores range from 2.90 to 3.00, indicating that CPM's felt it was extremely important to eliminate all problems/drawbacks towards ensuring that the project programme is managed and delivered successfully. In addition, failure to adequately programme the work and adhere to the programme (Mean = 3.00) was seen as extremely important for CPM's to eliminate. While a lack of communication resulting in delays to the programme (Mean = 2.90) was seen as least important and ranked last. It is evident that CPM's have consensus with eliminating failure to adequately programme the work and non-adherence to the programme, with these two problems/drawbacks present, the programme will then be compromised and not delivered successfully.

The literature supports the responses in Table 4.17 confirming that CPM's feel it was extremely important for these to be eliminated to ensure that the project programme was managed and delivered successfully.

4.7 Summary

This chapter presented the findings and analysis of the three sub-sections of the research instrument used. Cronbach's alpha confirmed the internal consistency/ reliability of the constructs identified. CPM's executed public sector construction projects often or always. They were well versed in utilizing the programme towards delivery of the project on time and felt that the use of the project programme during the construction phase of projects is extremely important. It was then confirmed that CPM's use the project programme within calendar month often to always and experience challenges often to always with monitoring and managing the project programme. There is consensus between CPM's awareness and experience with the causes of poor programme management. CPM's further agree that the principles underpinning LPM are important and further agree with their application towards improving the management and delivery of the programme. They are aware of LPM and are using these principles during construction projects. CPM's are also implementing LPM under the nine project management areas of expertise as an initiative towards improving the delivery of the programme during the construction phase of public sector projects. They strongly agree with the benefits of LPM and further confirm that they are extremely important in implementing towards ensuring the successful delivery of the project programme. Furthermore, they encountered all of the

problems/drawbacks often to always, when implementing LPM on public sector projects and feel it is extremely important for these problems/drawbacks to be eliminated towards ensuring that the project programme is managed and delivered successfully. In addition, the findings were related to the hypotheses and the study objectives which formed the core of the research. The next chapter draws conclusions from the research findings and provides recommendations for further research.

Chapter 5 – Conclusion and Recommendations

5.1 Introduction

The final chapter of the research draws conclusions from the findings identified and presented in the Data Collection and Analysis chapter (Chapter 4) and relates them to the hypotheses and research objectives stated in Chapter 1.

5.2 Summary

The purpose of this study was to determine whether implementing LPM tools and techniques during the construction phase of public sector projects would assist in the successful delivery of the project programme from the CPM's perspective. The research established a link between the project programme during the construction phase of projects and the implementation of LPM by CPM's during this phase towards overcoming the obstacles of poor delivery of the programme on public sector projects. It further presented the integration between the areas of concern in a practical way through the research findings from the literature and data collection and analysis that portrayed the relationship between the programme and LPM. The problem statement that provided guidance and direction for the study and it objectives was the following:

Poor management of the programme CPM's during the construction phase of public sector projects hinders the successful delivery of the project programme.

The objectives of the research were:

1. To determine if CPM's are aware of lean project management tools and techniques.
2. To determine the lean project management tools and techniques importance to CPM's.
3. To determine how often CPM's use lean project management tools and techniques during the construction phase towards the successful completion of the programme.

4. To determine whether poor programme management during the construction phase impacts the successful delivery of the programme.

It was found that CPM's were aware of LPM and that poor management of the programme during the construction phase negatively impacted the successful delivery of the programme. In addition, CPM's felt that LPM was important and they took the initiative to implement its tools and techniques during construction on public sector projects.

5.3 Hypothesis Testing

5.3.1 Hypothesis 1: CPM's are not aware of lean project management tools and techniques

It was noted that 84.4% of CPM's executed public sector construction projects often to always. The majority of CPM's surveyed, confirmed that LPM principles were extremely important in adopting towards improving the management and delivery of the programme.

The majority confirmed that they strongly agreed with applying LPM principles to improve the management and delivery of the programme. CPM's were implementing most of the principles of LPM under the nine project management areas of expertise to improve the delivery of the programme during the construction phase of public sector projects. CPM's were aware of LPM and were using some of these principles and techniques during construction projects.

The hypothesis that CPM's are not aware of LPM is rejected.

5.3.2 Hypothesis 2: Lean project management tools and techniques are not important to CPM's

The majority of CPM's agreed that the principles underpinning LPM were extremely important and further agreed with their application to improve the management and delivery of the programme. CPM's strongly agreed with the benefits of LPM and further confirmed that they are extremely important in implementing to ensure the successful

delivery of the project programme. CPM's felt that it was extremely important for the problems/drawbacks to be eliminated to ensure that the project programme is managed and delivered successfully

The hypothesis that LPM is not important to CPM's is rejected.

5.3.3 Hypothesis 3: Lean project management tools and techniques are not used often by CPM's during the construction phase towards the completion of the programme

CPM's confirmed that they strongly agreed with applying LPM principles to improve the management and delivery of the programme. CPM's were implementing most of the principles of LPM under the nine project management areas of expertise to improve the delivery of the programme during the construction phase of public sector projects.

Other principles were also used from time to time. There was room for improvement regarding the equal implementation of all principles under the nine areas of expertise. Interestingly, CPM's confirmed that they encountered all of the listed problems/drawbacks when implementing LPM on public sector projects.

The hypothesis that LPM is not used often by CPM's during the construction phase towards the completion of the programme is rejected.

5.3.4 Hypothesis 4: Poor programme management during the construction phase does not impact the successful delivery of the programme

All CPM's rated their knowledge, understanding and interpretation as good or excellent confirming that they were well versed in utilizing the programme towards delivery of the project on time. In addition, 90.3% of CPM's felt that the use of the project programme during the construction phase of projects was extremely important. Furthermore, 84.7% of CPM's indicated that they mostly used the project programme often to always within calendar month.

The majority of CPM's confirmed that they do experience challenges while monitoring and managing the project programme during the construction phase of projects. It was evident that CPM's were aware of the causes of poor programme management and experienced them during the construction phase of public sector projects, indicating that poor programme management negatively impacted the delivery of the programme causing delays to the project. There was consensus between CPM's level of awareness and experience.

The hypothesis that poor programme management during the construction phase does not impact the successful delivery of the programme is rejected.

5.4 Recommendations

5.4.1 Recommendations to CPM's

CPM's must play a pro-active role towards ensuring that the principles and techniques of LPM are implemented during the construction phase towards improving the management and delivery of the project programme. As a key role player on construction projects, CPMs are in an opportune position to drive the implementation of these principles on public sector projects. It is imperative for them to ensure all principles are implemented under all nine project management areas of expertise as an initiative towards the successful delivery of the programme. This could be initiated through CPM's tracking the implementation of the respective principles and that the impacts/improvements are achieved regarding progress in relation to the programme. In addition, depending on the duration of the project, regular programming meetings should be held to review and track whether LPM is being implemented, including the identification of areas that could be improved on if the project is not on programme. As an alternative, a section for LPM implementation/ monitoring and tracking could be included in the agenda of the regular project site and technical meetings.

CPM's must enhance their project management and lean project management tools and techniques to further assist in the overall management of public sector construction projects. This could be achieved through CPM's ensuring they attend regular project management and LPM training courses/ workshops which discuss new and up to date

tools and techniques being implemented to improve the management of construction projects.

CPM's should consider partnering with Government towards improving the successful delivery of public sector projects by working together to eliminate/ minimize the areas of poor programme management. This could be achieved through regular meetings/ workshops held between CPM's and government during the life cycle of the project where areas of poor programme management are reviewed and the proposed solutions for eliminating them are discussed. The outcome of these meetings/ workshops should be to develop an action plan for implementation towards eliminating poor programme management during the execution of the project.

CPM's should prepare a specific construction phase completion report at the end of the construction phase to track and identify any old and new areas of poor programme management that they may have incurred. This information should be shared with government and the SACPCMP through the creation of a data base that makes these reports accessible, so that other professionals and government sectors have the opportunity to review them and are made aware of these challenges. This will promote awareness and better equip construction professionals to address the areas of poor programme management moving forward.

5.4.2 Recommendations to the Public Sector

The Department of Public Works (DPW), being a major implementing agent of public sector projects in South Africa, should consider partnering with CPM's to eliminate/ minimize the problems/ drawbacks identified with implementing LPM towards improving the management and delivery of the programme. This may be facilitated through regular workshops/ operations and programming meetings with the department and CPM's during the project life cycle, whereby the problems/ drawbacks are identified and listed, so that control measures are put in place such as risk management plans in order to monitor and avoid identified problems/ drawbacks including dealing with them immediately as they occur.

Government should promote the implementation of LPM on public sector projects through their procurement strategies used for employing construction professionals. They should consider including LPM implementation and experience from construction professionals as a preferential requirement under the functionality criteria required during the tender process.

It would be beneficial for Government to monitor the implementation of LPM through their procurement strategies which should be facilitated by their Supply Chain Management division and track the impacts on the delivery of the programme. This will enable a data base to be created identifying strengths and weaknesses, allowing for further corrective measures to be implemented towards ensuring that public sector projects are delivered successfully.

Government should consider facilitating the implementation of LPM principles and techniques with other construction professionals towards improving the delivery of public sector construction projects. This could be achieved through government raising awareness via Professional Bodies regarding the initiatives of implementing LPM in construction projects moving forward. This could then be driven through updating the scope of services documents for each professional body, thereby making the implementation of LPM on public sector projects a requirement rather than an initiative.

5.4.3 Further Research

It is recommended that research be done on the implementation of LPM by CPM's during the construction phase of public sector projects to achieve the successful delivery of the project programme in other provinces of South Africa and comparisons drawn. It is important to establish a holistic interpretation before strategies can be developed at a national level by Government and the SACPCMP.

A study should be conducted on the implementation of LPM on the other project work stages and comparisons be drawn to identify the trends in its implementation and respective impacts it makes during its use in other work stages.

LPM being relatively new in construction and little research being conducted in South Africa, it is recommended that further research in the field of LPM including its integration with and impacts on the built environment be investigated and explored allowing for further growth and development of the body of knowledge in South Africa.

It is recommended that the same study should be conducted after a fair period of time has lapsed to establish whether the implementation of LPM on public sector construction projects has improved including whether the impacts of LPM has improved the delivery of the project programme.

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University of Kwa-Zulu Natal
School of Engineering
Property Development Programme

Dear Sir/Madam

I am currently undertaking academic research in fulfilment of the requirements for the Master's Degree in Construction Management at the School of Engineering, in the Property Development Programme at the University of Kwa-Zulu Natal, Durban, South Africa. This research aims to investigate the impacts of implementing during the construction phase lean project management tools and techniques by the CPM in public sector projects towards assisting in the successful delivery of the programme.

The questionnaire survey that I am inviting you to participate in, aims to identify and assess the use of lean project management tools and techniques by CPM's during the construction phase of projects and their impact on the overall construction programme.

My Research Supervisors and I would be very grateful if you will complete the attached questionnaire as accurately and fully as you can. Completed questionnaires should be returned by 30th August 2015 to neil@ldm.co.za.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.

Should you have any queries or you would like to discuss any question, please feel free to contact me via the contact information mentioned in the questionnaire.

Yours Sincerely

Mr. Neil Sirbadhoo
Masters Student
neil@ldm.co.za
031 207 1340

Prof. Theo Haupt
Research Supervisor
haupt@ukzn.ac.za
031 260 2687

Dr. N. Harinarain
Research Co-Supervisor
harinarain@ukzn.ac.za
031 260 2687

You may also contact the Research Office through:

P. Mohun
HSSREC Research Office
mohunp@ukzn.ac.za
031 260 4557

Lean Project Management for the Successful Delivery of the Project Programme during the Construction Phase: The Construction Project Managers Perspective in the Public Sector

Thank you for taking the time to complete this questionnaire. Your input is of great value and will be used in understanding CPM's perception of the causes of poor programme management and identify the lean tools and techniques that could be implemented during the construction phase of Public Sector projects towards the successful delivery of the programme.

Your anonymity is of utmost importance and therefore all responses in this questionnaire will remain completely confidential.

Kindly email the completed questionnaire to the following email address: neil@ldm.co.za

Interviewer Contact Details:

Telephone (Home)	(031) 564 9830
Telephone (Cell)	072 112 4620
Email Address	neil@ldm.co.za

Section 1 – Public Sector Construction Projects

Question 1	Ranking				
	1 (Never)	2 (Seldom)	3 (Sometimes)	4 (Often)	5 (Always)
How often do you execute Public Sector construction projects?					

Section 2 – Programme Management during the Construction Phase

Question 2	Ranking				
	1 (Very Poor)	2 (Poor)	3 (Average)	4 (Good)	5 (Excellent)
How would you rate your knowledge, understanding and interpretation of the project programme during the construction phase towards ensuring that the project is delivered on time?					

Question 3	Ranking		
	1 (Not Important at all)	2 (Neutral)	3 (Extremely Important)
How important is the use of a programme during the construction phase of projects?			

Question 4	Ranking				
	1 (Never)	2 (Seldom)	3 (Sometimes)	4 (Often)	5 (Always)
How often (within a calendar month) do you use a project programme on construction projects during the construction phase?					

Section 2 – Programme Management during the Construction Phase (Continued)

Question 5	Ranking				
	1 (Never)	2 (Seldom)	3 (Sometimes)	4 (Often)	5 (Always)
How often (within a calendar month) on public sector construction projects do you experience any challenges with the monitoring and management of the project programme during the construction phase?					

Question 6

Based on your experience with Government during the construction phase of public sector construction projects, to what extent do you agree with the causes of poor programme management listed in the table below from a CPM's perspective?

No.	Poor Programme Management Areas	Rating				
		1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
1	Failure to adequately programme the work and adhere to the programme					
2	Failure to provide adequate qualified human resources to manage the programme					
3	Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution					
4	Failure to control cost changes that impact the programme throughout the execution of the project					
5	Lack of communication resulting in delays to the programme					
6	Lack of pro-active approach towards achieving the targeted programme dates					
7	Poor turnaround time for information flow					

Section 2 – Programme Management during the Construction Phase (Continued)

Question 7

Based on your experience with Government during the construction phase of public sector construction projects, how often do you experience the causes of poor programme management listed in the table below from a CPM's perspective?

No.	Poor Programme Management Areas	Rating				
		1 (Never)	2 (Seldom)	3 (Sometimes)	4 (Often)	5 (Always)
1	Failure to adequately programme the work and adhere to the programme					
2	Failure to provide adequate qualified human resources to manage the programme					
3	Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution					
4	Failure to control cost changes that impact the programme throughout the execution of the project					
5	Lack of communication resulting in delays to the programme					
6	Lack of pro-active approach towards achieving the targeted programme dates					
7	Poor turnaround time for information flow					

Section 3 – Lean Project Management

Lean is defined as "containing little or no fat" (Oxford English Dictionary, 2013). The Lean Construction Institute (LCI) identifies Lean Construction as a continuous process that applies through design, procurement, manufacture and construction in which Clients, Designers, Contractors and Suppliers must be committed to working together, focusing on delivering value and striving to get it right the first time.

Question 8

How important to CPM's are the principles underpinning lean construction and techniques that may be adopted towards improving the management and delivery of the project programme listed in the table below as highlighted by the LCI?

No.	Lean Principles and Techniques	Ranking		
		1 (Not Important at all)	2 (Neutral)	3 (Extremely Important)
1	Improving planning and communication			
2	Eliminating waste and errors			
3	Direct intervention to drive immediate and apparent change			
4	Improving work planning and forward scheduling			
5	Specifying value from the perspective of the customer/ client			
6	Eliminating activities that do not add value			
7	Ensuring the work environment is clean, safe and efficient			
8	Implementing critical path analysis and programme management			
9	Reduce lead time			
10	Reduce total costs			
11	Maximizing workflow, minimizing the performance variation rather than focusing on speed only			
12	Value management techniques			
13	Benchmarking techniques including the use of key performance indicators			
14	Risk management techniques			
15	Implementing continuous improvement from one project to another			

Section 3 – Lean Project Management (Continued)

Question 9

Do CPM's agree with applying these principles underpinning lean construction and techniques that may be adopted during the construction phase towards improving the delivery of the project programme?

No.	Lean Principles and Techniques	Ranking				
		1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
1	Improving planning and communication					
2	Eliminating waste and errors					
3	Direct intervention to drive immediate and apparent change					
4	Improving work planning and forward scheduling					
5	Specifying value from the perspective of the customer/ client					
6	Eliminating activities that do not add value					
7	Ensuring the work environment is clean, safe and efficient					
8	Implementing critical path analysis and programme management					
9	Reduce lead time					
10	Reduce total costs					
11	Maximizing workflow, minimizing the performance variation rather than focusing on speed only					
12	Value management techniques					
13	Benchmarking techniques including the use of key performance indicators					
14	Risk management techniques					
15	Implementing continuous improvement from one project to another					

Section 3 – Lean Project Management (Continued)

Question 10

How often do you use these principles under the Nine Project Management Areas of Expertise during the construction phase of projects?

Please indicate in the boxes below on a scale of 1 to 5 (where 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Always):

No.	Lean Principles and Techniques	Nine Project Management Areas of Expertise								
		Integration Management	Scope Management	Time Management	Cost Management	Quality Management	Human Resource Management	Communication Management	Risk Management	Procurement Management
1	Improving planning and communication									
2	Eliminating waste and errors									
3	Direct intervention to drive immediate and apparent change									
4	Improving work planning and forward scheduling									
5	Specifying value from the perspective of the customer/ client									
6	Eliminating activities that do not add value									
7	Ensuring the work environment is clean, safe and efficient									
8	Implementing critical path analysis and programme management									
9	Reduce lead time									
10	Reduce total costs									
11	Maximizing workflow, minimizing the performance variation rather than focusing on speed only									
12	Value management techniques									
13	Benchmarking techniques including the use of key performance indicators									
14	Risk management techniques									
15	Implementing continuous improvement from one project to another									

Section 3 – Lean Project Management (Continued)

Question 11

Leach (2006) notes that Lean Project Management aims to increase productivity, reduce project durations and minimize quality defects.

Do you agree with the benefits of implementing Lean Project Management listed below on Public Sector projects towards ensuring the project programme is managed and delivered successfully?

No.	Lean Project Management	Rating				
		1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
1	Increase successful projects					
2	Faster project completion					
3	Simple project status					
4	Reduced unnecessary paperwork					
5	Clear signals on when to take action					
6	Reduced pressure on the team					
7	Reduced waste that cause delays					

Section 3 – Lean Project Management (Continued)

Question 12

How important are the benefits of implementing Lean Project Management listed below on Public Sector projects towards ensuring the project programme is managed and delivered successfully?

No.	Lean Project Management	Rating		
		1 (Not Important at all)	2 (Neutral)	3 (Extremely Important)
1	Increase successful projects			
2	Faster project completion			
3	Simple project status			
4	Reduced unnecessary paperwork			
5	Clear signals on when to take action			
6	Reduced pressure on the team			
7	Reduced waste that cause delays			

Section 3 – Lean Project Management (Continued)

Question 13

How often do you encounter the problems/drawbacks listed in the table below towards implementing Lean Project Management on Public Sector projects towards ensuring the project programme is managed and delivered successfully?

No.	Lean Project Management Problems/ Drawbacks	Rating				
		1 (Never)	2 (Seldom)	3 (Sometimes)	4 (Often)	5 (Always)
1	Failure to adequately programme the work and adhere to the programme					
2	Failure to provide adequate qualified human resources to manage the programme					
3	Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution					
4	Failure to control cost changes that impact the programme throughout the execution of the project					
5	Lack of communication resulting in delays to the programme					
6	Lack of pro-active approach towards achieving the targeted programme dates					
7	Poor turnaround time for information flow					

Section 3 – Lean Project Management (Continued)

Question 14

How important is it for these problems to be eliminated towards ensuring the project programme is managed and delivered successfully?

No.	Lean Project Management Problems/ Drawbacks	Rating		
		1 (Not Important at all)	2 (Neutral)	3 (Extremely Important)
1	Failure to adequately programme the work and adhere to the programme			
2	Failure to provide adequate qualified human resources to manage the programme			
3	Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution			
4	Failure to control cost changes that impact the programme throughout the execution of the project			
5	Lack of communication resulting in delays to the programme			
6	Lack of pro-active approach towards achieving the targeted programme dates			
7	Poor turnaround time for information flow			

Annexure C – Data Summary Schedule

Annexure C

SPSS - Data Summary Schedule

Section1	Q1	Section2	Q2	Q3	Q4	Q5	Q6	Q6.1	Q6.2	Q6.3	Q6.4	Q6.5	Q6.6	Q6.7	Q7	Q7.1	Q7.2	Q7.3	Q7.4	Q7.5	Q7.6	Q7.7	Section3	Q8	Q8.1	Q8.2	Q8.3	Q8.4	Q8.5	Q8.6	Q8.7	Q8.8	Q8.9	Q8.10
	5,00		4,00	3,00	5,00	3,00		4,00	5,00	5,00	4,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	4,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		4,00	4,00	4,00	5,00	5,00	5,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	5,00	5,00	5,00	4,00	3,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	4,00	4,00		4,00	4,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	2,00	2,00
	4,00		5,00	3,00	4,00	3,00		4,00	5,00	5,00	5,00	5,00	4,00	4,00		4,00	4,00	3,00	3,00	4,00	3,00	3,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	2,00	2,00
	4,00		5,00	2,00	3,00	3,00		5,00	5,00	5,00	5,00	4,00	5,00	5,00		4,00	4,00	3,00	3,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	2,00	3,00	3,00		5,00	5,00	5,00	5,00	4,00	5,00	5,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	2,00	2,00	2,00	2,00	2,00
	4,00		5,00	2,00	3,00	3,00		5,00	5,00	5,00	5,00	4,00	5,00	5,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	2,00	2,00	2,00	2,00	2,00
	4,00		5,00	2,00	3,00	3,00		5,00	5,00	5,00	5,00	4,00	5,00	5,00		4,00	4,00	4,00	4,00	3,00	3,00	3,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	4,00		4,00	5,00	5,00	5,00	5,00	4,00	4,00		4,00	4,00	3,00	3,00	4,00	4,00	4,00			3,00	3,00	2,00	2,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	5,00	5,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	4,00		4,00	5,00	4,00	5,00	5,00	5,00	5,00		5,00	4,00	5,00	5,00	5,00	4,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	3,00	5,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	4,00		4,00	4,00	4,00	5,00	5,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	4,00		4,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	4,00		4,00	5,00	3,00	4,00	5,00	4,00	5,00		4,00	4,00	5,00	4,00	5,00	4,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	2,00	3,00	3,00	3,00
	3,00		4,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	3,00	4,00	4,00		4,00	4,00	5,00	4,00	5,00	4,00	4,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	4,00		5,00	5,00	5,00	5,00	5,00	4,00	4,00		5,00	5,00	4,00	4,00	4,00	4,00	5,00			3,00	3,00	3,00	2,00	2,00	3,00	2,00	3,00	3,00	3,00
	4,00		4,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00	4,00	3,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	2,00		4,00	3,00	4,00	4,00		4,00	4,00	5,00	5,00	5,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	2,00		5,00	3,00	5,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	5,00		4,00	5,00	5,00	4,00	4,00	4,00	5,00		5,00	4,00	4,00	5,00	4,00	5,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	3,00	5,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	3,00	4,00	4,00		4,00	5,00	5,00	5,00	4,00	5,00	5,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		5,00	5,00	5,00	4,00	4,00	4,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	5,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	4,00	5,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	3,00		5,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	4,00	4,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	5,00	4,00	4,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00			3,00	2,00	2,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00		5,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	4,00	4,00	5,00	5,00			3,00	3,00	2,00	2,00	2,00	2,00	2,00	3,00	3,00	3,00
	4,00		4,00	3,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	5,00	4,00	5,00			3,00	3,00	3,00	3,00	2,00	2,00	2,00	2,00	2,00	3,00
	4,00		5,00	3,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	3,00	3,00	4,00	3,00	3,00			3,00	3,00	3,00	3,00	3,00	2,00	2,00	2,00	3,00	2,00	2,00
	4,00		5,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	2,00	2,00	3,00	3,00	2,00	2,00	2,00	2,00
	5,00		5,00	3,00	4,00	4,00		4,00	4,00	4,00	3,00	3,00	3,00	3,00		4,00	3,00	4,00	3,00	4,00	3,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	2,00	3,00	3,00		4,00	4,00	4,00	5,00	4,00	5,00	5,00		4,00	3,00	4,00	3,00	4,00	3,00	4,00			3,00	3,00	3,00	3,00	2,00	3,00	3,00	2,00	2,00	2,00
	4,00		5,00	3,00	4,00	4,00		4,00	5,00	5,00	5,00	5,00	4,00	5,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00			3,00	3,00	2,00	3,00	2,00	2,00	2,00	3,00	3,00	2,00
	4,00		5,00	3,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	4,00	3,00	5,00	4,00	3,00	4,00			3,00	3,00	2,00	3,00	2,00	2,00	2,00	3,00	3,00	2,00
	3,00		4,00	3,00	3,00	4,00		4,00	3,00	4,00	3,00	5,00	4,00	5,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00			3,00	3,00	2,00	3,00	2,00	2,00	2,00	3,00	3,00	2,00
	3,00		5,00	3,00	4,00	3,00		4,00	4,00	3,00	3,00	5,00	4,00	4,00		3,00	3,00	4,00	4,00	3,00	4,00	4,00			3,00	3,00	3,00	3,00	2,00	2,00	3,00	2,00	3,00	3,00
	3,00		5,00	3,00	4,00	3,00		4,00	4,00	3,00	3,00	5,00	4,00	4,00		3,00	3,00	4,00	4,00	3,00	4,00	4,00			3,00	3,00	3,00	3,00	2,00	2,00	3,00	2,00	3,00	3,00
	3,00		5,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	5,00	5,00		4,00	5,00	5,00	4,00	4,00	5,00	4,00			3,00	2,00	2,00	2,00	3,00	3,00	2,00	3,00	2,00	3,00
	4,00		4,00	3,00	4,00	5,00		4,00	4,00	4,00	3,00	4,00	3,00	5,00		4,00	3,00	4,00	5,00	4,00	3,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00		4,00	3,00	4,00	5,00		4,00	4,00	4,00	3,00	4,00	3,00	5,00		4,00	3,00	4,00	5,00	4,00	3,00	4,00			3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00

Annexure C

SPSS - Data Summary Schedule

Q8.11	Q8.12	Q8.13	Q8.14	Q8.15	Q9	Q9.1	Q9.2	Q9.3	Q9.4	Q9.5	Q9.6	Q9.7	Q9.8	Q9.9	Q9.10	Q9.11	Q9.12	Q9.13	Q9.14	Q9.15	Q10	Q10.1	Q10.1.1	Q10.1.2	Q10.1.3	Q10.1.4	Q10.1.5	Q10.1.6	Q10.1.7	Q10.1.8	Q10.1.9	Q10.2	Q10.2.1	Q10.2.2
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	3,00	4,00	4,00	3,00	3,00	4,00	4,00	3,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	3,00	4,00	4,00	3,00	4,00	5,00	4,00	3,00		4,00	4,00
2,00	2,00	3,00	3,00	2,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	4,00	5,00	3,00	3,00	3,00	5,00			4,00	4,00	4,00	4,00	4,00	3,00	4,00	3,00	4,00		3,00	4,00
2,00	2,00	3,00	3,00	2,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	4,00	5,00	3,00	3,00	3,00	5,00			5,00	4,00	3,00	4,00	2,00	3,00	4,00	3,00	4,00		3,00	4,00
2,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	5,00	5,00	4,00			3,00	4,00	3,00	4,00	4,00	3,00	3,00	4,00	4,00		3,00	4,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00			3,00	4,00	3,00	4,00	4,00	3,00	3,00	4,00	4,00		3,00	4,00
2,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00			3,00	4,00	3,00	4,00	4,00	3,00	3,00	4,00	4,00		3,00	4,00
2,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00		3,00	4,00
2,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00			3,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00		3,00	4,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00			3,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00		3,00	4,00
3,00	3,00	2,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	5,00	5,00			5,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00		2,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	4,00	4,00	5,00	5,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		4,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	4,00	4,00	4,00	5,00	5,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		5,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	4,00	5,00	5,00	5,00	5,00	5,00			5,00	5,00	5,00	5,00	5,00	4,00	4,00	5,00	4,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	5,00	3,00	5,00	4,00	5,00	4,00	5,00	4,00		3,00	5,00
3,00	3,00	2,00	2,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00			4,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00		3,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	5,00	5,00	4,00	5,00	4,00	4,00	5,00	5,00		3,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			5,00	5,00	5,00	4,00	5,00	4,00	4,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00		3,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00			3,00	5,00	4,00	5,00	5,00	5,00	5,00	4,00	5,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	3,00	5,00	4,00	3,00	4,00	4,00	4,00	5,00	4,00			4,00	5,00	4,00	4,00	4,00	5,00	5,00	5,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	4,00	4,00	5,00	5,00	5,00	5,00			4,00	3,00	4,00	4,00	4,00	5,00	5,00	5,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			3,00	3,00	5,00	4,00	5,00	4,00	5,00	3,00	5,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00			4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			5,00	5,00	4,00	5,00	4,00	5,00	3,00	5,00	4,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			5,00	5,00	5,00	3,00	4,00	5,00	5,00	3,00	5,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			5,00	5,00	5,00	3,00	4,00	5,00	5,00	3,00	5,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00			5,00	4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			5,00	5,00	5,00	4,00	5,00	4,00	4,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			5,00	4,00	5,00	4,00	4,00	5,00	5,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	5,00	5,00	4,00	4,00	5,00	4,00	4,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00			4,00	3,00	5,00	5,00	3,00	4,00	5,00	5,00	4,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	3,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00		4,00	5,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00			4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00
3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00			4,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00	4,00		4,00	4,00
3,00	2,00	2,00	3,00	3,00		5,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00			3,00	5,00	3,00	5,00	4,00	5,00	4,00	4,00	4,00		3,00	5,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00			3,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		3,00	4,00
2,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	4,00	4,00	5,00	5,00	5,00	4,00	4,00	4,00	5,00	5,00	4,00			4,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		3,00	4,00
3,00	3,00	2,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00			5,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		2,00	4,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	4,00	4,00	4,00	5,00	5,00			5,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		2,00	4,00
3,00	3,00	2,00	3,00	2,00		5,00	5,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	4,00	5,00	5,00	5,00	5,00	5,00			5,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		2,00	4,00
3,00	3,00	2,00	2,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00			5,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		2,00	4,00
3,00	3,00	2,00	2,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00			5,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		2,00	4,00
3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	5,00	4,00	4,00	5,00	3,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00			5,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00		2,00	4,00
3,00	2,00	2,00	2,00	2,00		4,00	5,00	4,00	4,00	5,00	5,00	4,00	4,00	5,00	5,00	4,00	5,00	4,00	5,00	4,00			4,00	4,00	3,00	4,00	2,00	4,00	5,00	4,00	4,00		4,00	4,00
3,00	2,00	2,00	2,00	2,00		5,00	4,00	5,00	5,00	4,00	4,00	5,00	5,00	5,00	5,00	4,00	4,00	5,00	4,00	5,00			3,00	3,00	4,00	4,00	4,00	5,00	5,00	4,00	4,00		4,00	4,00
2,00	3,00	3,00	2,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00			3,00	3,00	4,00	4,00	4,00	5,00	5,00	4,00	4,00		4,00	3,00
2,00	2,00	3,00	3,00	2,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	5,00	5,00	5,00	5,00	4,00	4,00	5,00	4,00			4,00	4,00	2,00	4,00	2,00	3,00	2,00	3,00	4,00		3,00	4,00
2,00	2,00	3,00	3,00	2,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	5,00	5,00	4,00	5,00	3,00	3,00	3,00	5,00			4,00	4,00	2,00	4,00	2,00	3,00	2,00	3,00	4,00		3,00	4,00

Annexure C

SPSS - Data Summary Schedule

Q10.2.3	Q10.2.4	Q10.2.5	Q10.2.6	Q10.2.7	Q10.2.8	Q10.2.9	Q10.3	Q10.3.1	Q10.3.2	Q10.3.3	Q10.3.4	Q10.3.5	Q10.3.6	Q10.3.7	Q10.3.8	Q10.3.9
4,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	5,00	4,00	2,00	4,00
4,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00	2,00	4,00
3,00	4,00	3,00	4,00	5,00	4,00	2,00		4,00	3,00	2,00	5,00	4,00	4,00	2,00	2,00	4,00
3,00	4,00	4,00	4,00	5,00	4,00	2,00		4,00	3,00	4,00	5,00	4,00	4,00	2,00	2,00	4,00
3,00	4,00	4,00	4,00	3,00	4,00	3,00		4,00	3,00	4,00	3,00	4,00	4,00	4,00	4,00	3,00
5,00	3,00	4,00	5,00	4,00	4,00	3,00		5,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00	3,00
5,00	3,00	4,00	5,00	5,00	4,00	3,00		5,00	4,00	4,00	5,00	4,00	4,00	2,00	4,00	3,00
5,00	3,00	4,00	3,00	5,00	4,00	3,00		5,00	4,00	4,00	5,00	4,00	3,00	2,00	4,00	3,00
5,00	4,00	4,00	3,00	3,00	4,00	3,00		5,00	4,00	4,00	5,00	4,00	3,00	5,00	4,00	3,00
5,00	4,00	5,00	3,00	3,00	4,00	3,00		5,00	3,00	4,00	5,00	4,00	3,00	5,00	4,00	3,00
5,00	4,00	5,00	4,00	5,00	4,00	3,00		5,00	3,00	4,00	5,00	4,00	5,00	5,00	4,00	3,00
4,00	5,00	4,00	4,00	4,00	5,00	3,00		4,00	4,00	5,00	4,00	4,00	3,00	4,00	4,00	4,00
3,00	5,00	4,00	4,00	4,00	5,00	3,00		4,00	5,00	4,00	4,00	4,00	5,00	5,00	4,00	4,00
4,00	4,00	4,00	4,00	4,00	5,00	3,00		4,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00
4,00	4,00	4,00	4,00	4,00	5,00	3,00		4,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00
3,00	3,00	5,00	5,00	4,00	3,00	4,00		4,00	4,00	5,00	5,00	4,00	3,00	5,00	5,00	4,00
3,00	3,00	5,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00
3,00	4,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	4,00	4,00
3,00	4,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00
4,00	5,00	4,00	3,00	4,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00
3,00	4,00	5,00	5,00	5,00	5,00	5,00		4,00	45,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00
4,00	3,00	4,00	3,00	2,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
5,00	3,00	4,00	4,00	2,00	5,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
4,00	3,00	4,00	3,00	3,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
4,00	3,00	4,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00
4,00	4,00	4,00	3,00	3,00	3,00	3,00		3,00	4,00	4,00	4,00	4,00	3,00	4,00	3,00	3,00
4,00	4,00	4,00	4,00	4,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00
4,00	5,00	4,00	4,00	4,00	4,00	3,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	3,00	3,00
4,00	3,00	4,00	4,00	4,00	4,00	3,00		4,00	3,00	4,00	2,00	4,00	3,00	4,00	3,00	3,00
5,00	4,00	3,00	4,00	5,00	5,00	5,00		5,00	4,00	3,00	3,00	4,00	5,00	4,00	4,00	5,00
4,00	2,00	4,00	4,00	3,00	4,00	3,00		4,00	3,00	4,00	2,00	4,00	4,00	4,00	3,00	4,00
5,00	4,00	3,00	4,00	5,00	5,00	4,00		5,00	4,00	3,00	3,00	4,00	5,00	4,00	4,00	4,00
5,00	4,00	3,00	4,00	5,00	5,00	4,00		5,00	4,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00
5,00	4,00	3,00	4,00	5,00	5,00	4,00		5,00	4,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00
5,00	4,00	4,00	4,00	5,00	5,00	4,00		5,00	4,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00
5,00	4,00	3,00	4,00	5,00	5,00	4,00		5,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00
5,00	4,00	3,00	4,00	5,00	5,00	4,00		5,00	4,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00
5,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	5,00	3,00	3,00	4,00	4,00	3,00	4,00	4,00
5,00	4,00	4,00	5,00	4,00	4,00	4,00		3,00	5,00	3,00	3,00	4,00	4,00	5,00	4,00	4,00
5,00	4,00	4,00	5,00	4,00	3,00	4,00		4,00	5,00	3,00	4,00	4,00	4,00	5,00	4,00	4,00
3,00	5,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	5,00	3,00	4,00
5,00	4,00	4,00	5,00	4,00	5,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	5,00	3,00	4,00
4,00	5,00	5,00	4,00	3,00	4,00	4,00		5,00	4,00	5,00	5,00	5,00	4,00	5,00	4,00	4,00
5,00	5,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	3,00	4,00	4,00	5,00	4,00	4,00	4,00
5,00	5,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	3,00	4,00	4,00	5,00	4,00	4,00	4,00
5,00	5,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	3,00	4,00	4,00	5,00	4,00	4,00	4,00
5,00	5,00	3,00	4,00	4,00	4,00	4,00		5,00	4,00	3,00	4,00	4,00	5,00	4,00	4,00	5,00
5,00	5,00	3,00	4,00	4,00	4,00	4,00		5,00	4,00	3,00	3,00	4,00	5,00	4,00	4,00	5,00
5,00	5,00	3,00	4,00	5,00	4,00	5,00		5,00	4,00	3,00	3,00	4,00	5,00	4,00	4,00	5,00
5,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	4,00	5,00	3,00	4,00	3,00	4,00	4,00	4,00
4,00	4,00	5,00	5,00	3,00	3,00	4,00		4,00	4,00	3,00	3,00	4,00	3,00	4,00	5,00	4,00
4,00	4,00	5,00	5,00	5,00	3,00	4,00		4,00	4,00	3,00	3,00	4,00	3,00	4,00	5,00	4,00
3,00	3,00	5,00	5,00	4,00	3,00	4,00		4,00	4,00	5,00	5,00	4,00	3,00	5,00	5,00	4,00
4,00	5,00	3,00	5,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	3,00	5,00	5,00	4,00
4,00	5,00	3,00	5,00	4,00	3,00	4,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00
4,00	4,00	4,00	5,00	4,00	3,00	4,00		4,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00
4,00	4,00	4,00	5,00	4,00	3,00	4,00		4,00	4,00	3,00	4,00	4,00	3,00	4,00	2,00	4,00
5,00	3,00	4,00	4,00	2,00	4,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
3,00	4,00	4,00	4,00	2,00	4,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
3,00	4,00	4,00	4,00	2,00	4,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00
5,00	4,00	5,00	4,00	5,00	4,00	3,00		5,00	3,00	4,00	5,00	4,00	5,00	2,00	4,00	3,00
5,00	4,00	5,00	4,00	5,00	4,00	3,00		5,00	3,00	2,00	5,00	2,00	4,00	2,00	4,00	3,00
5,00	4,00	4,00	4,00	5,00	4,00	3,00		5,00	3,00	2,00	5,00	4,00	4,00	2,00	4,00	3,00
3,00	4,00	4,00	4,00	5,00	4,00	3,00		4,00	3,00	4,00	5,00	4,00	4,00	2,00	4,00	3,00
3,00	4,00	4,00	4,00	5,00	4,00	3,00		4,00	5,00	4,00	5,00	4,00	4,00	2,00	4,00	3,00
3,00	4,00	4,00	4,00	2,00	4,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00
3,00	4,00	5,00	3,00	3,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00	3,00	4,00
5,00	4,00	5,00	3,00	3,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00	3,00	4,00
4,00	3,00	4,00	4,00	3,00	4,00	3,00		4,00	3,00	4,00	2,00	4,00	3,00	4,00	3,00	3,00
4,00	4,00	4,00	4,00	4,00	4,00	2,00		4,00	3,00	2,00	5,00	2,00	2,00	2,00	2,00	4,00
4,00	4,00	4,00	4,00	4,00	4,00	2,00		2,00	4,00	3,00	3,00	3,00	4,00	3,00	4,00	2,00

Q10.4	Q10.4.1	Q10.4.2	Q10.4.3	Q10.4.4	Q10.4.5	Q10.4.6	Q10.4.7	Q10.4.8	Q10.4.9	Q10.5	Q10.5.1	Q10.5.2	Q10.5.3	Q10.5.4	Q10.5.5	Q10.5.6	Q10.5.7
	5,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00	3,00		4,00	5,00	4,00	4,00	4,00	5,00	4,00
	5,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00	3,00		4,00	4,00	3,00	4,00	4,00	3,00	3,00
	2,00	4,00	3,00	3,00	5,00	2,00	3,00	4,00	2,00		4,00	4,00	4,00	4,00	2,00	3,00	4,00
	2,00	4,00	4,00	3,00	4,00	2,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00
	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	3,00		4,00	3,00	4,00	4,00	5,00	3,00	4,00
	2,00	4,00	4,00	2,00	3,00	4,00	4,00	3,00	3,00		4,00	4,00	4,00	4,00	3,00	5,00	4,00
	2,00	3,00	4,00	2,00	3,00	4,00	4,00	3,00	3,00		4,00	3,00	5,00	4,00	3,00	5,00	4,00
	2,00	3,00	4,00	2,00	3,00	5,00	4,00	3,00	3,00		4,00	3,00	5,00	4,00	3,00	2,00	4,00
	2,00	3,00	4,00	3,00	3,00	5,00	2,00	3,00	3,00		4,00	3,00	5,00	4,00	3,00	2,00	4,00
	2,00	5,00	4,00	3,00	3,00	5,00	2,00	4,00	3,00		4,00	4,00	5,00	4,00	3,00	2,00	4,00
	4,00	5,00	4,00	3,00	4,00	4,00	3,00	4,00	3,00		4,00	4,00	5,00	4,00	5,00	4,00	4,00
	4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	5,00	5,00	4,00
	4,00	5,00	4,00	5,00	4,00	5,00	4,00	5,00	5,00		4,00	4,00	4,00	4,00	5,00	5,00	4,00
	4,00	5,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00
	4,00	5,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00
	4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	5,00		4,00	4,00	5,00	5,00	5,00	4,00	5,00
	4,00	3,00	4,00	4,00	5,00	4,00	4,00	4,00	5,00		4,00	5,00	4,00	5,00	5,00	4,00	5,00
	4,00	5,00	4,00	4,00	5,00	4,00	4,00	4,00	5,00		4,00	5,00	4,00	5,00	5,00	4,00	5,00
	4,00	5,00	4,00	4,00	5,00	4,00	4,00	4,00	5,00		4,00	5,00	4,00	5,00	5,00	4,00	5,00
	4,00	4,00	3,00	5,00	4,00	3,00	4,00	4,00	3,00		4,00	3,00	4,00	5,00	4,00	3,00	4,00
	4,00	5,00	4,00	5,00	5,00	3,00	4,00	4,00	5,00		4,00	5,00	4,00	3,00	5,00	4,00	5,00
	4,00	4,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00		3,00	5,00	3,00	4,00	3,00	3,00	2,00
	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00	5,00	4,00	5,00	3,00	2,00
	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00	5,00	4,00	4,00	3,00	4,00
	4,00	4,00	3,00	4,00	4,00	4,00	4,00	3,00	4,00		3,00	3,00	4,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	3,00	4,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00
	4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00
	4,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00	3,00		4,00	3,00	4,00	4,00	4,00	5,00	4,00
	5,00	4,00	4,00	3,00	5,00	5,00	3,00	4,00	4,00		4,00	5,00	3,00	4,00	5,00	4,00	4,00
	4,00	2,00	4,00	4,00	3,00	4,00	4,00	4,00	3,00		4,00	3,00	4,00	4,00	4,00	5,00	4,00
	5,00	4,00	4,00	3,00	5,00	5,00	3,00	4,00	4,00		4,00	5,00	5,00	5,00	3,00	5,00	3,00
	5,00	4,00	4,00	3,00	5,00	5,00	3,00	4,00	4,00		4,00	5,00	4,00	4,00	5,00	4,00	3,00
	5,00	4,00	4,00	3,00	5,00	5,00	3,00	4,00	4,00		4,00	5,00	4,00	4,00	5,00	4,00	3,00
	5,00	4,00	4,00	3,00	5,00	5,00	3,00	4,00	4,00		4,00	5,00	4,00	4,00	5,00	4,00	3,00
	5,00	3,00	4,00	5,00	5,00	4,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00
	5,00	3,00	4,00	3,00	5,00	4,00	3,00	5,00	4,00		4,00	4,00	4,00	4,00	5,00	5,00	3,00
	3,00	3,00	4,00	3,00	5,00	4,00	3,00	5,00	4,00		3,00	4,00	4,00	4,00	5,00	5,00	4,00
	3,00	3,00	4,00	3,00	5,00	4,00	4,00	5,00	4,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00
	4,00	3,00	4,00	5,00	5,00	4,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	5,00	5,00	5,00
	4,00	5,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	5,00
	4,00	5,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	5,00
	4,00	4,00	3,00	3,00	4,00	5,00	4,00	5,00	4,00		4,00	5,00	4,00	5,00	4,00	3,00	4,00
	5,00	4,00	4,00	3,00	5,00	5,00	4,00	5,00	4,00		5,00	4,00	4,00	5,00	4,00	3,00	5,00
	5,00	4,00	4,00	5,00	5,00	5,00	4,00	4,00	4,00		5,00	4,00	4,00	5,00	4,00	3,00	5,00
	5,00	5,00	3,00	4,00	5,00	5,00	4,00	4,00	4,00		5,00	4,00	4,00	5,00	4,00	3,00	5,00
	5,00	4,00	3,00	4,00	5,00	5,00	3,00	4,00	4,00		5,00	5,00	4,00	5,00	5,00	3,00	4,00
	5,00	4,00	3,00	3,00	5,00	5,00	3,00	4,00	4,00		5,00	5,00	4,00	4,00	5,00	3,00	4,00
	5,00	4,00	3,00	3,00	5,00	5,00	3,00	4,00	4,00		5,00	5,00	4,00	4,00	5,00	3,00	4,00
	4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00		3,00	4,00	5,00	4,00	5,00	5,00	3,00
	4,00	5,00	5,00	4,00	5,00	4,00	4,00	4,00	5,00		5,00	4,00	4,00	5,00	3,00	4,00	3,00
	4,00	5,00	5,00	4,00	5,00	4,00	4,00	4,00	5,00		5,00	3,00	4,00	4,00	3,00	4,00	3,00
	3,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	5,00		5,00	3,00	5,00	5,00	5,00	4,00	5,00
	3,00	4,00	4,00	5,00	5,00	4,00	4,00	5,00	5,00		5,00	3,00	3,00	3,00	3,00	4,00	5,00
	4,00	5,00	4,00	3,00	4,00	5,00	3,00	5,00	5,00		4,00	3,00	3,00	4,00	3,00	4,00	5,00
	4,00	5,00	5,00	3,00	4,00	5,00	5,00	5,00	5,00		5,00	3,00	4,00	4,00	4,00	3,00	3,00
	3,00	4,00	5,00	3,00	3,00	5,00	4,00	4,00	3,00		4,00	4,00	3,00	4,00	4,00	3,00	3,00
	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00	99,00	4,00	5,00	3,00	2,00
	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00	4,00	4,00	5,00	3,00	2,00
	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	3,00		4,00	3,00	4,00	4,00	5,00	3,00	2,00
	4,00	5,00	4,00	3,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	5,00	4,00	5,00	4,00	4,00
	2,00	4,00	5,00	2,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	2,00	4,00	4,00	3,00	4,00
	2,00	4,00	4,00	2,00	5,00	4,00	4,00	4,00	3,00		4,00	4,00	4,00	4,00	2,00	3,00	4,00
	4,00	4,00	4,00	2,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	5,00	4,00	2,00	3,00	4,00
	5,00	4,00	4,00	2,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	5,00	4,00	2,00	3,00	4,00
	4,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	3,00		5,00	3,00	4,00	4,00	5,00	3,00	2,00
	4,00	3,00	5,00	4,00	4,00	5,00	3,00	4,00	5,00		4,00	4,00	4,00	3,00	5,00	4,00	3,00
	4,00	3,00	5,00	4,00	4,00	4,00	3,00	4,00	5,00		4,00	4,00	4,00	3,00	5,00	4,00	3,00
	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00		4,00	3,00	4,00	4,00	4,00	5,00	4,00
	2,00	4,00	3,00	3,00	3,00	4,00	3,00	4,00	2,00		4,00	2,00	4,00	4,00	4,00	2,00	4,00
	4,00	2,00	4,00	4,00	4,00	2,00	4,00	2,00	3,00		2,00	4,00	5,00	4,00	4,00	3,00	5,00

Annexure C

SPSS - Data Summary Schedule

Q10.5.8	Q10.5.9	Q10.6	Q10.6.1	Q10.6.2	Q10.6.3	Q10.6.4	Q10.6.5	Q10.6.6	Q10.6.7	Q10.6.8	Q10.6.9	Q10.7	Q10.7.1	Q10.7.2	Q10.7.3	Q10.7.4	Q10.7.5	Q10.7.6	Q10.7.7	Q10.7.8	Q10.7.9	Q10.8	Q10.8.1	Q10.8.2	Q10.8.3	Q10.8.4	Q10.8.5	Q10.8.6	Q10.8.7	Q10.8.8	Q10.8.9	Q10.9	Q10.9.1	Q10.9.2
4,00	3,00		4,00	4,00	5,00	4,00	4,00	4,00	5,00	4,00	2,00		4,00	4,00	4,00	3,00	4,00	2,00	4,00	4,00	3,00		3,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00	3,00		4,00	3,00
4,00	3,00		4,00	5,00	4,00	3,00	4,00	4,00	4,00	4,00	2,00		4,00	3,00	5,00	3,00	5,00	5,00	5,00	4,00	3,00		3,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	5,00
2,00	3,00		2,00	4,00	5,00	4,00	4,00	4,00	5,00	3,00	4,00		3,00	5,00	2,00	4,00	4,00	4,00	2,00	3,00	5,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	3,00	2,00		5,00	3,00
2,00	5,00		2,00	4,00	2,00	4,00	4,00	4,00	5,00	3,00	4,00		3,00	5,00	3,00	4,00	3,00	4,00	2,00	3,00	4,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	3,00	4,00		4,00	3,00
4,00	4,00		3,00	4,00	5,00	4,00	2,00	4,00	4,00	4,00	4,00		3,00	4,00	2,00	3,00	4,00	4,00	4,00	5,00	4,00		3,00	3,00	4,00	3,00	4,00	3,00	4,00	4,00	5,00		4,00	3,00
3,00	5,00		4,00	4,00	4,00	4,00	5,00	3,00	3,00	5,00	3,00		4,00	3,00	3,00	4,00	2,00	3,00	5,00	3,00	5,00		4,00	5,00	5,00	4,00	3,00	5,00	2,00	5,00	2,00		4,00	2,00
3,00	5,00		4,00	5,00	3,00	4,00	5,00	3,00	4,00	5,00	3,00		4,00	2,00	3,00	4,00	2,00	3,00	4,00	3,00	5,00		4,00	3,00	5,00	4,00	3,00	5,00	3,00	5,00	2,00		4,00	5,00
3,00	5,00		4,00	5,00	3,00	4,00	5,00	4,00	4,00	5,00	3,00		4,00	2,00	3,00	4,00	2,00	3,00	4,00	2,00	5,00		4,00	3,00	5,00	4,00	3,00	4,00	3,00	4,00	2,00		4,00	3,00
3,00	5,00		4,00	5,00	3,00	4,00	5,00	4,00	4,00	5,00	2,00		5,00	2,00	3,00	3,00	2,00	3,00	4,00	2,00	4,00		4,00	3,00	5,00	3,00	3,00	4,00	4,00	4,00	4,00		4,00	3,00
4,00	5,00		4,00	4,00	3,00	4,00	5,00	4,00	4,00	4,00	2,00		5,00	5,00	3,00	3,00	2,00	3,00	4,00	5,00	4,00		4,00	3,00	5,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00
4,00	5,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	2,00		5,00	5,00	4,00	5,00	4,00	3,00	4,00	5,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00
3,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	4,00	3,00		4,00	4,00	4,00	3,00	3,00	4,00	5,00	4,00	3,00		4,00	5,00
3,00	4,00		4,00	4,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	3,00	4,00	4,00	4,00	5,00	5,00		4,00	4,00
3,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00		4,00	4,00
5,00	4,00		4,00	5,00	4,00	4,00	4,00	3,00	3,00	4,00	3,00		5,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00	3,00		3,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00	5,00		4,00	4,00
5,00	4,00		4,00	4,00	5,00	4,00	4,00	3,00	3,00	4,00	3,00		5,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00	3,00		3,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00	5,00		4,00	4,00
5,00	4,00		4,00	4,00	5,00	4,00	4,00	3,00	3,00	4,00	3,00		5,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00		3,00	5,00	4,00	3,00	4,00	4,00	3,00	3,00	5,00		4,00	4,00
5,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	5,00	3,00	4,00	3,00	3,00	4,00	4,00	3,00		4,00	5,00
5,00	3,00		4,00	4,00	5,00	5,00	4,00	4,00	3,00	4,00	5,00		5,00	4,00	4,00	4,00	3,00	4,00	4,00	5,00	4,00		3,00	5,00	4,00	3,00	4,00	4,00	3,00	3,00	5,00		4,00	4,00
4,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	5,00	3,00	4,00	3,00	3,00	4,00	4,00	3,00		4,00	5,00
5,00	3,00		4,00	4,00	5,00	4,00	3,00	4,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	3,00	5,00	4,00	3,00	3,00	4,00	5,00	3,00		3,00	3,00
5,00	3,00		4,00	4,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	3,00	5,00	4,00	4,00	3,00	4,00	5,00	3,00		3,00	3,00
4,00	3,00		4,00	4,00	4,00	5,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00		3,00	3,00	4,00	3,00	3,00	4,00	3,00	3,00	4,00		3,00	4,00
4,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	4,00	4,00	3,00	3,00	4,00	3,00		4,00	4,00
3,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	3,00	4,00	4,00	4,00	5,00	5,00		4,00	4,00
3,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	3,00	4,00	4,00	4,00	5,00	5,00		4,00	4,00
4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	4,00	4,00	4,00	4,00	3,00	3,00	4,00	3,00		4,00	4,00
4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	4,00	4,00	5,00	5,00	3,00	3,00	4,00	3,00		4,00	4,00
4,00	3,00		4,00	5,00	4,00	4,00	4,00	5,00	5,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00	3,00		3,00	4,00	4,00	5,00	5,00	4,00	3,00	4,00	3,00		4,00	4,00
4,00	3,00		4,00	4,00	5,00	4,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	2,00	4,00	4,00	3,00		3,00	5,00	4,00	2,00	4,00	3,00	3,00	4,00	3,00		4,00	4,00
5,00	4,00		5,00	3,00	4,00	4,00	4,00	4,00	5,00	3,00	3,00		5,00	5,00	4,00	4,00	5,00	5,00	4,00	5,00	3,00		4,00	5,00	4,00	5,00	4,00	3,00	3,00	5,00	4,00		4,00	5,00
4,00	3,00		4,00	4,00	5,00	4,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	2,00	4,00	4,00	3,00		3,00	5,00	4,00	4,00	3,00	4,00	4,00	4,00	3,00		4,00	4,00
5,00	4,00		3,00	4,00	4,00	5,00	4,00	5,00	5,00	4,00	3,00		3,00	5,00	4,00	3,00	5,00	5,00	5,00	4,00	3,00		4,00	5,00	4,00	5,00	4,00	5,00	5,00	4,00	4,00		5,00	5,00
5,00	4,00		3,00	4,00	4,00	5,00	4,00	5,00	4,00	4,00	3,00		3,00	5,00	4,00	3,00	5,00	5,00	5,00	4,00	3,00		4,00	5,00	4,00	5,00	4,00	4,00	5,00	3,00	4,00		5,00	5,00
5,00	5,00		4,00	4,00	4,00	5,00	4,00	5,00	3,00	4,00	5,00		5,00	4,00	4,00	3,00	4,00	5,00	5,00	4,00	4,00		3,00	5,00	4,00	3,00	4,00	4,00	3,00	3,00	5,00		4,00	5,00
5,00	4,00		4,00	4,00	4,00	5,00	4,00	5,00	3,00	4,00	5,00		5,00	5,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		3,00	5,00	4,00	3,00	4,00	4,00	3,00	3,00	5,00		4,00	4,00
5,00	4,00		4,00	4,00	4,00	5,00	4,00	5,00	3,00	3,00	3,00		3,00	5,00	4,00	3,00	5,00	5,00	5,00	5,00	3,00		4,00	5,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00		5,00	5,00
5,00	4,00		4,00	4,00	4,00	5,00	4,00	5,00	3,00	3,00	3,00		3,00	5,00	4,00	3,00	5,00	5,00	5,00	5,00	3,00		4,00	5,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00		5,00	5,00
5,00	4,00		3,00	4,00	4,00	5,00	4,00	5,00	5,00	4,00	3,00		3,00	5,00	4,00	3,00	5,00	5,00	5,00	4,00	3,00		4,00	5,00	4,00	5,00	4,00	5,00	5,00	4,00	4,00		5,00	5,00
5,00	4,00		4,00	4,00	3,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00	4,00	5,00	4,00	2,00	3,00	4,00	5,00		3,00	5,00	4,00	2,00	4,00	3,00	4,00	3,00	4,00		4,00	4,00
5,00	4,00		4,00	4,00	3,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00	4,00	5,00	4,00	2,00	4,00	4,00	3,00		3,00	5,00	4,00	2,00	4,00	3,00	4,00	3,00	4,00		4,00	4,00
5,00	5,00		4,00	4,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00		3,00	5,00	4,00	2,00	4,00	3,00	4,00	3,00	4,00		4,00	4,00
5,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00		3,00	5,00	4,00	2,00	4,00	3,00	4,00	3,00	4,00		4,00	4,00
5,00	4,00		4,00	4,00	3,00	4,00	2,00	4,00	4,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	2,00	3,00	4,00	5,00		3,00	5,00	4,00	2,00	4,00	3,00	4,00	3,00	4,00		4,00	4,00
4,00	3,00		4,00	4,00	3,00	4,00	2,00	4,00	3,00	5,00	4,00		4,00	4,00	4,00	5,00	4,00	2,00	4,00	4,00	3,00		3,00	5,00	4,00	2,00	4,00	3,00	3,00	3,00	3,00		4,00	4,00
2,00	3,00		2,00	4,00	5,00	4,00	4,00	3,00	5,00	3,00	4,00		3,00	2,00	2,00	4,00	2,00	4,00	2,00	3,00	5,00		4,00	3,00	4,00	4,00	4,00	3,00	2,00	3,00	2,00		5,00	4,00
3,00	4,00		3,00	2,00	2,00	4,00	2,00	4,00	2,00	3,00	5,00		4,00	3,00	4,00	4,00	4,00	3,00	2,00	3,00	2,00		5,00	4,00	4,00	2,00	2,00	4,00	4,00	4,00	4,00		2,00	2,00

Annexure C

SPSS - Data Summary Schedule

Q10.9.3	Q10.9.4	Q10.9.5	Q10.9.6	Q10.9.7	Q10.9.8	Q10.9.9	Q10.10	Q10.10.1	Q10.10.2	Q10.10.3	Q10.10.4	Q10.10.5	Q10.10.6	Q10.10.7	Q10.10.8	Q10.10.9	Q10.11	Q10.11.1	Q10.11.2	Q10.11.3	Q10.11.4	Q10.11.5	Q10.11.6	Q10.11.7	Q10.11.8	Q10.11.9	Q10.12	Q10.12.1	Q10.12.2	Q10.12.3	Q10.12.4	Q10.12.5	Q10.12.6	Q10.12.7
5,00	3,00	2,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	2,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	2,00	3,00		4,00	4,00	2,00	4,00	4,00	3,00	5,00
5,00	3,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	2,00	4,00		4,00	4,00	2,00	4,00	4,00	3,00	5,00
4,00	2,00	4,00	4,00	4,00	4,00	4,00		2,00	2,00	4,00	4,00	4,00	4,00	4,00	2,00	4,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	2,00	3,00	4,00	4,00	4,00	2,00		4,00	2,00	3,00	4,00	4,00	4,00	4,00	2,00	2,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	4,00	5,00	3,00	4,00	4,00	2,00		4,00	4,00	5,00	4,00	2,00	4,00	2,00	4,00	3,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00
2,00	5,00	3,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	2,00	4,00	3,00	2,00	4,00	4,00		4,00	4,00	2,00	5,00	4,00	3,00	4,00	5,00	4,00		4,00	5,00	4,00	4,00	3,00	5,00	4,00
3,00	5,00	3,00	4,00	5,00	4,00	4,00		4,00	4,00	5,00	2,00	4,00	3,00	2,00	4,00	4,00		4,00	4,00	2,00	5,00	4,00	3,00	4,00	5,00	4,00		4,00	5,00	4,00	4,00	3,00	5,00	4,00
3,00	5,00	3,00	4,00	5,00	4,00	4,00		4,00	4,00	5,00	2,00	4,00	3,00	2,00	3,00	4,00		4,00	3,00	2,00	5,00	4,00	3,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	3,00	5,00	4,00
2,00	5,00	3,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	2,00	4,00	3,00	5,00	3,00	3,00		4,00	3,00	5,00	5,00	4,00	3,00	3,00	3,00	3,00		4,00	4,00	2,00	4,00	3,00	5,00	3,00
2,00	5,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	5,00	2,00	4,00	5,00	5,00	4,00	3,00		4,00	3,00	5,00	5,00	4,00	3,00	3,00	4,00	5,00		4,00	4,00	2,00	4,00	4,00	4,00	3,00
4,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	4,00	5,00	4,00	4,00	5,00	5,00	4,00	4,00		4,00	3,00	5,00	5,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	4,00	4,00	4,00	3,00	4,00	5,00		3,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	5,00
5,00	4,00	4,00	4,00	3,00	4,00	5,00		3,00	5,00	4,00	5,00	5,00	4,00	5,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	5,00
5,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00
5,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00
4,00	4,00	4,00	4,00	3,00	4,00	5,00		5,00	4,00	4,00	4,00	5,00	4,00	5,00	3,00	4,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	5,00
5,00	4,00	5,00	4,00	4,00	4,00	5,00		5,00	5,00	4,00	4,00	5,00	4,00	5,00	3,00	4,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	5,00
5,00	4,00	4,00	4,00	5,00	5,00	4,00		5,00	5,00	4,00	4,00	4,00	3,00	4,00	4,00	5,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	5,00
5,00	4,00	4,00	4,00	5,00	5,00	4,00		5,00	5,00	4,00	4,00	4,00	3,00	4,00	4,00	5,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	5,00	5,00	5,00	3,00
4,00	5,00	4,00	3,00	4,00	5,00	3,00		4,00	4,00	3,00	5,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	4,00	3,00	4,00	3,00	4,00	4,00	3,00		4,00	4,00	4,00	5,00	3,00	3,00	4,00
5,00	4,00	4,00	4,00	5,00	5,00	4,00		5,00	5,00	4,00	4,00	4,00	3,00	4,00	4,00	5,00		4,00	4,00	3,00	3,00	5,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	5,00	5,00	5,00	3,00
4,00	3,00	4,00	3,00	4,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00		2,00	5,00	2,00	4,00	3,00	4,00	4,00
5,00	2,00	4,00	4,00	4,00	5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	2,00	4,00	4,00		3,00	3,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	2,00	2,00	4,00
5,00	3,00	4,00	3,00	4,00	5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	3,00	4,00	4,00
4,00	3,00	4,00	3,00	3,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	3,00	3,00	4,00	3,00	4,00	4,00
4,00	4,00	4,00	3,00	3,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	3,00	3,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00
4,00	4,00	4,00	4,00	3,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00
4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00	4,00		4,00	4,00	4,00	5,00	4,00	5,00	4,00
4,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	3,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00	3,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00
5,00	4,00	4,00	4,00	5,00	4,00	4,00		4,00	4,00	4,00	2,00	3,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	4,00	5,00	5,00	4,00	4,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	5,00
4,00	4,00	3,00	3,00	5,00	4,00	3,00		3,00	3,00	3,00	5,00	4,00	3,00	4,00	4,00	3,00		4,00	5,00	4,00	5,00	3,00	4,00	4,00	4,00	5,00		4,00	5,00	5,00	5,00	4,00	3,00	3,00
5,00	4,00	2,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	2,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	5,00	5,00	4,00	4,00	3,00		4,00	4,00	2,00	4,00	4,00	3,00	5,00
4,00	4,00	4,00	5,00	5,00	5,00	3,00		3,00	5,00	5,00	5,00	4,00	3,00	4,00	4,00	3,00		4,00	5,00	4,00	5,00	3,00	4,00	4,00	4,00	5,00		4,00	5,00	5,00	5,00	4,00	5,00	3,00
4,00	4,00	4,00	5,00	5,00	5,00	3,00		3,00	4,00	3,00	4,00	5,00	3,00	4,00	4,00	3,00		4,00	5,00	4,00	3,00	3,00	4,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	5,00	5,00	3,00
4,00	4,00	4,00	5,00	5,00	5,00	3,00		3,00	4,00	3,00	4,00	5,00	3,00	4,00	4,00	3,00		4,00	5,00	4,00	3,00	3,00	4,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	5,00	5,00	3,00
4,00	4,00	4,00	5,00	5,00	5,00	3,00		3,00	4,00	3,00	4,00	5,00	3,00	4,00	4,00	3,00		4,00	4,00	4,00	3,00	3,00	4,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00
5,00	3,00	3,00	3,00	3,00	5,00	5,00		3,00	4,00	3,00	4,00	5,00	3,00	4,00	4,00	3,00		4,00	5,00	4,00	3,00	4,00	4,00	4,00	4,00	5,00		4,00	3,00	4,00	3,00	5,00	5,00	5,00
5,00	3,00	3,00	3,00	3,00	5,00	5,00		3,00	4,00	3,00	4,00	5,00	3,00	4,00	4,00	3,00		4,00	5,00	4,00	3,00	3,00	4,00	4,00	4,00	5,00		4,00	3,00	4,00	3,00	4,00	5,00	5,00
5,00	3,00	3,00	4,00	3,00	5,00	5,00		3,00	4,00	3,00	4,00	5,00	5,00	4,00	4,00	3,00		4,00	4,00	3,00	5,00	3,00	3,00	4,00	4,00	5,00		4,00	3,00	4,00	3,00	4,00	5,00	5,00
5,00	4,00	3,00	4,00	4,00	5,00	4,00		3,00	4,00	3,00	4,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	3,00	5,00	4,00	5,00	5,00	5,00	4,00		4,00	3,00	4,00	3,00	4,00	5,00	5,00
5,00	4,00	3,00	4,00	5,00	5,00	4,00		3,00	4,00	5,00	5,00	4,00	4,00	5,00	4,00	5,00		4,00	4,00	3,00	5,00	4,00	5,00	4,00	5,00	4,00		4,00	3,00	4,00	3,00	4,00	5,00	3,00
5,00	5,00	3,00	4,00	5,00	5,00	4,00		5,00	5,00	4,00	4,00	4,00	3,00	4,00	4,00	5,00		4,00	4,00	3,00	3,00	4,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	3,00
5,00	5,00	3,00	4,00	5,00	5,00	4,00		3,00	4,00	5,00	4,00	4,00	4,00	5,00	4,00	5,00		4,00	4,00	3,00	3,00	4,00	5,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	3,00
5,00	3,00	3,00	4,00	5,00	5,00	5,00		4,00	5,00	4,00	5,00	4,00	4,00	5,00	5,00	3,00		4,00	5,00	5,00	5,00	4,00	5,00	4,00	4,00	5,00		5,00	5,00	3,00	4,00	5,00	3,00	4,00
4,00	4,00	3,00	5,00	5,00	4,00	5,00		4,00	4,00	4,00	5,00	4,00	4,00	5,00	4,00	3,00		4,00	3,00	5,00	5,00	4,00	5,00	4,00	5,00	5,00		5,00	5,00	3,00	4,00	4,00	5,00	4,00
4,00	5,00	3,00	5,00	4,00	4,00	3,00		4,00	4,00	4,00	5,00	4,00	4,00	5,00	4,00	3,00		4,00	5,00	5,00	4,00	5,00	4,00	4,00	5,00	5,00		5,00	5,00	3,00	4,00	4,00	5,00	4,00
4,00	5,00	3,00	5,00	4,00	4,00	3,00		4,00	4,00	4,00	5,00	4,00	4,00	5,00	4,00	3,00		4,00	5,00	5,00	4,00	3,00	5,00	4,00	4,00	5,00		5,00	5,00	3,00	4,00	4,00	5,00	4,00
4,00	5,00	3,00	5,00	4,00	4,00	3,00		3,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00	3,00		4,00	5,00	5,00	5,00	3,00	5,00	4,00	4,00	5,00		4,00	5,00	5,00	5,00	4,00	5,00	4,00
4,00	5,00	3,00	5,00	5,00	4,00	3,00		3,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00		4,00	5,00	5,00	5,00	3,00	5,00	4,00	4,00	5,00		4,00	5,00	5,00	5,00	4,00	5,00	3,00
4,00	4,00	3,00	5,00	5,00	4,00	3,00		3,00	3,00	5,00	5,00	4,00	4,00	4,00	4,00	3,00		4,00	5,00	5,00	5,00	3,00	5,00	4,00	4,00	5,00		4,00	5,00	5,00	5,00	4,00	5,00	3,00
4,00	4,00	4,00	4,00	3,00	4,00	5,00		3,00	4,00	3,00	5,00	4,00	4,00	4,00	5,00	4,00		4,00	4,00	5,00	4,00	4,00	3,00	4,00	5,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	5,00
4,00	4,00	4,00	4,00	3,00	4,00	5,00		3,00	4,00	3,00	5,00	4,00	3,00	5,00	3,00	4,00		4,00	4,00	5,00	4,00	5,00	4,00	4,00	5,00	4,00		4,00	4,00	5,00	3,00	4,00	5,00	5,00
4,00	4,00	4,00	4,00	3,00	4,00	5,00		5,00	4,00	4,00	4,00	5,00	4,00	5,00	5,00	4,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	3,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	5,00
4,00	4,00	4,00	4,00	3,00	4,00	5,00		5,00	4,00	4,00	4,00	5,00	4,00	5,00	5,00	4,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	3,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	5,00
4,00	4,00	4,00	4,00	5,00	4,00	5,00		5,00	4,00	4,00	5,00	3,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	3,00	4,00		4,00	4,00	5,00	4,00	3,00	4,00	4,00
4,00	4,00	4,00	4,00	5,00	4,00	5,00		5,00	4,00	4,00	3,00	3,00	4,00	4,00	4,00	4,00		4,00	3,00	5,00	4,00	5,00	5,00	4,00	3,00	4,00		4,00	4,00	5,00	4,00	3,00	5,00	5,00
3,00	4,00	5,00	5,00	5,00	5,00	5,00		5,00	4,00	4,00	3,00	3,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	5,00	5,00	4,00	2,00	4,00		4,00	4,00	5,00	4,00	3,00	5,00	5,00
3,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	4,00	5,00	4,00	2,00	4,00		4,00	4,00	2,00	4,00	3,00	3,00	5,00
3,00	4,00	5,00	4,00	4,00	5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	2,00	4,00	4,00		3,00	3,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00
4,00	4,00	4,00	3,00	4,00	4,00	3,00		4,00	4,00	5,00	4,00	4,00	4,00	2,00	4,00	4,00		3,00	3,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00
4,00	4,00	5,00	3,00	4,00	4,00	2,00		3,00	4,00	5,00	4,00	2,00	4,00	2,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00
4,00	4,00	4,00	4,00	4,00	4,00	5,00		4,00	4,00	5,00	4,00	4,00	5,00	5,00	4,00	4,00		4,00	3,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	4,00	4,00	3,00	4,00	4,00	5,00		4,00	4,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00		4,00	3,00	5,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	4,00	4,00	3,00	4,00	4,00	5,00		4,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00	5,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	4,00	5,00	0,30	4,00	4,00	2,00		4,00	4,00	5,00	4,00	2,00	4,00	4,00	4,00	4,00		4,00	3,00	5,00	4,00	4,00	2,00	4,00	4,00	2,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	4,00	5,00	3,00	4,00	4,00	2,00		4,00	4,00	5,00	4,00	2,00	4,00	2,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	5,00	4,00	2,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00
4,00	4,00	5,00	3,00	4,00	4,00	2,00		3,00	4,00	5,00	4,00	2,00	4,00	2,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	2,00	4,00
5,00	4,00	3,00	5,00	4,00	4,00	4,00		5,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	3,00	4,00	5,00	3,00		4,00	4,00	4,00	2,00	4,00	3,00	4,00
5,00	4,00	4,00	4,00	4,00	4,00	4,00		5,00	4,00	4,00	3,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	5,00	3,00		4,00	4,00	4,00	2,00	4,00	4,00	4,00
5,00	4,00	4,00	4,00	5,00	4,00	4,00		5,00	4,00	4,00	2,00	3,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	5,00	3,00		4,00	4,00	4,00	2,00	4,00	4,00	5,00
4,00	2,00	2,00	4,00	4,00	4,00	4,00		2,00	2,00	4,00	4,00	3,00	4,00	2,00	2,00	2,00		4,00	4,00	4,00	4,00	4,00	2,00	3,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00
4,00	4,00	3,00	4,00	2,00	2,00	2,00		4,00	4,00	4,00	4,00	4,00	2,00	3,00	4,00	4,00		4,00	4,00	2,00	4,00	4,00	4,00	4,00	2,00	2,00		4,00	5,00	4,00	4,00	4,00	2,00	4,00

Annexure C

SPSS - Data Summary Schedule

Q10.12.8	Q10.12.9	Q10.13	Q10.13.1	Q10.13.2	Q10.13.3	Q10.13.4	Q10.13.5	Q10.13.6	Q10.13.7	Q10.13.8	Q10.13.9	Q10.14	Q10.14.1	Q10.14.2	Q10.14.3	Q10.14.4	Q10.14.5	Q10.14.6	Q10.14.7	Q10.14.8	Q10.14.9	Q10.15	Q10.15.1	Q10.15.2	Q10.15.3	Q10.15.4	Q10.15.5	Q10.15.6	Q10.15.7	Q10.15.8	Q10.15.9
4,00	3,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	2,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
4,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	2,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
2,00	4,00		4,00	5,00	4,00	4,00	4,00	2,00	4,00	3,00	5,00		4,00	4,00	2,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00
2,00	4,00		4,00	5,00	4,00	4,00	4,00	2,00	4,00	3,00	5,00		4,00	4,00	2,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00
3,00	4,00		4,00	3,00	4,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	3,00	4,00	4,00	2,00	4,00	3,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00
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5,00	5,00		4,00	3,00	4,00	4,00	3,00	2,00	5,00	2,00	2,00		4,00	3,00	4,00	4,00	5,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	3,00	2,00	4,00	3,00	4,00	4,00
4,00	2,00		4,00	3,00	4,00	4,00	4,00	5,00	5,00	3,00	4,00		4,00	3,00	4,00	4,00	3,00	4,00	2,00	4,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00
4,00	4,00		4,00	3,00	4,00	4,00	4,00	5,00	4,00	3,00	4,00		4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00
4,00	3,00		4,00	4,00	5,00	5,00	4,00	5,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00		4,00	5,00	4,00	5,00	4,00	3,00	5,00	4,00	5,00
4,00	3,00		4,00	4,00	5,00	5,00	4,00	5,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00		4,00	5,00	4,00	5,00	4,00	3,00	5,00	4,00	5,00
4,00	3,00		4,00	4,00	5,00	5,00	4,00	5,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00		4,00	5,00	4,00	5,00	4,00	3,00	5,00	4,00	5,00
4,00	3,00		4,00	4,00	5,00	5,00	4,00	5,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00		4,00	5,00	4,00	5,00	4,00	3,00	5,00	4,00	5,00
5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	3,00
5,00	3,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	4,00	4,00	5,00	4,00	4,00	4,00	3,00
5,00	3,00		5,00	4,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	5,00	4,00	4,00	5,00	4,00	4,00	3,00
5,00	3,00		5,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00	3,00	3,00
5,00	4,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	5,00	4,00		4,00	3,00	5,00	5,00	4,00	3,00	3,00	5,00	4,00		4,00	3,00	5,00	5,00	4,00	3,00	4,00	5,00	4,00
5,00	3,00		5,00	4,00	4,00	5,00	5,00	4,00	4,00	3,00	3,00		4,00	4,00	3,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00	3,00	3,00
4,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
5,00	4,00		5,00	3,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00		5,00	3,00	5,00	4,00	4,00	4,00	3,00	5,00	4,00		4,00	3,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00
5,00	4,00		4,00	3,00	5,00	4,00	4,00	3,00	4,00	5,00	3,00		4,00	3,00	5,00	4,00	4,00	3,00	3,00	5,00	3,00		4,00	3,00	5,00	4,00	4,00	3,00	4,00	5,00	3,00
4,00	2,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	4,00	3,00	3,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	3,00	3,00	4,00	4,00	4,00
4,00	4,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	4,00	4,00	3,00	3,00	4,00	4,00	4,00
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4,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
4,00	3,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
4,00	3,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
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4,00	3,00		5,00	5,00	3,00	4,00	3,00	3,00	4,00	3,00	3,00		4,00	4,00	3,00	3,00	5,00	3,00	4,00	5,00	5,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00	3,00	3,00
5,00	3,00		5,00	5,00	3,00	3,00	4,00	4,00	4,00	3,00	3,00		4,00	4,00	3,00	3,00	5,00	3,00	4,00	5,00	5,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00	3,00	3,00
5,00	3,00		5,00	4,00	5,00	4,00	3,00	4,00	4,00	3,00	3,00		4,00	4,00	3,00	3,00	5,00	3,00	4,00	5,00	5,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00	3,00	3,00
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4,00	5,00		5,00	4,00	4,00	5,00	3,00	3,00	4,00	3,00	3,00		5,00	3,00	4,00	4,00	5,00	4,00	5,00	5,00	4,00		4,00	3,00	5,00	5,00	4,00	5,00	5,00	3,00	3,00
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5,00	4,00		4,00	5,00	3,00	4,00	3,00	3,00	4,00	3,00	3,00		4,00	4,00	3,00	5,00	5,00	4,00	5,00	5,00	4,00		3,00	4,00	3,00	4,00	4,00	5,00	5,00	3,00	3,00
5,00	4,00		5,00	5,00	3,00	4,00	3,00	3,00	4,00	3,00	3,00		4,00	4,00	3,00	3,00	5,00	4,00	5,00	5,00	4,00		3,00	4,00	3,00	3,00	4,00	5,00	5,00	3,00	3,00
5,00	4,00		5,00	5,00	3,00	4,00	3,00	3,00	4,00	3,00	3,00		4,00	4,00	3,00	3,00	5,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00	3,00	3,00
5,00	4,00		5,00	5,00	3,00	4,00	3,00	3,00	4,00	3,00	3,00		4,00	4,00	3,00	3,00	5,00	4,00	5,00	5,00	4,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00	3,00	3,00
4,00	3,00		4,00	4,00	5,00	5,00	4,00	5,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00		4,00	5,00	4,00	4,00	4,00	3,00	5,00	4,00	5,00
4,00	3,00		4,00	4,00	5,00	5,00	4,00	5,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00		4,00	5,00	4,00	4,00	4,00	3,00	5,00	4,00	5,00
5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00	5,00		4,00	5,00	4,00	4,00	4,00	5,00	4,00	4,00	3,00
5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
5,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
4,00	3,00		4,00	5,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	5,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
4,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	3,00	5,00	5,00	4,00	4,00	5,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
4,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	4,00		4,00	4,00	4,00	3,00	5,00	4,00	3,00	2,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00
4,00	4,00		5,00	3,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00		5,00	3,00	4,00	4,00	2,00	4,00	3,00	4,00	4,00		4,00	3,00	5,00	4,00	4,00	4,00	4,00	5,00	4,00
4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00		5,00	3,00	4,00	4,00	2,00	4,00	3,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	5,00	4,00
4,00	4,00		4,00	3,00	4,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	3,00	4,00	4,00	2,00	4,00	3,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	3,00	4,00	4,00
4,00	4,00		4,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00		4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00
4,00	4,00		4,00	3,00	4,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	3,00	4,00	4,00	3,00	4,00	4,00	4,00	4,00		4,00	4,00	4,00	3,00	4,00	4,00	3,00	4,00	4,00
4,00	4,00		4,00	3,00	4,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	4,00	4,00	3,00	4,00	4,00
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4,00	4,00		4,00	3,00	4,00	4,00	4,00	2,00	4,00	4,00	4,00		4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	5,00	4,00	4,00	4,00	3,00	4,00	4,00
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4,00	3,00		5,00	3,00	4,00	4,00	3,00	5,00	4,00	4,00	4,00		4,00	4,00	4,00	4,00	4,00	4,00	3,00	5,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	4,00	3,00	3,00
2,00	2,00		4,00	5,00	4,00	4,00	4,00	2,00	4,00	3,00	3,00		4,00	4,00	2,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00
3,00	3,00		4,00	5,00	4,00	4,00	4,00	2,00	4,00	3,00	3,00		4,00	4,00	2,00	4,00	4,00	3,00	4,00	4,00	4,00		4,00	4,00	3,00	4,00	4,00	4,00	3,00	4,00	4,00

Annexure C

SPSS - Data Summary Schedule

Q11	Q11.1	Q11.2	Q11.3	Q11.4	Q11.5	Q11.6	Q11.7	Q12	Q12.1	Q12.2	Q12.3	Q12.4	Q12.5	Q12.6	Q12.7	Q13	Q13.1	Q13.2	Q13.3	Q13.4	Q13.5	Q13.6	Q13.7	Q14	Q14.1	Q14.2	Q14.3	Q14.4	Q14.5	Q14.6	Q14.7
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	4,00	4,00	4,00	4,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	5,00	4,00	4,00		3,00	3,00	3,00	2,00	2,00	2,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	5,00	4,00	4,00		3,00	3,00	3,00	2,00	2,00	2,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	5,00	5,00	5,00	4,00	4,00	5,00		3,00	3,00	2,00	3,00	3,00	2,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	2,00	2,00	2,00
	5,00	5,00	4,00	4,00	4,00	4,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	2,00	2,00	2,00
	5,00	5,00	4,00	4,00	4,00	4,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	2,00	3,00	2,00	3,00		5,00	5,00	4,00	5,00	5,00	5,00	4,00		3,00	3,00	3,00	2,00	2,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	3,00	3,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		3,00	3,00	4,00	3,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	4,00	4,00	5,00	4,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	4,00	4,00	5,00	4,00	4,00	99,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	3,00	3,00	3,00	3,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	5,00	5,00	5,00	5,00	5,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	5,00	5,00	4,00	5,00	3,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	3,00	4,00	4,00	5,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	5,00	5,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	2,00	3,00	3,00	3,00
	5,00	5,00	5,00	4,00	4,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	2,00	2,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	5,00	4,00		3,00	3,00	3,00	3,00	2,00	2,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		3,00	4,00	4,00	3,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	5,00	5,00	4,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	4,00	5,00	4,00	5,00	5,00	5,00		3,00	3,00	3,00	2,00	3,00	3,00	3,00		4,00	3,00	5,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	2,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	2,00	3,00	3,00	3,00		4,00	5,00	4,00	5,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	5,00	5,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	4,00	5,00	5,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	5,00	4,00	5,00	4,00	4,00	4,00		3,00	2,00	2,00	2,00	3,00	2,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	4,00	5,00	3,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	3,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	3,00	4,00	3,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	5,00	4,00	5,00	4,00	5,00	5,00		3,00	3,00	3,00	2,00	3,00	2,00	3,00		4,00	4,00	5,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		3,00	3,00	3,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	3,00	3,00	3,00	3,00	3,00	3,00	3,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	2,00	3,00	3,00	3,00		5,00	4,00	4,00	4,00	4,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	5,00	5,00	5,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	4,00	4,00	4,00	4,00	4,00	5,00		3,00	3,00	3,00	3,00	3,00	2,00	3,00		4,00	4,00	4,00	4,00	5,00	5,00	5,00		3,00	3,00	3,00	2,00	2,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	5,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	2,00	2,00		4,00	5,00	4,00	5,00	4,00	4,00	5,00		3,00	3,00	2,00	3,00	3,00	2,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	2,00	3,00	2,00	3,00		5,00	5,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	5,00	4,00	5,00	3,00	5,00		3,00	3,00	3,00	2,00	3,00	2,00	3,00		5,00	5,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		5,00	5,00	4,00	3,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	2,00	2,00	3,00
	4,00	5,00	4,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	3,00	4,00	4,00	3,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	5,00	4,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	3,00	4,00	4,00	3,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	2,00	2,00		4,00	3,00	4,00	3,00	4,00	4,00	3,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	4,00	5,00	5,00	4,00	4,00	5,00	5,00		3,00	3,00	3,00	3,00	3,00	2,00	2,00		4,00	4,00	5,00	4,00	4,00	5,00	4,00		3,00	2,00	2,00	3,00	2,00	3,00	3,00
	4,00	4,00	4,00	5,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	3,00	4,00	3,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	5,00	5,00	4,00	5,00		3,00	3,00	3,00	2,00	3,00	2,00	3,00		4,00	4,00	4,00	5,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	4,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00
	5,00	5,00	5,00	4,00	5,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00		4,00	4,00	4,00	4,00	4,00	4,00	4,00		3,00	3,00	3,00	3,00	3,00	3,00	3,00

Annexure D – Data Output

```
RELIABILITY
  /VARIABLES=Q6.1 Q6.2 Q6.3 Q6.4 Q6.5 Q6.6 Q6.7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:21:53
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q6.1 Q6.2 Q6.3 Q6.4 Q6.5 Q6.6 Q6.7 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.869	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Failure to adequately programme the work and adhere to the programme	26.7778	6.372	.753	.838
Failure to provide adequate qualified human resources to manage the programme	26.7083	6.153	.733	.838
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	26.7222	6.175	.684	.845
Failure to control cost changes that impact the programme throughout the execution of the project	26.7222	5.556	.785	.829
Lack of communication resulting in delays to the programme	26.6944	6.976	.471	.871
Lack of pro-active approach towards achieving the targeted programme dates	26.7639	6.183	.690	.844
Poor turnaround time for information flow	26.6111	7.142	.406	.879

```
RELIABILITY
  /VARIABLES=Q7.1 Q7.2 Q7.3 Q7.4 Q7.5 Q7.6 Q7.7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:24:25
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q7.1 Q7.2 Q7.3 Q7.4 Q7.5 Q7.6 Q7.7 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.911	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Failure to adequately programme the work and adhere to the programme	25.3750	10.294	.730	.899
Failure to provide adequate qualified human resources to manage the programme	25.4861	9.577	.736	.897
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	25.4583	9.717	.772	.893
Failure to control cost changes that impact the programme throughout the execution of the project	25.4028	9.652	.671	.905
Lack of communication resulting in delays to the programme	25.4028	9.568	.780	.892
Lack of pro-active approach towards achieving the targeted programme dates	25.4861	9.803	.674	.904
Poor turnaround time for information flow	25.3889	9.903	.780	.893

```
RELIABILITY
  /VARIABLES=Q8.1 Q8.2 Q8.3 Q8.4 Q8.5 Q8.6 Q8.7 Q8.8 Q8.9 Q8.10 Q8.11 Q8.12
Q8.13 Q8.14 Q8.15
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:25:23
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q8.1 Q8.2 Q8.3 Q8.4 Q8.5 Q8.6 Q8.7 Q8.8 Q8.9 Q8.10 Q8.11 Q8.12 Q8.13 Q8.14 Q8.15 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.831	15

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Improving planning and communication	40.2639	6.760	.000	.835
Eliminating waste and errors	40.3056	6.581	.134	.835
Direct intervention to drive immediate and apparent change	40.4028	5.878	.451	.821
Improving work planning and forward scheduling	40.3333	6.310	.299	.829
Specifying value from the perspective of the customer/client	40.4028	5.737	.541	.814
Eliminating activities that do not add value	40.4167	5.514	.655	.806
Ensuring the work environment is clean, safe and efficient	40.4722	5.351	.656	.805
Implementing critical path analysis and programme management	40.4028	5.681	.577	.812
Reduce load time	40.4028	5.765	.523	.816
Reduce total costs	40.4167	5.627	.583	.811
Maximising workflow, minimising the performance variation rather than focusing on speed only	40.4028	6.019	.363	.827
Value management techniques	40.3750	6.125	.342	.827
Benchmarking techniques including the use of key performance indicators	40.3889	5.790	.536	.815
Risk management techniques	40.3472	6.061	.454	.821
Implementing continuous improvement from one project to another	40.3611	6.206	.313	.829

```
RELIABILITY
 /VARIABLES=Q9.1 Q9.2 Q9.3 Q9.4 Q9.5 Q9.6 Q9.7 Q9.8 Q9.9 Q9.10 Q9.11 Q9.12
Q9.13 Q9.14 Q9.15
 /SCALE('ALL VARIABLES') ALL
 /MODEL=ALPHA
 /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:26:18
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q9.1 Q9.2 Q9.3 Q9.4 Q9.5 Q9.6 Q9.7 Q9.8 Q9.9 Q9.10 Q9.11 Q9.12 Q9.13 Q9.14 Q9.15 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.929	15

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Improving planning and communication	64.7639	26.746	.801	.921
Eliminating waste and errors	64.7778	26.992	.744	.922
Direct intervention to drive immediate and apparent change	64.8472	26.328	.817	.920
Improving work planning and forward scheduling	64.7639	27.169	.712	.923
Specifying value from the perspective of the customer/client	64.7500	27.289	.650	.925
Eliminating activities that do not add value	64.7500	27.204	.710	.923
Ensuring the work environment is clean, safe and efficient	64.7500	27.401	.592	.927
Implementing critical path analysis and programme management	64.6250	28.463	.476	.929
Reduce lead time	64.5833	28.725	.493	.929
Reduce total costs	64.7917	27.012	.692	.924
Maximising workflow, minimising the performance variation rather than focusing on speed only	64.7500	27.739	.599	.926
Value management techniques	64.8750	26.055	.718	.923
Benchmarking techniques including the use of key performance indicators	64.8472	26.103	.711	.923
Risk management techniques	64.7222	26.739	.600	.927
Implementing continuous improvement from one project to another	64.6528	27.864	.582	.927

```
RELIABILITY
  /VARIABLES=Q10.1 Q10.1.1 Q10.1.2 Q10.1.3 Q10.1.4 Q10.1.5 Q10.1.6 Q10.1.7
Q10.1.8 Q10.1.9
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:28:01
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q10.1 Q10.1.1 Q10.1.2 Q10.1.3 Q10.1.4 Q10.1.5 Q10.1.6 Q10.1.7 Q10.1.8 Q10.1.9 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Warnings

There are too few cases (N = 0) for the analysis.
Execution of this command stops.

```
RELIABILITY
 /VARIABLES=Q11.1 Q11.2 Q11.3 Q11.4 Q11.5 Q11.6 Q11.7
 /SCALE('ALL VARIABLES') ALL
 /MODEL=ALPHA
 /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:32:05
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q11.1 Q11.2 Q11.3 Q11.4 Q11.5 Q11.6 Q11.7 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.915	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Increase successful projects	27.1667	6.873	.798	.896
Faster project completion	27.1111	7.002	.764	.900
Simple project status	27.1806	6.826	.815	.894
Reduced unnecessary paperwork	27.2361	7.056	.714	.905
Clear signals on when to take action	27.1667	7.099	.705	.906
Reduced pressure on the team	27.3333	6.873	.678	.910
Reduced waste that cause delays	27.2222	7.049	.718	.904

```
RELIABILITY
  /VARIABLES=Q12.1 Q12.2 Q12.3 Q12.4 Q12.5 Q12.6 Q12.7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:32:37
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q12.1 Q12.2 Q12.3 Q12.4 Q12.5 Q12.6 Q12.7 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.620	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Increase successful projects	17.5556	.842	.000	.637
Faster project completion	17.5833	.725	.316	.592
Simple project status	17.5833	.725	.316	.592
Reduced unnecessary paperwork	17.7083	.463	.502	.517
Clear signals on when to take action	17.5833	.725	.316	.592
Reduced pressure on the team	17.7222	.372	.717	.382
Reduced waste that cause delays	17.5972	.751	.145	.634

```
RELIABILITY
  /VARIABLES=Q13.1 Q13.2 Q13.3 Q13.4 Q13.5 Q13.6 Q13.7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:34:02
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q13.1 Q13.2 Q13.3 Q13.4 Q13.5 Q13.6 Q13.7 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.072	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Failure to adequately programme the work and adhere to the programme	27.3056	130.835	.319	.040
Failure to provide adequate qualified human resources to manage the programme	27.3194	133.066	.123	.060
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	27.3750	133.505	.109	.063
Failure to control cost changes that impact the programme throughout the execution of the project	27.3611	129.952	.290	.034
Lack of communication resulting in delays to the programme	27.2917	133.702	.108	.064
Lack of pro-active approach towards achieving the targeted programme dates	27.2639	133.915	.088	.066
Poor turnaround time for information flow	26.0000	8.085	.038	.892

```
RELIABILITY
  /VARIABLES=Q13.1 Q13.2 Q13.3 Q13.4 Q13.5 Q13.6
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:34:47
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q13.1 Q13.2 Q13.3 Q13.4 Q13.5 Q13.6 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.892	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Failure to adequately programme the work and adhere to the programme	21.6528	5.751	.751	.867
Failure to provide adequate qualified human resources to manage the programme	21.6667	5.408	.781	.861
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	21.7222	5.950	.663	.880
Failure to control cost changes that impact the programme throughout the execution of the project	21.7083	5.167	.732	.874
Lack of communication resulting in delays to the programme	21.6389	5.980	.736	.871
Lack of pro-active approach towards achieving the targeted programme dates	21.6111	6.156	.644	.883

```
RELIABILITY
  /VARIABLES=Q14.1 Q14.2 Q14.3 Q14.4 Q14.5 Q14.6 Q14.7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		30-OCT-2015 09:35:43
Comments		
Input	Data	C:\Users\Haupt\Desktop\Neil.sav
	Active Dataset	DataSet3
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q14.1 Q14.2 Q14.3 Q14.4 Q14.5 Q14.6 Q14.7 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded[a]	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.620	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Failure to adequately programme the work and adhere to the programme	17.6806	.643	.000	.637
Failure to provide adequate qualified human resources to manage the programme	17.6944	.581	.266	.606
Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution	17.7222	.513	.309	.590
Failure to control cost changes that impact the programme throughout the execution of the project	17.7361	.563	.077	.671
Lack of communication resulting in delays to the programme	17.7778	.316	.709	.394
Lack of pro-active approach towards achieving the targeted programme dates	17.7639	.380	.540	.493
Poor turnaround time for information flow	17.7083	.519	.403	.567

```
FREQUENCIES VARIABLES=Section1 Q1 Section2 Q2 Q3 Q4 Q5 Q6 Q6.1 Q6.2 Q6.3 Q6
.4 Q6.5 Q6.6 Q6.7 Q7
    Q7.1 Q7.2 Q7.3 Q7.4 Q7.5 Q7.6 Q7.7 Section3 Q8 Q8.1 Q8.2 Q8.3 Q8.4 Q8.5
 Q8.6 Q8.7 Q8.8 Q8.9 Q8.10
    Q8.11 Q8.12 Q8.13 Q8.14 Q8.15 Q9 Q9.1 Q9.2 Q9.3 Q9.4 Q9.5 Q9.6 Q9.7 Q9.
8 Q9.9 Q9.10 Q9.11 Q9.12
    Q9.13 Q9.14 Q9.15 Q10 Q10.1 Q10.1.1 Q10.1.2 Q10.1.3 Q10.1.4 Q10.1.5 Q10
.1.6 Q10.1.7 Q10.1.8 Q10.1.9
    Q10.2 Q10.2.1 Q10.2.2 Q10.2.3 Q10.2.4 Q10.2.5 Q10.2.6 Q10.2.7 Q10.2.8 Q
10.2.9 Q10.3 Q10.3.1 Q10.3.2
    Q10.3.3 Q10.3.4 Q10.3.5 Q10.3.6 Q10.3.7 Q10.3.8 Q10.3.9 Q10.4 Q10.4.1 Q
10.4.2 Q10.4.3 Q10.4.4
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10.6.6 Q10.6.7 Q10.6.8
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10.7.8 Q10.7.9 Q10.8 Q10.8.1
    Q10.8.2 Q10.8.3 Q10.8.4 Q10.8.5 Q10.8.6 Q10.8.7 Q10.8.8 Q10.8.9 Q10.9 Q
10.9.1 Q10.9.2 Q10.9.3
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    Q10.10.6 Q10.10.7 Q10.10.8 Q10.10.9 Q10.11 Q10.11.1 Q10.11.2 Q10.11.3 Q
10.11.4 Q10.11.5 Q10.11.6
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10.12.5 Q10.12.6 Q10.12.7
    Q10.12.8 Q10.12.9 Q10.13 Q10.13.1 Q10.13.2 Q10.13.3 Q10.13.4 Q10.13.5 Q
10.13.6 Q10.13.7 Q10.13.8
    Q10.13.9 Q10.14 Q10.14.1 Q10.14.2 Q10.14.3 Q10.14.4 Q10.14.5 Q10.14.6 Q
10.14.7 Q10.14.8 Q10.14.9
    Q10.15 Q10.15.1 Q10.15.2 Q10.15.3 Q10.15.4 Q10.15.5 Q10.15.6 Q10.15.7 Q
10.15.8 Q10.15.9 Q11 Q11.1
    Q11.2 Q11.3 Q11.4 Q11.5 Q11.6 Q11.7 Q12 Q12.1 Q12.2 Q12.3 Q12.4 Q12.5 Q
12.6 Q12.7 Q13 Q13.1 Q13.2
    Q13.3 Q13.4 Q13.5 Q13.6 Q13.7 Q14 Q14.1 Q14.2 Q14.3 Q14.4 Q14.5 Q14.6 Q
14.7
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  /ORDER=VARIABLE.
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Frequencies

Notes

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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.

Notes

Syntax	FREQUENCIES VARIABLES=Section1 Q1 Section2 Q2 Q3 Q4 Q5 Q6 Q6.1 Q6.2 Q6.3 Q6.4 Q6.5 Q6.6 Q6.7 Q7 Q7.1 Q7.2 Q7.3 Q7.4 Q7.5 Q7.6 Q7.7 Section3 Q8 Q8.1 Q8.2 Q8.3 Q8.4 Q8.5 Q8.6 Q8.7 Q8.8 Q8.9 Q8.10 Q8.11 Q8.12 Q8.13 Q8.14 Q8.15 Q9 Q9.1 Q9.2 Q9.3 Q9.4 Q9.5 Q9.6 Q9.7 Q9.8 Q9.9 Q9.10 Q9.11 Q9.12 Q9.13 Q9.14 Q9.15 Q10 Q10.1 Q10.1.1 Q10.1.2 Q10.1.3 Q10.1.4 Q10.1.5 Q10.1.6 Q10.1.7 Q10.1.8 Q10.1.9 Q10.2 Q10.2.1 Q10.2.2 Q10.2.3 Q10.2.4 Q10.2.5 Q10.2.6 Q10.2.7 Q10.2.8 Q10.2.9 Q10.3 Q10.3.1 Q10.3.2 Q10.3.3 Q10.3.4 Q10.3.5 Q10.3.6 Q10.3.7 Q10.3.8 Q10.3.9 Q10.4 Q10.4.1 Q10.4.2 Q10.4.3 Q10.4.4 Q10.4.5 Q10.4.6 Q10.4.7 Q10.4.8 Q10.4.9 Q10.5 Q10.5.1 Q10.5.2 Q10.5.3 Q10.5.4 Q10.5.5 Q10.5.6 Q10.5.7 Q10.5.8 Q10.5.9 Q10.6 Q10.6.1 Q10.6.2 Q10.6.3 Q10.6.4 Q10.6.5 Q10.6.6 Q10.6.7 Q10.6.8 Q10.6.9 Q10.7 Q10.7.1 Q10.7.2 Q10.7.3 Q10.7.4 Q10.7.5 Q10.7.6 Q10.7.7 Q10.7.8 Q10.7.9 Q10.8 Q10.8.1 Q10.8.2 Q10.8.3 Q10.8.4 Q10.8.5 Q10.8.6 Q10.8.7 Q10.8.8 Q10.8.9 Q10.9 Q10.9.1 Q10.9.2 Q10.9.3 Q10.9.4 Q10.9.5 Q10.9.6 Q10.9.7 Q10.9.8 Q10.9.9 Q10.10 Q10.10.1 Q10.10.2 Q10.10.3 Q10.10.4 Q10.10.5 Q10.10.6 Q10.10.7 Q10.10.8 Q10.10.9 Q10.11 Q10.11.1 Q10.11.2 Q10.11.3 Q10.11.4 Q10.11.5 Q10.11.6 Q10.11.7 Q10.11.8 Q10.11.9 Q10.12 Q10.12.1 Q10.12.2 Q10.12.3 Q10.12.4 Q10.12.5 Q10.12.6 Q10.12.7 Q10.12.8 Q10.12.9 Q10.13 Q10.13.1 Q10.13.2 Q10.13.3 Q10.13.4 Q10.13.5 Q10.13.6 Q10.13.7 Q10.13.8 Q10.13.9 Q10.14 Q10.14.1 Q10.14.2 Q10.14.3 Q10.14.4 Q10.14.5 Q10.14.6 Q10.14.7 Q10.14.8 Q10.14.9 Q10.15 Q10.15.1 Q10.15.2 Q10.15.3 Q10.15.4 Q10.15.5 Q10.15.6 Q10.15.7 Q10.15.8 Q10.15.9 Q11 Q11.1 Q11.2 Q11.3 Q11.4 Q11.5 Q11.6 Q11.7 Q12 Q12.1 Q12.2 Q12.3 Q12.4 Q12.5 Q12.6 Q12.7 Q13 Q13.1 Q13.2 Q13.3 Q13.4 Q13.5 Q13.6 Q13.7 Q14 Q14.1 Q14.2 Q14.3 Q14.4 Q14.5 Q14.6 Q14.7 /STATISTICS=STDDEV MEAN

Notes

Resources	Processor Time	00:00:00.14
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Public sector construction projects

Statistics

Public sector construction projec

N	Valid	0
	Missing	72

Public sector construction projects

		Frequency	Percent
Missing	System	72	100.0

How often do you execute Public Sector construction projects?

Statistics

How often do you execute Public

N	Valid	72
	Missing	0
Mean		4.1111
Median		4.0000
Std. Deviation		.72297

How often do you execute Public Sector construction projects?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	9	12.5	12.5	15.3
	Often	40	55.6	55.6	70.8
	Always	21	29.2	29.2	100.0
	Total	72	100.0	100.0	

Programme Management during the Construction Phase

Statistics

Programme Management during

N	Valid	0
	Missing	72

Programme Management during the Construction Phase

		Frequency	Percent
Missing	System	72	100.0

How would you rate your knowledge, understanding and interpretati on of the programme during the construction phase towards ensurin g that the project is delivered on time?

Statistics

How would you rate your knowle

N	Valid	72
	Missing	0
Mean		4.7361
Median		5.0000
Std. Deviation		.44383

How would you rate your knowledge, understanding and interpretation of the programme during the construction phase towards ensuring that the project is delivered on time?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	19	26.4	26.4	26.4
	Excellent	53	73.6	73.6	100.0
	Total	72	100.0	100.0	

How important is the use of a programme during the construction ph ase of projects?

Statistics

How important is the use of a pr

N	Valid	72
	Missing	0
Mean		2.9028
Median		3.0000
Std. Deviation		.29834

How important is the use of a programme during the construction phase of projects?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	9.7	9.7	9.7
	Extremely important	65	90.3	90.3	100.0
	Total	72	100.0	100.0	

How often (within a calender month) do you use a project programm e on construction projects during the construction phase?

Statistics

How often (within a calender mo

N	Valid	72
	Missing	0
Mean		4.2083
Median		4.0000
Std. Deviation		.69073

How often (within a calender month) do you use a project programme on construction projects during the construction phase?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	11	15.3	15.3	15.3
	Often	35	48.6	48.6	63.9
	Always	26	36.1	36.1	100.0
	Total	72	100.0	100.0	

How often (within a calender month) on public sector construction pr ojects do you experience any challenges with the monitoring and ma nagement of the project programme during the construction phase?

Statistics

How often (within a calender mo

N	Valid	72
	Missing	0
Mean		3.8056
Median		4.0000
Std. Deviation		.61983

How often (within a calender month) on public sector construction projects do you experience any challenges with the monitoring and management of the project programme during the construction phase?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	22	30.6	30.6	30.6
	Often	42	58.3	58.3	88.9
	Always	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

Based on your experience with Government during the construction phase of public sector construction projects, to what extent do you a gree with the causes of poor programme management listed in the ta ble below from CPM's perspective?

Statistics

Based on your experience with C

N	Valid	0
	Missing	72

Based on your experience with Government during the construction phase of public sector construction projects, to what extent do you agree with the causes of poor programme management listed in the table below from CPM's perspective?

		Frequency	Percent
Missing	System	72	100.0

Failure to adequately programme the work and adhere to the programme

Statistics

Failure to adequately programm

N	Valid	72
	Missing	0
Mean		4.3889
Median		4.0000
Std. Deviation		.49092

Failure to adequately programme the work and adhere to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	44	61.1	61.1	61.1
	Strongly agree	28	38.9	38.9	100.0
	Total	72	100.0	100.0	

Failure to provide adequate qualified human resources to manage the programme

Statistics

Failure to provide adequate qual

N	Valid	72
	Missing	0
Mean		4.4583
Median		4.0000
Std. Deviation		.55507

Failure to provide adequate qualified human resources to manage the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	2.8	2.8	2.8
	Agree	35	48.6	48.6	51.4
	Strongly agree	35	48.6	48.6	100.0
	Total	72	100.0	100.0	

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

Statistics

Failure to develop an efficient pr

N	Valid	72
	Missing	0
Mean		4.4444
Median		4.0000
Std. Deviation		.57870

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	4.2	4.2	4.2
	Agree	34	47.2	47.2	51.4
	Strongly agree	35	48.6	48.6	100.0
	Total	72	100.0	100.0	

Failure to control cost changes that impact the programme throughout the execution of the project

Statistics

Failure to control cost changes tl

N	Valid	72
	Missing	0
Mean		4.4444
Median		5.0000
Std. Deviation		.66901

Failure to control cost changes that impact the programme throughout the execution of the project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	9.7	9.7	9.7
	Agree	26	36.1	36.1	45.8
	Strongly agree	39	54.2	54.2	100.0
	Total	72	100.0	100.0	

Lack of communication resulting in delays to the programme

Statistics

Lack of communication resulting

N	Valid	72
	Missing	0
Mean		4.4722
Median		4.0000
Std. Deviation		.50273

Lack of communication resulting in delays to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	38	52.8	52.8	52.8
	Strongly agree	34	47.2	47.2	100.0
	Total	72	100.0	100.0	

Lack of pro-active approach towards achieving the targeted program me dates

Statistics

Lack of pro-active approach tow

N	Valid	72
	Missing	0
Mean		4.4028
Median		4.0000
Std. Deviation		.57310

Lack of pro-active approach towards achieving the targeted programme dates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	4.2	4.2	4.2
	Agree	37	51.4	51.4	55.6
	Strongly agree	32	44.4	44.4	100.0
	Total	72	100.0	100.0	

Poor turnaround time for information flow

Statistics

Poor turnaround time for informa

N	Valid	72
	Missing	0
Mean		4.5556
Median		5.0000
Std. Deviation		.50039

Poor turnaround time for information flow

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	32	44.4	44.4	44.4
	Strongly agree	40	55.6	55.6	100.0
	Total	72	100.0	100.0	

Based on your experience with Government during the construction phase of public sector construction projects, how often do you exper ience the causes of poor programme management listed in the table below from a CPM's perspective?

Statistics

Based on your experience with C

N	Valid	0
	Missing	72

Based on your experience with Government during the construction phase of public sector construction projects, how often do you experience the causes of poor programme management listed in the table below from a CPM's perspective?

		Frequency	Percent
Missing	System	72	100.0

Failure to adequately programme the work and adhere to the programme

Statistics

Failure to adequately programm

N	Valid	72
	Missing	0
Mean		4.2917
Median		4.0000
Std. Deviation		.54223

Failure to adequately programme the work and adhere to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	3	4.2	4.2	4.2
	Often	45	62.5	62.5	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Failure to provide adequate qualified human resources to manage the programme

Statistics

Failure to provide adequate qual

N	Valid	72
	Missing	0
Mean		4.1806
Median		4.0000
Std. Deviation		.67816

Failure to provide adequate qualified human resources to manage the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	11	15.3	15.3	15.3
	Often	37	51.4	51.4	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

Statistics

Failure to develop an efficient pr

N	Valid	72
	Missing	0
Mean		4.2083
Median		4.0000
Std. Deviation		.62658

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	8	11.1	11.1	11.1
	Often	41	56.9	56.9	68.1
	Always	23	31.9	31.9	100.0
	Total	72	100.0	100.0	

Failure to control cost changes that impact the programme throughout the execution of the project

Statistics

Failure to control cost changes th

N	Valid	72
	Missing	0
Mean		4.2639
Median		4.0000
Std. Deviation		.71193

Failure to control cost changes that impact the programme throughout the execution of the project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	8	11.1	11.1	12.5
	Often	34	47.2	47.2	59.7
	Always	29	40.3	40.3	100.0
	Total	72	100.0	100.0	

Lack of communication resulting in delays to the programme

Statistics

Lack of communication resulting

N	Valid	72
	Missing	0
Mean		4.2639
Median		4.0000
Std. Deviation		.64988

Lack of communication resulting in delays to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	8	11.1	11.1	11.1
	Often	37	51.4	51.4	62.5
	Always	27	37.5	37.5	100.0
	Total	72	100.0	100.0	

Lack of pro-active approach towards achieving the targeted program me dates

Statistics

Lack of pro-active approach tow

N	Valid	72
	Missing	0
Mean		4.1806
Median		4.0000
Std. Deviation		.67816

Lack of pro-active approach towards achieving the targeted programme dates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	11	15.3	15.3	15.3
	Often	37	51.4	51.4	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Poor turnaround time for information flow

Statistics

Poor turnaround time for informa

N	Valid	72
	Missing	0
Mean		4.2778
Median		4.0000
Std. Deviation		.58676

Poor turnaround time for information flow

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	5	6.9	6.9	6.9
	Often	42	58.3	58.3	65.3
	Always	25	34.7	34.7	100.0
	Total	72	100.0	100.0	

Lean Project Management

Statistics

Lean Project Management

N	Valid	0
	Missing	72

Lean Project Management

		Frequency	Percent
Missing	System	72	100.0

How important to CPM's are the principles underpinning lean construction and techniques that may be adopted towards improving the management and delivery of the project programme listed in the table below as highlighted by the LCI?

Statistics

How important to CPM's are the

N	Valid	0
	Missing	72

How important to CPM's are the principles underpinning lean construction and techniques that may be adopted towards improving the management and delivery of the project programme listed in the table below as highlighted by the LCI?

		Frequency	Percent
Missing	System	72	100.0

Improving planning and communication

Statistics

Improving planning and commur

N	Valid	72
	Missing	0
Mean		3.0000
Median		3.0000
Std. Deviation		.00000

Improving planning and communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	72	100.0	100.0	100.0

Eliminating waste and errors

Statistics

Eliminating waste and errors

N	Valid	72
	Missing	0
Mean		2.9583
Median		3.0000
Std. Deviation		.20123

Eliminating waste and errors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	4.2	4.2	4.2
	Extremely important	69	95.8	95.8	100.0
	Total	72	100.0	100.0	

Direct intervention to drive immediate and apparent change

Statistics

Direct intervention to drive imme

N	Valid	72
	Missing	0
Mean		2.8611
Median		3.0000
Std. Deviation		.34826

Direct intervention to drive immediate and apparent change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	10	13.9	13.9	13.9
	Extremely important	62	86.1	86.1	100.0
	Total	72	100.0	100.0	

Improving work planning and forward scheduling

Statistics

Improving work planning and for

N	Valid	72
	Missing	0
Mean		2.9306
Median		3.0000
Std. Deviation		.25599

Improving work planning and forward scheduling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	6.9	6.9	6.9
	Extremely important	67	93.1	93.1	100.0
	Total	72	100.0	100.0	

Specifying value from the perspective of the customer/client

Statistics

Specifying value from the perspe

N	Valid	72
	Missing	0
Mean		2.8611
Median		3.0000
Std. Deviation		.34826

Specifying value from the perspective of the customer/client

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	10	13.9	13.9	13.9
	Extremely important	62	86.1	86.1	100.0
	Total	72	100.0	100.0	

Eliminating activities that do not add value

Statistics

Eliminating activities that do not

N	Valid	72
	Missing	0
Mean		2.8472
Median		3.0000
Std. Deviation		.36230

Eliminating activities that do not add value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	11	15.3	15.3	15.3
	Extremely important	61	84.7	84.7	100.0
	Total	72	100.0	100.0	

Ensuring the work environment is clean, safe and efficient

Statistics

Ensuring the work environment i

N	Valid	72
	Missing	0
Mean		2.7917
Median		3.0000
Std. Deviation		.40897

Ensuring the work environment is clean, safe and efficient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	15	20.8	20.8	20.8
	Extremely important	57	79.2	79.2	100.0
	Total	72	100.0	100.0	

Implementing critical path analysis and programme management

Statistics

Implementing critical path analys

N	Valid	72
	Missing	0
Mean		2.8611
Median		3.0000
Std. Deviation		.34826

Implementing critical path analysis and programme management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	10	13.9	13.9	13.9
	Extremely important	62	86.1	86.1	100.0
	Total	72	100.0	100.0	

Reduce load time

Statistics

Reduce load time

N	Valid	72
	Missing	0
Mean		2.8611
Median		3.0000
Std. Deviation		.34826

Reduce load time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	10	13.9	13.9	13.9
	Extremely important	62	86.1	86.1	100.0
	Total	72	100.0	100.0	

Reduce total costs

Statistics

Reduce total costs

N	Valid	72
	Missing	0
Mean		2.8472
Median		3.0000
Std. Deviation		.36230

Reduce total costs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	11	15.3	15.3	15.3
	Extremely important	61	84.7	84.7	100.0
	Total	72	100.0	100.0	

Maximising workflow, minimising the performance variation rather th an focusing on speed only

Statistics

Maximising workflow, minimising

N	Valid	72
	Missing	0
Mean		2.8611
Median		3.0000
Std. Deviation		.34826

Maximising workflow, minimising the performance variation rather than focusing on speed only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	10	13.9	13.9	13.9
	Extremely important	62	86.1	86.1	100.0
	Total	72	100.0	100.0	

Value management techniques

Statistics

Value management techniques

N	Valid	72
	Missing	0
Mean		2.8889
Median		3.0000
Std. Deviation		.31648

Value management techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	8	11.1	11.1	11.1
	Extremely important	64	88.9	88.9	100.0
	Total	72	100.0	100.0	

Benchmarking techniques including the use of key performance indi cators

Statistics

Benchmarking techniques includ

N	Valid	72
	Missing	0
Mean		2.8750
Median		3.0000
Std. Deviation		.33304

Benchmarking techniques including the use of key performance indicators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	9	12.5	12.5	12.5
	Extremely important	63	87.5	87.5	100.0
	Total	72	100.0	100.0	

Risk management techniques

Statistics

Risk management techniques

N	Valid	72
	Missing	0
Mean		2.9167
Median		3.0000
Std. Deviation		.27832

Risk management techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	8.3	8.3	8.3
	Extremely important	66	91.7	91.7	100.0
	Total	72	100.0	100.0	

Implementing continuous improvement from one project to another

Statistics

Implementing continuous improv

N	Valid	72
	Missing	0
Mean		2.9028
Median		3.0000
Std. Deviation		.29834

Implementing continuous improvement from one project to another

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	9.7	9.7	9.7
	Extremely important	65	90.3	90.3	100.0
	Total	72	100.0	100.0	

Do CPM's agree with applying these principles underpinning lean co nstruction and techniques that may be adopted during the constructi on phase towards improving the delivery of the project programme?

Statistics

Do CPM's agree with applying th

N	Valid	0
	Missing	72

Do CPM's agree with applying these principles underpinning lean construction and techniques that may be adopted during the construction phase towards improving the delivery of the project programme?

		Frequency	Percent
Missing	System	72	100.0

Improving planning and communication

Statistics

Improving planning and commur

N	Valid	72
	Missing	0
Mean		4.6111
Median		5.0000
Std. Deviation		.49092

Improving planning and communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	28	38.9	38.9	38.9
	Strongly agree	44	61.1	61.1	100.0
	Total	72	100.0	100.0	

Eliminating waste and errors

Statistics

Eliminating waste and errors

N	Valid	72
	Missing	0
Mean		4.5972
Median		5.0000
Std. Deviation		.49390

Eliminating waste and errors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	29	40.3	40.3	40.3
	Strongly agree	43	59.7	59.7	100.0
	Total	72	100.0	100.0	

Direct intervention to drive immediate and apparent change

Statistics

Direct intervention to drive imme

N	Valid	72
	Missing	0
Mean		4.5278
Median		5.0000
Std. Deviation		.53001

Direct intervention to drive immediate and apparent change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	32	44.4	44.4	45.8
	Strongly agree	39	54.2	54.2	100.0
	Total	72	100.0	100.0	

Improving work planning and forward scheduling

Statistics

Improving work planning and for

N	Valid	72
	Missing	0
Mean		4.6111
Median		5.0000
Std. Deviation		.49092

Improving work planning and forward scheduling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	28	38.9	38.9	38.9
	Strongly agree	44	61.1	61.1	100.0
	Total	72	100.0	100.0	

Specifying value from the perspective of the customer/client

Statistics

Specifying value from the perspe

N	Valid	72
	Missing	0
Mean		4.6250
Median		5.0000
Std. Deviation		.51560

Specifying value from the perspective of the customer/client

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	25	34.7	34.7	36.1
	Strongly agree	46	63.9	63.9	100.0
	Total	72	100.0	100.0	

Eliminating activities that do not add value

Statistics

Eliminating activities that do not

N	Valid	72
	Missing	0
Mean		4.6250
Median		5.0000
Std. Deviation		.48752

Eliminating activities that do not add value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	27	37.5	37.5	37.5
	Strongly agree	45	62.5	62.5	100.0
	Total	72	100.0	100.0	

Ensuring the work environment is clean, safe and efficient

Statistics

Ensuring the work environment i

N	Valid	72
	Missing	0
Mean		4.6250
Median		5.0000
Std. Deviation		.54223

Ensuring the work environment is clean, safe and efficient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	2.8	2.8	2.8
	Agree	23	31.9	31.9	34.7
	Strongly agree	47	65.3	65.3	100.0
	Total	72	100.0	100.0	

Implementing critical path analysis and programme management

Statistics

Implementing critical path analys

N	Valid	72
	Missing	0
Mean		4.7500
Median		5.0000
Std. Deviation		.46724

Implementing critical path analysis and programme management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	16	22.2	22.2	23.6
	Strongly agree	55	76.4	76.4	100.0
	Total	72	100.0	100.0	

Reduce lead time

Statistics

Reduce lead time

N	Valid	72
	Missing	0
Mean		4.7917
Median		5.0000
Std. Deviation		.40897

Reduce lead time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	15	20.8	20.8	20.8
	Strongly agree	57	79.2	79.2	100.0
	Total	72	100.0	100.0	

Reduce total costs

Statistics

Reduce total costs

N	Valid	72
	Missing	0
Mean		4.5833
Median		5.0000
Std. Deviation		.52407

Reduce total costs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	28	38.9	38.9	40.3
	Strongly agree	43	59.7	59.7	100.0
	Total	72	100.0	100.0	

Maximising workflow, minimising the performance variation rather th an focusing on speed only

Statistics

Maximising workflow, minimising

N	Valid	72
	Missing	0
Mean		4.6250
Median		5.0000
Std. Deviation		.48752

Maximising workflow, minimising the performance variation rather than focusing on speed only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	27	37.5	37.5	37.5
	Strongly agree	45	62.5	62.5	100.0
	Total	72	100.0	100.0	

Value management techniques

Statistics

Value management techniques

N	Valid	72
	Missing	0
Mean		4.5000
Median		5.0000
Std. Deviation		.62799

Value management techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	6.9	6.9	6.9
	Agree	26	36.1	36.1	43.1
	Strongly agree	41	56.9	56.9	100.0
	Total	72	100.0	100.0	

Benchmarking techniques including the use of key performance indi cators

Statistics

Benchmarking techniques includ

N	Valid	72
	Missing	0
Mean		4.5278
Median		5.0000
Std. Deviation		.62736

Benchmarking techniques including the use of key performance indicators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	6.9	6.9	6.9
	Agree	24	33.3	33.3	40.3
	Strongly agree	43	59.7	59.7	100.0
	Total	72	100.0	100.0	

Risk management techniques

Statistics

Risk management techniques

N	Valid	72
	Missing	0
Mean		4.6528
Median		5.0000
Std. Deviation		.63156

Risk management techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	8.3	8.3	8.3
	Agree	13	18.1	18.1	26.4
	Strongly agree	53	73.6	73.6	100.0
	Total	72	100.0	100.0	

Implementing continuous improvement from one project to another

Statistics

Implementing continuous improv

N	Valid	72
	Missing	0
Mean		4.7222
Median		5.0000
Std. Deviation		.48126

Implementing continuous improvement from one project to another

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	18	25.0	25.0	26.4
	Strongly agree	53	73.6	73.6	100.0
	Total	72	100.0	100.0	

How often do you use these principles under the Nine Project Management Areas of Expertise during the construction phase of projects?

Statistics

How often do you use these prin

N	Valid	0
	Missing	72

How often do you use these principles under the Nine Project Management Areas of Expertise during the construction phase of projects?

		Frequency	Percent
Missing	System	72	100.0

Improving planning and communication

Statistics

Improving planning and commur

N	Valid	0
	Missing	72

Improving planning and communication

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.1250
Median		4.0000
Std. Deviation		.73038

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	15	20.8	20.8	20.8
	Often	33	45.8	45.8	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0417
Median		4.0000
Std. Deviation		.63772

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	13	18.1	18.1	18.1
	Often	43	59.7	59.7	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.9583
Median		4.0000
Std. Deviation		.82969

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	20	27.8	27.8	30.6
	Often	29	40.3	40.3	70.8
	Always	21	29.2	29.2	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		4.2917
Median		4.0000
Std. Deviation		.54223

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	3	4.2	4.2	4.2
	Often	45	62.5	62.5	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.9306
Median		4.0000
Std. Deviation		.65706

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	6	8.3	8.3	13.9
	Often	53	73.6	73.6	87.5
	Always	9	12.5	12.5	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		4.0833
Median		4.0000
Std. Deviation		.74588

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	17	23.6	23.6	23.6
	Often	32	44.4	44.4	68.1
	Always	23	31.9	31.9	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		4.1667
Median		4.0000
Std. Deviation		.76912

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	10	13.9	13.9	16.7
	Often	34	47.2	47.2	63.9
	Always	26	36.1	36.1	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.0833
Median		4.0000
Std. Deviation		.55029

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	8	11.1	11.1	11.1
	Often	50	69.4	69.4	80.6
	Always	14	19.4	19.4	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		4.1250
Median		4.0000
Std. Deviation		.47285

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	4	5.6	5.6	5.6
	Often	55	76.4	76.4	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Eliminating waste and errors

Statistics

Eliminating waste and errors

N	Valid	0
	Missing	72

Eliminating waste and errors

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		3.5417
Median		4.0000
Std. Deviation		.69073

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	7	9.7	9.7	9.7
	Sometimes	20	27.8	27.8	37.5
	Often	44	61.1	61.1	98.6
	Always	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.2500
Median		4.0000
Std. Deviation		.49647

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	2	2.8	2.8	2.8
	Often	50	69.4	69.4	72.2
	Always	20	27.8	27.8	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		4.1806
Median		4.0000
Std. Deviation		.79304

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	17	23.6	23.6	23.6
	Often	25	34.7	34.7	58.3
	Always	30	41.7	41.7	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.9722
Median		4.0000
Std. Deviation		.67076

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	14	19.4	19.4	20.8
	Often	43	59.7	59.7	80.6
	Always	14	19.4	19.4	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		4.0139
Median		4.0000
Std. Deviation		.59323

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	12	16.7	16.7	16.7
	Often	47	65.3	65.3	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		4.0833
Median		4.0000
Std. Deviation		.59930

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	10	13.9	13.9	13.9
	Often	46	63.9	63.9	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.9861
Median		4.0000
Std. Deviation		.91148

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	6	8.3	8.3	8.3
	Sometimes	12	16.7	16.7	25.0
	Often	31	43.1	43.1	68.1
	Always	23	31.9	31.9	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.0972
Median		4.0000
Std. Deviation		.69525

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	14	19.4	19.4	19.4
	Often	37	51.4	51.4	70.8
	Always	21	29.2	29.2	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.4861
Median		3.5000
Std. Deviation		.67120

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	32	44.4	44.4	50.0
	Often	33	45.8	45.8	95.8
	Always	3	4.2	4.2	100.0
	Total	72	100.0	100.0	

Direct intervention to drive immediate and apparent change

Statistics

Direct intervention to drive imme

N	Valid	0
	Missing	72

Direct intervention to drive immediate and apparent change

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.2639
Median		4.0000
Std. Deviation		.58123

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	2	2.8	2.8	4.2
	Often	46	63.9	63.9	68.1
	Always	23	31.9	31.9	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.5417
Median		4.0000
Std. Deviation		4.87574

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	15	20.8	20.8	20.8
	Often	43	59.7	59.7	80.6
	Always	13	18.1	18.1	98.6
	45.00	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.6667
Median		4.0000
Std. Deviation		.73158

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	23	31.9	31.9	37.5
	Often	38	52.8	52.8	90.3
	Always	7	9.7	9.7	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.9583
Median		4.0000
Std. Deviation		.82969

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	17	23.6	23.6	27.8
	Often	32	44.4	44.4	72.2
	Always	20	27.8	27.8	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.9583
Median		4.0000
Std. Deviation		.39137

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	1	1.4	1.4	4.2
	Often	67	93.1	93.1	97.2
	Always	2	2.8	2.8	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.9028
Median		4.0000
Std. Deviation		.73465

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	20	27.8	27.8	29.2
	Often	36	50.0	50.0	79.2
	Always	15	20.8	20.8	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.8611
Median		4.0000
Std. Deviation		.86081

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	10	13.9	13.9	13.9
	Sometimes	2	2.8	2.8	16.7
	Often	48	66.7	66.7	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		3.7500
Median		4.0000
Std. Deviation		.70711

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	6	8.3	8.3	8.3
	Sometimes	11	15.3	15.3	23.6
	Often	50	69.4	69.4	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.7500
Median		4.0000
Std. Deviation		.57531

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	20	27.8	27.8	29.2
	Often	47	65.3	65.3	94.4
	Always	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

Improving work planning and forward scheduling

Statistics

Improving work planning and for

N	Valid	0
	Missing	72

Improving work planning and forward scheduling

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		3.7917
Median		4.0000
Std. Deviation		.94850

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	10	13.9	13.9	13.9
	Sometimes	11	15.3	15.3	29.2
	Often	35	48.6	48.6	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0417
Median		4.0000
Std. Deviation		.72067

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	11	15.3	15.3	18.1
	Often	41	56.9	56.9	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.9861
Median		4.0000
Std. Deviation		.51712

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	10	13.9	13.9	13.9
	Often	53	73.6	73.6	87.5
	Always	9	12.5	12.5	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.5694
Median		3.0000
Std. Deviation		.90112

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	7	9.7	9.7	9.7
	Sometimes	30	41.7	41.7	51.4
	Often	22	30.6	30.6	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		4.2778
Median		4.0000
Std. Deviation		.67599

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	9	12.5	12.5	12.5
	Often	34	47.2	47.2	59.7
	Always	29	40.3	40.3	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		4.1806
Median		4.0000
Std. Deviation		.67816

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	2	2.8	2.8	6.9
	Often	46	63.9	63.9	70.8
	Always	21	29.2	29.2	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.7083
Median		4.0000
Std. Deviation		.54223

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	18	25.0	25.0	27.8
	Often	51	70.8	70.8	98.6
	Always	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		3.9722
Median		4.0000
Std. Deviation		.58073

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	10	13.9	13.9	15.3
	Often	51	70.8	70.8	86.1
	Always	10	13.9	13.9	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.8472
Median		4.0000
Std. Deviation		.79894

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	23	31.9	31.9	34.7
	Often	31	43.1	43.1	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Specifying value from the perspective of the customer/client

Statistics

Specifying value from the perspe

N	Valid	0
	Missing	72

Specifying value from the perspective of the customer/client

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.0833
Median		4.0000
Std. Deviation		.52407

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	4	5.6	5.6	6.9
	Often	55	76.4	76.4	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		3.9444
Median		4.0000
Std. Deviation		.76709

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	20	27.8	27.8	29.2
	Often	33	45.8	45.8	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	71
	Missing	1
Mean		4.0986
Median		4.0000
Std. Deviation		.58931

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	6	8.3	8.5	9.9
	Often	49	68.1	69.0	78.9
	Always	15	20.8	21.1	100.0
	Total	71	98.6	100.0	
Missing	99.00	1	1.4		
Total		72	100.0		

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		4.0694
Median		4.0000
Std. Deviation		.53934

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	8	11.1	11.1	11.1
	Often	51	70.8	70.8	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		4.1667
Median		4.0000
Std. Deviation		.90383

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	12	16.7	16.7	22.2
	Often	24	33.3	33.3	55.6
	Always	32	44.4	44.4	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.7222
Median		4.0000
Std. Deviation		.90728

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	30	41.7	41.7	47.2
	Often	20	27.8	27.8	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.8333
Median		4.0000
Std. Deviation		.87210

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	6	8.3	8.3	8.3
	Sometimes	16	22.2	22.2	30.6
	Often	34	47.2	47.2	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.1389
Median		4.0000
Std. Deviation		.86081

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	13	18.1	18.1	22.2
	Often	27	37.5	37.5	59.7
	Always	29	40.3	40.3	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		4.0139
Median		4.0000
Std. Deviation		.66062

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	15	20.8	20.8	20.8
	Often	41	56.9	56.9	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Eliminating activities that do not add value

Statistics

Eliminating activities that do not

N	Valid	0
	Missing	72

Eliminating activities that do not add value

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		3.8056
Median		4.0000
Std. Deviation		.64216

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	11	15.3	15.3	20.8
	Often	52	72.2	72.2	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0139
Median		4.0000
Std. Deviation		.56899

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	8	11.1	11.1	12.5
	Often	52	72.2	72.2	84.7
	Always	11	15.3	15.3	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		4.1389
Median		4.0000
Std. Deviation		.71809

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	8	11.1	11.1	13.9
	Often	40	55.6	55.6	69.4
	Always	22	30.6	30.6	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		4.2222
Median		4.0000
Std. Deviation		.45105

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	1.4	1.4	1.4
	Often	54	75.0	75.0	76.4
	Always	17	23.6	23.6	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.8194
Median		4.0000
Std. Deviation		.86116

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	11	15.3	15.3	15.3
	Sometimes	1	1.4	1.4	16.7
	Often	50	69.4	69.4	86.1
	Always	10	13.9	13.9	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		4.0000
Median		4.0000
Std. Deviation		.50351

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	9	12.5	12.5	12.5
	Often	54	75.0	75.0	87.5
	Always	9	12.5	12.5	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		4.1667
Median		4.0000
Std. Deviation		.76912

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	13	18.1	18.1	19.4
	Often	31	43.1	43.1	62.5
	Always	27	37.5	37.5	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.0972
Median		4.0000
Std. Deviation		.63156

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	11	15.3	15.3	15.3
	Often	43	59.7	59.7	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.6528
Median		4.0000
Std. Deviation		.92172

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	8	11.1	11.1	11.1
	Sometimes	23	31.9	31.9	43.1
	Often	27	37.5	37.5	80.6
	Always	14	19.4	19.4	100.0
	Total	72	100.0	100.0	

Ensuring the work environment is clean, safe and efficient

Statistics

Ensuring the work environment i

N	Valid	0
	Missing	72

Ensuring the work environment is clean, safe and efficient

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.2361
Median		4.0000
Std. Deviation		.72176

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	12	16.7	16.7	16.7
	Often	31	43.1	43.1	59.7
	Always	29	40.3	40.3	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0694
Median		4.0000
Std. Deviation		.79304

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	8	11.1	11.1	16.7
	Often	39	54.2	54.2	70.8
	Always	21	29.2	29.2	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.7917
Median		4.0000
Std. Deviation		.67003

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	5	6.9	6.9	6.9
	Sometimes	10	13.9	13.9	20.8
	Often	52	72.2	72.2	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.9306
Median		4.0000
Std. Deviation		.56485

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	14	19.4	19.4	19.4
	Often	49	68.1	68.1	87.5
	Always	9	12.5	12.5	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.9722
Median		4.0000
Std. Deviation		.85534

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	6	8.3	8.3	8.3
	Sometimes	9	12.5	12.5	20.8
	Often	38	52.8	52.8	73.6
	Always	19	26.4	26.4	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.9028
Median		4.0000
Std. Deviation		.85843

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	6	8.3	8.3	8.3
	Sometimes	12	16.7	16.7	25.0
	Often	37	51.4	51.4	76.4
	Always	17	23.6	23.6	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		4.0139
Median		4.0000
Std. Deviation		.79599

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	6	8.3	8.3	8.3
	Sometimes	4	5.6	5.6	13.9
	Often	45	62.5	62.5	76.4
	Always	17	23.6	23.6	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.3333
Median		4.0000
Std. Deviation		.76912

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	7	9.7	9.7	12.5
	Often	28	38.9	38.9	51.4
	Always	35	48.6	48.6	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.6806
Median		4.0000
Std. Deviation		.66769

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	28	38.9	38.9	40.3
	Often	36	50.0	50.0	90.3
	Always	7	9.7	9.7	100.0
	Total	72	100.0	100.0	

Implementing critical path analysis and programme management

Statistics

Implementing critical path analys

N	Valid	0
	Missing	72

Implementing critical path analysis and programme management

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		3.7500
Median		4.0000
Std. Deviation		.70711

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	29	40.3	40.3	40.3
	Often	32	44.4	44.4	84.7
	Always	11	15.3	15.3	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0417
Median		4.0000
Std. Deviation		.81253

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	22	30.6	30.6	30.6
	Often	25	34.7	34.7	65.3
	Always	25	34.7	34.7	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		4.2222
Median		4.0000
Std. Deviation		.45105

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	1.4	1.4	1.4
	Often	54	75.0	75.0	76.4
	Always	17	23.6	23.6	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.9028
Median		4.0000
Std. Deviation		.85843

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	5	6.9	6.9	6.9
	Sometimes	15	20.8	20.8	27.8
	Often	34	47.2	47.2	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.8889
Median		4.0000
Std. Deviation		.59471

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	14	19.4	19.4	20.8
	Often	49	68.1	68.1	88.9
	Always	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.7222
Median		4.0000
Std. Deviation		.65482

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	28	38.9	38.9	38.9
	Often	36	50.0	50.0	88.9
	Always	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.7083
Median		4.0000
Std. Deviation		.59191

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	20	27.8	27.8	30.6
	Often	47	65.3	65.3	95.8
	Always	3	4.2	4.2	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.0000
Median		4.0000
Std. Deviation		.71207

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	18	25.0	25.0	25.0
	Often	36	50.0	50.0	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.9722
Median		4.0000
Std. Deviation		.91885

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	5	6.9	6.9	6.9
	Sometimes	16	22.2	22.2	29.2
	Often	27	37.5	37.5	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Reduce lead time

Statistics

Reduce lead time

N	Valid	0
	Missing	72

Reduce lead time

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.0139
Median		4.0000
Std. Deviation		.51712

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	6	8.3	8.3	9.7
	Often	56	77.8	77.8	87.5
	Always	9	12.5	12.5	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0139
Median		4.0000
Std. Deviation		.89589

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	22	30.6	30.6	33.3
	Often	21	29.2	29.2	62.5
	Always	27	37.5	37.5	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		4.1806
Median		4.0000
Std. Deviation		.73784

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	5	6.9	6.9	11.1
	Often	40	55.6	55.6	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.9306
Median		4.0000
Std. Deviation		.71850

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	9	12.5	12.5	18.1
	Often	47	65.3	65.3	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.7222
Median		4.0000
Std. Deviation		.71645

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	22	30.6	30.6	34.7
	Often	39	54.2	54.2	88.9
	Always	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.8931
Median		4.0000
Std. Deviation		.75867

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.30	1	1.4	1.4	1.4
	Sometimes	16	22.2	22.2	23.6
	Often	43	59.7	59.7	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		4.0972
Median		4.0000
Std. Deviation		.73465

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	13	18.1	18.1	19.4
	Often	36	50.0	50.0	69.4
	Always	22	30.6	30.6	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.1389
Median		4.0000
Std. Deviation		.65661

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	8	11.1	11.1	12.5
	Often	43	59.7	59.7	72.2
	Always	20	27.8	27.8	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.8750
Median		4.0000
Std. Deviation		.96323

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	7	9.7	9.7	9.7
	Sometimes	17	23.6	23.6	33.3
	Often	26	36.1	36.1	69.4
	Always	22	30.6	30.6	100.0
	Total	72	100.0	100.0	

Reduce total costs

Statistics

Reduce total costs

N	Valid	0
	Missing	72

Reduce total costs

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		3.8611
Median		4.0000
Std. Deviation		.75630

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	20	27.8	27.8	30.6
	Often	36	50.0	50.0	80.6
	Always	14	19.4	19.4	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0000
Median		4.0000
Std. Deviation		.55665

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	2	2.8	2.8	6.9
	Often	59	81.9	81.9	88.9
	Always	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		4.0833
Median		4.0000
Std. Deviation		.64459

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	12	16.7	16.7	16.7
	Often	42	58.3	58.3	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.8472
Median		4.0000
Std. Deviation		.86659

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	9	12.5	12.5	12.5
	Sometimes	6	8.3	8.3	20.8
	Often	44	61.1	61.1	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.9306
Median		4.0000
Std. Deviation		.73784

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	5	6.9	6.9	6.9
	Sometimes	7	9.7	9.7	16.7
	Often	48	66.7	66.7	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.7917
Median		4.0000
Std. Deviation		.57989

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	18	25.0	25.0	26.4
	Often	48	66.7	66.7	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.7361
Median		4.0000
Std. Deviation		1.10049

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	17	23.6	23.6	23.6
	Sometimes	4	5.6	5.6	29.2
	Often	32	44.4	44.4	73.6
	Always	19	26.4	26.4	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		3.9583
Median		4.0000
Std. Deviation		.59191

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	5	6.9	6.9	11.1
	Often	56	77.8	77.8	88.9
	Always	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.7917
Median		4.0000
Std. Deviation		.64867

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	18	25.0	25.0	27.8
	Often	45	62.5	62.5	90.3
	Always	7	9.7	9.7	100.0
	Total	72	100.0	100.0	

Maximising workflow, minimising the performance variation rather th an focusing on speed only

Statistics

Maximising workflow, minimising

N	Valid	0
	Missing	72

Maximising workflow, minimising the performance variation rather than focusing on speed only

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		3.9444
Median		4.0000
Std. Deviation		.23067

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	4	5.6	5.6	5.6
	Often	68	94.4	94.4	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		3.9306
Median		4.0000
Std. Deviation		.63526

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	17	23.6	23.6	23.6
	Often	43	59.7	59.7	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		4.2222
Median		4.0000
Std. Deviation		.82602

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	6	8.3	8.3	13.9
	Often	32	44.4	44.4	58.3
	Always	30	41.7	41.7	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		4.0417
Median		4.0000
Std. Deviation		.65944

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	14	19.4	19.4	19.4
	Often	41	56.9	56.9	76.4
	Always	17	23.6	23.6	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		4.0417
Median		4.0000
Std. Deviation		.59191

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	11	15.3	15.3	15.3
	Often	47	65.3	65.3	80.6
	Always	14	19.4	19.4	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		4.0972
Median		4.0000
Std. Deviation		.95179

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	6	8.3	8.3	8.3
	Sometimes	11	15.3	15.3	23.6
	Often	25	34.7	34.7	58.3
	Always	30	41.7	41.7	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.9444
Median		4.0000
Std. Deviation		.33098

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	6	8.3	8.3	8.3
	Often	64	88.9	88.9	97.2
	Always	2	2.8	2.8	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		3.9444
Median		4.0000
Std. Deviation		.83731

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	5	6.9	6.9	6.9
	Sometimes	12	16.7	16.7	23.6
	Often	37	51.4	51.4	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		4.0000
Median		4.0000
Std. Deviation		.73158

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	10	13.9	13.9	18.1
	Often	43	59.7	59.7	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Value management techniques

Statistics

Value management techniques

N	Valid	0
	Missing	72

Value management techniques

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.0278
Median		4.0000
Std. Deviation		.33450

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Often	67	93.1	93.1	94.4
	Always	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0972
Median		4.0000
Std. Deviation		.50796

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	6	8.3	8.3	8.3
	Often	53	73.6	73.6	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.7500
Median		4.0000
Std. Deviation		1.08446

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	15	20.8	20.8	20.8
	Sometimes	8	11.1	11.1	31.9
	Often	29	40.3	40.3	72.2
	Always	20	27.8	27.8	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.9722
Median		4.0000
Std. Deviation		.62736

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	6	8.3	8.3	12.5
	Often	53	73.6	73.6	86.1
	Always	10	13.9	13.9	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.8889
Median		4.0000
Std. Deviation		.54529

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	12	16.7	16.7	18.1
	Often	53	73.6	73.6	91.7
	Always	6	8.3	8.3	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		4.0833
Median		4.0000
Std. Deviation		1.00351

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	8	11.1	11.1	11.1
	Sometimes	9	12.5	12.5	23.6
	Often	24	33.3	33.3	56.9
	Always	31	43.1	43.1	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		4.0972
Median		4.0000
Std. Deviation		.69525

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	14	19.4	19.4	19.4
	Often	37	51.4	51.4	70.8
	Always	21	29.2	29.2	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.2083
Median		4.0000
Std. Deviation		.73038

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	4	5.6	5.6	9.7
	Often	40	55.6	55.6	65.3
	Always	25	34.7	34.7	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.4167
Median		3.0000
Std. Deviation		.62235

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Sometimes	38	52.8	52.8	56.9
	Often	29	40.3	40.3	97.2
	Always	2	2.8	2.8	100.0
	Total	72	100.0	100.0	

Benchmarking techniques including the use of key performance indi cators

Statistics

Benchmarking techniques includ

N	Valid	0
	Missing	72

Benchmarking techniques including the use of key performance indicators

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.3611
Median		4.0000
Std. Deviation		.48369

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	46	63.9	63.9	63.9
	Always	26	36.1	36.1	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		3.8889
Median		4.0000
Std. Deviation		.77923

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	26	36.1	36.1	36.1
	Often	28	38.9	38.9	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.9861
Median		4.0000
Std. Deviation		.59323

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	13	18.1	18.1	18.1
	Often	47	65.3	65.3	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		4.1667
Median		4.0000
Std. Deviation		.41111

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	1.4	1.4	1.4
	Often	58	80.6	80.6	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		3.7500
Median		4.0000
Std. Deviation		.57531

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	23	31.9	31.9	31.9
	Often	44	61.1	61.1	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.5000
Median		4.0000
Std. Deviation		.99293

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	15	20.8	20.8	20.8
	Sometimes	17	23.6	23.6	44.4
	Often	29	40.3	40.3	84.7
	Always	11	15.3	15.3	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		4.0278
Median		4.0000
Std. Deviation		.16549

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	70	97.2	97.2	97.2
	Always	2	2.8	2.8	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		3.3472
Median		3.0000
Std. Deviation		.65348

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	48	66.7	66.7	69.4
	Often	17	23.6	23.6	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.5972
Median		4.0000
Std. Deviation		.64261

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	23	31.9	31.9	37.5
	Often	43	59.7	59.7	97.2
	Always	2	2.8	2.8	100.0
	Total	72	100.0	100.0	

Risk management techniques

Statistics

Risk management techniques

N	Valid	0
	Missing	72

Risk management techniques

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		4.0556
Median		4.0000
Std. Deviation		.23067

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	68	94.4	94.4	94.4
	Always	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		3.9306
Median		4.0000
Std. Deviation		.69862

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	20	27.8	27.8	27.8
	Often	37	51.4	51.4	79.2
	Always	15	20.8	20.8	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.6806
Median		4.0000
Std. Deviation		.66769

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	19	26.4	26.4	31.9
	Often	45	62.5	62.5	94.4
	Always	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.7222
Median		4.0000
Std. Deviation		.58676

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	25	34.7	34.7	34.7
	Often	42	58.3	58.3	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		4.2778
Median		4.0000
Std. Deviation		.80879

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	4	5.6	5.6	11.1
	Often	32	44.4	44.4	55.6
	Always	32	44.4	44.4	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		3.9444
Median		4.0000
Std. Deviation		.64762

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	17	23.6	23.6	23.6
	Often	42	58.3	58.3	81.9
	Always	13	18.1	18.1	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		3.9028
Median		4.0000
Std. Deviation		.77204

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	2	2.8	2.8	2.8
	Sometimes	19	26.4	26.4	29.2
	Often	35	48.6	48.6	77.8
	Always	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		4.3472
Median		4.0000
Std. Deviation		.69525

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	3	4.2	4.2	4.2
	Often	38	52.8	52.8	56.9
	Always	31	43.1	43.1	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		4.3472
Median		4.0000
Std. Deviation		.50796

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	1.4	1.4	1.4
	Often	45	62.5	62.5	63.9
	Always	26	36.1	36.1	100.0
	Total	72	100.0	100.0	

Implementing continuous improvement from one project to another

Statistics

Implementing continuous improv

N	Valid	0
	Missing	72

Implementing continuous improvement from one project to another

		Frequency	Percent
Missing	System	72	100.0

Intergration Management

Statistics

Intergration Management

N	Valid	72
	Missing	0
Mean		3.9306
Median		4.0000
Std. Deviation		.30611

Intergration Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	3	4.2	4.2	5.6
	Often	68	94.4	94.4	100.0
	Total	72	100.0	100.0	

Scope Management

Statistics

Scope Management

N	Valid	72
	Missing	0
Mean		4.0139
Median		4.0000
Std. Deviation		.51712

Scope Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	9	12.5	12.5	12.5
	Often	53	73.6	73.6	86.1
	Always	10	13.9	13.9	100.0
	Total	72	100.0	100.0	

Time Management

Statistics

Time Management

N	Valid	72
	Missing	0
Mean		3.8889
Median		4.0000
Std. Deviation		.66196

Time Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	20	27.8	27.8	27.8
	Often	40	55.6	55.6	83.3
	Always	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Cost Management

Statistics

Cost Management

N	Valid	72
	Missing	0
Mean		3.7500
Median		4.0000
Std. Deviation		.62235

Cost Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	25	34.7	34.7	34.7
	Often	40	55.6	55.6	90.3
	Always	7	9.7	9.7	100.0
	Total	72	100.0	100.0	

Quality Management

Statistics

Quality Management

N	Valid	72
	Missing	0
Mean		4.1111
Median		4.0000
Std. Deviation		.70322

Quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	4	5.6	5.6	5.6
	Sometimes	2	2.8	2.8	8.3
	Often	48	66.7	66.7	75.0
	Always	18	25.0	25.0	100.0
	Total	72	100.0	100.0	

Human Resource Management

Statistics

Human Resource Management

N	Valid	72
	Missing	0
Mean		4.1528
Median		4.0000
Std. Deviation		.70531

Human Resource Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seldom	1	1.4	1.4	1.4
	Sometimes	10	13.9	13.9	15.3
	Often	38	52.8	52.8	68.1
	Always	23	31.9	31.9	100.0
	Total	72	100.0	100.0	

Communication Management

Statistics

Communication Management

N	Valid	72
	Missing	0
Mean		4.1250
Median		4.0000
Std. Deviation		.78610

Communication Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	18	25.0	25.0	25.0
	Often	27	37.5	37.5	62.5
	Always	27	37.5	37.5	100.0
	Total	72	100.0	100.0	

Risk Management

Statistics

Risk Management

N	Valid	72
	Missing	0
Mean		3.7361
Median		4.0000
Std. Deviation		.58123

Risk Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	24	33.3	33.3	33.3
	Often	43	59.7	59.7	93.1
	Always	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

Procurement Management

Statistics

Procurement Management

N	Valid	72
	Missing	0
Mean		3.5278
Median		3.0000
Std. Deviation		.64942

Procurement Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	40	55.6	55.6	55.6
	Often	26	36.1	36.1	91.7
	Always	6	8.3	8.3	100.0
	Total	72	100.0	100.0	

Leach (2006) notes that Lean Project Management aims to increase p roductivity, reduce project durations and minimise quality defects. D o you agree with the benefits of implementing Lean Project Manage ment listed below on Public Sector projects towards ens

Statistics

Leach (2006) notes that Lean Pr

N	Valid	0
	Missing	72

Leach (2006) notes that Lean Project Management aims to increase productivity, reduce project durations and minimise quality defects. Do you agree with the benefits of implementing Lean Project Management listed below on Public Sector projects towards ens

		Frequency	Percent
Missing	System	72	100.0

Increase successful projects

Statistics

Increase successful projects

N	Valid	72
	Missing	0
Mean		4.5694
Median		5.0000
Std. Deviation		.52612

Increase successful projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	29	40.3	40.3	41.7
	Strongly agree	42	58.3	58.3	100.0
	Total	72	100.0	100.0	

Faster project completion

Statistics

Faster project completion

N	Valid	72
	Missing	0
Mean		4.6250
Median		5.0000
Std. Deviation		.51560

Faster project completion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	25	34.7	34.7	36.1
	Strongly agree	46	63.9	63.9	100.0
	Total	72	100.0	100.0	

Simple project status

Statistics

Simple project status

N	Valid	72
	Missing	0
Mean		4.5556
Median		5.0000
Std. Deviation		.52779

Simple project status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	30	41.7	41.7	43.1
	Strongly agree	41	56.9	56.9	100.0
	Total	72	100.0	100.0	

Reduced unnecessary paperwork

Statistics

Reduced unnecessary paperwor

N	Valid	72
	Missing	0
Mean		4.5000
Median		5.0000
Std. Deviation		.53074

Reduced unnecessary paperwork

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	34	47.2	47.2	48.6
	Strongly agree	37	51.4	51.4	100.0
	Total	72	100.0	100.0	

Clear signals on when to take action

Statistics

Clear signals on when to take ac

N	Valid	72
	Missing	0
Mean		4.5694
Median		5.0000
Std. Deviation		.52612

Clear signals on when to take action

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	29	40.3	40.3	41.7
	Strongly agree	42	58.3	58.3	100.0
	Total	72	100.0	100.0	

Reduced pressure on the team

Statistics

Reduced pressure on the team

N	Valid	72
	Missing	0
Mean		4.4028
Median		4.0000
Std. Deviation		.59717

Reduced pressure on the team

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	4	5.6	5.6	5.6
	Agree	35	48.6	48.6	54.2
	Strongly agree	33	45.8	45.8	100.0
	Total	72	100.0	100.0	

Reduced waste that cause delays

Statistics

Reduced waste that cause delay

N	Valid	72
	Missing	0
Mean		4.5139
Median		5.0000
Std. Deviation		.53056

Reduced waste that cause delays

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Agree	33	45.8	45.8	47.2
	Strongly agree	38	52.8	52.8	100.0
	Total	72	100.0	100.0	

How important are the benefits of implementing Lean Project Manag ement listed below on Public Sector projects towards ensuring the pr oject programme is managed and delivered successfully?

Statistics

How important are the benefits c

N	Valid	0
	Missing	72

How important are the benefits of implementing Lean Project Management listed below on Public Sector projects towards ensuring the project programme is managed and delivered successfully?

		Frequency	Percent
Missing	System	72	100.0

Increase successful projects

Statistics

Increase successful projects

N	Valid	72
	Missing	0
Mean		3.0000
Median		3.0000
Std. Deviation		.00000

Increase successful projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	72	100.0	100.0	100.0

Faster project completion

Statistics

Faster project completion

N	Valid	72
	Missing	0
Mean		2.9722
Median		3.0000
Std. Deviation		.16549

Faster project completion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	2.8	2.8	2.8
	Extremely important	70	97.2	97.2	100.0
	Total	72	100.0	100.0	

Simple project status

Statistics

Simple project status

N	Valid	72
	Missing	0
Mean		2.9722
Median		3.0000
Std. Deviation		.16549

Simple project status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	2.8	2.8	2.8
	Extremely important	70	97.2	97.2	100.0
	Total	72	100.0	100.0	

Reduced unnecessary paperwork

Statistics

Reduced unnecessary paperwor

N	Valid	72
	Missing	0
Mean		2.8472
Median		3.0000
Std. Deviation		.36230

Reduced unnecessary paperwork

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	11	15.3	15.3	15.3
	Extremely important	61	84.7	84.7	100.0
	Total	72	100.0	100.0	

Clear signals on when to take action

Statistics

Clear signals on when to take ac

N	Valid	72
	Missing	0
Mean		2.9722
Median		3.0000
Std. Deviation		.16549

Clear signals on when to take action

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	2.8	2.8	2.8
	Extremely important	70	97.2	97.2	100.0
	Total	72	100.0	100.0	

Reduced pressure on the team

Statistics

Reduced pressure on the team

N	Valid	72
	Missing	0
Mean		2.8333
Median		3.0000
Std. Deviation		.37529

Reduced pressure on the team

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	12	16.7	16.7	16.7
	Extremely important	60	83.3	83.3	100.0
	Total	72	100.0	100.0	

Reduced waste that cause delays

Statistics

Reduced waste that cause delay

N	Valid	72
	Missing	0
Mean		2.9583
Median		3.0000
Std. Deviation		.20123

Reduced waste that cause delays

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	4.2	4.2	4.2
	Extremely important	69	95.8	95.8	100.0
	Total	72	100.0	100.0	

How often do you encounter the problems/drawbacks listed in the table below towards implementing Lean Project Management on Public Sector projects towards ensuring the project programme is managed and delivered successfully?

Statistics

How often do you encounter the

N	Valid	0
	Missing	72

How often do you encounter the problems/drawbacks listed in the table below towards implementing Lean Project Management on Public Sector projects towards ensuring the project programme is managed and delivered successfully?

		Frequency	Percent
Missing	System	72	100.0

Failure to adequately programme the work and adhere to the programme

Statistics

Failure to adequately programm

N	Valid	72
	Missing	0
Mean		4.3472
Median		4.0000
Std. Deviation		.56068

Failure to adequately programme the work and adhere to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	3	4.2	4.2	4.2
	Often	41	56.9	56.9	61.1
	Always	28	38.9	38.9	100.0
	Total	72	100.0	100.0	

Failure to provide adequate qualified human resources to manage th e programme

Statistics

Failure to provide adequate qual

N	Valid	72
	Missing	0
Mean		4.3333
Median		4.0000
Std. Deviation		.62799

Failure to provide adequate qualified human resources to manage the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	6	8.3	8.3	8.3
	Often	36	50.0	50.0	58.3
	Always	30	41.7	41.7	100.0
	Total	72	100.0	100.0	

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

Statistics

Failure to develop an efficient pr

N	Valid	72
	Missing	0
Mean		4.2778
Median		4.0000
Std. Deviation		.56224

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	4	5.6	5.6	5.6
	Often	44	61.1	61.1	66.7
	Always	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

Failure to control cost changes that impact the programme throughout the execution of the project

Statistics

Failure to control cost changes t

N	Valid	72
	Missing	0
Mean		4.2917
Median		4.0000
Std. Deviation		.72067

Failure to control cost changes that impact the programme throughout the execution of the project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	11	15.3	15.3	15.3
	Often	29	40.3	40.3	55.6
	Always	32	44.4	44.4	100.0
	Total	72	100.0	100.0	

Lack of communication resulting in delays to the programme

Statistics

Lack of communication resulting

N	Valid	72
	Missing	0
Mean		4.3611
Median		4.0000
Std. Deviation		.51198

Lack of communication resulting in delays to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	1.4	1.4	1.4
	Often	44	61.1	61.1	62.5
	Always	27	37.5	37.5	100.0
	Total	72	100.0	100.0	

Lack of pro-active approach towards achieving the targeted program me dates

Statistics

Lack of pro-active approach tow

N	Valid	72
	Missing	0
Mean		4.3889
Median		4.0000
Std. Deviation		.51882

Lack of pro-active approach towards achieving the targeted programme dates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	1.4	1.4	1.4
	Often	42	58.3	58.3	59.7
	Always	29	40.3	40.3	100.0
	Total	72	100.0	100.0	

Poor turnaround time for information flow

Statistics

Poor turnaround time for informat

N	Valid	72
	Missing	0
Mean		5.6528
Median		4.0000
Std. Deviation		11.16983

Poor turnaround time for information flow

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	3	4.2	4.2	4.2
	Often	41	56.9	56.9	61.1
	Always	27	37.5	37.5	98.6
	99.00	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

How important is it for these problems to be eliminated towards ensu ring the project programme is managed and delivered successfully?

Statistics

How important is it for these prol

N	Valid	0
	Missing	72

How important is it for these problems to be eliminated towards ensuring the project programme is managed and delivered successfully?

		Frequency	Percent
Missing	System	72	100.0

Failure to adequately programme the work and adhere to the progra mme

Statistics

Failure to adequately programm

N	Valid	72
	Missing	0
Mean		3.0000
Median		3.0000
Std. Deviation		.00000

Failure to adequately programme the work and adhere to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	72	100.0	100.0	100.0

Failure to provide adequate qualified human resources to manage th e programme

Statistics

Failure to provide adequate qual

N	Valid	72
	Missing	0
Mean		2.9861
Median		3.0000
Std. Deviation		.11785

Failure to provide adequate qualified human resources to manage the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	1.4	1.4	1.4
	Extremely important	71	98.6	98.6	100.0
	Total	72	100.0	100.0	

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

Statistics

Failure to develop an efficient pr

N	Valid	72
	Missing	0
Mean		2.9583
Median		3.0000
Std. Deviation		.20123

Failure to develop an efficient programme and to effectively maintain the programme throughout the project execution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	4.2	4.2	4.2
	Extremely important	69	95.8	95.8	100.0
	Total	72	100.0	100.0	

Failure to control cost changes that impact the programme througho ut the execution of the project

Statistics

Failure to control cost changes tl

N	Valid	72
	Missing	0
Mean		2.9444
Median		3.0000
Std. Deviation		.23067

Failure to control cost changes that impact the programme throughout the execution of the project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	4	5.6	5.6	5.6
	Extremely important	68	94.4	94.4	100.0
	Total	72	100.0	100.0	

Lack of communication resulting in delays to the programme

Statistics

Lack of communication resulting

N	Valid	72
	Missing	0
Mean		2.9028
Median		3.0000
Std. Deviation		.29834

Lack of communication resulting in delays to the programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	9.7	9.7	9.7
	Extremely important	65	90.3	90.3	100.0
	Total	72	100.0	100.0	

Lack of pro-active approach towards achieving the targeted program me dates

Statistics

Lack of pro-active approach towa

N	Valid	72
	Missing	0
Mean		2.9167
Median		3.0000
Std. Deviation		.27832

Lack of pro-active approach towards achieving the targeted programme dates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	8.3	8.3	8.3
	Extremely important	66	91.7	91.7	100.0
	Total	72	100.0	100.0	

Poor turnaround time for information flow

Statistics

Poor turnaround time for informa

N	Valid	72
	Missing	0
Mean		2.9722
Median		3.0000
Std. Deviation		.16549

Poor turnaround time for information flow

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	2.8	2.8	2.8
	Extremely important	70	97.2	97.2	100.0
	Total	72	100.0	100.0	