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On

Investigating the Impact of (ISO 9001) Quality Management System Implementation on Organizational Performance: Case In, Ethiopia Cable Industries

By

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This is to acknowledge that the thesis entitled: "***Investigating the Impact of (ISO 9001) Quality Management System Implementation on Organizational Performance: In Ethiopia Cable Industries"*** submitted by Betiel Tsegaye, in partial fulfilments of the requirements for Master of Science (Mechanical and Industrial Engineering), Addis Ababa Institute of Technology.

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DECLARATION

I hereby declare that the work which is being presented in this thesis entitled: "***Investigating the impact of (ISO 9001) Quality management System Implementation on Organizational Performance***" is original work of my endeavour and has not been presented for a degree of any other university and all the resources of materials used for the thesis have been duly acknowledged.

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This is to certify that the above declaration made by the author is correct to the best of my Knowledge

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DEDICATION

This Thesis work is dedicated to my father, my mother and my beloved family and friends who stood behind me.

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Abstract

Quality Management has been known as a method to improve the organizational performances. This research has been performed to investigate the impact of (ISO 9001) Quality Management System implementation on organizational performance which will provide good information about this effect in cable manufacturing sector. A descriptive research design has been applied to investigate the impact of QMS on the selected cable company's organizational performance. It used primary and secondary data collection and analysed the input by using SPSS software. The outcome of the study showed that Implementation of Quality Management System has positive hand-outs to all of the performance indicators in the selected companies. Organizational performance dimensions such as business performance, operational performance, and product/service quality are positively impacted by the quality management system practices such as management & team working, quality information, supplier relationship management, customer relationship management and competitiveness. The research finding has also demonstrated that the main obstacles in the investigating of quality management system implementation are strategic decisions are affected by top managements, top management commitment while implementing Quality Management System and insufficient time for continual improvement.

Key Words: Quality management system, organizational performance, manufacturing sector

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Acronyms

QMS	Quality Management System
ISO	International Organizations for Standardization
QM	Quality Management
SPSS	Statistical Package for the Social Science
OP	Organizational Performance

Chapter One

1. Introduction

1.1 Background of the Study

Today's global market is increasing with business competitions. To be in the increased global competition, organizations are forced to produce high quality products and continuously improve themselves to survive and to stay in the market (Abdul-Aziz, Chan, Metcalfe, 2000).

According to (Sharma et al, 2005), the main focus of a company should be the customer and it should consider their needs and demands so as to maintain a competitive edge and survive in the market.

The quality theory has emerged and disseminated in various activities to become a vital management performance instrument as opposed to its initial role of control (Belay et al, 2011). Quality management is one of the key challenges that brought the attention of the research and business community in the last 3 decades (Noranha, 2002, Feng et al, 2007).

There are many quality management approaches used by organizations to achieve these objectives such as Kaizen, Six Sigma, Lean management, TQM, etc. The most common approach is ISO 9001 QMS (Limakatso P., 2011).In the present situation of highly competitive business environment in domestic as well as global market, implementation of Quality Management System (QMS) concept has become an important business style and a key survival tool, both for manufacturing and service industries, from large-scale to small-scale, for achieving the business goal and market value (Başak M., 2014).

The adoption of a QMS should be a strategic decision (Mello et al, 2005), development and implementation of this system should consider the uniqueness of each organization, since it depends on several factors like: Specific objectives; supplied products, and processes used (Salgado et al, 2014).

Implementation of ISO 9001 QMS represents the basic precondition of a company's success and entrance in the market (Gotzamani et al, 2015). This implementation of QMS is a

voluntary process supported by organization's own strategy, motivations, policies and goals (Kaziliunas, 2010).

The ISO 9001 QMS standard has been accepted and realized almost in all countries of the world since its inception in 1987 (Dupendant, 2016)**.** The ISO 9000 series certification is important to organization seeking to interact internationally. The newer version of ISO 9001 is introduced in 2015. The standard is widely used by organizations to gain both operational and market benefits. Therefore, recently in Ethiopia ISO 9001 QMS has been adopted on the same voluntary basis by Cable industries in order to improve their competitive advantage.

The performance of organization is dependent on the ability of the organization to meet the standards of good or service quality required by end users. The organizations are mentioned to have a good quality management if the output of the organization is meeting with end users requirements and the possibility to develop the outputs to meet the customers' expectations.

For this study purpose from the manufacturing sector, cable industries in Ethiopia are selected. BMET, Elsewedy and Belayab cable factories implement QMS (ISO 9001) and got certificate.

This study will investigated the impact of quality management on organizational performance which will provide good information about this effect in cable manufacturing sector. This thesis used primary and secondary data collection and analysed the input by using SPSS.

1.2 Statement of the Research Problem

The implementation of the ISO 9001QMS internationally provides inherent positive impact on the overall performance of the organizations. However, the impact of its implementation in the area of study remains questionable. Many researchers' studies have shown mixed conclusions on the impact of ISO 9001,but most of the reports show positive results of QMS practice on performance (Zu, 2009); (Kaynak and Hartley, 2005); (Sila and Ebrahimpour, 2005); (Prajogo and Sohal, 2003); (Kaynak, 2003); (Ahire et al, 1996), but still, some studies reveal negative results (Abdel Aziz, 2011); (Kitaw and Bete, 2003); (Beshah and Kitaw, 2014).

Even if there is reasonably variety of studies available on the impact of QMS implementation on sectors such as Agro-processing, metal industries, limited or no studies has been done concerning for Ethiopia cable industries. The result of such studies indicated that the impact of QMS via application of ISO 9001 is tremendous. The impact can be highlighted on product quality improvement, market share penetration, inventory monitoring. As a result of this studying impact of QMS on Ethiopia cable industries can help to maximize benefits from manufacturing industry due to quality management and other different problems. The impact can be illustrated such as electrical cables are highly linked to our day-to-day activity. And also electricity is essential for any factory activity.

Therefore, the aim of this thesis is to find out what are the impacts of ISO 9001, and to give better understanding the differences in the current literature.

1.3 Research Questions

After finalizing this thesis, the following research questions will be resolved

Question 1: What is the current QMS implementation practice in Ethiopia cable industries?

Question 2: What are the impacts of QMS implementation in Ethiopia cable industry?

1.4 Objectives

1.4.1 *General* Objective:

The general objective of this thesis is, to investigate the impact of the implementation of QMS (ISO 9001) on organizational performance for the selected cable industries in Ethiopia. The organizational performance variables used are: business performance, operational performance and quality of service/product.

1.4.2 Specific Objectives:

- Investigating of ISO 9001 QMS trend, impact and application related to cable industries.
- To investigate positive and negative impacts of implementing QMS.
- To draw a frame work and general conclusion on the impact of ISO 9001 QMS on cable industries in Ethiopia.

1.5 Significance of the Study

Since there are limited studies in the area, it will give a comprehensive starting point for more precise quality researches for Ethiopia Cable Industries.

The research offers a realizable contribution to standing academic and practical knowledge related impacts on implementing QMS ISO 9001 on Ethiopia cable industries. It can inform others who think that implementing ISO 9001 is mandatory, by presenting whether it has a positive or negative impact.

Finally, the research may assist as an initiative for further research on impacts of implementing QMS ISO 9001 on Ethiopia cable industries for educational institutes. Conclusively, anybody who is interested in QMS especially in Cable products may get a good idea from this thesis. With this regard, this study has added its own importance to the concept by studying the impacts of ISO Quality Management System implementation on organizational performance.

1.6 Scope of the Study

The scope of this thesis is limited to investigating the impacts of QMS on Ethiopia cable industries specifically; BMET, Elsewedy and Belayab cable industries.

However, most of the data and information will be collected from BMET cable industry, due to the fact that the researcher has good access to get required data or information.

Chapter Two

2 Literature Review

2.1 Conceptual Definition

2.1.1 Quality

The word "quality" illustrates a concern for customer satisfaction. Quality is the sum of imbedded characteristics & features of a product/service which satisfies the required need of the users.

It has been found that different researchers adopted different quality definitions and outlines based on their own understanding of QMS and research objectives. Consequently, there are fewer agreements on what QMS is and what constitutes it.

Quality has become an advantageous marketing tool of many companies to exceed competitors in expanding the market share of a product (Awoku, 2012).

Quality can be considered as a competitive tool in the marketplace. Quality creates competitive advantage by proving products that meet or exceed customer needs and expectations (Lee and Zhou, 2000). Quality is defined using different perspectives, as it is still a subjective goal that has indefinable characteristics (Kazan et al., 2006). An early definition for quality is presented by, (Juran, 1974) who defines quality as "*fitness for Purpose*". (Reeves and Bednar, 1994) define quality as excellence, value, conformance to specifications, and meeting or exceeding customers' expectation. The term "fitness for purpose" defined by (Juran, 1974) is also included in the quality definition presented by (Reeves and Bednar, 1994). Thus, the customer perspective with respect to quality is the master key that should be understood while determining any term for quality or definition of quality. (Garvin, 1987) sees quality as a multidimensional construct. He describes quality as having eight dimensions, which include: conformance, performance, reliability, features, durability, serviceability, aesthetics, and perceived quality. Conformance is the level of satisfaction of a set of specification labelled by the end users, while performance depicts the level of efficiency.

2.1.2 Meaning of ISO 9001 Quality Management System and Certificate

ISO is a Greek word which means "Equal". The International Organization for Standardization (ISO) is founded in February 23, 1947; London United Kingdom. It is a worldwide federation of national standards bodies from some 100 countries, with one standards body representing each member country. ISO is the world's largest non-profit organization to develop and publish international management system standards on various subjects such as ISO 9001, Requirements for a QMS. Quality Management System is a set of interrelated activities performed to meet the required needs of the end users. Some quality specialists consider Quality Management System as a major activity required to meet the customer needs. Researchers define Quality Management (QM) is both a set of guiding principles and management style and that have been adopted by managers in organizations to improve competitiveness and organizational performance. The ISO does not enforce regulations (Dupendant, 2016).

A Quality Management System is a set of tools for intended to manage the planned activities of a company/organization to accomplish and achieve a targeted outcome regarding the satisfaction of customer demands. This may refer to engaging Human-Resource, Knowledge & Technology and Working Procedures to achieve the intended goal (Feraneceschini, 2007).

ISO 9000 standard has been revised during the last thirty years. The revisions has under-gone four times since the first publish in 1987 of which the 9001:2015 is the last version.

The 9001 shows the standard code for Quality Management System and the 2015 shows the publication year of the standard. The revision of the standard were essential since they depicted the new demands of the end users by avoidance of doubts in the previous publications of the standard.

"ISO 9001 Certified" means an organization has met the requirements in ISO9001 (QMS).An ISO certification is not a license that permits an activity. ISO 9001 evaluates whether your QMS is appropriate and effective, while forcing you to identify and implement improvements (Dupendant, 2016).

2.1.3 Brief review of QMS ISO standards and principles

Generally speaking, a management system is the way in which an organization manages the inter-related parts of its business in order to achieve its objectives (ISO, 2017). According to ISO, these objectives can relate to a number of different areas, including product or service quality, operational efficiency, environmental performance, health and safety in the workplace and many more.

The ISO 9000 standards originated in 1987 with a bulletin from the International Organization for Standardization (Ferguson, 1996). Its purpose was to provide a series of international standards dealing with quality systems that could be used for external quality purposes (Aggelo Giannopoulos, et al., 2007). The other objective was the desire to provide information to organizations about how to design their own quality systems based on individual company marketplace needs.

The management system standard has been presented with the purpose of guaranteeing achievement of customers' needs with regards to the service/products provided is ISO 9001, Quality Management System (ISO, 2017). All the standards set in the ISO 9001 QMS are practical aiming to satisfy the basic requirements of the customers' requirements. Accordingly, the target set in the application of the minimum standardization will be beneficial to both the customers' needs satisfactions & the supplier's achievements. It also ascertains the definition of a contractual agreement standard which enables the customers' needs conformity to the supplier's duty to fulfil the demands (Gohe and Yahaya, 2001).

According to the International Organization for Standardization (ISO), quality management system is demarcated as a general guideline to coordinate the activities required to achieve the quality performance of the organization. It is a standard established by the International Organizations for Standardization & act as a framework for organizational quality management systems (Omeachonu and Bella, 2011). The framework is widely agreed by all stakeholders, i.e. governments and companies around the world & as a result used as standards for management system.

The ISO 9000 series standard is definitely the most recognized quality management system (Bashirs and AlRawahi, 2011).

ISO 9001 involves requirements for quality management system that can be used for inner system procedures by companies, for contractual resolutions and for certification. It concentrations on the efficiency of quality management system in fulfilling customer needs (INTERA.ITILTD-India, 2019).

The below table give a brief discussion on ISO 9001 Principle

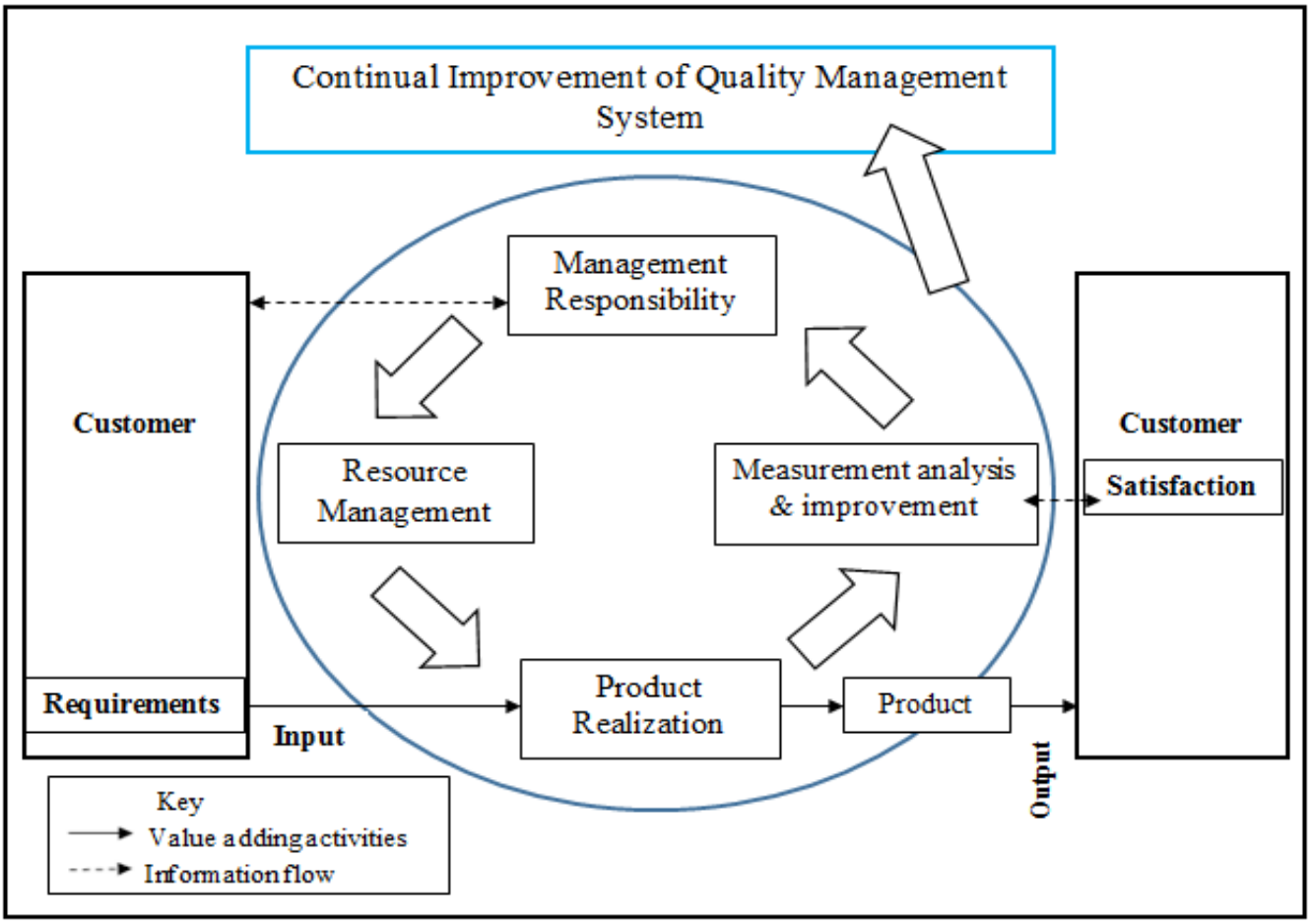
Table 2.1: ISO 9001 Principles and Organizational welfares

ISO 9001 Principle	Organizational Welfares
Customer Focus	Growth Market share as a result of quick response to market demands. Increase efficient employment of resources to fulfil customers demand on time.
Leadership	Customers will be appealed by the presentation of the company objectives. Actions will be executed in a combined fulfilments
Involvement of people	People will be attracted and motivated to align with the company. People ready to participate in the activities and development.
Process approach	Avoidance of rework and concentrate on cost saving. Aspire to renewed, improved & reliable outcomes. Concentrate on development opportunities.
System approach to management	Alignment of accepted procedures to accomplish the required results. Concentrated on the key courses.
Continuous improvement	High achievement over development company competencies. Suppleness to respond rapidly to prospects.
Truthful approach to decision making	Developed facility to review, to comply, to change opinions, and reach results. Assured judgements.
Mutually beneficial supplier relationships	Developed aptitude to ascertain worth for mutual benefits. Suppleness in fast reply to altering demands and customer requirements.

(Source: BSI, 2019)

The quality management system tracks the procedure based abstract model as represented in Figure 2.1. The model includes the main segments and divisions of the quality management standard counting: management responsibility, resource management, product realizations and measurement analysis & improvement whereas considering the customers requirement as input & customer happiness as output in a continual improvement method.

Figure 2.1: A procedure based Quality Management System Model



(Source: INTRA.ITILTD-India, 2019)

2.1.4 Organizational Performance

Performance of the business is a measurement of the achievement of organizational goals (Carlos, Alex and Jose, 2012). The measurement is operationalized by the organizations report that indicators of business performance, market share, the percentage of new product sales to total sales and return on the investments (ROI).

The overall helpfulness of the company is stately by linking the commercial and non-commercial aspects of the company (Razaei and Baalousha, 2011).

Performance measurement business was conducted with the financial and non-financial criteria. Dimensions are used to measure the performance of the business is done by combining financial and non-financial criteria are market share, the sales of new products and services, return on investment (ROI), improved processes, reduced time to respond to market changes.

Another study conducted by (Jho Rhodes and Peter Lok, 2008), entitled "An integrative models of organizational learning and social capital on effective knowledge transfer and perceived organization performance". Performance measurement is done by using the concept of balanced scorecard (Kaplan and Norton, 2002). Dimensions and performance indicators that are used include: Innovation and learning (such as new products, technological improvements, an increase in patents, improvement of human capital); Process (such as a new system, cycle time reduction, process reengineering); Customer satisfaction (such as an increase in the number of customers, repeat purchase, reduction of customer complaints; Finance (such as profit improvement, cost reduction, increased sales).These four dimensions are grouped into 2 of the financial performance in the form of repair cost advantages and increase market share; and non-financial performance / performance innovation of product development and process engineering.

Consequent study conducted by Pantauvakis & Kafetzopoulusen, titled the impact of ISO 9001 efficiency on the routine of service organization. Their research was conducted on 100 companies services in Greek that has been certified ISO 9001-2008. Performance

measurement is done with the financial performance, operational performance and quality of services / products. Dimensions and indicators of the abovementioned research converted a large part of the balanced scorecard method of assessing the performance of companies / businesses based on financial and non-financial criteria. Results of non-financial assessment which includes innovation and learning, internal business processes, customer satisfaction always should automatically reinvested to increase the value of the company's business that is known as intellectual capital.

2.2 Theoretical Concepts of QMS

The literature currently advances main theories to explain the implementation of QMS, each of which centres on idea of the implementation of QMS, top management commitment as well as quality improvement which offers a sufficient amount of information and research on the topic, also implementation of QMS to various cable industries in Ethiopia.

2.2.1 QMS Implementation in Ethiopia Cable Industries

2.3.2.1 BMET

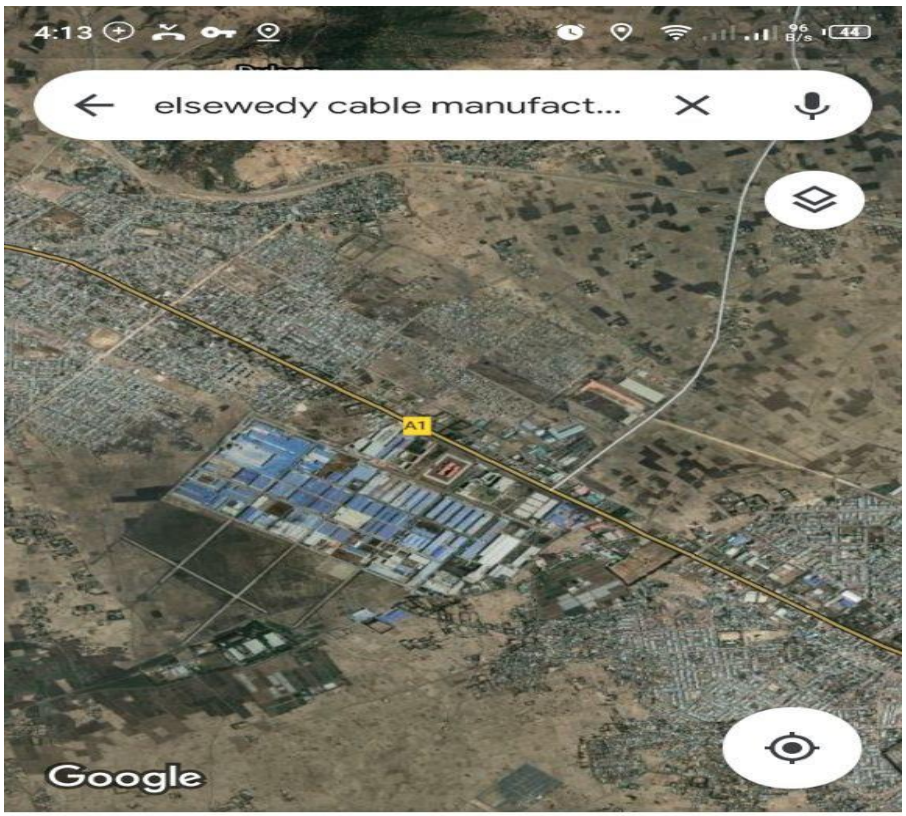
BMET Energy Telecom Industry and Trade PLC has been established in 2013, and it’s located in Sebeta, Dima. The company perform design, production and marketing of the following goods and services, Communication cables and accessories (Fiber optic cables and accessories, data cables and optical cables), power cables, energy transmission and accessories (insulated cables, bare grounding, copper wire rod, aluminium wire rod and bare aluminium conductors), building wires and multi core cables, low voltage energy cables, medium voltage energy cables, high voltage energy cables, aluminium conductor and copper telecom cables. The company started implementation QMS in December 2014 and Certified in December 2015 (BMET Quality Manual, 2019).

2.3.2.2 BelayAb

BelayAb cable manufacturing private limited company has been established in 2014, and it's located in Adama city. The company produces data cables and aluminium cables. The company started implementation QMS in January 2016 and Certified in December 2016(Company Manual, 2019).

2.3.2.3 Elsewedy Electric

Elsewedy Cables Ethiopia PLC has been established in 2008, and it's located in Dukem city. Their products are; Low Voltage Cables, Medium Voltage Cables, Overhead Conductors, Special Cables, Copper telecom cables, Telecom Accessories, Winding Wires, etc. The company started implementation QMS in April 2015 and Certified in May 2016 (Elsewedy Quality System Manual, 2019).



2.3 The Motivation for implementing ISO 9000

ISO 9000 comes with long list of requirements, which the organization will have to fulfil in order to become certified. Regardless of the organization's motivation, it'll have to go through the process of change to adopt the quality assurance standard. Organizational change does not come easily. Existing procedures, practices and organizational culture ensure that most organizations are quite rigid and resistance to change. To make the transition, the organization will first have to practice its norms and values, altered them such that they fit the new paradigm and have refrozen to make them stick. In the meantime, organizational procedures

have to be re-established and supplemented by the requirements for the coming from the ISO 9000 standards.

Moreover, the motivation for ISO 9000 implementation is often claimed to be a significant factor for business success which could be external reasons such as, marketing advantages, customer expectation and competitive pressures, instead of internal reasons such as improving the quality of products and services, (Feng et al., 2008). However, more recent research indicates that manager's motivation for seeking ISO 9000 certification has shifted significantly from external to internal reasons. For example, market related reasons for certification do not rank high as motivators to gain ISO 9000 certification.

2.4 ISO 9001 Certification

ISO 9001 evaluates whether organizations Quality Management System is appropriate and effective, while forcing the organization to identify and implement improvements.

ISO outlines a set of proprietary commercial and industrial standards which are followed worldwide as a measure of best practice conformed to buy a company. In order to be certified to ISO 9001, a company must follow the requirements set forth in the ISO 9001 standard. The standard is designed to help companies at many levels, including a focus on customer requirements, improving leadership within the company, finding ways to continually improve, and more. There are several different documents in the ISO 9000 families of standards, but ISO 9001 is the only standard in the 9000 series that request certification (ISO 9000 series, 2015).

In general, it is understood that ISO certification can improve the performance of the organizations though there are some others who do not agree with this argument.

Being this is the case and even if there are a multiple of studies in the field of quality management, there is still a gap on how ISO certification have an impact on the performance of an organization.

Moreover, to get certification as a proof of the organization that has fully complied the standard, several procedures should be taken, which are:

1. ISO 9000 Assessment: The primary assessment is a detailed review of the company's quality systems and procedures compared to ISO 9000 requirement. This process defines the objective and scope of the ISO 9000 project.
2. Training: All employees must be trained in two areas. 1st, they must have an overall understanding of ISO 9000 vocabulary requirements, the role of the quality manual and the benefits that will be derived from the system. 2nd, they must understand the actual day to day process of upgrading and improving procedures.
3. Documentation of work instruction: All procedures must be described and documented so that they can be understood prior to approval. Once completed, this document should outline every process a company undertakes that affects the quality of its finished products.
4. Quality Assurance Manual: While ISO 9000 standard does not require a Quality Assurance and policy manual, they do require that a company document everything it does and every system that affects the quality of the finished product. The manual is often used to assemble all documents in one place.
5. Registration Audit: The final step in certification is an audit by an organization chosen as external registrar to see that the system is working as described in the Quality Manual and that meets ISO 9000 requirement.

This literature is, therefore, believed to include the impact of ISO certification on organizations performance.

2.5 Impact of ISO Certification

ISO 9000 is an international standard for quality assurance, recognized throughout the world (Ashton and Jackson, 1995). ISO certification stands for assured minimum quality standards that organizations should meet, and is held to assure a reliable required quality levels (Singles et al., 2001).

(Singles et al., 2001) also stated that ISO 9000 standards help to ensure that organizations follow specific well documented procedures in making of their products or services, and nothing more. These procedures describe how operations in an organization must be conducted. By doing this, organizations will have consistent product or services that are offered to the customers. If the products or services are consistent and meet customer specifications, then the organization will benefit from ISO certification.

These benefits, (Cagnazzo et al., 2009), could then be those that are internally impact the performance of the organization or those that can externally affect the organization. From this, the researcher will discuss the internal impacts of ISO 9000 certification impacts on quality system, product/service, competitiveness, management and team working, financial performances; and followed by external impacts, such as impacts on market, customer and impacts from or on suppliers.

2.5.1 Internal Impacts

2.6.1.1 Impact on the Quality System

ISO 9000 accreditation, inspections & assessments permit organizations to always modernise & regulate their quality systems. Specifically, the quality assurance should be: - dedicated to quality, practice the interior quality assessments for promotion in estimating the usefulness of quality system, confirm the quality system is developed, and frequently evaluate the quality system (Luca Cagnazzo, Paolo Taticchi, Francesco Fuiano, 2009).

2.6.1.2 Impact on Management & Team Working

Many authors (Cartin T.J. 1995, Ingles S., 1994, Tenner A.R. and DeToro I.J.,July 1992) have frazzled staffs participation & additional worker features as the major to fruitful application of the International Standard of Organization system.

Some authors experiential that ISO 9000 procedures convey almost observable variations in such fields as HR growth, attracted and motivated of employees, communication and collaboration, and organization aim mission & vision. An assessment applied on 700 companies, (Taylor W.A., 1995) observed that obligation to ISO 9000 certificate

implementation has shown major enhancements in the approaches & performances of the management teams of the companies. According to the conclusions of the research, ISO 9000 implementation system determine that it can change & restructure administrative conditions of a company (Kunnanatt J.T., 2007)

2.6.1.3 Impact on Product or Service

The main significant thing that will impact the presentation of the rivalry is the fact that there is a direct link among product/service quality, and also there is a direct connection among consumer gratification & success/profitability (Helmi, M.A. 1998). The main improvements made to the ISO 9000, as a result of the international reporting period, will be related to the overall product quality of the product, as well as the quality of the service (Brown A., Van der Wiele T. and Loughton K. 1998). These will ensure that ISO 9000 is fully improved the invention quality and customer demand (Quazi H.A. and Padibjo S.R 1998). Many other industries are working to improve the overall productivity of the product, and as well as to improve the overall productivity of the business (Chean C.S and Yaeug T.L, 2003). Additional features of the status quo that have had an optimistic impact: it has seen a reduction in the distribution time, the overall cost of the product, the overall saving in the product price, and increase leading-time. The ISO 9000 program offer a comprehensive overview of the processes that are set up in a comprehensive process, both in productive or in-service delivery system. It decreases the overall erraticism of the product because it deliver a superior way to write and process directions (Curkovic S. and Pagell M., 1999).

2.6.1.4 Impact on Competitiveness

Implementing ISO 9000 standards allows organizations to compete more effectively because their products have a higher quality and their procedures are more efficient and consistent. If organizations become certified for ISO 9000, they have an even bigger competitive advantage because they can bid on contracts that specify ISO 9000 certification, while their competitors lacking certification can't bid. Overall, ISO 9000 improves their competitive position in the marketplace (Bert Markgraf, 2015).

2.6.1.5 Impact on Financial Performances

Most researchers describe that the impact of ISO 9000 on financial performance is a potential sources of discussion. A research conducted by (Van Der Wiele et al., 2000) justified that there is no clear relationship between having ISO 9000 series certificate and the financial performance of an organization. This is mainly due to the reason that ISO 9000 focuses only on how organizations reduces their costs through minimizing the inspection time, detecting the quality problem early at the production level and the time spent for call backs. ISO also requires the tasks to be performed as per the stated procedures. But, in general, ISO certified companies have more access to new markets and can control the existing markets which in turn can improve their financial performance.

ISO 9000 had the most immediate and substantial impact on productivity/efficiency, profitability and cost factors (Pinar, 2001). This might suggest that these were the main factors influencing the belief or perceptions of the firms regarding ISO 9000 success.

(Corbett, 2002) supplemented that firms that decided to seek ISO 9000 maintained their return on assets (ROA), while the non-certified firms saw their performance decline over time.

(Sharma, 2005) provided the evidence that ISO 9000 certification is associated with improvements in financial performance. His results revealed that ISO 9000 certification does bring benefits to the firm and its stakeholders. Profit margin, growth in sales, and earnings per share are among the significant improvements observed as a result of ISO 9000 certification. However, the impact of ISO 9000 certification was greater on profit margin than on growth in sales which suggests that the improvement in overall performance is attributed largely to improvements in internal business processes.

2.5.2 External Impacts

2.6.2.1 Impact on International Trades

According to a number of studies, the international standard of deciding whether to implement the entire level of trade is completely undefined by the fact that it does not have a definite article, and that it does not have valid ISO 9000 certification. In fact, in most cases, it is clearly

indicate the purpose of their acceptance to implement ISO 9000. Such that, ISO 9000 valid certification will be used as a passport for performing most businesses in different countries. The ISO 9000 certification represents a significant features for increasing sales on international trades (Costa, M. and Lorente, M., 2004).

The acceptance of international quality ISO 9000 has created a consensus to evaluate and measure suppliers to eliminate the most obstacles to international trade. Consequently, the standard ISO 9000 has been recognized as a national & international trademark (Cater D.J., Pasqualone R.G., 1995).

2.6.2.2 Impact on Market

Acceptance of the ISO 9000 program, the basis of performance enlargement comes from the fact that ISO 9000 certified companies have found a new market (Corbett, C. Montes-Sancho, M. Kirsch, D., 2005). The ISO 9000 chain of accredited certification is widely accepted for its versatility in access to markets (Aarts F. and Vos E. 2001). Agreeing to a recent study published in the UK, some of the welfares of a certifications are as follows: it will be very helpful to access new and international market, it helps to keep a close-knit market in place, to increase the chance of procurement new contracts. An additional essential feature related to ISO 9000 certification is related to the rapid response to market demand exploration (McGuire, S.J., Dilts, D. M., 2008).

Santos and Escanciano (2002) described that companies will achieve the development of a more suitable commercial offer for their customer needs, which implies a marked increase in customer satisfaction and loyalty, and greater opportunities appear in the access to new markets as a result of the improvements in the commercial management. And also there is an increase in market participation and the firm acquires a strong image.

Moreover, as Cagnazzo et al. (2009) identified, the company that get ISO certification may help them in gaining access to the market and the faster reaction to the market request. The fact that ISO 9000 series certification can lead to gain access to markets, besides it can also review some of the welfares of certification; implementing one-on-one important marketing,

helping to secure new contracts, and growing access to new and global markets will be a great help. This ISO 9000 certified organizations have been able to find a new marketplace that will provide with the latest ISO program.

2.6.2.3 Impact on Customer

The implementation of the ISO 9000 system provides a comprehensive and wide-ranging solution for organizations across the global, as well as increasing customer's satisfaction (Luca Cagnazzo, 2007). The positive impact of customers has been widely acknowledged by many companies in the world, and all of the companies that are certified by the ISO 9000 certifications are fully aware of the needs of their customers. These include: a number of planned activities to increase customer satisfaction, complete methodical procedures for the elimination of misconstructions by customer orders, a methodical approach to dealing with customers, and methodical analysis the terms of agreements (Luca Cagnazzo, Paolo Taticchi, Francesco Fuiano, 2009).

2.6.2.4 Impact on Supplier

There are two main features that can be used by suppliers to make a difference. Welfares that come from accreditation and certificates come from the end of the company. The first, the ISO 9000 standards have been acknowledged by the world-wide accredited and qualified suppliers of quality assurance management system (Beattie, K.K., A.S., 2009).

All cases related to ISO 9000 are required to be permanently certified by the company. Providers are selected based on the quality of the certain product: There is a general lack of disagreement with the suppliers of trade orders, the quality of services provided has been reviewed all materials from customers' and non-suppliers are treated in the same way, and all subcontractors are in the same position. It agreed with the suppliers of the work they do. With the growing demand for certified suppliers (in USA industries) stated that it expects ISO 9000 certified companies to be able to increase the quality of their supplier communications (Buttle, F., 1997).

(Terlaak A., King A.A., 2006) has studied ISO 9000 certificates as a quality marker, and organizations with ISO 9000 certification are growing rapidly and faster than non-certified companies.

2.6.2.5 Impact on Financial Stakeholder

(Sharma, 2005) stated that ISO 9000 certification does bring benefits to the firm and its stakeholders. The practice of ISO certification is linked to the need for comprehensive financial commitment to the overall commercial performance of all stakeholders (Cagnazzo et al., 2009). According to the authors, the ISO certification is clear indication of the fact that other organization are suffering from the effects of the crisis. Organization established in a low-quality background that have high agreements with quality standards should have relatively great properties compared to companies in the area that are believed to manufacture extraordinary quality.

2.6 Empirical Studies on QMS implementation

In above sections theories regarding to QMS implementation have been explained in detail. On other side there are various of researchers who have attempted to describe the impacts of QMS implementation which form their view of empirical studies in this section and has a particular focus on those that have been conducted from Ethiopia, Africa and worldwide in general and it is presented as follows:

2.6.1 Empirical Literature Review: World Wide

(Magd et al. 2006) assessed the outcomes of a study of 175 manufacturing companies certified by ISO 9001 in Saudi Arabia. The research concentrate on the welfares gained from the application of ISO 9000, the overall satisfaction level, the post ISO 9001 performance requirements, the reasons for the impact of the recording agencies, and the reasons for the overall impact of the registration, and of course the registration: have been through a lot of problems with agencies. In Saudi Arabia, a number of certified organizations have demonstrated the full scope of the recording process. The reason why this is possible is that most of the important customers who claim to have high quality service/product that do not have a valid/permanent certificates are required due to the fact that the high-quality

environment is not enough. The study propose: in order to implement a comprehensive standard of conduct in a complete manner, other organization must carefully monitor the company, monitor external & internal features, and at the same time evaluate the implementation practise as a cost effective analysis. They also need to use ISO 9000 to meet the requirements of ISO. At-the-time of this study, a number of certified organizations were still in the area, limiting future research in this area.

(Jang and Lin, 2007) has thoroughly explored whether business can benefit from ISO-9001, and insists that the implementation of ISO-9000: will greatly enhance the overall impact of ISO 9001 on the overall performance of ISO-9000 in Taiwan. A study inquiry-form have been sent to 1,668 organizations with a valid ISO 9000 certification, in over-all 441 practical reply have been carry-on. By means of the structure of equation model, the research investigates based on the generalization of the implementation of the ISO, both in general and in the context of the implementation routine of the ISO-9000. As the result show, we recognize that there is a long-term positive link between the organization and the company in which the organization is implementing the ISO 9001 and strong performance. It also adjusts the complete range of inter-relationship between the internal and external components of the ISO implementation. In addition, the implementation of the ISO 9000 will directly distress the overall performance of the market, both directly and indirectly.

(Ul-Hassan et al, 2012) empirical examined the association between QMS practices and performance, i.e. quality, business, and organizational performance. The quantitative data were obtained through a survey from 171 quality managers of Pakistan's manufacturing industry. This study supports the hypothesis that QMS practices positively impact the performance. QMS tools and techniques (Incentive and Recognition System, Process, Monitoring and Control and Continuous Improvement) and Behavioural factors (Fact based-management, top management's commitment to quality, employee involvement and customer focus) contribute to the successful implementation of QMS. According to the research, the successful implementation of a comprehensive and wide-ranging implementation of the QMS trend will improve the overall performance of the organization. The findings are based on the

fact that public and private executives are working together to achieve better customer experience, greater customer satisfaction, better communication, better quality, and better business performance rather than implementing QMS trends.

(Omer el Tigani, 2011) has evaluated the overall impact of the QMS application on the overall routine of involved staff. Qualitative as well as quantifiable studies were performed. In Qatar, the state of emergency, both private and public, gathered data from a total of 150 participants. The results also demonstration that the implementation of the ISO 9001, will not affect the overall performance of the staff of participating organizations. This was a study of research and development in the field of public relations. It allows the applications to raise certain questions. And the ISO quality management system is a quality-based system that recognizes the performance of the structure. The research addresses some of the important questions in the global ranking systems.

(Memari et al, 2013) investigates the relationship between organizational commitment and employees' job performance in Meli Bank in Kurdistan Iran. The results showed a positive relationship between organizational commitment and employees' job performance. In the comparative analysis of three dimensions of organizational commitment, normative commitment has a positive and significant correlation with employees' job performance.

2.6.2 Empirical Literature Review: Africa

(Muturi et al, 2015) has been studying the overall results of the implementation on companies of the ISO in Kenya. He has repeatedly directed the recorded companies in the most widely used security interactions in East Africa. Secondary data available from the NSE warehouses on financial performance was collected from 19 of these organizations. The study covered five sectors namely: Finance; Automobiles; Manufacturing; Energy/petroleum and Commercial services. The study used a wide-range of web analytics to collect information from the world's leading websites. During the last four fiscal years (2010-2013) the net profit, the exchange rate, and the total net possessions were collected. According to the results of the

study, the total number of ISO certifications in the companies will be affected by the total number of non-permanent returns.

(Benarbia et al, 2015) investigated the effect of ISO 9001 certification of BeniSaf company performance, as perceived by the management. Results indicated that the ISO 9001 certification has a positive impact on BeniSaf Company's performance. The marketing advantages were the principal benefits and the benefits related to the human resources occupied the lowest position in the company.

(Otieno et al, 2015), examined the effects of QMS implementation on students' employment, and establish the effect of QMS implementation on employee performance and to establish the level of infrastructural growth of Maseno University. The study adopted a case study design since it was desirable for in-depth analysis. The target population was 1283 non-teaching staff of Maseno University. A sample of 296 employees was obtained from the population using stratified random sampling. Primary data was then collected using questionnaires while secondary data obtained from records in relevant offices. Data collected was analysed using correlation, regression analyses. The study findings established that the QMS implementation had a strong positive impact on student employment.

(Wanjauand Kibe, 2014) explored QMS and their influence performance of food processing firms in Kenya, where, food processing companies still find it challenging to effectively implement QMS that contribute towards realization of increased organization performance. Over 75% of food processing companies in Kenya are still struggling to embrace effective quality management systems as a strategy to gain a competitive edge in the target market through development of superior product quality, market growth and higher customer satisfaction.

The study found that quality management practices under study have a strong positive connection with an organizations' competitive performance. These quality practices are critical in achieving and maintaining this competitive performance, they include top management support, control measures, adoption and utilization of information technology

and capacity enhancement. The study therefore recommends that food processing firms focus should thus be on modifying the culture of the whole organization with a view to transforming it into an overtly quality-oriented culture, for the firm to achieve the benefits of a QMS, it is critical to regularly run training in this area with the aim of instilling habits and make workers more receptive to the change of working methods. The implementation of quality management techniques enables organizations to improve internal efficiencies, which is considered as a prerequisite to become competitive in global marketplace.

(El Sakka and El Khamess, 2013) determined the relationship between applying QMS and environmental standard on organizational performance (OP). Data in the study was collected from sample of 150 management staff of small and medium enterprises (SME'S) in Egypt. The collected data were analysed using SPSS (Statistical Package for Social Sciences). The study found that quality management and environmental standard aspects were related to organizational performance. The study also revealed that applying QMS and environment standard contributed to organizational performance, it was found that QMS had more effects on organizational performance than environmental standard; the findings of study provide empirical evidence that quality of management system significantly has an influence on the organizational performance more than the influence of environment standard findings.

(Fening et al, 2013) examined the linkages between QMS and organizational survival in manufacturing companies in Ghana. The quantitative approach and the survey method of collecting data were used. The questionnaire was administered through the face-to-face method of collecting data. A sample of 250 manufacturing firm within the city of Kumasi, the second largest city in Ghana was selected and interviewed. The missing data and data differences were eliminated resulting in a final valid sample of 101. A structural equation model (SEM) was proposed to examine the relationships between the seven organizational linkages and five practices of QMS impact on the Ghanaian companies. The findings showed significant positive effect on organizational performance. This study demonstrated that Ghanaian and foreign owned manufacturing companies believe that QMS is a key-contributing factor to a firm's survival.

(Fapohunda, 2012) examined correlate of QMS as a leadership style on organization performance. The current trend of QMS as used in work organisations encouraged the interest of this study. The objective was to establish relationship between QMS and organization performance using a manufacturing company in Nigeria. One hundred and fifty (150) questionnaires were returned in usable condition. With the aid of chi-square statistical method, the four hypotheses formulated were tested. The findings showed a significant relationship between QMS and organizational performance; between the success of QMS and perception of organization members; between QMS and effective management of resistance to change performance. This study recommends that management should also provide enabling environment to implement QMS policy with democratic leadership styles in the organisation and should think of how satisfy customers at the first time always.

2.6.3 Empirical Literature Review: Ethiopia

(Frew, 2016) examined the practice and challenges of QMS (ISO 9001:2008) in the Pharmaceutical industry: The case of EPHARM Ethiopia. A descriptive research approach was employed using a self-administered questionnaire to get primary data from employees of EPHARM S.C. The research findings are concrete and valuable hence it can be concluded that implementing the system brings the benefits of building the image of company, creating a better competitive advantage on top of its competitors, improved awareness of employees to quality, increased profit and reduced or fewer rejections of products. And also efforts to determine the challenges of implementing QMS revealed that lack of adequate information, lack of management commitment and lack of capacity by personnel to be the main challenges that impede the effective implementation of the system. In spite of the few challenges faced by the company to develop, implement and maintain ISO 9001:2008 Quality Management System, broadly asserted benefits of implementing it were found significant as a whole and has resulted in good impact on the performance of the company. The study finally recommends, it is important that all potential problems identified in the implementation of QMS to be given a due attention and appropriate preventive and corrective actions planned ahead during the planning and development stage of the system.

(Kidanu, 2014) assessed the impact of QMS (ISO 9001) certification on Ethiopia construction companies. To carry out the study a questionnaire is designed based on the literature review and distributed to ISO certified construction companies, then collected and analysed. The conclusion was drawn from the findings. The ISO 9001 certified construction companies have not got tangible benefit. The main reason for failure is that construction companies do not give much emphasis to internal benefits of the standard such as process efficiency and effectiveness, inadequate training, inadequate motivation etc. In addition to this, the support and encouragement of governmental bodies to certified companies lacks continuity. The top main challenges that certified companies faced during ISO implementation are change resistance, inconsistency in implementing QMS and Turnover. Lastly, recommendations are forwarded to fill the gaps observed in the findings.

(Beshah and Kitaw, 2014) assessed Quality Management Practice in Ethiopia. The study states that the importance of Total Quality Management, is growing to increase customers' satisfaction and as a result to win the market in the long term. In the criteria analysis, the problem is associated with all criteria. At the sub-criteria level the root cause for the problem are clearly identified. In fact, almost all the sub-criteria are negatively skewed which practically shows weak quality management practice in Ethiopian Industries.

(Tulu, 2011) investigates the impact of ISO 9001 certification on organization performance: on Ethiopia Beer Factories. The research was studied mainly due to the reason that companies often claim ISO certification can improve the performance of the organization. To investigate this, secondary data of five brewery companies in Ethiopia are collected. The statistics used the organizations over the ten-year duration, and it is before and after the completion of the ISO permanent certification. The collected data was analysed using descriptive statistics and tested for its significance. As the result demonstrate, the ISO's certification has been implicated in the company's overall performance and it has a major impact on the firms. The finding also indicated that, after ISO certification the companies have acquired improvements on their total sales. Further study is suggested to investigate the impact of ISO certification on company performance, particularly for Ethiopian Companies.

(Kitaw and Bete, 2003) investigative research QMS title Exertions and Difficulties in the Ethiopian Manufacturing Industry. The research findings reveal some insight with respect to the implementation of various quality advantages in the Ethiopian manufacturing industry: some of the manufacturing companies understand the importance of involvement of top level management in quality improvement and they actively practice it. Based on the survey, they draw conclusions on current quality management situation in Ethiopia. The first one is, the management level of many Ethiopian companies, especially those of public enterprises, doesn't have strong quality sense. Secondly, because of the poor management commitment in quality, most enterprises don't have their own business culture to support total employees involvement in quality improvement. Thirdly, some managers have misconception about ISO 9000. In many manufacturing companies in Ethiopia, because they don't have systematic quality training program, people in quality and other departments are not familiar with quality tools and thus quality improvement cannot be achieved in a systematic way. Based on the survey to 55 manufacturing companies in Ethiopia, the paper addresses the current situation of quality management in Ethiopia. The survey is not a random sampling from manufacturing companies in Ethiopia. The surveyed are located in the central cities and cities of high industry level.

2.7 Research Gap

In paragraphs under section 2.7, the review of the relevant literature on impacts of implementation of QMS ISO 9001 on business and organizational performance have been well researched, evident and documented in developed countries, emerging markets like Saudia Arabia, Taiwan, Pakistan, Qatar, Iran, India and few in Africa. However, there is very little evidence of empirical studies in Ethiopia context. Therefore the study required to fill or link the knowledge gap existing by empirically marking out the impacts of implementation of QMS ISO 9001 on organizational performance for the cable industry in Ethiopia.

2.8 Conceptual Framework

The following conceptual framework has been adopted and diagram describes the relationship among variables of interest.

The dependent variable in this study is Organizational performance (Business Performance, Operational Performance and Product/Service Quality). And independent variables are top management commitment, management and team working, quality information, supplier relationship management, customer relationship management, product/service management and competitiveness.

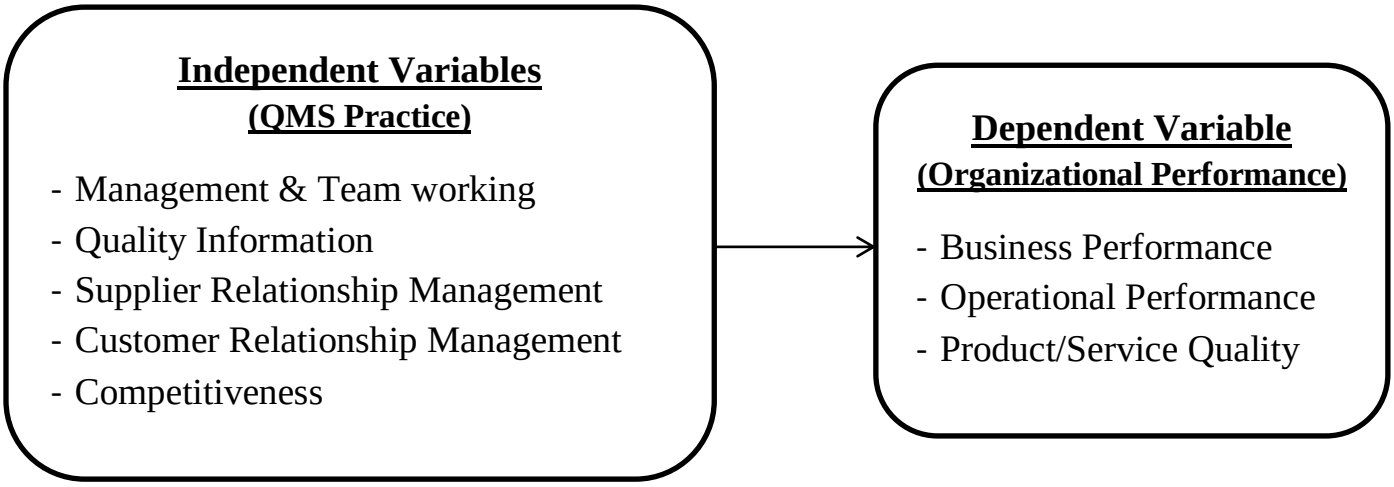


Figure 2.2 Conceptual Framework of the study

Chapter Three

3 Research Methodology

3.1 Introduction

This chapter describes the research design, Area of the study, method of data collection, data collection tools, reliability and validity of the research data as well as the techniques used in data analysis.

3.2 Research Design

A research design helps to decide upon issues like what, where, when, how much, by what means etc, with regard to research study. In general, the research design is the conceptual structures within which research is conducted; it constitutes the blue print for the collection, measurement and analysis of data (Seltizet al, 1962).

Both quantitative and qualitative methodology is essentially driven by the need to gain an understanding into the impact of implementation QMS on organizational performance in Ethiopia cable industries.

For the study purpose, from the manufacturing sector, cable industries were selected. The study has investigated the performance of the industries after the certification. Also for the investigation purpose, among the cable companies in Ethiopia, the researcher has selected three certified cable factories, because only three of them have implement QMS and got the ISO certificate. These include BMET, Belayab and Elsewedy cable industries.

3.3 Area of the Study

The study was conducted in BMET which is located in Sebeta city, Belayab which is located in Adama city, and Elsewedy which is located in Dukem city.

3.4 Data Type and Source

Table 3.1: The concepts and parameters for the study

Objective	Constructs	Variable	References
1. Detecting the overall performance dynamics affected by QMS practices. 2. Analysing the results of the ISO 9000 QMS practice on the overall performance of the selected companies	Business performance	Budget of Production	(Kiafetzopoulos, 2015) (Alkhal, and Yung., 2009) (Yuar, 2009), (Feng, et al., 2008), (Lin & Jang, 2008), (Soung., 2008),
		Revenues	
		Operative wages	
		Fair whole	
		Trades	
	Operational performance	Performance description	
		Apparent feature	
		Consistency	
		Routine	
		Stability	
	Product/Service Quality	Procedure use	
		Fairs Proficiency	
		Efficiency	

3.5 Target Population

The population of interested in the study included of General Manager/D.G Manager, Head of Department/Section, QMS coordinators/ Quality Teams, Subordinate. The target population was 51 as shown in table 3.1 and for the interview it is 12.

Table 3.2: Target Population

S/No.	**Position**	**Total Population**
1	General Manager/D.G Manager	3
2	Head of Department/Section	18
3	QMS coordinators/ Quality Teams	9
4	Subordinate Departments	21
Total		**51**

3.6 Inclusion and Exclusion Criteria

3.6.1 Sampling Design

Sample is part of the target population that has been selected to represent it. Sampling is the process of systematically selecting representative elements of a concerned population Kothari (2004).

The study engaged purposive sampling to select the General Manager/D.G Manager, Head of Department/Section and QMS coordinators/ Quality Teams, and simple random sampling was used to select the Subordinate within the selected Ethiopia Cable Industries. Purposive sampling is popular in qualitative research. Patton (1990) has recommended that among other cases, purposive sampling can be appropriate where there's maximum variation in responses and it serves to identify important common patterns that cut across variations.

Again it was important to purposively sample as it was also found that General Manager/D.G Manager, Head of Department/Section and QMS coordinators/ Quality Teams were directly involved with the organizational QMS implementation.

Simple random sampling was used to avoid unfairness and every individual to have an equal chance to participate in the study. It also confirmed that the cost per observation was greatly reduced. On this study the subordinates are which works under scrap section, packaging section, labours etc.

Table 3.3: Sampling Design

S/No.	Position	Total Population	Sampling Design
1	General Manager/D.G Manager	3	Purposive
2	Head of Department/Section	18	Purposive
3	QMS coordinators/ Quality Teams	9	Purposive
4	Subordinate	21	Simple Random Sampling
Total		**51**	

3.6.2 Inclusion Criteria

The Case Company's General Manager/D.G Manager, Head of Department/Section, QMS coordinators/ Quality Teams and with the help of ISO 9000 QMS, the implementation of proposal, development and final evaluation, there have been number of permanent and general staff members who are involved.

3.6.3 Exclusion Criteria

The Case Company's employees, who were field workers (like purchasers, sellers) and those who are newly employed and had inadequate knowledge/information for the ISO 9001 implementation were excluded.

3.7 Methods of Data Collection

Different methodologies will be used for the preparation of this thesis paper. The main sources of information especially for collecting the theoretical background are different consistent books, company manuals and Internet websites.

But mostly in data collection, both primary and secondary data are used.

3.7.1 Primary data collection

In primary data collection, the researcher used the following methods: -

- ***Visiting and observation:***

To see if the companies are implemented ISO 9001 and also to witness whether they are working based on the QMS standards so that the researcher can find the first step to investigate the impact of QMS implementing in cable industries. Therefore, the researcher observed all the companies are implement ISO 9001 and work based on the implementation.

- ***Interview:***

In this data collection method, structured interview questions are prepared and conducted with each company's staff members, different department/section managers and Top managements in order to collect detail qualitative data. It has been conducted for 30 individuals.

- ***Questionnaire***

Under this data collection method, different questionnaires are designed and distribute for each company's staff members, different department/section managers and Top managements in order to collect quantitative data.

3.7.2 Secondary data collection

With a particular focus on the problems of investigating and measurement activities in cable industry, data's are organized from different Academic, Social and Public sources. Each and every literature searches were conducted using major multi-purpose databases such as Google Scholarly, International journals, Company reports, prior AAiT thesis's are among the vast to applicable for this thesis. The original search results reveal that around a total of 100 articles were found from various academic journals, textbooks and professional journals more from the date of 1989-2019 G.C.

3.8 Reliability and Validity of Data

3.8.1 Reliability of Data

Saunders et al (2007), Reliability has been used to determine the extent to which the relevant information collection and general analysis of various technologies. After a series of tests, it will find that the research tool has been used to determine the overall or complete information. Reliability is affected by arbitrary error. Increasing the reliability of the information has been verified by the use of a built-in application of Cronbach's Alpha, which is used to measure the overall uniformity of both internal & external components.

The Cronbach's Alpha formula was used since reduces the time required to compute a reliability coefficient in other methods. Its coefficient is also a conventional estimate of reliability hence avoids over-estimation. Dimension verbs are used in the five-point-Likert scales in end-point of "strongly disagree (1)" and "strongly agree (5)". There are 106 inconstant congregated into 10 concealed inconstant that can be used to extent the overall routine of the company. Before examining the questions of the study, the full scope of the survey was examined, and the general accuracy of the study was examined for rationality. In addition to the fact that the approach used in this study has been used to measure the reliability

of the component of the method, it has been uses extensively. It already learned that the accuracy of construction of levelheadedness is determine by the specification of specific constructions, complete analysis and generalization of study details.

Table 3.4: Reliability Statistics for Cronbach's Alpha

No	Construct	Item	Cronbach's α	N
1	Management & Team Working	MTW1	0.522	51
		MTW2		51
		MTW3		51
		MTW4		51
		MTW5		51
		MTW6		51
		MTW7		51
		MTW8		51
2	Information Quality	IQ1	0.912	51
		IQ2		51
		IQ3		51
		IQ4		51
		IQ5		51
		IQ6		51
		IQ7		51
		IQ8		51
		IQ9		51
		IQ10		51
		IQ11		51
		IQ12		51
		IQ13		51
		IQ14		51
		IQ15		51
		IQ16		51
		IQ17		51
		IQ18		51
		IQ19		51
		IQ20		51
		IQ21		51
		IQ22		51
3	Supplier Relationship Management	SRM1	0.886	51

		SRM2		51
		SRM3		51
		SRM4		51
		SRM5		51
		SRM6		51
		SRM7		51
		SRM8		51
4	Customer Relationship Management	CRM1	0.795	51
		CRM2		51
		CRM3		51
		CRM4		51
		CRM5		51
		CRM6		51
		CRM7		51
		CRM8		51
		CRM9		51
		CRM10		51
		CRM11		51
		CRM12		51
		CRM13		51
		CRM14		51
5	Competitive Priorities	CP1	0.868	51
		CP2		51
		CP3		51
		CP4		51
		CP5		51
6	Business Performance	BP1	0.768	51
		BP2		51
		BP3		51
		BP4		51
		BP5		51
7	Operational Performance	OP1	0.969	51
		OP2		51
		OP3		51
		OP4		51
		OP5		51
		OP6		51

		OP7		51
		OP8		51
8	Product Quality	PQ1	0.801	51
		PQ2		51
		PQ3		51
		PQ4		51
		PQ5		51
		PQ6		51
		PQ7		51
		PQ8		51
		PQ9		51
	Service Quality	SQ1		51
		SQ2		51
		SQ3		51
		SQ4		51
		SQ5		51
		SQ6		51
		SQ7		51
		SQ8		51
		SQ9		51
		SQ10		51
		SQ11		51
		SQ12		51
		SQ13		51
		SQ14		51
		SQ15		51
		SQ16		51
		SQ17		51
		SQ18		51
		SQ19		51
		SQ20		51
		SQ21		51
		SQ22		51

Cronbach's Alpha starting point is have to be 0.60 at-least. And if it's 0.70, it is well thought-out to be the most reliable (Muturi, D., 2015). Table 3.3 shows the preliminary Cronbach's Alpha for each creates with a total of 160 components of Cronbach's Alpha is 0.921. Reliability is a testament to the importance of sustainability and acceptance for additional investigation.

Between the constructs to be discussed in this research, the Operational performance and Information Quality were good/strong. Business performance and Customer relationship management is marginally of challenge in the case companies. There has been a high level of irregularities in the Management and Team working for the variable of "Do planned pronouncement in your company have a general impact by top managements?"

3.8.2 Validity of Data

According to Saunders et al (2007), it is important to note that the validity of the information in the context of the fact/findings that it is in general is clear to them, and seem to be universal. Based on the results of research, it has established the importance of the completeness and accuracy of the data.

3.9 Data Analysis

Data was screened to confirm that responses are readable and understandable and that responses are within an acceptable range and are complete. Collected data and responses from questionnaires was coded and entered into the Statistical Package for Social Sciences (SPSS) program for analysis.

Chapter Four

4 Result and Discussion

4.1 Introduction

The objective of this chapter is to present the empirical data collected from the survey. The data will be analysed with SPSS data processing results, and the results of data collection are analysed and discussed systematically. The chapter has been structured as follows; 4.2 present characteristics of the respondents 4.3 data analysis 4.4 provides discussion on findings, finally 4.5 presents the summary. Census

4.2 Profile of the Respondents

This section presents a brief description of the demographic characteristics of the sampled respondents involved in this study. Such an explanation is considered to be very important in providing a better understanding of the respondents included in the study and then provide a good foundation for a detailed discussion of the results based on the required objectives of the study. The characteristics included rate of responses, position of respondents, experience (length of service) of respondents and QMS awareness of respondents.

The rate of responses from the questionnaire as per sample design, the total of 51respondents were able to respond on the questionnaires delivered to them at selected Ethiopia cable industries. Therefore findings are valid and describe the reality of research problem as shown in the table 4.1.

Table 4.1: Frequency of position of respondents

Position of Respondents			
		Frequency (N)	**Percentage (%)**
Valid	General Manager/D.G Manager	3	5.9
	Head of Department/Section	18	35.3
	QMS coordinators/ Quality Teams	9	17.6
	Subordinate	21	41.2
Total		**51**	**100.0**

Source: Own Review (2019)

The researcher wanted to establish the position of the respondents. These respondents were grouped in line with the leadership and involvement of people of the principles of QMS. The leadership part of respondents accounted 60.8% and subordinate accounted 39.2%.

Table 4.2: Frequency of qualification of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MSC / MA	7	13.7	13.7	13.7
	BSC / BA	24	47.1	47.1	60. 8
	College Diploma	12	23.5	23.5	84.3
	Below Diploma	8	15.7	15.7	100.0
	Total	51	100.0	100.0	

Source: Own Review (2019)

The data in table 4.2 show that, the total number of respondent, 24(47.1%) were first degree holders, 7(13.7%) of the total number were second degree holders, also 12(23.5%) were holder of college diploma and 8 (15.7%) were holder of below diploma. Unfortunately, there were no PhD holders in the sample.

Table 4.3: Frequency of service year in the company of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	2	3.9	3.9	3.9
	1-3 years	8	15.7	15.7	19.6
	Over 3 years	41	80.4	80.4	100.0
	Total	51	100.0	100.0	

Source: Own Review (2019)

On the length of service, 41 (80.4%) of respondents had served for more than three years, 8 (15.7%) of respondents had served between one to three years and there are 2 (3.9 %) respondents which had served less than one year in the company. The data showed that majority of respondents had served above three years, 80.4% of respondents which is significantly long period enough to provide significant information concerning regional operations and management. The longer one stays in a job, the better understanding of the organization he/she has

Table 4.4: Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Man	43	84.3	84.3	84.3
	Woman	8	15.7	15.7	100.0
	Total	51	100.0	100.0	

Source: Own Review (2019)

From Table 4.4 it can be observed that the total number of respondent taken as a sample was 51 and from which 43 are male and 8 are female.

4.2.1 QMS Awareness of Respondents

The data showed that 62.7%, 31.4% and 5.9% of respondents are strongly aware, aware and not aware respectively on the awareness of QMS. This findings show that almost all respondents were able to describes the concept of QMS which indicates that study covered the maximum proportion acceptance of their awareness from respondents. Therefore the possibilities of missing data due to lack of awareness were reduced as shown in table 4.5.

Table 4.5: Frequency of QMS Awareness of Respondents

QMS Awareness					
		Frequency	**Percent**	**Valid %**	**Cumulative %**
Valid	Strongly Aware	32	62.7	62.7	62.7
	Aware	16	31.4	31.4	94.1
	Not Aware	3	5.9	5.9	100.0
Total		**51**	**100.0**	**100.0**	

Source: Own Review (2019)

4.3 Data Analysis

4.3.1 Analysis of Descriptive Statistics

This sub-section presents a descriptive analysis of the data achieved through data collection instruments. In descriptive statistical analysis the aim is to summarize data. The basic features of the data are being described in terms of measures of central tendency and measures of variability descriptive statistics. A measure of central tendency includes the minimum, maximum &mean. A measure of variability includes standard deviation and skewness.

Descriptive analysis of data is necessary as it helps to determine the normality of the distribution. The nature of the statistical technique to be applied for inferential analysis of the data depends on the characteristics of the data. Due to the flexibility, accurate and quick response, I the researcher prefer to use SPSS to analysis the data.

4.3.2 Descriptive Analysis of Main Quality Management Practices

As described in the survey, it can be seen the full range of Quality Management System Practice experienced in general and the full text of the study in the entire section of the literature are:- management & team working, quality information, supplier relationship management, customer relationship management and competitiveness.

As it can be seen at the below table 4.6, the minimum total score is 2.25. While 5.00 is maximum-scoring result. The average value is more than 4.46, and the standard deviation about the average mean value for all is less than 0.80.

Under the benefits obtained by companies after ISO 9001 QMS certification all the parameters studied in detail by the level of agreement of the respondents with their implications at selected cable industries in Ethiopia.

Table 4.6: Descriptive Statistics for Quality Management System Practice

	N	Min.	Max.	Aver. Mean	Standard Deviation
Management & Team Working	51	2.25	5.00	4.46	0.80
Quality Information	51	3.68	5.00	4.82	0.36
Supplier R/Ship Management	51	3.88	5.00	4.84	0.35
Customer R/Ship Management	51	4.29	5.00	4.92	0.20
Competitiveness	51	4.80	5.00	5.00	0.03
Valid N (list wise)	51				

Source: Own Review (2019)

4.3.3 Descriptive Analysis of Main Organizational Performance Constructs

As described in the method of the study & referred in Literature chapter, the full range of performance indicators that reveal the organization's overall performance in this study are: Business performance, Operational performance and Product/Service quality.

Table 4.7: Descriptive Statistics for Organization Performance

	N	Min.	Max.	Average Mean	Standard Deviation
Business Performance	51	4.00	5.00	4.94	0.21
Operational Performance	51	4.00	5.00	4.78	0.41
Product/ Service Quality	51	4.26	5.00	4.91	0.20
Valid N (list wise)	51				

Source: Own Review (2019)

As it can be seen at the above table 4.7, the minimum total score is 4.00. While 5.00 is maximum-scoring result. The average value is more than 4.78, and the standard deviation about the average mean value for all is less than 0.41.

4.3.4 Bivariate Correlation Test

Bivariate correlation is an arithmetical method that is used as describing the reality of connection between two unlike inconstant. Pairwise correlation table offers connections that calculated from statements that have non-missing standards for several twosomes of inconstant. Pearson correlation coefficient is extended to control the connection between 2 quantifiable inconstant & the gradation to which the 2 inconstant correspond with each other. It can be used to summarize the strength of the linear r/ship between two data samples. The pair-wise correlation assessment was initially prepared on every variables on the quantifying scale (see Appendix-C).

Table 4.8: Correlation between Constructs

		MTW	IQ	SRM	CRM	CP	BP	OP	PQ_SQ
MTW	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	51							

IQ	Pearson Correlation	.900**	1						
	Sig. (2-tailed)	.000							
	N	51	51						
SRM	Pearson Correlation	.868**	.912**	1					
	Sig. (2-tailed)	.000	.000						
	N	51	51	51					
CRM	Pearson Correlation	.865**	.889**	.888**	1				
	Sig. (2-tailed)	.000	.000	.000					
	N	51	51	51	51				
CP	Pearson Correlation	.532**	.590**	.508**	.593**	1			
	Sig. (2-tailed)	.000	.000	.000	.000				
	N	51	51	51	51	51			
BP	Pearson Correlation	.842**	.888**	.837**	.884**	.746**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000			
	N	51	51	51	51	51	51		
OP	Pearson Correlation	.360**	.395**	.315*	.483**	.295*	.416**	1	
	Sig. (2-tailed)	.009	.004	.024	.000	.035	.002		
	N	51	51	51	51	51	51	51	
PQ_SQ	Pearson Correlation	.689**	.751**	.805**	.774**	.515**	.690**	.353*	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.011	
	N	51	51	51	51	51	51	51	51

Source: Own Review (2019)

In addition, the Pearson correlation exploration gain that, $p<0.01$. The company's Business performance is certainly correlated with Management& Team working is ($r = 0.842$), Information quality is ($r = 0.888$), Supplier relationship management is (0.837), Customer relationship management is ($r = 884$), and Competitiveness Priorities is ($r = 0.746$).

4.3.5 Regression Analysis

Linear regression used to model the assessment of the reliant inconstant that is Business performance, Operational performance and Product/Service quality, because of the linear relationship between forecasters. This method for defining the relationships of the problem is linear regression. Well known measurement to know how the regression model meet the data is R^2. This is a complete statistic that shows the alteration of reaction with the relationship of the forecasters. Those are: Management & Team working, Information quality, Supplier

relationship management, Customer relationship management, and Competitive priorities. If R^2 is close to 1, the model will be a greater acceptable.

The regression equation

$$Y= \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Y= Organization Performance

α= Autonomous factors

X_1= Management and Team Working

X_2= Quality Information

X_3= Supplier Relationship Management

X_4= Customer Relationship Management

X_5= Competitiveness Priorities

β_i represents the beta coefficient of the independent variables Xi

e= Error term – Captures all relevant variables not included in the model

Replacing Beta coefficients identified in Table 4.9, the equation will be:

$$Y= 1.867 + 0.092 X_1 + 0.311 X_2 + 0.286 X_3 + 0.779 X_4 + 0.109 X_5 + e$$

According to the regression equation established, taking all factors (Management and Team Working, Quality Information, Supplier Relationship Management, Customer Relationship Management, and Competitiveness Priorities) constant at zero, Organization Performance realized would be 1.867. The data findings analysed also shows that taking all other independent variables at zero, a unit increase in Management and Team Working results to 0.092 increase in organizational performance. Increasing the quality information by a single unit will result in an increase in the organization's overall performance to a total of 3.11; a unit increase in Supplier Relationship Management will lead to 0.286 increase in organizational performance; a unit increase in Customer Relationship Management results to 0.779 increase in organizational performance, whereas a unit increase in Competitiveness Priorities will lead to 0.109 increase in organizational performance. The significant which were less than 5% imply that all the predictors used were significant. All the t values are >1.96 hence the values are significant.

Table 4.9: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.867	.471		1.114	.271
	MTW	.140	.095	.092	.422	.675
	IQ	.210	.183	.311	.147	.257
	SRM	.196	.167	.286	.174	.247
	CRM	1.067	.309	.779	1.457	.001
	CP	.722	.754	.109	.958	.343
a. Dependent Variable: Organizational Performances						

Source: Own Review (2019)

The five independent variables that were studied, explain 64.8% of the organizational performance as represented by the R^2. This therefore means the five independent variables only contribute about 64.8% to organizational performance while other QMS practices not included in the study explain 35.2% of performance.

Table 4.10: Model Summary for Organizational Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.805[a]	.648	.609	.11627
a. Predictors: (Constant), CP, SRM, MTW, CRM, IQ				
b. Dependent Variable: Organizational Performance				

Source: Own Review (2019)

Under the ANOVA table 4.11: has highlighted a comprehensive F static, and the use of the Model has been found to be greater than estimating the overall average performance of the companies.

Table 4.11: ANOVA[a] for Organizational Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.120	5	.224	16.567	.173[b]
	Residual	.608	45	.014		
	Total	1.728	50			
a. Dependent Variable: Organizational Performances						
b. Predictors: (Constant), CP, SRM, MTW, CRM, IQ						

Source: Own Review (2019)

4.4 Interview Question Summary Analysis

For the purpose of this study, there were 19 different staff members from the top management, middle management, and employees as all of them as a key source of information. The questions are 5, as shown in Appendix B.

According to the interview, the organization has fully implemented the quality management system. And it was to increase quality information communication through the organization, decrease deficiency, enhancement end-users satisfaction, and improve quality of service/product. The top management adherents of the executive branch had a strong desire to accomplish a comprehensive, complete and high market performance for the organizations via the quality management system implementation. The interviews as well as the general practice of ISO 9001: 2015 were experienced throughout the selected case companies. Some of the five interviewees had full experience of ISO 9001: 2015 QMS implementation commencement from registering process to QMS certification and continual improvements, and complete system-wide access to the ISO 9001: 2015 QMS application. On the other hand, despite the fact that they had a complete experience throughout the entire implementation process, there were also some employees who do not have experience in the implementation of the system, even though, they had partial experience in the continual improvement process.

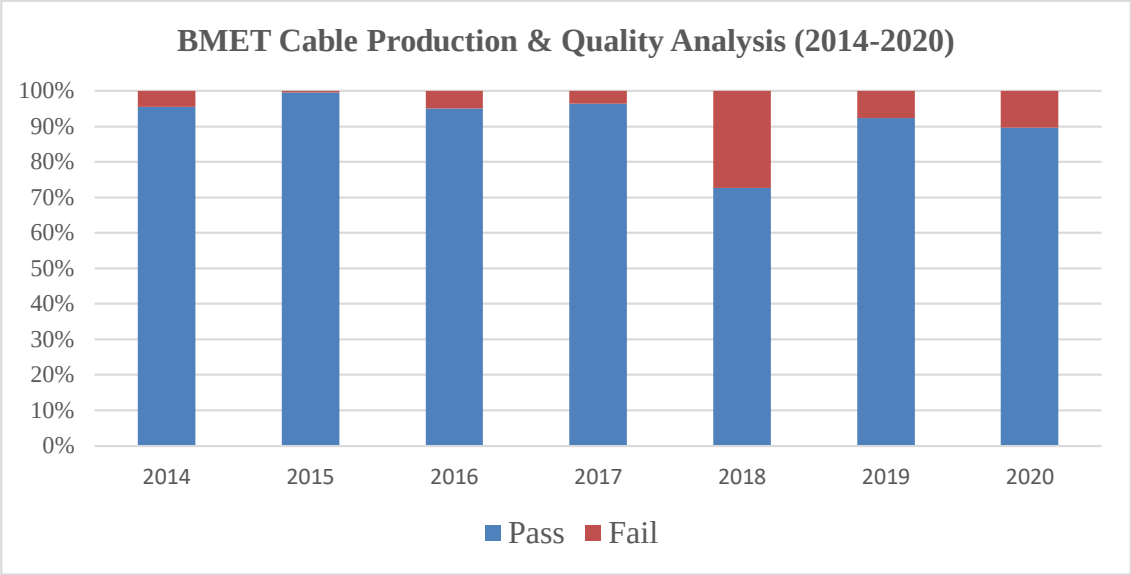
For the query, “there are many challenges in the implementation of QMS application”, and in some cases, the answer for the respondents were the same. For these reason, the lack of knowledge and experience of ISO 9001 has always been a challenge for QMS implementation. There was not enough-time for QMS implementation, the QMS system was fully budgeted to run the implementation, and at the time of the implementation of QMS, there was a significant lack of commitment from top managements.

The interviewees’ perception on the benefits/achievements of the implementation of the ISO 9001:2008 QMS were mainly the increase on the sales performance of the company. They had also insight on the improvement of organizational performance in terms of product quality, business performance, and operational performance as well.

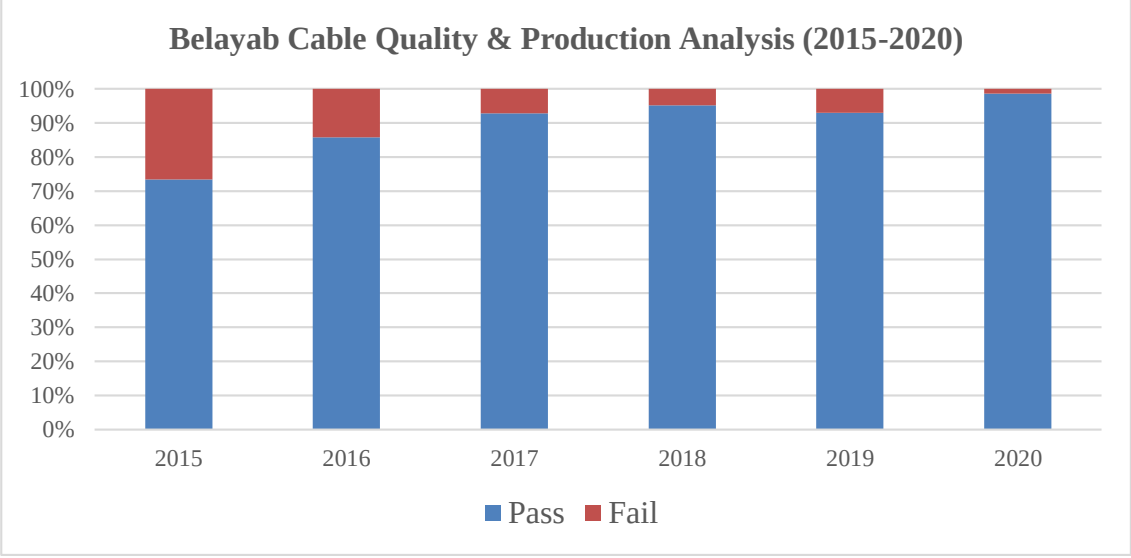
Proceeding the QMS implementation process the interviewer were asked “To what extent do you believe that your implemented QMS met your expected benefits?” majority (14 out of 19) of them said that the implementation met their organizational benefits > 90%.

And for the question “Is the ISO 9001certificate of the certified cable company still maintained and audited by external auditor or expired?” all the selected cable companies are still audited by external auditors annually and their certificate is not expired.

Figure 4.1: Sample Analysis of the companies before & after their ISO implementation.



Year	2014	2015	2016	2017	2018	2019	2020
Pass	202701	468286.6	22202.68	31872.92	2958.93	13493.07	38677.5
Fail	9573.856	2242.925	1159.455	1204.82	1110.39	1127.875	4470.78



Year	2015	2016	2017	2018	2019	2020
Pass	36	182	143	99	186	139
Fail	13	30	11	5	14	2

4.4 Summary of Findings

The purpose of this study is to investigate the overall impact of ISO quality management system on the overall performance of organization. The main purpose is to accomplish the study's objective by following technical methods. The first step in understanding the quality of ISO 9001 is to comprehend the hypothetical aspects, and practical findings. A comprehensive review of this relevant literature has been conducted. Literacy criteria evaluates the ISO quality management system practices by theoretical relationship and practical applications, inclosing Business performance, Operational Performance, and Product/Service quality.

The overall of Five QMS practice and Three Company performance enhancement have been acknowledged for the case companies to determine however there is an effect on organizational performance of the ISO 9001 implementation. A 106-items questionnaire have been developed for general organization performance measurements, quality management, and application experiment theory. Out of 51 queries, 51 queries with 100 % response rate were answered and returned. The reliability and measurement of the items are a minimum of 0.5 α value using the Cronbach's Alpha Coefficient with all groups. The coefficient total value of the additional accreditation was stated to be 0.921, so it is satisfactory to provide additional investigation.

Descriptive examination has presented that

- For all the construct, the minimum result is greater than 2.25.
- For all the construct, the maximum result is 5.00.
- Also the mean average mean value is greater than the average value, 4.46 for all items.
- Average mean deviation is below 0.8, which the standard deviation of all standard QMS practice. At the same time, the minimum value is greater than the mean value for all organizational performance theory.
- The average value of the standard deviation is estimated to be less than 0.41 standard.

The regression analysis has shown that

- Repeated completion of the organizational performance by Regression on the five forecasters will result in a total R^2 of 0.648. This inconstant described in terms of the number of forecasters in linear regression.

The company implementation before and after ISO implementation has shown that

- Before the implementation the documentation system were poor
- It was hard to find the documents based on the product type
- They couldn't calculate their failurity root cause to improve their production
- After the implementation documents are easy to find
- Finding their root cause and calculate it, improves their productivity

The study also confirmed that the organizations has been challenged a number of main problems in the implementation of quality management system.

- Top management obligation
- Provide information on production for employees
- The commitment of the workforce
- Getting adequate time

Chapter Five

5 Conclusion and Recommendation

5.1 Conclusion

This study has examined the impact of the ISO 9000 QMS implementation on organization performance; case study in Ethiopia cable industry. One hundred six indicator questions are used in the study.

After all the parameters under the benefits obtained by companies ISO 9001 QMS certification studied in detail at selected cable industries in Ethiopia, the following conclusions were drawn. The researcher able to demonstrate a significant conclusion based on the fact obtained from literatures and questionnaire response.

Operational performance and Quality information are amongst the top achieved benefits obtained by companies after ISO 9001 QMS certification.

Supplier relationship and Competitive priorities are reasonable results obtained by companies after ISO 9001 QMS certification.

Top management commitment, gain workforce commitment to QMS implementation and insufficient time for QMS implementation are still not yet achieved by companies after ISO 9001 QMS certification.

Generally comparison of the performance of quality certified cable industries before and after certification have indicated that the ISO 9000 quality management systems did have positive contributions to all of the performance indicators in the selected companies. Nevertheless, it can be said that the ISO 9000 practices guided cable companies in improving their performance and improve overall business standards.

From the interview the researcher conclude that to be more competitive with the implementation sustainability, the company should involve more the lower level employees and their internal auditors in the ISO system training; give material utilization training besides the ISO training.

5.2 Recommendation from the study

The study recommends that manufacturing firms adopt and implement ISO 9001 for purpose of comparison and selecting the best practices for improved operational performance. Manufacturing firms in Ethiopia have to benchmark themselves against the best firms globally in an effort to enhance competitiveness.

5.3 Limitation and Future Work

The research findings are limited to three organizations in the study may consider as limitation for this study outcome and that is because there is no more ISO certified organizations in cable manufacturing sectors in Ethiopia. The study collected information about performance in relation to ISO 9001 QMS elements from company higher official point of view and no customers included. In addition all the case company employees are not participated in questioner because of the author time, financial capabilities and the author also believes higher officials have better awareness of ISO 9001 QMS related subject which brings an issue of accuracy considering those responding may have supplied the data desired in that time of collection and might have made the businesses to have some more positive outlooks. Future studies may well examine the perception of customers of quality in these manufacturing firms.

Therefore further research recommended in this topic which shall include both employee and customer's point of view from more than those organization in Ethiopia (if any) ISO 9001 Quality Management System certified. Future researchers must work upon all the dimensions of quality management and they must ensure that no dimension would be showed by the other item.

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Appendix-A: Questionnaire

ADDIS ABABA UNIVERSITY

INSTITUTE OF TECHNOLOGY

SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

(Industrial Engineering Stream)

Thesis Title: Investigating the impact of (ISO 9001) Quality Management System implementation on organizational performance: Case of Ethiopia Cable Industries

Dear Participants;

I would like to extend my deep appreciation if you could spend a few minutes answering the attached questionnaire as truthfully as possible and your response will be highly confidential.

This questionnaire is developed to conduct a scientific research on investigating the impact of (ISO 9001) Quality Management System implementation on organizational performance: Case of Ethiopia Cable Industries.

I would also like to assure you that all responses given will be treated as **STRICTLY CONFIDENTIAL!!** And used for academic purposes only. If you need further clarification, please feel free to contact through the address below.

Thank you for your kind cooperation.

Sincerely,

Betiel Tsegaye
Tel: +251-911-007-4716
Email: betieltsegaye@gmail.com

Advisor**: Dr. Yitagesu Yilma (PhD)**
Tel: +251- 913-043-328
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Addis Ababa Institute of Technology
Tell: +251-947-132-338

N.B*: *Please *give answers in the spaces provided and matches your responses to the questions where applicable*

Company Name: _____

SECTION A: RESPONDENT PROFILE

1. What is your current position in the company? (✓Tick as applicable)
   a) General Manager/ D.G Manager ( )
   b) Head of department/section ( )
   c) QMS coordinator ( )
   d) Subordinate ( )
2. What is your qualification? (✓ Tick as applicable)
   a) MA/MSc ( )
   b) BA/BSc ( )
   c) College Diploma ( )
   d) Below Diploma ( )
3. How long is your service year? (✓ Tick as applicable)
   a) Less than 1 year ( )
   b) 1- 3 years ( )
   c) Over 3 years ( )
4. Gender (✓ Tick as applicable)
   a) Male ( )
   b) Female ( )
5. How aware are you of ISO 9001 QMS in your company? (✓ Tick as applicable)
   a) Strongly not Aware ( )
   b) Not Aware ( )
   c) Aware ( )
   d) Strongly Aware ( )
6. Specify sector type of your organization. (✓ Tick as applicable)
   a) Government ( )
   b) Private ( )
   c) Government – Private (Jointly Owned) ( )

7. Please refer to any remarks, opinions, and recommendations that you may have about the full effect of the implementation of quality management system from your understanding?

_____

_____

_____

SECTION B: IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEMS (QMS)

Dimension 1: Implementation of Quality Management Systems& Certification Information

8. Please indicate for how long your organization it has been certified? (✓Tick as applicable)

Less than a Year	1-3 years	3-5 years	5 years and above
1 ☐	**2** ☐	**3** ☐	**4** ☐

9. In your organization, are QMS implemented as a way for Change? If yes, what are the changes it made? (✓Tick as applicable)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

To Start for Improved Quality Performance	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Familiarizing Innovative Applies	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
To Change the Company Principles	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Point of View for Quality Development	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Looking for Prospects to Progress	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

10. What are the reasons for implementation of QMS in your organization? (✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

To Get a Chance from Global Markets	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
To Stay in Business	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
For having a Source to Quality Improvement	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Allowing for Bidding	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
From Consumer Burden	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
To Get the Most out of Marketing Opportunities	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

To Generate a Systematic Structure within the Company	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
For Transforming Company Principles	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
To Escalation Market-share	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
For Customers' Needs for the Imminent	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
To Increasing Customer Provisions	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
With customers, to Create a long-term Relationship	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
To Increasing Productivity	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

11. Do you use QMS in daily practice? (✓Tick the appropriate box)
    5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Structure is fit organized	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Designed to the requirements of the Company	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Documents Development	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
QMS is a Part of Daily Practice	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

Dimension 2: Management and Team Working:

12. What do you say about the top management commitment trend in your organization?(✓Tick the appropriate box)
    5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Assumes responsibility for quality performance	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Provides personal leadership for quality products & improvements	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Evaluated for quality performance	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Quality Issues are reviewed in top-management meeting	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Looks at Quality as a Whole and as a Goal	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Planned pronouncements have a general impact by top managements	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Quality Management Policy has been Established by Top-Managements.	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Making the Information Progression more Effective	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

Dimension 3: Information Quality:

13. What do you say about the impact of quality management system application in your organization's information content?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

When making a decision, information is significant	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Quality linked policies are noticeably stated	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
For everyday routine, information is beneficial	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Information that has been registered is correct and precise	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
There is a different/secured section for document handling	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Information concentrates on main commercial practices	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

14. What do you say about the impact of quality management system application in your organization's information distribution?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Is information sharing agreeable with employees	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
There is a good connection and direction with every department	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Information based to quality enlargement has been distributed to suppliers and customers	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Creates believable and comfortable working atmosphere through customers and suppliers	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

15. What do you say about the impact of quality management system application in your organization's information use?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Administrative performance can be assessed by quality information	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Practical Theory has been offered to all employees, to the conception of 'Total Quality Management Model'	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
In work place, quality information and control-charts are available	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
For managing quality, as an instrument quality information is applied	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Top-managements and directors can find quality information easily	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Trainings are provided to top-managements and directors on quality based	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

16. What do you say about the impact of quality management system application in your organization's process controlling?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Employee can find the efficiency report information easily	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
On working area's wall the control-chart is labelled for the rejected products	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Fabrication are supervised frequently	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
On working area's wall the overall plan is labelled	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
To enlargement the work process, it is frequently checked	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
On working area's wall the machine down-time is labelled	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

Dimension 4: Operating Performance:

17. What do you say about the impact of information quality development in your organization's operational performance?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Increase Efficiency quality	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Better quality product distribution-time	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Decrease idle time	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Bargain production budget	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Decrease product Scrap	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Increase efficiency	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Decrease quality budget	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Increase product plan	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

Dimension 5: Business Performance:

18. What do you say about the impact of Business performance of your organization after implementation of ISO 9001?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Increased Market share	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Improved Sales Product	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

Increased Profit	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Improved Operating income	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Reduced Manufacturing unit cost	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Dimension 6: Supplier Relationships:

19. What do you say about the impact of information quality enlargement in your organization's relationship of suppliers?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Suppliers are carefully chosen based on quality	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Suppliers gets practical help from the company	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Where there's new product enlargement, suppliers will be announced	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Company and supplier creates long-term relationship	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease assessment of raw material	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Company and suppliers share information frequently	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Suppliers support companies on improving environment	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Dimension 7: Customer Relationships:

20. What do you say about the impact of information quality enlargement in your organization's relationship of customers?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Frequently customers are present/come in the company	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Customer's feed-back are followed regularly	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
In company's overall design, customers are intricate	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
To develop enlargements, customer feed-backs are a good source	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Company and customers share information to each other	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Document handling for customer compliant is well organized	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Announce customers' needs	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Confusions are exceptional between company & customer	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Customers responds to the features and distribution performance	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Customer Satisfaction assessment is gathered	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Customers support companies on improving environment	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Customers are sharing information associated to quality enlargements	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
In Planning & development of company's activity, customers are intricate	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease Customers inspection/assessment	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Dimension 8: Product Quality:

21. What do you say about the impact of design and operating performance enlargement in your organization's quality of product?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Increase quality awareness of manufacturing goods to customers	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease repetition of work	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Constant mechanism for main progressions	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Increase wide-range of manufacturing goods quality	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Increase separable procedure performance	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease products variability	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease waste of product	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease product rejection	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Increase consistency of products	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Dimension 9: Service Quality:

22. What do you say about the impact of supplier relationships enlargement in your organization's services of supplier?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Suppliers get supports from company	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease delivery with defective items from suppliers	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Decrease delivery time of procured supplies	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
A comprehensive approach has been implemented to address the general problem of suppliers	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Improve recording of raw-materials transition	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease assessment of raw-material	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Decrease the amount of raw-materials in store	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

23. What do you say about the impact of customer relationship enlargement in your organization's services of customer?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Improve cost-effectiveness of customers	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Responds are quick to customers' questions	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
A comprehensive approach has been implemented to address the general compliant of customers	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
To respond customers' complaints, company employees are ready to proceed	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Customers are less likely to complain	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Based on customers' fulfilment, customer complaints are responded	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

24. What do you say about the impact of customer relationship enlargement in your organization's fulfilment of customer?(✓Tick the appropriate box)

5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Customers are delighted with the overall services available through the company	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Increase customers in quantities	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Customer satisfaction assessment is measured	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
To decrease customer complaints, overall plan is made by the company	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Improve reliability of customers	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Improve marketing	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Increase quality manufacturing goods for customers	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Increase customer satisfaction	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Dimension 10: Competitive Priorities:

25. What do you say about the impact of Product/Service Quality enlargement in your organization's priorities of competitiveness? (✓Tick the appropriate box)

    5: Strongly Agree; 4: Agree; 3: Neutral; 2: Disagree; 1: Strongly Disagree

Better-quality Product Distribution-time	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Increase Customer Fulfilment	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Reduce Product Variability	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Decrease Quality Budget	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐
Bargain Production Budget	**1** ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

Thank You for your cooperation to fill this questionnaire

****

Appendix-B: Guide for Interview

Ensuring validity and reliability of the data obtained in survey is critical as most of the time compared with other data gathering methods such as interview and case study approaches; generally surveys are prone to bias and misunderstanding and thus overall validity is doubtful. Therefore, checking by interviewing based on the same questionnaire to let support respondent's responses by example will be mandatory.

In addition, in this particular research the interview also helped to get additional information which was not covered in questionnaire. The base ideas used to get additional information are as below.

1. Is the ISO 9001certificate of the certified cable company still maintained and audited by external auditor or expired?
2. Driving force to implement QMS:
   Is there any legal requirement that forced you to implement QMS? If yes please give an example: _____
3. Challenges during QMS implementation:
   - Do you have well trained your own internal auditors?
   - Do the challenges you faced during implementation of QMS solved after implementation or remained to be still challenges?
4. Actual benefits acquired:
   Can you please mention examples of what you achieved by having the QMS?
5. To what extent do you believe that your implemented QMS met your expected benefits?
   a) > 90% b) 75-89% c) 65-74% d) 50-64% e) < 50%

Appendix-C: Pearson Correlation Coefficient for the various items

1. Correlation Coefficient for Management and Team working Commitment

		MTW1	MTW2	MTW3	MTW4	MTW5	MTW6	MTW7	MTW8
MTW1	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	51							
MTW2	Pearson Correlation	.514**	1						
	Sig. (2-tailed)	.000							
	N	51	51						
MTW3	Pearson Correlation	.516**	.761**	1					
	Sig. (2-tailed)	.000	.000						
	N	51	51	51					
MTW4	Pearson Correlation	.424**	.870**	.605**	1				
	Sig. (2-tailed)	.002	.000	.000					
	N	51	51	51	51				
MTW5	Pearson Correlation	.440**	.914**	.657**	.755**	1			
	Sig. (2-tailed)	.001	.000	.000	.000				
	N	51	51	51	51	51			
MTW6	Pearson Correlation	-.638**	-.453**	-.312*	-.393**	-.479**	1		
	Sig. (2-tailed)	.000	.001	.026	.004	.000			
	N	51	51	51	51	51	51		
MTW7	Pearson Correlation	.170	.571**	.366**	.536**	.668**	-.292*	1	
	Sig. (2-tailed)	.234	.000	.008	.000	.000	.038		
	N	51	51	51	51	51	51	51	
MTW8	Pearson Correlation	.403**	.836**	.649**	.675**	.873**	-.438**	.564**	1
	Sig. (2-tailed)	.003	.000	.000	.000	.000	.001	.000	
	N	51	51	51	51	51	51	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

b. Cannot be computed because at least one of the variables is constant.

2. Correlation Coefficient for Information Quality Management

		IQ1	IQ2	IQ3	IQ4	IQ5	IQ6	IQ7	IQ8	IQ9	IQ10	IQ11	IQ12	IQ13	IQ14	IQ15	IQ16	IQ17	IQ18	IQ19	IQ20	IQ21	IQ22
IQ1	Pearson Correlation	1																					
	Sig. (2-tailed)																						
	N	51																					
IQ2	Pearson Correlation	.429**	1																				
	Sig. (2-tailed)	.002																					
	N	51	51																				
IQ3	Pearson Correlation	.613**	.700**	1																			
	Sig. (2-tailed)	.000	.000																				
	N	51	51	51																			
IQ4	Pearson Correlation	.[b]	.[b]	.[b]	.[b]																		
	Sig. (2-tailed)																						
	N	51	51	51	51																		
IQ5	Pearson Correlation	.[b]	.[b]	.[b]	.[b]	.[b]																	
	Sig. (2-tailed)																						
	N	51	51	51	51	51																	
IQ6	Pearson Correlation	.[b]	.[b]	.[b]	.[b]	.[b]	.[b]																
	Sig. (2-tailed)																						
	N	51	51	51	51	51	51																
IQ7	Pearson Correlation	.681**	.624**	.891**	.[b]	.[b]	.[b]	1															
	Sig. (2-tailed)	.000	.000	.000																			
	N	51	51	51	51	51	51	51															

IQ8	Pearson Correlation	.738**	.504**	.720**	.b	.b	.b	.860**	1														
	Sig. (2-tailed)	.000	.000	.000				.000															
	N	51	51	51	51	51	51	51	51														
IQ9	Pearson Correlation	.758**	.566**	.808**	.b	.b	.b	.907**	.891**	1													
	Sig. (2-tailed)	.000	.000	.000				.000	.000														
	N	51	51	51	51	51	51	51	51	51													
IQ10	Pearson Correlation	.746**	.575**	.821**	.b	.b	.b	.844**	.793**	.766**	1												
	Sig. (2-tailed)	.000	.000	.000				.000	.000	.000													
	N	51	51	51	51	51	51	51	51	51	51												
IQ11	Pearson Correlation	.613**	.700**	1.000**	.b	.b	.b	.891**	.720**	.808**	.821**	1											
	Sig. (2-tailed)	.000	.000	0.000				.000	.000	.000	.000												
	N	51	51	51	51	51	51	51	51	51	51	51											
IQ12	Pearson Correlation	.648**	.753**	.793**	.b	.b	.b	.824**	.832**	.864**	.786**	.793**	1										
	Sig. (2-tailed)	.000	.000	.000				.000	.000	.000	.000	.000											
	N	51	51	51	51	51	51	51	51	51	51	51	51										
IQ13	Pearson Correlation	.640**	.485**	.693**	.b	.b	.b	.774**	.846**	.857**	.748**	.693**	.941**	1									
	Sig. (2-tailed)	.000	.000	.000				.000	.000	.000	.000	.000	.000										
	N	51	51	51	51	51	51	51	51	51	51	51	51	51									
IQ14	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b								
	Sig. (2-tailed)																						
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51								
IQ15	Pearson Correlation	.648**	.753**	.793**	.b	.b	.b	.824**	.832**	.864**	.786**	.793**	1.000**	.941**	.b	1							
	Sig. (2-tailed)	.000	.000	.000				.000	.000	.000	.000	.000	0.000	.000									
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51							

IQ16	Pearson Correlation	.594**	.393**	.562**	.b	.b	.b	.654**	.712**	.695**	.724**	.562**	.629**	.633**	.b	.629**	1						
	Sig. (2-tailed)	.000	.004	.000				.000	.000	.000	.000	.000	.000	.000		.000							
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51						
IQ17	Pearson Correlation	.273	.700**	.480**	.b	.b	.b	.418**	.318*	.379**	.518**	.480**	.510**	.317*	.b	.510**	.315*	1					
	Sig. (2-tailed)	.053	.000	.000				.002	.023	.006	.000	.000	.000	.024		.000	.025						
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51					
IQ18	Pearson Correlation	.273	.700**	.480**	.b	.b	.b	.418**	.318*	.379**	.518**	.480**	.510**	.317*	.b	.510**	.315*	1.000**	1				
	Sig. (2-tailed)	.053	.000	.000				.002	.023	.006	.000	.000	.000	.024		.000	.025	0.000					
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51				
IQ19	Pearson Correlation	.366**	.219	.313*	.b	.b	.b	.427**	.588**	.387**	.555**	.313*	.425**	.452**	.b	.425**	.479**	.091	.091	1			
	Sig. (2-tailed)	.008	.122	.025				.002	.000	.005	.000	.025	.002	.001		.002	.000	.524	.524				
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51			
IQ20	Pearson Correlation	.231	.156	.223	.b	.b	.b	.304*	.459**	.276	.428**	.223	.303*	.322*	.b	.303*	.448**	.223	.223	.712**	1		
	Sig. (2-tailed)	.103	.274	.116				.030	.001	.050	.002	.116	.031	.021		.031	.001	.116	.116	.000			
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51		
IQ21	Pearson Correlation	.346*	.209	.299*	.b	.b	.b	.408**	.559**	.370**	.590**	.299*	.406**	.431**	.b	.406**	.485**	.299*	.299*	.955**	.746**	1	
	Sig. (2-tailed)	.013	.141	.033				.003	.000	.008	.000	.033	.003	.002		.003	.000	.033	.033	.000	.000		
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	
IQ22	Pearson Correlation	.296*	.242	.346*	.b	.b	.b	.472**	.607**	.428**	.541**	.346*	.470**	.500**	.b	.470**	.423**	.181	.181	.895**	.684**	.882**	1
	Sig. (2-tailed)	.035	.087	.013				.000	.000	.002	.000	.013	.001	.000		.001	.002	.203	.203	.000	.000	.000	
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

b. Cannot be computed because at least one of the variables is constant.

3. Correlation Coefficient for Operational Performance

		OP1	OP2	OP3	OP4	OP5	OP6	OP7	OP8
OP1	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	51							
OP2	Pearson Correlation	.721**	1						
	Sig. (2-tailed)	.000							
	N	51	51						
OP3	Pearson Correlation	.671**	.736**	1					
	Sig. (2-tailed)	.000	.000						
	N	51	51	51					
OP4	Pearson Correlation	.865**	.736**	.587**	1				
	Sig. (2-tailed)	.000	.000	.000					
	N	51	51	51	51				
OP5	Pearson Correlation	.685**	.835**	.791**	.791**	1			
	Sig. (2-tailed)	.000	.000	.000	.000				
	N	51	51	51	51	51			
OP6	Pearson Correlation	.685**	.835**	.791**	.791**	1.000**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	0.000			
	N	51	51	51	51	51	51		
OP7	Pearson Correlation	.685**	.835**	.791**	.791**	1.000**	1.000**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	0.000	0.000		
	N	51	51	51	51	51	51	51	
OP8	Pearson Correlation	.685**	.835**	.791**	.791**	1.000**	1.000**	1.000**	1
	Sig. (2-tailed)	.000	.000	.000	.000	0.000	0.000	0.000	
	N	51	51	51	51	51	51	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

4. Correlation Coefficient for Business Performance

		BP1	BP2	BP3	BP4	BP5
BP1	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	51				
BP2	Pearson Correlation	.485**	1			
	Sig. (2-tailed)	.000				
	N	51	51			
BP3	Pearson Correlation	.704**	.681**	1		
	Sig. (2-tailed)	.000	.000			
	N	51	51	51		
BP4	Pearson Correlation	.485**	.729**	.488**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	51	51	51	51	
BP5	Pearson Correlation	.b	.b	.b	.b	.b
	Sig. (2-tailed)					
	N	51	51	51	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

b. Cannot be computed because at least one of the variables is constant.

5. Correlation Coefficient for Supplier Relationship Management

		SRM1	SRM2	SRM3	SRM4	SRM5	SRM6	SRM7	SRM8
SRM1	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	51							
SRM2	Pearson Correlation	.655**	1						
	Sig. (2-tailed)	.000							
	N	51	51						
SRM3	Pearson Correlation	.613**	.512**	1					
	Sig. (2-tailed)	.000	.000						
	N	51	51	51					
SRM4	Pearson Correlation	.364**	.571**	.594**	1				
	Sig. (2-tailed)	.009	.000	.000					
	N	51	51	51	51				

SRM5	Pearson Correlation	.436**	.818**	.366**	.592**	1			
	Sig. (2-tailed)	.001	.000	.008	.000				
	N	51	51	51	51	51			
SRM6	Pearson Correlation	.328*	.616**	.536**	.591**	.753**	1		
	Sig. (2-tailed)	.019	.000	.000	.000	.000			
	N	51	51	51	51	51	51		
SRM7	Pearson Correlation	.700**	.629**	.429**	.255	.306*	.230	1	
	Sig. (2-tailed)	.000	.000	.002	.071	.029	.105		
	N	51	51	51	51	51	51	51	
SRM8	Pearson Correlation	.328*	.510**	.536**	.798**	.522**	.606**	.230	1
	Sig. (2-tailed)	.019	.000	.000	.000	.000	.000	.105	
	N	51	51	51	51	51	51	51	51
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

6. Correlation Coefficient for Customer Relationship Management

		CRM 1	CRM 2	CRM 3	CRM 4	CRM 5	CRM 6	CRM 7	CRM 8	CRM 9	CRM 10	CRM 11	CRM 12	CRM 13	CRM 14
CRM 1	Pearson Correlation	1													
	Sig. (2-tailed)														
	N	51													
CRM 2	Pearson Correlation	.685**	1												
	Sig. (2-tailed)	.000													
	N	51	51												
CRM 3	Pearson Correlation	.b	.b	.b											
	Sig. (2-tailed)														
	N	51	51	51											
CRM 4	Pearson Correlation	.b	.b	.b	.b										
	Sig. (2-tailed)														
	N	51	51	51	51										
CRM 5	Pearson Correlation	.254	.371**	.b	.b	1									
	Sig. (2-tailed)	.072	.007												

	N	51	51	51	51	51									
CRM 6	Pearson Correlation	.566**	.387**	.b	.b	-.078	1								
	Sig. (2-tailed)	.000	.005			.584									
	N	51	51	51	51	51	51								
CRM 7	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig. (2-tailed)														
	N	51	51	51	51	51	51	51							
CRM 8	Pearson Correlation	.808**	.553**	.b	.b	.126	.700**	.b	1						
	Sig. (2-tailed)	.000	.000			.378	.000								
	N	51	51	51	51	51	51	51	51						
CRM 9	Pearson Correlation	.292*	.426**	.b	.b	.254	.566**	.b	.379**	1					
	Sig. (2-tailed)	.038	.002			.072	.000		.006						
	N	51	51	51	51	51	51	51	51	51					
CRM 10	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b				
	Sig. (2-tailed)														
	N	51	51	51	51	51	51	51	51	51	51				
CRM 11	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b			
	Sig. (2-tailed)														
	N	51	51	51	51	51	51	51	51	51	51	51			
CRM 12	Pearson Correlation	.627**	.385**	.b	.b	.316*	.355*	.b	.507**	.142	.b	.b	1		
	Sig. (2-tailed)	.000	.005			.024	.011		.000	.319					
	N	51	51	51	51	51	51	51	51	51	51	51	51		
CRM 13	Pearson Correlation	.451**	.371**	.b	.b	.346*	.255	.b	.364**	.451**	.b	.b	.316*	1	
	Sig. (2-tailed)	.001	.007			.013	.071		.009	.001			.024		
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	
CRM 14	Pearson Correlation	.673**	.417**	.b	.b	.203	.600**	.b	.622**	.285*	.b	.b	.632**	.418**	1
	Sig. (2-tailed)	.000	.002			.154	.000		.000	.042			.000	.002	
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

b. Cannot be computed because at least one of the variables is constant.

7. Correlation Coefficient for Product Quality

		PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9
PQ1	Pearson Correlation	1								
	Sig. (2-tailed)									
	N	51								
PQ2	Pearson Correlation	.121	1							
	Sig. (2-tailed)	.396								
	N	51	51							
PQ3	Pearson Correlation	.198	.613**	1						
	Sig. (2-tailed)	.164	.000							
	N	51	51	51						
PQ4	Pearson Correlation	.121	.198	.[a]	.[a]					
	Sig. (2-tailed)									
	N	51	51	51	51					
PQ5	Pearson Correlation	.[a]	.[a]	.[a]	.[a]	.[a]				
	Sig. (2-tailed)									
	N	51	51	51	51	51				
PQ6	Pearson Correlation	.198	.[a]	.[a]	.[a]	.[a]	1			
	Sig. (2-tailed)	.061								
	N	51	51	51	51	51	51			
PQ7	Pearson Correlation	.323*	.191	.220	.[a]	.[a]	.[a]	1		
	Sig. (2-tailed)	.021	.180	.120						
	N	51	51	51	51	51	51	51		
PQ8	Pearson Correlation	.323*	.191	.220	.[a]	.[a]	.[a]	1.000**	1	
	Sig. (2-tailed)	.021	.180	.120				0.000		
	N	51	51	51	51	51	51	51	51	
PQ9	Pearson Correlation	.323*	.191	.220	.[a]	.[a]	.[a]	1.000**	1.000**	1
	Sig. (2-tailed)	.021	.180	.120				0.000	0.000	
	N	51	51	51	51	51	51	51	51	51

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

8. Correlation Coefficient for Service Quality

		SQ1	SQ2	SQ3	SQ4	SQ5	SQ6	SQ7	SQ8	SQ9	SQ10	SQ11	SQ12	SQ13	SQ14	SQ15	SQ16	SQ17	SQ18	SQ19	SQ20	SQ21	SQ22
SQ1	Pearson Correlation	1																					
	Sig. (2-tailed)																						
	N	51																					
SQ2	Pearson Correlation	.364**	1																				
	Sig. (2-tailed)	.009																					
	N	51	51																				
SQ3	Pearson Correlation	.536**	.518**	1																			
	Sig. (2-tailed)	.000	.000																				
	N	51	51	51																			
SQ4	Pearson Correlation	.[a]	.[a]	.536**	1																		
	Sig. (2-tailed)			.000																			
	N	51	51	51	51																		
SQ5	Pearson Correlation	.[a]	.[a]	.518**	.355*	1																	
	Sig. (2-tailed)			.000	.011																		
	N	51	51	51	51	51																	
SQ6	Pearson Correlation	.[a]	.[a]	.536**	1.000**	.355*	1																
	Sig. (2-tailed)			.000	0.000	.011																	
	N	51	51	51	51	51	51	51															
SQ7	Pearson Correlation	.[a]	.[a]	.579**	.429**	.443**	.429**	1															
	Sig. (2-tailed)			.000	.002	.001	.002																

	N	51	51	51	51	51	51	51														
SQ8	Pearson Correlation	.429**		.443**	.a	.a	.429**	.a	1													
	Sig. (2-tailed)	.002		.002			.000															
	N	51	51	51	51	51	51	51	51													
SQ9	Pearson Correlation	.a	.a	.a	.a	.a	.a	.a	.a	.a												
	Sig. (2-tailed)																					
	N	51	51	51	51	51	51	51	51	51												
SQ10	Pearson Correlation	.a	.a	.364**	.485**	.308*	.485**	.149	.a	.a	1											
	Sig. (2-tailed)			.009	.000	.028	.000	.296														
	N	51	51	51	51	51	51	51	51	51	51											
SQ11	Pearson Correlation	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a										
	Sig. (2-tailed)																					
	N	51	51	51	51	51	51	51	51	51	51	51										
SQ12	Pearson Correlation	.a	.a	-.021	-.035	.142	-.035	.198	.a	.a	-.073	.a	1									
	Sig. (2-tailed)			.882	.805	.319	.805	.164			.611											
	N	51	51	51	51	51	51	51	51	51	51	51	51									
SQ13	Pearson Correlation	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a								
	Sig. (2-tailed)																					
	N	51	51	51	51	51	51	51	51	51	51	51	51	51								
SQ14	Pearson Correlation	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a	.a							
	Sig. (2-tailed)																					
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51							

SQ15	Pearson Correlation	.[a]	.[a]	.463[**]	.566[**]	.385[**]	.566[**]	.478[**]	.[a]	.[a]	.547[**]	.[a]	-.063	.[a]	.[a]	1							
	Sig. (2-tailed)			.001	.000	.005	.000	.000			.000		.663										
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51							
SQ16	Pearson Correlation	.[a]	.[a]	-.081	-.020	-.056	-.020	-.047	.[a]	.[a]	-.041	.[a]	-.035	.[a]	.[a]	-.035	1						
	Sig. (2-tailed)			.574	.889	.694	.889	.745			.774		.805			.805							
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51						
SQ17	Pearson Correlation	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]					
	Sig. (2-tailed)																						
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51					
SQ18	Pearson Correlation	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]				
	Sig. (2-tailed)																						
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51				
SQ19	Pearson Correlation	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]			
	Sig. (2-tailed)																						
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51			
SQ20	Pearson Correlation	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]		
	Sig. (2-tailed)																						
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51		
SQ21	Pearson Correlation	.[a]	.[a]	.125	-.020	.355[*]	-.020	.429[**]	.[a]	.[a]	-.041	.[a]	.566[**]	.[a]	.[a]	-.035	-.020	.[a]	.[a]	.[a]	.[a]	1	
	Sig. (2-tailed)			.383	.889	.011	.889	.002			.774		.000			.805	.889						
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	
SQ22	Pearson Correlation	.[a]	.[a]	.125	-.020	-.056	-.020	-.047	.[a]	.[a]	.485[**]	.[a]	-.035	.[a]	.[a]	.566[**]	-.020	.[a]	.[a]	.[a]	.[a]	-.020	1

	Sig. (2-tailed)			.383	.889	.694	.889	.745			.000		.805			.000	.889					.889	
	N	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
**. Correlation is significant at the 0.01 level (2-tailed).																								
*. Correlation is significant at the 0.05 level (2-tailed).																								
a. Cannot be computed because at least one of the variables is constant.																								

9. Correlation Coefficient for Competitive Priorities

		CP1	CP2	CP3	CP4	CP5
CP1	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	51				
CP2	Pearson Correlation	.390**	1			
	Sig. (2-tailed)	.005				
	N	51	51			
CP3	Pearson Correlation	.525**	.b	1		
	Sig. (2-tailed)	.000				
	N	51	51	51		
CP4	Pearson Correlation	.663**	.b	.288*	1	
	Sig. (2-tailed)	.000		.040		
	N	51	51	51	51	
CP5	Pearson Correlation	.472**	.b	.398**	.b	1
	Sig. (2-tailed)	.000		.004		
	N	51	51	51	51	51
**. Correlation is significant at the 0.01 level (2-tailed).						
b. Cannot be computed because at least one of the variables is constant.						

Appendix-D: Sample Report Documents of the Companies

Before ISO Implementation (Year 2015)

BELAYAB CABLES

DATE	PRODUCTION ORDER	PRODUCTION DATE	CABLE TYPE	START	END	LENGTH (mt)	TEST RESULT	DELIVERED OR NOT
02,09,2015	0015/2015	24,08,2015	3x70+35 mm^2	1010	0	1010	Pass	Delivered
02,09,2015	0015/2015	24,08,2015	3x70+35 mm^2	2102	1011	1091	Pass	Delivered
02,09,2015	0015/2015	14,08,2015	3x70+35 mm^2	2101	1006	1095	Pass	Delivered
02,09,2015	0015/2015	31,08,2015	3x70+35 mm^2	2100	1050	1050	Pass	Delivered
03,09,2015	0061/2015	02,09,2015	2x1.5 mm^2	1402	2	1400	Fail	not deliverd
03,09,2015	0061/2015	02,09,2015	2x1.5 mm^2	2844	1403	1441	Fail	
03,09,2015	0061/2015	02,09,2015	2x1.5 mm^2	3008	2845	163	Pass	Delivered
05,09,2015	0015/2015	24,08,2015	3x70+35 mm^2	1040	0	1040	Pass	Delivered
05,09,2015	0015/2015	31,08,2015	3x120+70 mm^2	354	0	354	Pass	Delivered
06,09,2015	0058/2015	01,09,2015	3x70+35 mm^2	1000	0	1000	Pass	Delivered
07,09,2015	0061/2015	01,09,2015	4x4 mm^2	877	0	877	Fail	
07,09,2015	0015/2015	24,08,2015	3x120+70 mm^2	1017	666	351	Pass	Delivered
07,09,2015	0015/2015	24,08,2015	3x120+70 mm^2	485	0	485	Pass	Delivered
07,09,2015	0015/2015	24,08,2015	3x120+70 mm^2	651	0	651	Pass	Delivered
07,09,2015	0039/2015	06,09,2015	2X6 mm^2	3675	0	3675	Pass	Delivered
07,09,2015	0039/2015	06,09,2015	2X6 mm^2	3654	0	3654	Pass	Delivered
07,09,2015	0015/2015	24,08,2015	3x120+70 mm^2	664	488	176	Fail	not deliverd
07,09,2015	0015/2015	31,08,2015	3x70+35 mm^2	1039	0	1039	Pass	Delivered
07,09,2015	0015/2015	24,08,2015	3x120+70 mm^2	352	0	352	Pass	Delivered
07,09,2015	0039/2015	06,09,2015	2X6 mm^2	3564	0	3564	Pass	
07,09,2015	0039/2015	06,09,2015	2X6 mm^2	3628	0	3628	Pass	
17,09,2015	0039/2015	08,09,2015	4x16 mm^2	1050	0	1050	Fail	
17,09,2015	0039/2015	08,09,2015	4x16 mm^2	2101	1051	1050	Fail	not deliverd
17,09,2015	0061/2015	08,09,2015	3x2.5 mm^2	2859	1101	1758	Fail	not deliverd
17,09,2015	0061/2015	08,09,2015	3x2.5 mm^2	4064	0	4064	Pass	Delivered
17,09,2015	0039/2015	13,09,2015	2x10 mm^2	2206	0	2206	Pass	Delivered
17,09,2015	0039/2015	13,09,2015	2x10 mm^2	2034	0	2034	Pass	Delivered
17,09,2015	0039/2015	13,09,2015	2x10 mm^2	6641	4234	2407	Pass	Delivered
17,09,2015	0039/2015	13,09,2015	2x10 mm^2	4226	2207	2019	Fail	
17,09,2015	0039/2015	13,09,2015	2x10 mm^2	2085	0	2085	Pass	Delivered
17,09,2015	0039/2015	13,09,2015	2x10 mm^2	4173	2086	2087	Fail	
17,09,2015	0039/2015	13,09,2015	2x10 mm^2	1651	0	1651	Pass	Delivered
21,09,2015	0058/2015	16,09,2015	3x70+35 mm^2	1052	0	1052	Pass	Delivered
21,09,2015	0058/2015	07,09,2015	3x70+35 mm^2	2104	1021	1083	Fail	not deliverd
21,09,2015	0039/2015	08,09,2015	4x16 mm^2	3042	2102	940	Pass	Delivered
21,09,2015	0039/2015	17,09,2015	4x16 mm^2	3218	2168	1050	Pass	Delivered
21,09,2015	0039/2015	17,09,2015	4x16 mm^2	2167	1084	1083	Pass	Delivered

21,09,2015	0039/2015	16,09,2015	4x16 mm^2	1083	0	1083	Pass	Delivered
21,09,2015	0039/2015	17,09,2015	2X6 mm^2	3614	0	3614	Pass	Delivered
21,09,2015	0039/2015	28,08,2015	2X6 mm^2	1562	0	1562	Pass	Delivered
21,09,2015	0039/2015	07,09,2015	2X6 mm^2	3645	0	3645	Fail	
23,09,2015	0039/2015	20,09,2015	2X6 mm^2	3387	522	2865	Fail	not deliverd
23,09,2015	0039/2015	20,09,2015	2X6 mm^2	1105	0	1105	Pass	Delivered
23,09,2015	0039/2015	20,09,2015	2X6 mm^2	2210	0	2210	Pass	Delivered
23,09,2015	0039/2015	20,09,2015	2X6 mm^2	2881	0	2881	Pass	Delivered
23,09,2015	0039/2015	20,09,2015	2X6 mm^2	3637	0	3637	Pass	Delivered
30,09,2015	0062/2015	13,09,2015	4x6 mm^2	3025	0	3025	Pass	Delivered
30,09,2015	0039/2015	17,09,2015	2x10 mm^2	3135	0	3135	Pass	Delivered
30,09,2015		07,09,2015	3x25+16 mm^2	312	0	312	Pass	Delivered

Before ISO Implementation (Year 2016)

BELAYAB CABLES

DATE	PRODUCTION ORDER	PRODUCTION DATE	CABLE TYPE	START	END	LENGTH (mt)	TEST RESULT	DELIVERED OR NOT
07,07,2016	0039/2016-1	29,06,2016	4x10 mm^2	3045	1551	1494	Pass	delivered
07,07,2016	0010/2016	05,07,2016	5x16 mm^2	1447	0	1447	Fail	
07,07,2016	0039/2016-1	05,07,2016	4x10 mm^2	3048	1813	1235	Pass	delivered
08,07,2016	0039/2016-1	05,07,2016	4x10 mm^2	1809	0	1809	Pass	delivered
08,07,2016	0015/2016	01,07,2016	3x70+35 mm^2	1075	1	1074	Pass	delivered
08,07,2016	0039/2016-1	07,07,2016	2x6 mm^2	0	3110	3110	Pass	
11,07,2016	0015/2016	01,07,2016	3x70+35 mm^2	1021	0	1021	Fail	Not Delivered
11,07,2016	0015/2016	01,07,2016	3x70+35 mm^2	2043	1022	1021	Pass	delivered
11,07,2016		08,07,2016	4x25 mm^2	0	95	95	Pass	
11,07,2016		20,06,2016	3x6 mm^2	179	0	179	Pass	
11,07,2016	018/2016	20,04,2016	4x16 mm^2	145	0	145	Pass	
11,07,2016	0035/2016	04,07,2016	3x35 mm^2	789	0	789	Fail	Not Delivered
11,07,2016	0015/2016	01,07,2016	3x70+35 mm^2	1071	1	1070	Pass	
11,07,2016	0050/2016	21,06,2016	3x2.5 mm^2	3295	2251	1044	Pass	
11,07,2016	0050/2016	09,07,2016	3x4 mm^2	1194	0	1994	Pass	delivered
12,07,2016	0015/2016	30,06,2016	3x300+150 mm^2				Fail	Not Delivered
12,07,2016	0015/2016-2&3	30,06,2016	3x300+150 mm^2	251	0	251	Pass	delivered
12,07,2016	0034/2016-5	11,07,2016	4x16 mm^2	3977	2069	1908	Pass	delivered
12,07,2016	0034/2016-5	11,07,2016	4x16 mm^2	2066	0	2066	Pass	delivered
12,07,2016	0015/2016-5	01,07,2016	3x70+35 mm^2	1029		1029	Fail	
12,07,2016	0015/2016-5	01,07,2016	3x70+35 mm^2	2060	1030	1030	Pass	delivered
12,07,2016	0007/2016	07,05,2016	4x10 mm^2	4254	3918	336	Fail	
12,07,2016	0010/2016	05,07,2016	5x6 mm^2	935	0	935	Fail	Not Delivered
13,07,2016	024/2016	25,03,2016	3x185+95 mm^2	233	190	33	Fail	
13,07,2016		2008	3x240+120 mm^2	95	0	95	Pass	

14,07,2016	0050/2016	12,07,2016	3x2.5 mm^2	3476	0	3476	Pass	delivered
14,07,2016	0039/2016-1	08,07,2016	2X6 mm^2	2965	1310	1655	Pass	delivered
14,07,2016		05,07,2016	4x10 mm^2	1013	0	1013	Pass	delivered
15,07,2016	0046/2016	13,07,2016	3x185+95 mm^2	512	289	221	Pass	delivered
16,07,2016	0037/2016	11,07,2016	2X6 mm^2	2093	0	2093	Fail	
16,07,2016	034/2016-5	14,07,2016	4X16 mm^2	2068	0	2068	Pass	delivered
16,07,2016	034/2016-5	14,07,2016	4X16 mm^2	1932	0	1932	Pass	delivered
17,07,2016	0039/2016	16,07,2016	2X6 mm^2	3713	0	3713	Pass	delivered
17,07,2016	0039/2016	16,07,2016	2X6 mm^2	3663	0	3663	Pass	delivered
17,07,2016	0039/2016	16,07,2016	2X6 mm^2	3659	0	3659	Pass	delivered
18,07,2016	0039/2016	08,07,2016	2X6 mm^2	1309	0	1309	Pass	delivered
18,07,2016	0015/2016-5	13,07,2016	3x300+150 mm^2	497	249	248	Pass	delivered
18,07,2016	0015/2016-5	13,07,2016	3x300+150 mm^2	506	255	251	Pass	delivered
18,07,2016	0015/2016-5	13,07,2016	3x300+150 mm^2	254	0	254	Pass	delivered
18,07,2016	0039/2016	11,07,2016	3x6 mm^2	1572	0	1572	Pass	delivered
18,07,2016	0015/2016-5	13,07,2016	3x300+150 mm^2	248	0	248	Pass	delivered
20,07,2016	0039/2016	19.07,2016	2X6 mm^2	2171	0	2171	pass	delivered
20,07,2016	0039/2016	19.07,2016	2X6 mm^2	3649	54	3595	pass	delivered
20,07,2016	0039/2016	16.07,2016	2X6 mm^2	3687	109	3578	pass	delivered
20,07,2016	0039/2016	19,07,2016	2X6 mm^2	3361	0	3359	Pass	delivered
20,07,2016	0039/2016	19,07,2016	2X6 mm^2	3655	1	3654	Pass	delivered
20,07,2016	0039/2016	19,07,2016	2X6 mm^2	3716	0	3716	Pass	delivered
20,07,2016	0039/2016	19,07,2016	2X6 mm^2	449	1	448	Pass	
20,07,2016	010/2016	28,06,2016	3X16 mm^2	2736	2051	685	Pass	
20,07,2016	0039/2019	11,07,2016	2x2.5 mm^2	939	0	939	Pass	
20,07,2016	0039/2019	11,07,2016	4x1.5 mm^2	624	0	624	Pass	
21,07,2016	024/2016	25,03,2016	.	57	0	57	Pass	
21,07,2016	0039/2016	20,07,2016	2X6 mm^2	3336	0	3336	Pass	delivered
21,07,2016	0039/2016	20,07,2016	2X6 mm^2	3715	1	3714	Pass	delivered
21,07,2016	0039/2016	19,07,2016	2X6 mm^2	926	1	925	Pass	delivered
21,07,2016		19,10,2015	3X150+70 mm^2	699	608	91	Fail	
23,07,2016	0039/2016	21,07,2016	2X6 mm^2	3237	0	3237	Pass	delivered
25,07,2016	0015/2016-2	30,06,2016	3x300+150 mm^2	248	0	248	Pass	
25,07,2016	0015/2016-2	30,06,2016	3x300+150 mm^2	498	249	249	Fail	
26,07,2016	0039/2016	21,07,2016	2X6 mm^2	3594	3239	355	Pass	delivered
26,07,2016	0046/2016	13,07,2016	3x185+95 mm^2	288	0	288	Pass	delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	3687	1885	1802	Pass	delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	3601	494	3107	Fail	
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	3676	763	2913	Pass	delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	1884	1408	476	Pass	
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	815	0	815	Pass	delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	3627	1	3626	Pass	delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	3566	818	2748	Fail	Not Delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	1407	0	1407	Pass	delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	3673	0	3673	Pass	delivered
26,07,2016	0039/2016	25,07,2016	2X6 mm^2	3660	2	3660	Pass	delivered
27,07,2016	0039/2016	26,07,2016	2X6 mm^2	339	0	339	Pass	delivered
27,07,2016	0039/2016	26,07,2016	2X6 mm^2	2651	0	2651	Pass	delivered

27,07,2016	0039/2016	26,07,2016	2X6 mm^2	3650	0	3650	Pass	delivered
27,07,2016	0039/2016	26,07,2016	2X6 mm^2	3452	2	3450	Fail	
27,07,2016	0039/2016	25,07,2016	2X6 mm^2	2318	18	2300	Pass	delivered
29,07,2016	0015/2016-8&9	26,07,2016	3x70+35 mm^2	2103	1051	1052	Pass	
29,07,2016	0015/2016-8&9	26,07,2016	3x70+35 mm^2	1050	0	1050	Pass	delivered
29,07,2016	0015/2016-8&9	28,06,2016	3x70+35 mm^2	1020	0	1020	Pass	delivered
29,07,2016	0015/2016-1&2	27,07,2016	3x95+50 mm^2	441	0	441	Pass	delivered
30,07,2016	0015/2016-1&2	27,07,2016	3x95+50 mm^2			498	Pass	delivered
30,07,2016	0039/2016	29,07,2016	2X6 mm^2	3310	0	3310	Pass	delivered
30,07,2016	0039/2016	29,07,2016	2X6 mm^2	1525	2	1523	Pass	delivered
01,10,2016	0039/2016	24,09,2016	2X6 mm^2	1919	0	1919	Pass	Delivered
01,10,2016	0039/2016	24,09,2016	2X6 mm^2	3611	1926	1685	Pass	Delivered
01,10,2016	0039/2016	22,09,2016	2X6 mm^2	3503	1977	1526	Pass	Delivered
01,10,2016	0039/2016	21,09,2016	2X6 mm^2	3586	3023	563	Pass	Delivered
01,10,2016	0039/2016	21,09,2016	2X6 mm^2	6003	4602	1401	Pass	Delivered
01,10,2016	0039/2016	21,09,2016	2X6 mm^2	2338	179	2159	Pass	Delivered
01,10,2016	0039/2016	20,08,2016	2X6 mm^2	1415	1201	214	Pass	
01,10,2016	0039/2016	24,09,2016	4x16 mm^2	3213	2143	1070	Pass	Delivered
01,10,2016	0061/2016	14,09,2016	4x2.5 mm^2	964	1	963	Pass	
03,10,2016	0056/2016	01,09,2016	4x4 mm^2	443	0	443	Pass	
03,10,2016	0039/2016	24,09,2016	2X6 mm^2	3632	749	2883	Pass	Delivered
03,10,2016	0039/2016	24,09,2016	2X6 mm^2	3639	0	3639	Pass	Delivered
03,10,2016	0039/2016	24,09,2016	2X6 mm^2	3411	0	3411	Pass	Delivered
03,10,2016	0039/2016	21,09,2016	2X6 mm^2	3621	1846	1775	Pass	Delivered
03,10,2016	0039/2016	21,09,2016	2X6 mm^2	1264	0	1264	Pass	Delivered
03,10,2016	0039/2016	26,09,2016	2X6 mm^2	2933	0	2933	Pass	Delivered
03,10,2016	0058/2016	01,10,2016	4x16 mm^2	4216	2116	2100	Pass	Delivered
03,10,2016	0058/2016	01,10,2016	4x16 mm^2	3123	2001	1122	Pass	Delivered
03,10,2016	0058/2016	01,10,2016	4x16 mm^2	2000	0	2000	Pass	Delivered
05,10,2016	0058/2016	01,10,2016	4x16 mm^2	1105	0	1105	Pass	Delivered
05,10,2016	0058/2016	01,10,2016	4x16 mm^2	3315	2211	1104	Pass	Delivered
05,10,2016	0058/2016	01,10,2016	4x16 mm^2	2210	1106	1104	Pass	Delivered
05,10,2016	0058/2016	01,10,2016	4x16 mm^2	3216	1668	1548	Pass	Delivered
05,10,2016	0058/2016	01,10,2016	4x16 mm^2	2115	1057	1058	Pass	Delivered
05,10,2016	0058/2016	01,10,2016	4x16 mm^2	1056	0	1056	Pass	Delivered
05,10,2016	0058/2016	03,10,2016	4x16 mm^2	4034	2690	1344	Pass	Delivered
05,10,2016	0058/2016	03,10,2016	4x16 mm^2	1564	0	1564	Pass	Delivered
05,10,2016	0039/2016	21,09,2016	2X6 mm^2	662	0	662	Pass	Delivered
05,10,2016	0039/2016	20,09,2016	2X6 mm^2	517	0	517	Pass	Delivered
07,10,2016	0039/2016	03,10,2016	2X6 mm^2	8999	5385	3614	Pass	Delivered
07,10,2016	0039/2016	03,10,2016	2X6 mm^2	5053	1760	3293	Pass	Delivered
07,10,2016	0039/2016	21,09,2016	2X6 mm^2	1758	0	1758	Pass	Delivered
07,10,2016	0039/2016	21,09,2016	2X6 mm^2	3613	1762	1851	Pass	Delivered
07,10,2016	0039/2016	21,09,2016	2X6 mm^2	4069	3626	443	Pass	
07,10,2016	0039/2016	21,09,2016	2X6 mm^2	1844	1268	576	Pass	Delivered

07,10,2016	0039/2016	21,09,2016	2X6 mm^2	4951	4079	872	Pass	Delivered
07,10,2016	0058/2016	03,10,2016	4x16 mm^2	3129	1565	1564	Pass	Delivered
07,10,2016	0058/2016	03,10,2016	4x16 mm^2	2689	1344	1345	Pass	Delivered
07,10,2016	0058/2016	05,10,2016	3x70+35 mm^2	1035	0	1035	Pass	Delivered
07,10,2016	0058/2016	05,10,2016	3x70+35 mm^2	2093	1036	1057	Pass	Delivered
08,10,2016	0065/2016	07,10,2016	3x10 mm^2	4037	3251	786	Pass	Delivered
11,10,2016	0065/2016	07,10,2016	3x10 mm^2	1133	0	1133	Pass	
11,10,2016	0065/2016	07,10,2016	3x10 mm^2	3250	1134	2116	Pass	Delivered
11,10,2016	0058/2016	03,10,2016	4x16 mm^2	2137	0	3137	Pass	Delivered
11,10,2016	0058/2016	03,10,2016	4x16 mm^2	2001	0	2001	Pass	Delivered
11,10,2016	0058/2016	03,10,2016	4x16 mm^2	3058	2002	1056	Pass	Delivered
11,10,2016	0039/2016	03,10,2016	2X6 mm^2	7623	6218	1405	Fail	
11,10,2016	0065/2016	08,10,2016	3x50+25 mm^2	1493	1208	285	Pass	Delivered
11,10,2016	0058/2016	07,10,2016	3x70+35 mm^2	953	0	953	Pass	Delivered
11,10,2016	0065/2016	07,10,2016	3x10 mm^2	6133	4133	2000	Pass	Delivered
11,10,2016	0058/2016	03,10,2016	4x16 mm^2	1239	0	1239	Pass	Delivered
11,10,2016	0058/2016	03,10,2016	4x16 mm^2	1343	0	1343	Pass	Delivered
11,10,2016	0058/2016	03,10,2016	4x16 mm^2	1983	0	1983	Pass	Delivered
11,10,2016	0058/2016	01,10,2016	4x16 mm^2	1666	0	1666	Pass	Delivered
12,10,2016	0066/2016	10,10,2016	3x4 mm^2	536	0	536	Pass	
14,10,2016	0058/2016	07,10,2016	3x70+35 mm^2	1050	1	1049	Pass	Delivered
14,10,2016	0058/2016	07,10,2016	3x70+35 mm^2	1050	0	1050	Pass	Delivered
14,10,2016	0039/2016	03,09,2016	2X6 mm^2	1402	0	1402	Pass	Delivered
15,10,2016	0039/2016	03,09,2016	2X6 mm^2	3635	0	3635	Pass	Delivered
15,10,2016	0039/2016	03,09,2016	2X6 mm^2	3649	0	3649	Pass	Delivered
17,10,2016	0058/2016	15,10,2016	4x16 mm^2	2100	0	2100	Pass	Delivered
17,10,2016	0058/2016	15,10,2016	4x16 mm^2	4227	2101	2126	Pass	Delivered
18,10,2016	0058/2016	15,10,2016	4x16 mm^2	2120	0	2120	Pass	Delivered
18,10,2016	0058/2016	14,10,2016	4x16 mm^2	2110	0	2110	Pass	Delivered
18,10,2016	0058/2016	15,10,2016	4x16 mm^2	0	2153	2153	Pass	Delivered
18,10,2016	0058/2016	15,10,2016	4x16 mm^2	4227	2111	2116	Pass	Delivered
18,10,2016	0058/2016	15,10,2016	3x70+35 mm^2	1035	3	1032	Pass	Delivered
18,10,2016	0039/2016	15,10,2016	2X6 mm^2	5702	2377	3325	Pass	Delivered
19,10,2016	0058/2016	15,10,2016	4x10 mm^2	5345	3335	2010	Pass	Delivered
19,10,2016	0058/2016	15,10,2016	4x10 mm^2	3334	1368	1966	Pass	Delivered
19,10,2016	0058/2016	15,10,2016	4x10 mm^2	1248	0	1248	Pass	Delivered
19,10,2016	0058/2016	15,10,2016	4x10 mm^2	1367	0	1367	Pass	Delivered
19,10,2016	0039/2016	04,10,2016	2X6 mm^2	7485	5706	1779	Pass	Delivered
19,10,2016	0039/2016	17,10,2016	2X6 mm^2	3622	2	3620	Pass	Delivered
19,10,2016	0058/2016	15,10,2016	3x70+35 mm^2	1074	0	1074	Pass	Delivered
19,10,2016	0039/2016	04,10,2016	2X6 mm^2	12997	9352	3645	Pass	Delivered
19,10,2016	0039/2016	04,10,2016	2X6 mm^2	2373	486	1887	Pass	Delivered
19,10,2016	0058/2016	14,10,2016	4x16 mm^2	4308	2154	2154	Pass	Delivered
19,10,2016	0058/2016	17,10,2016	4x16 mm^2	4229	3016	1213	Pass	Delivered
19,10,2016	0058/2016	17,10,2016	4x16 mm^2	3014	1551	1463	Pass	Delivered
19,10,2016	0058/2016	17,10,2016	4x16 mm^2	1550	0	1550	Pass	Delivered
20,10,2016	0058/2016	15,10,2016	4x16 mm^2	2100	0	2100	Pass	Delivered
20,10,2016	0058/2016	14,10,2016	4x16 mm^2	2153	0	2153	Pass	Delivered

20,10,2016	0058/2016	17,10,2016	4x16 mm^2	2144	2	2142	Pass	Delivered
20,10,2016	0058/2016	19,10,2016	4x10 mm^2	2110	0	2110	Pass	Delivered
20,10,2016	0058/2016	19,10,2016	4x10 mm^2	4223	2111	2112	Pass	Delivered
20,10,2016	0039/2016	04,10,2016	2X6 mm^2	9346	7487	1859	Pass	Delivered
21,10,2016	0065/2016	08,10,2016	3X50+25 mm^2	1066	772	294	Pass	Delivered
21,10,2016	0066/2016	19,10,2016	3X120+70 mm^2	392	294	98	Pass	
22,10,2016	0058/2016	19,10,2016	4x10 mm^2	4223	2112	2111	Pass	Delivered
22,10,2016	0058/2016	19,10,2016	4x10 mm^2	2111	0	2111	Pass	Delivered
22,10,2016	0058/2016	20,10,2016	4x10 mm^2	6459	4229	2230	Pass	Delivered
22,10,2016	0058/2016	15,10,2016	3x70+35 mm^2	1030	0	1030	Pass	
25,10,2016	0039/2016	20,10,2016	2X6 mm^2	3624	2914	710	Pass	Delivered
25,10,2016	0039/2016	20,10,2016	2X6 mm^2	4060	3629	431	Pass	Delivered
25,10,2016	0039/2016	20,10,2016	2X6 mm^2	7859	7060	799	Pass	Delivered
25,10,2016	0039/2016	10,10,2016	2X6 mm^2	3642	2616	1026	Pass	Delivered
25,10,2016	0039/2016	07,09,2016	2X6 mm^2	327	0	327	Pass	Delivered
25,10,2016	0058/2016	15,10,2016	3x70+35 mm^2	1020	0	1020	Pass	Delivered
25,10,2016	0058/2016	15,10,2016	3x70+35 mm^2	2069	1031	1038	Fail	Not Deliverd
25,10,2016	0058/2016	15,10,2016	3x70+35 mm^2	2084	1021	1063	Fail	
26,10,2016	0039/2016	25,10,2016	2X6 mm^2	3614	0	3614	Pass	Delivered
26,10,2016	0039/2016	20,10,2016	2X6 mm^2	1140	0	1140	Pass	Delivered
26,10,2016	0039/2016	03,10,2016	2X6 mm^2	3495	0	3495	Pass	
26,10,2016	0039/2016	20,10,2016	2X6 mm^2	2389	0	2389	Pass	Delivered
27,10,2016	0039/2016	20,10,2016	2X6 mm^2	2856	0	2856	Fail	
27,10,2016	0039/2016	20,10,2016	2X6 mm^2	2912	3	2909	Fail	
27,10,2016	0039/2016	17,10,2016	2X6 mm^2	3610	0	3610	Pass	Delivered
27,10,2016	0039/2016	22,10,2016	2X6 mm^2	3112	2	3110	Fail	
27,10,2016	0039/2016	22,10,2016	2X6 mm^2	3658	2	3656	Pass	
27,10,2016	0039/2016	25,10,2016	2X6 mm^2	3660	0	3660	Pass	Delivered
27,10,2016	0039/2016	24,10,2016	2X6 mm^2	9384	7308	2076	Pass	Delivered
27,10,2016	0039/2016	24,10,2016	2X6 mm^2	7304	3676	3628	Fail	
27,10,2016	0039/2016	24,10,2016	2X6 mm^2	10603	9392	1211	Fail	
27,10,2016	0039/2016	24,10,2016	2X6 mm^2	1185	1	1184	Pass	
27,10,2016	0058/2016	22,10,2016	4X10 mm^2	3269	1634	1635	Fail	
27,10,2016	0058/2016	22,10,2016	4X10 mm^2	1633	0	1633	Pass	Delivered
27,10,2016	0058/2016	26,10,2016	4X16 mm^2	2131	0	3131	Pass	Delivered
27,10,2016	0065/2016	08,10,2016	3X50+25 mm^2	771	691	80	Pass	
28,10,2016	0039/2016	07,09,2016	2X6 mm^2	1564	0	1564	Pass	Delivered
28,10,2016	0039/2016	24,10,2016	2X6 mm^2	6126	3650	2476	Pass	Delivered
28,10,2016	0039/2016	03,10,2016	2X6 mm^2	7623	6218	1405	Fail	
28,10,2016	0039/2016	24,10,2016	2X6 mm^2	7339	6129	1205	Fail	
28,10,2016	0039/2016	24,10,2016	2X6 mm^2	3648	1188	2460	Pass	Delivered
28,10,2016	0039/2016	20,09,2016	2X6 mm^2	3039	1541	1498	Pass	Delivered
28,10,2016	0039/2016	20,09,2016	2X6 mm^2	7058	4076	2982	Pass	Delivered
28,10,2016	0039/2016	20,09,2016	2X6 mm^2	1540	0	1540	Fail	
28,10,2016	0039/2016	17,10,2016	2X6 mm^2	5287	3626	1661	Pass	Delivered
28,10,2016	0039/2016	17,10,2016	2X6 mm^2	3496	2113	1383	Pass	Delivered
28,10,2016	0039/2016	17,10,2016	2X6 mm^2	2110	0	2110	Pass	Delivered
28,10,2016	0058/2016	22,10,2016	4X10 mm^2	2234	0	2234	Pass	Delivered

28,10,2016	0058/2016	22,10,2016	4X10 mm^2	1657	0	1657	Pass	Delivered
28,10,2016	0058/2016	22,10,2016	4X10 mm^2	3316	1658	1658	Pass	Delivered
28,10,2016	0058/2016	27,10,2016	4X16 mm^2	3108	2101	1007	Pass	Delivered
29,10,2016	0065/2016	08,10,2016	3X50+25 mm^2	690	390	300	Pass	Delivered
31,10,2016	0065/2016	08,10,2016	3X50+25 mm^2	389	115	274	Pass	Delivered
31,10,2016	0058/2016	27,10,2016	4X16 mm^2	4212	3109	1103	Pass	Delivered
31,10,2016	0058/2016	26,10,2016	3x70+35 mm^2	1123	0	1123	Pass	Delivered
31,10,2016	0039/2016	11,10,2016	2X6 mm^2	5959	4442	1517	Pass	Delivered
31,10,2016	0039/2016	11,10,2016	2X6 mm^2	2385	1040	1345	Pass	Delivered
31,10,2016	0039/2016	11,10,2016	2X6 mm^2	8224	6202	2022	Pass	Delivered
31,10,2016	0039/2016	11,10,2016	2X6 mm^2	11527	10240	1287	Pass	Delivered
31,10,2016	0039/2016	11,10,2016	2X6 mm^2	9627	8335	1292	Pass	Delivered
31,10,2016	0039/2016	11,10,2016	2X6 mm^2	10237	9629	608	Pass	Delivered
31,10,2016	0039/2016	22,10,2016	2X6 mm^2	3527	3113	414	Pass	Delivered
31,10,2016	0039/2016	03,10,2016	2X6 mm^2	685	0	685	Pass	Delivered
31,10,2016	0039/2016	17,10,2016	2X6 mm^2	7103	5310	1793	Pass	Delivered

After ISO Implementation (Year 2017)

BELAYAB CABLE

FINAL TEST (HV TEST)

DATE	CABLE TYPE	TEST VOLTAGE	PRODUCTION ORDER	DESCRIPTION	PRODUCTION DATE	START	END	LENGTH (mt)	STANDARED	SPOOL CODE	Q.C OPERATOR	H.V TEST RESULT	DELIVERED OR NOT	DELIVERY DATE	IF ANY REASON
03,01,2017	5x4 mm^2	3.5Kv	0086/2016	Cu/pvc/pp/pvc-r	31,12,2016	361	74	287	IEC-60502	No	Adem	Pass	Delivered	06,01,2017	
03,01,2017	5x4 mm^2	3.5Kv	0086/2016	Cu/pvc/pp/pvc-r	31,12,2016	0	601	601	IEC-60502	1000-60	Adem	Pass	Delivered	06,01,2017	
03,01,2017	2x1.5 mm^2	3.5Kv	0078/2016	cu/pvc/pvc-F	06,12,2016	279	0	279	IEC-60502	No	Adem	Pass	Delivered	01,01,2017	
04,01,2017	3x120+70 mm^2	3.5Kv	0083/2016-1	Cu/xlpe/pp/pvc-R	03,01,2017	1531	1025	506	IEC-60502	1600-166	Adem	Pass	Delivered	09,01,2017	
04,01,2017	2x6 mm^2	3.5Kv	0039/2016-18	Cu/xlpe/pvc-s	16,12,2016	2347	1715	632	IEC-60502	1200-88	Adem	Pass	Delivered	01,03,2017	
04,01,2017	2x6 mm^2	3.5Kv	0039/2016-18	Cu/xlpe/pvc-s	16,12,2016	1710	0	1710	IEC-60502	1200-84	Adem	Pass	Delivered	01,03,2017	
04,01,2017	2x6 mm^2	3.5Kv	0039/2016-18	Cu/xlpe/pvc-s	16,12,2016	3430	6398	2968	IEC-60502	1200-91	Adem	Pass	Delivered	01,03,2017	
04,01,2017	3x2.5 mm^2	3.5Kv	0082/2016	cu/pvc/pvc-F	20,12,2016	0	3520	3520	IEC-60502	1400-306	Adem	Pass	Delivered	06,01,2017	
04,01,2017	2x6 mm^2	3.5Kv	0039/2016-18	Cu/xlpe/pvc-s	19,12,2016	1688	2232	544	IEC-60502	1336	Adem	Pass	Delivered	01,03,2017	
05,01,217	3x120+70 mm^2	3.5Kv	0083/2016-1	Cu/xlpe/pp/pvc-r	03,01,2017	1024	519	505	IEC-60502	1600-158	Adem	Pass	Delivered	09,01,2017	
10,01,2017	3x150+70 mm^2	3.5Kv	0086/2016	Cu/pvc/pvc/pvc-r	02,01,2017	503	303	200	IEC-60502	No	Adem	Pass	Delivered	10,01,2017	
10,01,2017	4x4mm^2	3.5Kv	0086/2016	Cu/pvc/pp/pvc-r	05,01,2017	442	0	442	IEC-60502	800-48	Adem	Pass	Delivered	11,01,2017	
11,01,2017	3x150+70 mm^2	3.5Kv	0086/2016	Cu/pvc/pvc/pvc-r	02,01,2017	302	0	302	IEC-60502	No	Adem	Pass	Delivered		108 Mt delivered remaing 194 mt
11,01,2017	3x35+16 mm^2	3.5Kv	0086/2016	Cu/pvc/pp/pvc-r	06,01,2017	711	453	258	IEC-60502	1000-91	Adem	Pass	Delivered	11,01,2017	
11,01,2017	4x16 mm^2	3.5Kv	0058/2016-8	Cu/xlpe/pp/pvc-R	10,12,2016	0	513	513	IEC-60502	1000-72	Adem	Pass	Delivered	12,01,2017	13 meters left 500 delivered
11,01,2017	4x10 mm^2	3.5kv	0088/2016	Cu/pvc/pp/pvc-r	09,01,2017	0	175	175	IEC-60502	800-46	mente	Pass	Delivered	11,01,2017	
12,01,2017	3x50+25mm^2	3.5kv	0086/2016	Cu/pvc/pvc/pvc-r	09,01,2017	0	258	258	IEC-60502	No	Adem	Pass	Delivered	12,01,2017	
12,01,2017	5x6 mm^2	3.5kv	0086/2016	Cu/pvc/pp/pvc-r	11,01,2017	0	212	212	IEC-60502	No	Adem	Pass	Delivered	12,01,2017	
12,01,2017	5x10 mm^2	3.5kv	0086/2016	Cu/pvc/pp/pvc-r	09,01,2017	0	500	500	IEC-60502	1000-75	Adem	Pass	Delivered	12,01,2017	
12,01,2017	4x10 mm^2	3.5kv	0088/2016	Cu/pvc/pp/pvc-r	09,01,2017	176	1022	846	IEC-60502	No	Adem	Pass	Delivered	02,02,2017	
12,01,2017	3x35+16 mm^2	3.5kv	0088/2106	Cu/pvc/pp/pvc-r	06,01,2017	49	249	200	IEC-60502	800-45	Mente	Pass	Delivered	13,01,2017	
13,01,2017	3x35+16 mm^2	3.5kv	0088/2106	Cu/pvc/pp/pvc-r	11,01,2017	500	0	500	IEC-60502	1200-90	Adem	Pass	Delivered	13,01,2017	
13,01,2017	4x16 mm^2	3.5kv	0058/2106	Cu/XLPE/pp/pvc-r	10,12,2016	514	1031	517	IEC-60502	1000-77	Adem	FAIL			
13,01,2017	5x10 mm^2	3.5kv	001/2017	Cu/pvc/pvc/pvc-r	11,01,2017	0	765	765	IEC-60502	1200-89	Adem	Pass	Delivered		
13,01,2017	5x10 mm^2	3.5kv	001/2017	Cu/pvc/pvc/pvc-r	11,01,2017	766	999	233	IEC-60502	800-42	Adem	Pass	Delivered	25,01,2017	150+83
13,01,2017	3x50+25 mm^2	3.5kv	0086/2016	Cu/pvc/pvc/pvc-r	09,01,2017	259	497	238	IEC-60502	1000-78	Adem	Pass	Delivered	17,01,2017	238 mt remaing 38 mt
13,01,2017	3x35+16 mm^2	3.5kv	0086/2016	Cu/pvc/pp/pvc-r	06,01,2017	452	254	198	IEC-60502	800-3	Adem	Pass	Delivered	25,01,2017	100+98
13,01,2017	3x300+150 mm^2	3.5kv	0001/2017	Cu/pvc/pvc/pvc-r	13,01,2017	136	0	136	IEC-60502	No	Tewabe	Pass			
16,01,2017	3x2.5 mm^2	2.5kv	0082/2016	cu/pvc/pvc-f	20,12,2016	4859	5105	246	IEC-60502	No	Adem	Pass			The drum has no drum number.
16,01,2017	2x6 mm^2	3.5kv	0039/2016	Cu/xlpe/pvc-s	21,09,2016	4069	3887	182	IEC-60502	No	Adem	Pass			The drum has no drum number.
16,01,2017	2x6 mm^2	3.5kv	0039/2016	Cu/xlpe/pvc-s	21,09,2016	no	3886	no	IEC-60502	No	Adem	Pass			The drum has no drum number.

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
77	04,07,2017	3x10 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	24,06,2017	1686	3	1683	IEC-60502	1400-387	Adem	Pass	Delivered	07,07,2017	
78	04,07,2017	3x10 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	24,06,2017	5166	3389	1777	IEC-60502	1600-215	Adem	Pass	Delivered	07,07,2017	
79	06,07,2017	3x50+25 mm²	3.5Kv	0083/2016-1	Cu/xlpe/pp/pvc-r	03,07,2017	1290	646	644	IEC-60502	No	Adem	Pass	Delivered	14,07,2017	
80	11,07,2017	3x240+120 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	06,07,2017	292	137	155	IEC-60502	1400-389	Tewabe	Pass	Delivered	11,07,2017	
81	11,07,2017	3x240+120 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	06,07,2017	456	293	163	IEC-60502	1600-216	Tewabe	Pass	Delivered	11,07,2017	
82	11,07,2017	3x240+120 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	06,07,2017	105	0	105	IEC-60502	No	Tewabe	Pass	Delivered	11,07,2017	6 mt remaing
83	11,07,2017	3x240+120 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	06,07,2017	136	0	136	IEC-60502	1400-391	Tewabe	Pass	Delivered	11,07,2017	
84	11,07,2017	3x240+120 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	06,07,2017	454	293	161	IEC-60502	1400-390	Tewabe	Pass	Delivered	11,07,2017	
85	11,07,2017	3x240+120 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	06,07,2017	292	106	186	IEC-60502	1600-217	Tewabe	Pass	Delivered	11,07,2017	
86	11,07,2017	5X10 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	11,07,2017	2000	0	2000	IEC-60502	1600-215	Tewabe	Pass	Delivered	11,07,2017	
87	11,07,2017	5X10 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	11,07,2017	4139	2708	1431	IEC-60502	1400-393	Tewabe	Pass	Delivered	11,07,2017	
88	11,07,2017	3X4 mm²	3.5Kv	0031/2017	Cu/pvc/pvc-R	08,07,2017	2486	2153	335	IEC-60502	800-113	Tewabe	Pass	Delivered	11,07,2017	
89	13,07,2017	5X10 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	11,07,2017	2703	2001	702	IEC-60502	1400-349	Menta	Pass	Delivered	14,07,2017	
90	13,07,2017	5X10 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	13,07,2017	892	300	592	IEC-60502	1200-130	Menta	Pass	Delivered	14,07,2017	
91	13,07,2017	5X10 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	11,07,2017	991	0	991	IEC-60502		Menta	Pass	Delivered		
92	13,07,2017	3x300+150 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	20,06,2017	411	165	246	IEC-60502		Abinet	Pass	Delivered	14,07,2017	
93	13,07,2017	3x300+150 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	20,06,2017	163	0	163	IEC-60502	1800-114	Menta	Pass	Delivered	14,07,2017	
94	13,07,2017	3x300+150 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	20,06,2017	164	0	164	IEC-60502	1800-116	Menta	Fail			Have surface problem
95	14,07,2017	3x150+70 mm²	3.5Kv		Cu/pvc/pvc/pvc-R	19,10,2015	695	610	85	IEC-60502	1400-341	Tewabe	Pass			After taking a corrective action
96	14,07,2017	3x120+70 mm²	3.5Kv	066/2016	Cu/pvc/pvc/pvc-R	26,10,2017	107	0	107	IEC-60502	1400-299	Tewabe	Fail			Have fault at 106 mt
97	14,07,2017	4x16 mm²	3.5Kv	0030/2017	Cu/pvc/pvc/pvc-R	26,05,2017	2412	1614	798	IEC-60502	0-1200-15	Tewabe	Pass	Delivered	15,07,2017	After taking a corrective action
98	15,07,2017	4x16 mm²	3.5Kv	0030/2017	Cu/pvc/pvc/pvc-R	26,05,2017	1613	1209	404	IEC-60502	1000-122	Tewabe	Pass	Delivered	15,07,2017	
99	15,07,2017	4x16 mm²	3.5Kv	0030/2017	Cu/pvc/pvc/pvc-R	26,05,2017	1208	1031	177	IEC-60502	800-131	Tewabe	Fail			
100	15,07,2017	5x10 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	13,07,2017	299	0	299	IEC-60502	1000-132	Tewabe	Pass	Delivered	26,07,2017	
101	15,07,2017	5x16 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	14,07,2017	513	322	191	IEC-60502	800-133	Tewabe	Pass	Delivered	21,07,2017	
102	15,07,2017	5x16 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	14,07,2017	321	0	321	IEC-60502	1000-134	Tewabe	Pass	Delivered	26,07,2017	
103	15,07,2017	3x25+16 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	13,07,2017	147	0	147	IEC-60502	800-132	Tewabe	Pass	Delivered	21,07,2017	
104	17,07,2017	3x25+16 mm²	3.5Kv	026/2017	Cu/pvc/pvc/pvc-R	13,07,2017	370	0	370	IEC-60502	1000-135	Tewabe	Pass	Delivered	20,08,2017	
105	18,07,2017	3x10 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	05,07,2017	5167	3168	1999	IEC-60502	1400-394	Tewabe	Pass	Delivered	19,07,2017	
106	18,07,2017	3x10 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	05,07,2017	3167	1167	2000	IEC-60502	1400-398	Tewabe	Fail			Have fault at 2999 mt
107	18,07,2017	3x25+16 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	15,07,2017	1483	0	1483	IEC-60502	1600-224	Tewabe	Pass	Delivered	18,07,2017	
108	18,07,2017	3x25+16 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	15,07,2017	2984	1484	1500	IEC-60502	1600-223	Tewabe	Fail			Have fault at 2184 mt
109	18,07,2017	3x25+16 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	15,07,2017	2129	984	1145	IEC-60502	No	Tewabe	Pass	Delivered	29,07,2017	
110	18,07,2017	3x25+16 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	15,07,2017	982	0	982	IEC-60502	1400-399	Tewabe	Pass	Delivered	18,07,2017	
111	19,07,2017	3x25+16 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	14,07,2017	2371	1171	1200	IEC-60502	1400-386	Tewabe	Pass	Delivered	29,07,2017	
112	19,07,2017	3x25+16 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	14,07,2017	1170	2	1168	IEC-60502	1400-591	Tewabe	Fail	Delivered	03,10,2017	have fault at start make it rewin
113	19,07,2017	3x4 mm²	3.5Kv	0031/2017	Cu/pvc/pvc/pvc-R	14,07,2017	2977	0	2977	IEC-60502	1400-402	Tewabe	Pass	Delivered	19,07,2017	
114	20,07,2017	3x300+150 mm²	3.5Kv	0039/2017	Cu/pvc/pvc/pvc-R	18,07,2017	246	0	246	IEC-60502	2000-005	Adem	Pass	Delivered	20,07,2017	

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After ISO Implementation (Year 2018)

BELAYAB CABLE

FINAL TEST (HV TEST)

DATE	CABLE TYPE	TEST VOLTAGE	PRODUCTION ORDER	DESCRIPTION	PRODUCTION DATE	START	END	LENGTH (mt)	STANDARED	SPOOL CODE	Q.C OPERATOR	H.V TEST RESULT	DELIVERED OR NOT	DELIVERY DATE	IF ANY REASON
01,03,2018	3x120+70 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	24,02,2018	5	505	500	IEC-60502	1600-172	Adem	Pass	delivered	07,03,2018	
01,03,2018	3x120+70 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	24,02,2018	506	1009	503	IEC-60502	1600-173	Adem	Pass	delivered	08,03,2018	
02,03,2018	3x300+150 mm^2	3.5Kv	0001/2018	Cu/pvc/pvc/pvc-R	18,02,2018	30	0	30	IEC-60502	No	Abinet	Pass	delivered	04,03,2018	
03,03,2018	3x120+70 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	01,03,2018	500	0	500	IEC-60502	1600-171	Adem	Pass	delivered	07,03,2018	
03,03,2018	3x120+70 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	03,03,2018	501	1012	511	IEC-60502	No	Adem	Pass	delivered	09,03,2018	
03,03,2018	3x95+50 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	03,03,2018	500	0	500	IEC-60502	1400-313	Adem	Pass	delivered	08,03,2018	
03,03,2018	3x95+50 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,03,2018	500	0	500	IEC-60502	1400-345	Abinet	Pass	delivered	07,03,2018	
03,03,2018	3x95+50 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,03,2018	1000	501	499	IEC-60502	1400-300	Abinet	Pass	delivered	07,03,2018	
04,03,2018	3x95+50 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,03,2018	992	501	491	IEC-60502	1400-310	Abinet	Pass	delivered	07,03,2018	
06,03,2018	3x95+50 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,03,2018	998	501	497	IEC-60502	1400-309	Adem	Pass	delivered	10,03,2018	
06,03,2018	3x95+50 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,03,2018	500	0	500	IEC-60502	1400-317	Adem	Pass	delivered	10,03,2018	
06,03,2018	3x95+50 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,03,2018	557	0	557	IEC-60502	1400-314	Adem	Pass	delivered	11,03,2018	
06,03,2018	4X16 mm^2	3.5Kv	006/2018	Cu/pvc/pvc/pvc-R	03,03,2018	1100	0	1100	IEC-60502	0-1400-01	Adem	Pass	delivered	13,03,2018	541 mt Delivered 559 mt remaing
06,03,2018	4X16 mm^2	3.5Kv	006/2018	Cu/pvc/pvc/pvc-R	03,03,2018	2930	1101	1829	IEC-60502	0-1600-03	Adem	Pass	delivered	09,03,2018	
06,03,2018	5X10 mm^2	3.5Kv	007/2018	Cu/pvc/pvc/pvc-R	04,02,2018	719	0	719	IEC-60502	1200-79	Adem	Pass	delivered	20,02,2018	Have printer problem on the date
07,03,2018	5X10 mm^2	3.5Kv	007/2018	Cu/pvc/pvc/pvc-R	04,02,2018	998	723	275	IEC-60502	800-66	Adem	Pass	delivered	18,02,2018	Have printer problem on the date , remaing 75 m
07,03,2018	5X16 mm^2	3.5Kv	007/2018	Cu/pvc/pvc/pvc-R	06,03,2018	1014	251	763	IEC-60502	1400-327	Adem	Pass	delivered	18,03,2018	
07,03,2018	5X16 mm^2	3.5Kv	007/2018	Cu/pvc/pvc/pvc-R	06,03,2018	250	0	250	IEC-60502	1000-89	Adem	Pass	delivered	17,03,2018	
07,03,2018	4X16 mm^2	3.5Kv	002/2018	Cu/pvc/pvc/pvc-R	04,02,2018	2027	0	2027	IEC-60502	1600-93	Adem	Pass	delivered	09,02,2018	Have printer problem on the date
07,03,2018	4X2.5 mm^2	2.5Kv	002/2018	Cu/pvc/pvc-F	13,03,2018	348	18	330	IEC-60227	0-600-1	Adem	Pass	delivered		
08,03,2018	4X16 mm^2	3.5Kv	006/2018	Cu/pvc/pvc/pvc-R	04,02,2018	2103	0	2103	IEC-60502	0-1800-01	Abinet	Pass	delivered	09,02,2018	Have printer problem on the date
08,03,2018	3X25+16 mm^2	3.5Kv	007/2018	Cu/pvc/pvc/pvc-R	06,03,2018	1255	0	1255	IEC-60502	0-1600-5	Abinet	Pass	delivered	18,03,2018	
08,03,2018	3X120+70 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,03,2018	500	0	500	IEC-60502	0-1800-9	Adem	Pass	delivered	18,03,2018	
09,03,2018	3X120+70 mm^2	3.5Kv	0083/2018	Cu/xlpe/pp/pvc-R	02,02,2018	512	0	512	IEC-60502	0-1800-8	Abinet	Pass	delivered	20,03,2018	
09,03,2018	5x4 mm^2	3.5Kv	0086/2017	Cu/pvc/pvc/pvc-R	31,12,2017	69	0	69	IEC-60502	Air coil	Adem	Pass	delivered	21,02,2018	
10,03,2018	3X120+70 mm^2	3.5Kv	008/2018	Cu/pvc/pvc/pvc-R	08,02,2018	90	0	90	IEC-60502	No	Adem	Pass	delivered	10,03,2018	

Before ISO 2015 | Before ISO 2016 | After ISO 2017 | **After ISO 2018** | After ISO 2019 | After ISO 2020 | Analaysis Before & After Print

67	01,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	25,11,2018	4033	3384	649	IEC-60502	1000-10	Siraj	Pass	Delivered	07,12,2018	Have cu oxidation problem,644 MT Delivere
68	02,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	29,11,2018	4148	2071	2077	IEC-60502	1400-671	Siraj	Pass	Delivered	04,12,2018	
69	02,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	29,11,2018	2070	0	2070	IEC-60502	1400-673	Siraj	Pass	Delivered	04,12,2018	
70	02,12,2018	5X10 mm^2	3.5 Kv	071/2018	Cu/pvc/pp/pvc-R	28,11,2018	1510	0	1510	IEC-60502	1400-669	Siraj	Pass	Delivered	03,12,2018	
71	04,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	29,11,2018	4058	2015	2043	IEC-60502	1400-677	Siraj	Pass	Delivered	05,12,2018	
72	04,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	29,11,2018	2022	0	2022	IEC-60502	1400-672	Siraj	Pass	Delivered	07,12,2018	2016 MT
73	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	2006	0	2006	IEC-60502	1400-678	Siraj	Pass	Delivered	07,12,2018	
74	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	2102	0	2102	IEC-60502	1400-679	Siraj	Pass	Delivered	07,12,2018	
75	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	06,12,2018	2029	4	2025	IEC-60502	1400-676	Siraj	Pass	Delivered	07,12,2018	
76	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	06,12,2018	4065	2030	2035	IEC-60502	1400-679	Siraj	Pass	Delivered	07,12,2018	
77	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	5825	3825	2000	IEC-60502	1400-684	Siraj	Pass	Delivered	06,12,2018	
78	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	4177	2177	2000	IEC-60502	1400-680	Siraj	Pass	Delivered	07,12,2018	
79	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	6178	4178	2000	IEC-60502	1400-681	Siraj	Pass	Delivered	07,12,2018	
80	07,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	6185	5827	358	IEC-60502	800-352	Siraj	Pass	Delivered	07,12,2018	
81	08,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	1669	0	1669	IEC-60502	1400-692	Shambel	Pass	Delivered	07,12,2018	
82	08,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	06,12,2018	1072	0	1072	IEC-60502	1200-333	Shambel	Pass	Delivered	06,12,2018	
83	08,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	06,12,2018	2133	1075	1058	IEC-60502	1200-337	Shambel	Pass	Delivered	06,12,2018	
84	08,12,2018	5x6 mm^2	3.5 Kv	0065/2018	Cu/pvc/pvc/pvc-R	06,12,2018	1441	0	1441	IEC-60502	1400-693	Shambel	Pass	Delivered	06,12,2018	
85	08,12,2018	3X10 mm^2	3.5 Kv	0031/2018	Cu/pvc/pvc/pvc-R	05,12,2018	3824	1677	2147	IEC-60502	1400-682	Shambel	Pass	Delivered	07,12,2018	
86	11,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	09,12,2018	0	395	395	IEC-60502	1600-296	Tewabe	Pass	Delivered	12,12,2018	
87	11,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	09,12,2018	792	396	396	IEC-60502	1600-295	Tewabe	Pass	Delivered	12,12,2018	
88	12,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	11,12,2018	397	0	397	IEC-60502	1600-299	Siraj	Pass	Delivered	14,12,2018	
89	12,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	11,12,2018	418	22	396	IEC-60502	1600-297	Siraj	Pass	Delivered	14,12,2018	
90	12,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	11,12,2018	21	0	21	IEC-60502	1200-339	Siraj	Pass	Delivered	14,12,2018	
91	12,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	09,12,2018	36	0	36	IEC-60502	1200-343	Shambel	Pass	Delivered	18,12,2018	
92	12,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	09,12,2018	437	37	400	IEC-60502	1600-298	Shambel	Pass	Delivered	18,12,2018	
93	12,12,2018	3x150+70 mm^2	3.5 Kv	0054/2018	Cu/pvc/pvc/pvc-R	11,12,2018	600	225	375	IEC-60502	1600-300	Shambel	Pass	Delivered	19,12,2018	
94	14,12,2018	3x25+16 mm^2	3.5 Kv	0073/2018	Cu/pvc/pvc/pvc-R	13,12,2018	1009	0	1009	IEC-60502	1400-697	Siraj	Pass	Delivered	19,12,2018	
95	15,12,2018	3x25+16 mm^2	3.5 Kv	0073/2018	Cu/pvc/pvc/pvc-R	13,12,2018	2834	1011	1823	IEC-60502	1800-142	Shambel	Pass	Delivered	19,12,2018	
96	15,12,2018	3x25+16 mm^2	3.5 Kv	0073/2018	Cu/pvc/pvc/pvc-R	13,12,2018	3084	2836	248	IEC-60502	1000-225	Shambel	Pass	Delivered	19,12,2018	
97	18,12,2018	5X6 mm^2	3.5 Kv	0069/2018	Cu/pvc/pvc/pvc-R	13,12,2018	1012	1	1011	IEC-60502	1200-355	Shambel	Pass	Delivered	19,12,2018	
98	18,12,2018	3X4 mm^2	3.5 Kv	0073/2018	Cu/pvc/pvc/pvc-R	14,12,2018	1305	508	797	IEC-60502	1000-226	Shambel	Pass	Delivered	20,12,2018	
99	18,12,2018	3X4 mm^2	3.5 Kv	0073/2018	Cu/pvc/pvc/pvc-R	14,12,2018	507	70	437	IEC-60502	800-390	Shambel	Pass	Delivered	20,12,2018	

Before ISO 2015 | Before ISO 2016 | After ISO 2017 | **After ISO 2018** | After ISO 2019 | After ISO 2020 | Analaysis Before & After Print

After ISO Implementation (Year 2019)

BELAYAB CABLE

FINAL TEST (HV TEST)

DATE	CABLE TYPE	TEST VOLTAGE	PRODUCTION ORDER	DESCRIPTION	RATED VOLTAGE	PRODUCTION DATE	START	END	LENGTH (mt)	STANDARED	SPOOL CODE	Q.C OPERATOR	H.V TEST RESULT	DELIVERED OR NOT	DELIVERY DATE	IF ANY REASON
01,04,2019	3x2.5 mm²	2.5 Kv	0014/2019	Cu/pvc/pvc-f	300/500 V	30,03,2019	1254	186	1068	IEC-60227	1000-100	Tewabe	Pass	Delivered	01,04,2019	
01,04,2019	3x2.5 mm²	2.5 Kv	0014/2019	Cu/pvc/pvc-f	300/500 V	30,03,2019	1760	1255	505	IEC-60227	No	Tewabe	Pass	Delivered	03,04,2019	
01,04,2019	3x2.5 mm²	2.5 Kv	0014/2019	Cu/pvc/pvc-f	300/500 V	30,03,2019	186	0	186	IEC-60227	Air coil	Tewabe	Pass	Delivered	03,04,2019	
01,04,2019	4x2.5 mm²	2.5 Kv	0014/2019	Cu/pvc/pvc-f	300/500 V	29,03,2019	119	0	119	IEC-60227	600-3	Tewabe	Pass	Delivered	03,04,2019	
01,04,2019	3x2.5 mm²	2.5 Kv	0014/2019	Cu/pvc/pvc-f	300/500 V	30,03,2019	623	0	623	IEC-60227	800-38	Tewabe	Pass	Delivered	03,04,2019	
01,04,2019	3x2.5 mm²	2.5 Kv	0014/2019	Cu/pvc/pvc-f	300/500 V	30,03,2019	2000	0	2000	IEC-60227	1000-107	Tewabe	Pass	Delivered	03,04,2019	
05,04,2019	2x6 mm²	3.5 Kv	0039/2019-20	Cu/xlpe/pvc-s	0.6/1 Kv	03,10,2018	6568	6225	343	IEC-60502	No	Abinet	Pass	Delivered	03,04,2019	
05,04,2019	2x6 mm²	3.5 Kv	0039/2019-20	Cu/xlpe/pvc-s	0.6/1 Kv	16,12,2018	2470	0	291	IEC-60502	No	Abinet	Pass	Delivered	01,04,2019	
06,04,2019	3x240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	391	271	120	IEC-60502	1600-9	Menta	Pass	Delivered	06,04,2019	
06,04,2019	3x240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	512	392	120	IEC-60502	1600-10	Menta	Pass	Delivered	06,04,2019	
06,04,2019	3x240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	120	0	120	IEC-60502	1600-6	Menta	Pass	Delivered	06,04,2019	
06,04,2019	3x240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	97	0	97	IEC-60502	No	Menta	Pass	Delivered	10,04,2019	
06,04,2019	3x240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	241	121	120	IEC-60502	No	Dawit	Pass	Delivered	06,04,2019	
07,04,2019	3x240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	200	86	114	IEC-60502	0-1400-09	Tewabe	Pass	Delivered	10,04,2019	
07,04,2019	3x2.5 mm²	3.5 Kv	013/2019	Cu/pvc/pvc/pvc-f	0.6/1 Kv	25,02,2019	2113	1892	221	IEC-60502	No	Tewabe	Pass			
07,04,2019	3x2.5 mm²	3.5 Kv	013/2019	Cu/pvc/pvc/pvc-f	0.6/1 Kv	25,02,2019	1890	1113	777	IEC-60502	1000-100	Tewabe	Pass	Delivered	10,04,2019	
08,04,2019	3X95+50 mm²	3.5 Kv	0083/2019-2	Cu/xlpe/pp/pvc-r	0.6/1 Kv	07,04,2019	210	0	210	IEC-60502	1400-365	Tewabe	Pass			
11,04,2019	3x240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	31	0	31	IEC-60502	1400-315	Adem	Pass			
11,04,2019	3X95+50 mm²	3.5 Kv	0083/2019-2	Cu/xlpe/pp/pvc-r	0.6/1 Kv	10,04,2019	219	0	219	IEC-60502	1400-354	Tewabe	Pass			
13,04,2019	3X120+70 mm²	3.5 Kv	0083/2019-8	Cu/xlpe/pp/pvc-r	0.6/1 Kv	07,04,2019	483	0	483	IEC-60502	0-1600-10	Adem	Pass	Delivered	20,04,2019	
13,04,2019	3X120+70 mm²	3.5 Kv	0083/2019-8	Cu/xlpe/pp/pvc-r	0.6/1 Kv	07,04,2019	523	0	523	IEC-60502	0-1600-11	Adem	Pass	Delivered	20,04,2019	
13,04,2019	3X240+120 mm²	3.5 Kv	016/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	03,04,2019	200	0	200	IEC-60502	N-1600-174	Adem	Pass	Delivered	13,04,2019	
13,04,2019	4X16 mm²	3.5 Kv	0017/2019-1	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	02,04,2019	4085	2051	2034	IEC-60502	N-1600-175	Adem	Pass	Delivered	13,04,2019	
13,04,2019	4X16 mm²	3.5 Kv	0017/2019-1	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	02,04,2019	2050	0	2050	IEC-60502	N-1600-176	Adem	Fail			263 MT PASS & 1786 MT
18,04,2019	3X70+35 mm²	3.5 Kv	0017/2019-1	Cu/pvc/pvc/pvc-r	0.6/1 Kv	11,04,2019	500	0	500	IEC-60502	N-1600-183	Abinet	Pass			
18,04,2019	3X70+35 mm²	3.5 Kv	0017/2019-1	Cu/pvc/pvc/pvc-r	0.6/1 Kv	11,04,2019	1070	501	569	IEC-60502	N-1600-181	Abinet	Pass	Delivered	19,08,2019	
18,04,2019	5X16 mm²	3.5 Kv	0018/2019	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	13,04,2019	1744	0	1744	IEC-60502	N-1600-186	Abinet	Pass	Delivered	18,08,2019	
19,04,2019	4X70 mm²	3.5 Kv	0017/2019	Cu/pvc/pvc/pvc-r	0.6/1 Kv	18,04,2019	806	72	734	IEC-60502	0-1800-12	Tewabe	Pass			
20,04,2019	4X16 mm²	3.5 Kv	0017/2019-1	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	02,04,2019	1573	0	1573	IEC-60502	1400-360	Abinet	Pass	Delivered	09,05,2019	
20,04,2019	4X16 mm²	3.5 Kv	0017/2019-1	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	12,04,2019	2132	0	2132	IEC-60502	N-1600-185	Abinet	Pass	Delivered	23,05,2019	
20,04,2019	4X16 mm²	3.5 Kv	0017/2019-1	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	12,04,2019	1953	0	1953	IEC-60502	N-1600-182	Abinet	Fail			Have fault b/n 3849-3850 mt, after we take a

Before ISO 2015 | Before ISO 2016 | After ISO 2017 | After ISO 2018 | **After ISO 2019** | After ISO 2020 | Analaysis Before & After Print

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
78	02,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	28,07,2019	2125	0	2125	IEC-60502	1400-430	Menta	Pass	Delivered	08,08,2019	
79	02,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	28,07,2019	1981	0	1981	IEC-60502	1400-427	Menta	Pass	Delivered	08,08,2019	
80	02,08,2019	3X185+95 mm^2	3.5Kv	0083/2019-2	Cu/xlpe/pp/pvc-r	0.6/1 Kv	31,07,2019	996	496	500	IEC-60502	1600-233	Menta	Pass	Delivered	08,08,2019	
81	02,08,2019	3X185+95 mm^2	3.5Kv	0083/2019-3	Cu/xlpe/pp/pvc-r	0.6/1 Kv	31,07,2019	1002	501	501	IEC-60502	1600-235	Menta	Pass	Delivered	08,08,2019	
82	03,08,2019	3X185+95 mm^2	3.5Kv	0083/2019-2	Cu/xlpe/pp/pvc-r	0.6/1 Kv	31,07,2019	495	0	495	IEC-60502	1600-232	Tewabe	Pass	Delivered	08,08,2019	
83	03,08,2019	4x16 mm^2	3.5Kv	0040/2019	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	02,08,2019	1205	351	854	IEC-60502	1200-149	Tewabe	Pass	Delivered	03,08,2019	
84	03,08,2019	4x16 mm^2	3.5Kv	0040/2019	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	02,08,2019	2383	1285	1098	IEC-60502	1400-431	Tewabe	Pass	Delivered	03,08,2019	948 mt delivered
85	03,08,2019	4x6 mm^2	3.5Kv	039/2019	Cu/pvc/pvc/pvc-f	0.6/1 Kv	02,08,2019	829	269	560	IEC-60502	1000-139	Tewabe	Pass	Delivered	20,08,2019	
86	03,08,2019	3X120+70 mm^2	3.5Kv	040/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	02,08,2019	421	30	383	IEC-60502	1600-234	Menta	Pass		04,08,2019	27 mt delivered
87	04,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	2070	0	2070	IEC-60502	1400-432	Tewabe	Pass	Delivered	08,08,2019	
88	04,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	4111	2071	2040	IEC-60502	1400-433	Tewabe	Pass	Delivered	08,08,2019	
89	04,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	6152	4112	2040	IEC-60502	1400-434	Tewabe	Pass	Delivered	08,08,2019	
90	04,08,2019	3X70+35 mm^2	3.5Kv	0026/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	23,06,2019	429	0	429	IEC-60502	1600-236	Tewabe	Pass	Delivered	10,08,2019	
91	05,08,2019	4x6 mm^2	3.5Kv	039/2019	Cu/pvc/pvc/pvc-f	0.6/1 Kv	02,08,2019	957	831	126	IEC-60502	800-138	Tewabe	Pass	Delivered	20,08,2019	
92	05,08,2019	3X4 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	28,07,2019	1624	0	1624	IEC-60502	1200-145	Tewabe	Pass	Delivered	20,08,2019	
93	05,08,2019	3x240+120 mm^2	3.5Kv	0040/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	01,08,2019	430	230	200	IEC-60502	1600-238	Tewabe	Pass	Delivered	27,08,2019	71 mt delivered and 85 mt delivered
94	05,08,2019	3x240+120 mm^2	3.5Kv	0040/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	01,08,2019	229	0	229	IEC-60502	1600-237	Menta	Fail			135 mt delivered
95	05,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	4174	2087	2087	IEC-60502	1400-437	Menta	Pass	Delivered	10,08,2019	
96	05,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	5827	4176	1651	IEC-60502	1400-436	Menta	Pass	Delivered	08,08,2019	
97	05,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	6184	5829	355	IEC-60502	800-153	Menta	Pass	Delivered	20,08,2019	
98	05,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	4102	2113	1989	IEC-60502	1400-441	Menta	Pass	Delivered	08,08,2019	
99	05,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	2110	0	2110	IEC-60502	1400-445	Menta	Pass	Delivered	08,08,2019	
100	05,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	04,08,2019	2067	0	2067	IEC-60502	1400-438	Menta	Pass	Delivered	10,08,2019	
101	08,08,2019	3X185+95 mm^2	3.5Kv	0083/2019	Cu/xlpe/pp/pvc-r	0.6/1 Kv	04,08,2019	995	495	500	IEC-60502	1600-239	Tewabe	Pass	Delivered	08,09,2019	
102	08,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	4096	2034	2062	IEC-60502	1400-446	Tewabe	Pass	Delivered	10,08,2019	
103	08,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	2033	0	2033	IEC-60502	1400-443	Tewabe	Pass	Delivered	10,08,2019	
104	09,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	03,08,2019	2086	0	2086	IEC-60502	1400-440	Tewabe	Pass	Delivered	10,08,2019	
105	09,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	05,08,2019	6207	4164	2043	IEC-60502	1400-448	Tewabe	Pass	Delivered	10,08,2019	
106	09,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	05,08,2019	2145	0	2145	IEC-60502	1400-449	Tewabe	Pass	Delivered	10,08,2019	
107	09,08,2019	3X185+95 mm^2	3.5Kv	0083/2019	Cu/xlpe/pp/pvc-r	0.6/1 Kv	04,08,2019	1001	501	500	IEC-60502	1600-242	Tewabe	Pass	Delivered	13,09,2019	
108	09,08,2019	3X25+16 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	27,07,2019	10192	8537	1655	IEC-60502	1800-137	Tewabe	Fail	Delivered	29,09,2019	After we make a corrective we got 1655 mt
109	10,08,2019	3X185+95 mm^2	3.5Kv	0083/2019	Cu/xlpe/pp/pvc-r	0.6/1 Kv	04,08,2019	500	0	500	IEC-60502	1600-231	Tewabe	Pass	Delivered	17,08,2019	
110	10,08,2019	5X10 mm^2	3.5Kv	0041/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	04,08,2019	4138	2578	1560	IEC-60502	1400-455	Tewabe	Pass	Delivered	12,08,2019	
111	10,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	07,08,2019	1987	438	1549	IEC-60502	1400-16	Tewabe	Pass	Delivered	12,08,2019	
112	10,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	08,08,2019	6068	4046	2022	IEC-60502	1400-450	Tewabe	Pass	Delivered	12,08,2019	
113	10,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	08,08,2019	4045	2023	2022	IEC-60502	1400-451	Tewabe	Pass	Delivered	12,08,2019	
114	10,08,2019	3X10 mm^2	3.5Kv	0031/2019	Cu/pvc/pvc/pvc-R	0.6/1 Kv	08,08,2019	2022	0	2022	IEC-60502	1400-452	Tewabe	Pass	Delivered	12,08,2019	
115	10,08,2019	2X1.5 mm^2	2.5kV	0044/2019	Cu/pvc/pvc-f	300/500 V	09,08,2019	8441	7114	1327	IEC-60227	800-158	Menta	Pass			

After ISO Implementation (Year 2020)

BELAYAB CABLE

FINAL TEST (HV TEST)

DATE	CABLE TYPE	TEST VOLTAGE	PRODUCTION ORDER	DESCRIPTION	RATED VOLTAGE	PRODUCTION DATE	START	END	LENGTH (mt)	STANDARED	SPOOL CODE	Q.C OPERATOR	H.V TEST RESULT	DELIVERED OR NOT	DELIVERY DATE	IF ANY REASON
02,05,2020	4X10 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	26,04,2020	593	0	593	IEC-60502	1200-105	Tewabe	Pass	Delivered	03,05,2020	
02,05,2020	5X6 mm^2	3.5 Kv	0021/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	29,04,2020	2438	0	2438	IEC-60502	1600-194	Tewabe	Pass	Delivered	04,05,2020	
03,05,2020	3x95+50 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	02,05,2020	604	0	604	IEC-60502	1800-113	Tewabe	Pass	Delivered	03,05,2020	
03,05,2020	4x70 mm^2	3.5 Kv	0022/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	01,05,2020	805	5	800	IEC-60502	1800-117	Tewabe	Pass	Delivered	04,05,2020	
04,05,2020	4X10 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	27,04,2020	932	0	932	IEC-60502	1200-103	Abinet	Pass	Delivered	01,05,202	
04,05,2020	3x185+95 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	02,05,2020	203	0	203	IEC-60502	1600-196	Tewabe	Pass	Delivered	01,05,2020	
05,05,2020	5X6 mm^2	2.5 Kv	0002/2020	Cu/pvc/pvc-f	300/500 V	13,04,2020	1938	0	1938	IEC-60227	1400-361	Tewabe	Pass	Delivered		500 MT DELIVERED AT DATE 24,05,2020
05,05,2020	3X35+16 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	22,04,2020	108	2	106	IEC-60502	No	Tewabe	Pass	Delivered	06,05,2020	
05,05,2020	3X95+50 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	02,05,2020	686	0	686	IEC-60502	2000-03	Tewabe	Pass	Delivered	06,05,2020	
05,05,2020	4X6 mm^2	2.5 Kv		Cu/pvc/pvc-f	300/500 V	13,04,2020	81	0	81	IEC-60227	Air coil	Tewabe	Pass	Delivered	06,05,2020	
06,05,2020	3x150+70 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	04,05,2020	204	0	204	IEC-60502	1600-199	Menta	Pass	Delivered		50 mt delivered
06,05,2020	3x4 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc-s	0.6/1 Kv	04,05,2020	1560	0	1560	IEC-60502	1000-119	Menta	Pass	Delivered	07,05,2020	
06,05,2020	3x4 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc-s	0.6/1 Kv	04,05,2020	3389	1561	1828	IEC-60502	0-1200-004	Tewabe	Pass	Delivered	07,05,2020	
06,05,2020	3x300+150 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	04,05,2020	120	0	120	IEC-60502	1600-202	Menta	Pass	Delivered	06,05,2020	
06,05,2020	3x300+150 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	04,05,2020	257	107	150	IEC-60502	1600-202	Tewabe	Pass	Delivered	06,05,2020	
06,05,2020	5x4 mm^2	3.5 Kv	018/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	05,05,2020	1569	1462	107	IEC-60502	800-102	Tewabe	Pass	Delivered	29,06,2020	
06,05,2020	5x4 mm^2	3.5 Kv	018/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	05,05,2020	1765	1570	195	IEC-60502	800-104	Tewabe	Pass	Delivered	09,05,2020	
06,05,2020	5x4 mm^2	3.5 Kv	018/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	05,05,2020	1461	657	804	IEC-60502	0-1200-17	Tewabe	Pass	Delivered		
06,05,2020	5x4 mm^2	3.5 Kv	018/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	04,05,2020	656	0	656	IEC-60502	1000-115	Tewabe	Pass	Delivered	09,05,2020	
08,05,2020	3x300+150 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	04,05,2020	106	0	106	IEC-60502	1600-191	Adem	Pass	Delivered		
08,05,2020	3x300+150 mm^2	3.5 Kv	0016/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	04,05,2020	117	0	117	IEC-60502	1600-190	Adem	Pass	Delivered		
11,05,2020	4x10 mm^2	3.5Kv	0022/2020	Cu/pvc/pp/pvc-R	0.6/1KV	10,05,2020	2021	0	2021	IEC-60502	1600-205	Adem	pass	Delivered	11,05,2020	
11,05,2020	4x10 mm^2	3.5Kv	0022/2020	Cu/pvc/pp/pvc-R	0.6/1KV	11,05,2020	2036	0	2036	IEC-60502	1600-204	Adem	pass	Delivered	11,05,2020	
11,05,2020	5x10 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	09,05,2020	3501	1470	2031	IEC-60502	1600-203	Adem	pass	Delivered	11,05,2020	
11,05,2020	5x10 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	09,05,2020	1468	1	1467	IEC-60502	1400-356	Adem	pass	Delivered	11,05,2020	
11,05,2020	3x240+120mm^2	3.5KV	0021/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	08,05,2020	105	0	105	IEC-60502	no.	Adem	pass	Delivered		
11,05,2020	3x240+120mm^2	3.5KV	0021/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	08,05,2020	300	0	300	IEC-60502	2000-04	Adem	pass	Delivered	15,05,2020	
11,05,2020	5x10 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	10,05,2020	1207	5	1202	IEC-60502	no	Adem	pass	Delivered	11,05,2020	
15,05,2020	3x4 mm^2	3.5KV	0016/2020	Cu/pvc/pvc-s	0.6/1KV	04,05,2020	1560	117	1443	IEC-60502	611-0001	Tewabe	Pass	Delivered	15,05,2020	
15,05,2020	3x4 mm^2	3.5KV	0016/2020	Cu/pvc/pvc-s	0.6/1KV	04,05,2020	3389	1561	1828	IEC-60502	0-1200-004	Tewabe	Fail			

Before ISO 2015 | Before ISO 2016 | After ISO 2017 | After ISO 2018 | After ISO 2019 | **After ISO 2020** | Analaysis Before & After Print

76	27,05,2020	4x4 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	26,05,2020	934	901	33	IEC-60502	Air coil	Tewabe	Pass			
77	27,05,2020	4x4 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	26,05,2020	47	0	47	IEC-60502	Air coil	Tewabe	Pass			
78	27,05,2020	3x4 mm^2	3.5 Kv	0016/2020	Cu/pvc/pp/pvc-R	0.6/1 Kv	20,05,2020	872	785	87	IEC-60502	Air coil	Tewabe	Pass			
79	27,05,2020	4x4 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	27,05,2020	1266	977	289	IEC-60502	800-zzz	dawit	Pass			
80	27,05,2020	4x4 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	27,05,2020	634	265	369	IEC-60502	1000-10	Abinet	Pass			
81	27,05,2020	4x4 mm^2	3.5 Kv	0017/2020	Cu/pvc/pvc/pvc-r	0.6/1 Kv	27,05,2020	264	0	264	IEC-60502	1000-10	Abinet	Pass			
82	30,05,2020	4x4 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	5/26,2020	1267	1324	57	IEC-60502	Air coil	Minte	pass			Air coil
83	30,05,2020	4x4 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	5/26,2020	913	799	114	IEC-60502	Air coil	Minte	pass			Air coil
84	30,05,2020	4x4 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	5/26,2020	976	915	61	IEC-60502	Air coil	Minte	pass			Air coil
85	30,05,2020	4x4 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	5/26,2020	53	82	29	IEC-60502	Air coil	Minte	pass			Air coil
86	30,05,2020	4x4 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1KV	05,26,2020	52	0	52	IEC-60502	Air coil	Minte	pass			Air coil
87	31,05,2020	4x16 mm^2	3.5 Kv	0017/2020	Cu/xlpe/pvc/pvc-r	0.6/1 Kv	27,05,2020	1030	2	1028	IEC-60502	no	Adem	Pass	Delivered	31,05,2020	
88	31,05,2020	4x16 mm^2	3.5 Kv	0058/2020	Cu/xlpe/pp/pvc-r	0.6/1 Kv	*10,12,2016*	1031	833	198	IEC-60502	no	Adem	Pass	Delivered	31,05,2020	
89	31,05,2020	5x10 mm^2	3.5Kv	0017/2020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	10,05,2020	124	5	119	IEC-60502	800-106	Adem	pass	Delivered	29,06,2020	
90																	
91	01,11,2020	3X10 mm^2	3.5 Kv		Cu/pvc/pvc/pvc-R	0.6/1 Kv	26,10,2020	147	0	147	IEC-60502	800-333	Shamble	Pass	Delivered	04,11,2020	
92	01,11,2020	4X10 mm^2	3.5 Kv	642,020	Cu/pvc/pvc-f	0.6/1 Kv	31,10,2020	999	0	999	IEC-60502	1200-274	Shamble	Pass			
93	01,11,2020	5X6 mm^2	3.5 Kv	572,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	31,10,2020	1861	0	1861	IEC-60502	1400-632	Shamble	Pass			
94	01,11,2020	5X6 mm^2	3.5 Kv	572,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	31,10,2020	717	459	258	IEC-60502	800-338	Shamble	Pass	Delivered	04,11,2020	
95	01,11,2020	5X6 mm^2	3.5 Kv	572,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	31,10,2020	810	722	88	IEC-60502	800-336	Shamble	Pass			
96	01,11,2020	5X6 mm^2	3.5 Kv	572,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	31,10,2020	457	0	457	IEC-60502	1000-214	Shamble	Pass			
97	01,11,2020	3X2.5 mm^2	3.5 Kv	542,020	Cu/pvc/pp/pvc-R	0.6/1 Kv	30,10,2020	2511	1956	555	IEC-60502	800-343	Shamble	Pass	Delivered	04,11,2020	
98	01,11,2020	3X2.5 mm^2	3.5 Kv	542,020	Cu/pvc/pp/pvc-R	0.6/1 Kv	30,10,2020	2833	2513	320	IEC-60502	800-341	Shamble	Pass	Delivered	04,11,2020	
99	01,11,2020	3X2.5 mm^2	3.5 Kv	542,020	Cu/pvc/pp/pvc-R	0.6/1 Kv	30,10,2020	1955	882	1073	IEC-60502	1000-210	Shamble	Pass			
100	01,11,2020	3X2.5 mm^2	3.5 Kv	542,020	Cu/pvc/pp/pvc-R	0.6/1 Kv	30,10,2020	880	0	880	IEC-60502	1000-208	Shamble	Pass			
101	03,11,2020	3x2.5 mm^2	2.5 Kv	472,020	Cu/pvc/pvc-f	300/500 V	07,09,2020	6128	5259	869	IEC-60227	1000-212	Siraj	Pass	Delivered	04,11,2020	
102	03,11,2020	3x120+70 mm^2	3.5 Kv	054,2020-1	Cu/pvc/pvc/pvc-R	0.6/1 Kv	30,10,2020	174	0	174	IEC-60502	1200-277	Siraj	Pass			The cu conductor is oxidized
103	03,11,2020	3x120+70 mm^2	3.5 Kv	054,2020-1	Cu/pvc/pvc/pvc-R	0.6/1 Kv	30,10,2020	512	175	337	IEC-60502	1400-641	Siraj	Pass	Delivered	24,11,2020	
104	03,11,2020	3x120+70 mm^2	3.5 Kv	054,2020-1	Cu/pvc/pvc/pvc-R	0.6/1 Kv	30,10,2020	1001	513	488	IEC-60502	1600-282	Siraj	Pass	Fail		The cu conductor is oxidized
105	03,11,2020	5X6 mm^2	3.5 Kv	572,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	31,10,2020	1645	4	1641	IEC-60502	1400-639	Siraj	Pass			
106	03,11,2020	4x4 mm^2	3.5 Kv	672,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	02,11,2020	1213	1023	190	IEC-60502	800-345	Siraj	Pass	Delivered	04,11,2020	
107	03,11,2020	4x4 mm^2	3.5 Kv	672,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	02,11,2020	1513	1216	297	IEC-60502	800-344	Siraj	Pass	Delivered	04,11,2020	
108	03,11,2020	4x4 mm^2	3.5 Kv	672,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	02,11,2020	556	332	224	IEC-60502	No	Siraj	Pass	Delivered	04,11,2020	
109	03,11,2020	4x4 mm^2	3.5 Kv	672,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	02,11,2020	324	0	324	IEC-60502	800-49	Siraj	Pass	Delivered	04,11,2020	
110	03,11,2020	3X120+70 mm^2	3.5 Kv	542,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	19,10,2020	651	167	484	IEC-60502	1600-281	Shamble	Pass	Delivered	26,11,2020	
111	03,11,2020	3X120+70 mm^2	3.5 Kv	542,020	Cu/pvc/pvc/pvc-R	0.6/1 Kv	19,10,2020	166	0	166	IEC-60502	1400-640	Shamble	Pass	Delivered	24,11,2020	
112	03,11,2020	3X120+70 mm^2	3.5 Kv	054,2020-1	Cu/pvc/pvc/pvc-R	0.6/1 Kv	31,10,2020	995	559	436	IEC-60502	1600-285	Shamble	Pass	Delivered	24,11,2020	
113	03,11,2020	3X120+70 mm^2	3.5 Kv	054,2020-1	Cu/pvc/pvc/pvc-R	0.6/1 Kv	31,10,2020	442	27	415	IEC-60502	1600-286	Shamble	Pass	Delivered	24,11,2020	

Before ISO 2015 | Before ISO 2016 | After ISO 2017 | After ISO 2018 | After ISO 2019 | **After ISO 2020** | Analaysis Before & After Print

Before ISO Implementation (Year 2014)

Production and Quality Report

Month August 2014

Product Type	Method Process	Machine Number	Tested Quantity (M)	Machine operator	Quality Personnel	Result
RG-6	Drawing, Coaxial Insulation, Braiding, Sheathing, Packaging	Drw.Comm-1, Coax Insulation-1, Sheathing (90)-4, PACKING-2	16.67	Gurmesa, Tesema, Abebe	Senait & Mulu	Pass
Drop Wire	Drawing, Insulation, Packaging	Drw.Comm-2, Insulation-1, PACKING-3	48.55	Kebede, Tesfaye, Alemitu	Addis & Lomi	Pass
CAT-6	Insulation, Pairing, Assembling, Sheathing, Packaging	Insulation-3, Paring-2, Armoring-1, Sheathing (120)-1, PACKING-2	88.11	Abdu, Fikir, Sami, Tolosa	Addis & Lomi	Pass
Copper Conductor	Melting Rod/Pallet	CCR-1	8	Tilahun, Elias	Tigist, Alem	Fail
Copper Rod	Drawing	CRBD-1	6	Birhanu	Gadisa, Aman	Fail

Production and Quality Report

Month November 2014

Product Type	Method Process	Machine Number	Tested Quantity (Km)	Machine operator	Quality Personnel	Result
Drop Wire	Drawing, Insulation, Packaging	PACKING-3	110.50	Tesfaye, Kebede, Alemitu	Fatuma, Senait	Pass
CAT-6	Insulation, Pairing, Assembling, Sheathing, Packaging	PACKING-2	255.33	Abdu, Fikir, Sami, Tolosa	Addis, Lomi	Pass
Copper Conductor	Melting Rod/Pallet	CCR-2	9	Tilahun, Elias	Tigist, Alem	Pass
Copper Rod	Drawing	CRBD-1	7	Birhanu	Gadisa, Aman	Pass

After ISO Implementation (Year 2015)

BMET® ENERGY TELECOM INDUSTRY AND TRADE LLC ETHIOPIAN BRANCH

Production and Quality Report

Month September 2015			Total			
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km)	Performance %
CAT-6	Km	Insulation	7005.00	7005.00	0.00	100%
		Pairing	56379.30	55802.20	163.60	99%
		Assembling	767.91	749.16	18.72	98%
		Sheathing	592.92	592.92	0.00	100%
		Packaging	766.88	816.45	9.58	106%
RG-6	Km	Drawing	603.76	249.76	140.00	41%
		Coaxial Insulation	166.61	151.35	15.26	91%
		Braiding	0.00	0.00	0.00	#DIV/0!
		Sheathing	147.92	118.04	28.50	80%
		Packaging	760.70	769.50	6.60	101%
Drop Wire	Km	Drawing	4601.20	4001.20	300.00	87%
		Insulation	2654.57	2515.97	0.00	95%
		Packaging	5229.75	4774.75	#REF!	91%
		Total (Km)	**79676.52**	**77546.30**	**#REF!**	**97.33%**
		Man Power				
		Labor Productivity		**77546.30**		
		Rank		**#N/A**		

BMET® ENERGY TELECOM INDUSTRY AND TRADE LLC ETHIOPIAN BRANCH

Production and Quality Report

Month December 2015			Total			
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %
CAT-6	Km	Insulation	2821.89	2696.26	175.63	96%
		Pairing	37758.30	37552.90	85.40	99%
		Assembling	587.49	574.99	12.48	98%
		Sheathing	437.89	576.45	29.10	132%
		Packaging	628.83	668.53	20.95	106%
RG-6	Km	Drawing	470.76	144.76	162.00	31%
		Coaxial Insulation	335.17	286.33	35.26	85%
		Braiding	0.00	0.00	0.00	#DIV/0!
		Sheathing	323.22	304.22	19.00	94%
		Packaging	713.20	1131.50	32.60	159%
Drop Wire	Km	Drawing	5502.15	4208.15	650.00	76%
		Insulation	3139.67	2903.67	1.50	92%
		Packaging	4325.90	3980.85	#REF!	92%
Conduit 16 mm	Pcs	Insulation	2380.38	2373.18	0.00	100%
		Total (Km)	**407362.57**	**391778.39**	**#REF!**	**96.17%**
		Man Power				
		Labor Productivity				
		Rank				

After ISO Implementation (Year 2016)

BMET® ENERGY TELECOM INDUSTRY AND TRADE LLC ETHIOPIAN BRANCH

Production and Quality Report

Month April 2016			Total			
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km)	Performance %
CAT-6	Km	Insulation	5549.30	5134.70	412.60	93%
		Pairing	793.60	726.60	94.50	92%
		Assembling	254.32	248.22	12.40	98%
		Sheathing	302.74	278.34	24.40	92%
		Packaging	308.89	309.47	0.00	100%
Drop Wire	Km	Drawing	2810.20	2610.20	200.00	93%
		Insulation	1743.21	1719.13	25.20	99%
		Packaging	1320.48	1315.23	5.25	100%
Fiber optic	Km	loading stage	17271.78	15611.60	0.00	90%
		buffering stage	3735.08	3631.93	0.00	97%
		SZ stage	894.50	890.52	4.00	100%
		Inner sheathing	30.80	30.80	0.00	100%
		outer sheathing	782.41	778.17	6.20	99%
		Total (Km)	**13082.74**	**12341.88**	**774.35**	**94.34%**
		Man Power				
		Labor Productivity				
		Rank				

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month December 2016			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	5233.45	5230.95	230.00	100%	Copper Quality Problem Raw Material Quality Problem
		Pairing	716.85	682.15	31.50	95%	
		Assembling	316.80	310.60	12.40	98%	
		Sheathing	414.72	414.72	0.00	100%	
		Packaging	310.26	309.96	0.31	100%	
RG-6	RG-6	Sheathing	17.50	17.50	0.00	100%	
Drop Wire	Km	Drawing	2407.20	2357.20	50.00	98%	
		Insulation	950.02	888.62	59.40	94%	
		Packaging	891.99	761.43	1.50	85%	
Fiber optic	Km	loading stage	5482.95	5470.76	0.00	100%	
		buffering stage	752.63	750.63	0.00	100%	
		SZ stage	341.72	336.57	4.15	98%	
		Inner sheathing	82.96	82.96	0.00	100%	
		outer sheathing	364.16	353.80	10.33	97%	
		Total (Km)	**11258.78**	**10973.13**	**385.11**	**97.46%**	
		Man Power					
		Labor Productivity					
		Rank					

After ISO Implementation (Year 2017)

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month May 2017			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	4450.80	4150.80	300.00	93%	Change In Product Type Power Interruption Lack Of Machine Operators
		Pairing	875.30	831.20	50.40	95%	
		Assembling	252.82	252.82	12.40	100%	
		Sheathing	258.81	195.81	61.00	76%	
		Packaging	275.67	275.67	0.61	100%	
Drop Wire	Km	Drawing	3157.20	2907.20	250.00	92%	
		Insulation	960.41	961.01	0.00	100%	
		Packaging	2757.54	2753.04	4.50	100%	
Fiber optic	Km	loading stage	18627.90	18186.82	0.00	98%	
		buffering stage	2755.56	2684.80	8.10	97%	
		SZ stage	847.53	843.54	4.00	100%	
		Inner sheathing	151.27	151.27	0.00	100%	
		outer sheathing	805.12	786.37	18.60	98%	
		Total (Km)	**12988.55**	**12327.55**	**678.91**	**94.91%**	
		Man Power					
		Labor Productivity					
		Rank					

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month December 2017			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	4675.80	4325.80	350.00	93%	Lack Of Machine Operators Pressure Decrement/ Compressor Problem
		Pairing	673.70	648.50	37.80	96%	
		Assembling	218.74	218.74	6.20	100%	
		Sheathing	214.21	163.41	48.80	76%	
		Packaging	206.76	206.76	0.61	100%	
Drop Wire	Km	Drawing	2907.20	2807.20	100.00	97%	
		Insulation	847.31	848.51	0.00	100%	
		Packaging	2685.72	2683.22	2.50	100%	
Fiber optic	Km	loading stage	16114.32	15232.87	0.00	95%	
		buffering stage	2573.61	2440.18	8.10	95%	
		SZ stage	747.04	739.06	8.00	99%	
		Inner sheathing	151.27	151.27	0.00	100%	
		outer sheathing	775.31	762.78	12.40	98%	
Conduit 16 mm	Pcs	Insulation	35.84	35.84	0.00	100%	
		Total (Km)	**1336.41**	**1279.72**	**545.91**	**95.76%**	
		Man Power					
		Labor Productivity					
		Rank					

After ISO Implementation (Year 2018)

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month Feb 2018			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	4974.30	4459.70	512.60	90%	Copper Quality Problem Lack Of Drums, Tools and other accessories
		Pairing	818.80	746.90	75.60	91%	
		Assembling	279.52	273.42	12.40	98%	
		Sheathing	302.74	278.34	24.40	92%	
		Packaging	308.89	309.47	0.00	100%	
Drop Wire	Km	Drawing	2710.20	2460.20	250.00	91%	
		Insulation	1683.91	1659.83	25.20	99%	
		Packaging	1278.48	1273.23	5.25	100%	
Fiber optic	Km	loading stage	17271.48	15611.30	0.00	90%	
		buffering stage	3659.41	3556.26	0.00	97%	
		SZ stage	870.13	866.15	4.00	100%	
		Inner sheathing	30.80	30.80	0.00	100%	
		outer sheathing	732.61	728.37	6.20	99%	
Conduit 16 mm	Pcs	Insulation	52.36	52.36	0.00	100%	
		Total (Km)	**1941.12**	**1800.31**	**905.45**	**92.75%**	
		Man Power					
		Labor Productivity					
		Rank					

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month December 2018			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	4462.80	3717.80	700.00	83%	Welding/Repair Change In Product Type Power Interruption Machine Mechanical Failure
		Pairing	1232.70	965.20	74.90	78%	
		Assembling	552.69	541.29	6.20	98%	
		Sheathing	509.51	473.86	39.65	93%	
		Packaging	498.25	544.96	21.69	109%	
Drop Wire	Km	Drawing	2783.80	2633.80	150.00	95%	
		Insulation	2322.02	2321.75	0.00	100%	
		Packaging	2553.48	2633.73	12.50	103%	
Fiber optic	Km	loading stage	23455.57	22458.59	0.00	96%	
		buffering stage	3008.11	2942.74	8.30	98%	
		SZ stage	865.86	867.87	0.00	100%	
		Inner sheathing	254.10	254.10	0.00	100%	
		outer sheathing	854.72	842.17	12.45	99%	
Conduit 16 mm	Pcs	Insulation	27.82	27.82	0.00	100%	
		Total (Km)	**1249.00**	**1158.62**	**1004.94**	**92.76%**	
		Man Power					
		Labor Productivity					
		Rank					

After ISO Implementation (Year 2019)

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month March 2019			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km)	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	3310.70	3135.70	175.00	95%	Copper Quality Problem Raw Material Quality Problem Change In Product Type, Lack Of Drums, Tools and other accessories Machine Electrical Failure
		Pairing	761.55	744.05	126.00	98%	
		Assembling	242.87	242.87	6.20	100%	
		Sheathing	333.98	333.98	0.00	100%	
		Packaging	247.93	247.92	0.00	100%	
RG-6	Km	Sheathing	17.50	17.50	0.00	100%	
		Packaging	100.00	100.00	0.00	100%	
Drop Wire	Km	Drawing	2542.30	2392.30	150.00	94%	
		Insulation	879.77	841.77	37.00	96%	
		Packaging	779.22	706.22	3.00	91%	
Fiber optic	Km	loading stage	10339.95	9573.95	0.00	93%	
		buffering stage	1418.20	1375.71	0.00	97%	
		SZ stage	448.77	443.63	4.15	99%	
		Inner sheathing	94.38	94.39	0.00	100%	
		outer sheathing	454.95	447.71	6.20	98%	
Conduit 16 mm	Pcs	Insulation	518.16	443.17	75.00	86%	
		Total (Km)	**14325.81**	**11649.57**	**497.43**	**81.32%**	
		Man Power					
		Labor Productivity					

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month December 2019			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	4974.30	4684.70	287.60	94%	Extruder Cleaning Lack Of Semi-Finished Material Lack Of Machine Operators Machine Mechanical Failure
		Pairing	818.80	746.90	75.60	91%	
		Assembling	279.52	273.42	12.40	98%	
		Sheathing	302.74	278.34	24.40	92%	
		Packaging	308.89	309.47	0.00	100%	
Drop Wire	Km	Drawing	2710.20	2510.20	200.00	93%	
		Insulation	1683.91	1659.83	25.20	99%	
		Packaging	1278.48	1273.23	5.25	100%	
Fiber optic	Km	loading stage	17271.48	15611.30	0.00	90%	
		buffering stage	3659.41	3556.26	0.00	97%	
		SZ stage	870.13	866.15	4.00	100%	
		Inner sheathing	30.80	30.80	0.00	100%	
		outer sheathing	732.61	728.37	6.20	99%	
Conduit 16 mm	Pcs	Insulation	52.36	52.36	0.00	100%	
		Total (Km)	**1941.12**	**1843.50**	**630.45**	**94.97%**	
		Man Power					
		Labor Productivity					

After ISO Implementation (Year 2020)

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month April 2020			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km)	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	6392.20	5892.20	500.00	92%	Copper Quality Problem Raw Material Quality Problem Power Interruption Pressure Decrement/ Compressor Problem Extruder Cleaning
		Pairing	1200.00	735.20	377.10	61%	
		Assembling	533.21	465.71	93.00	87%	
		Sheathing	446.10	280.00	197.30	63%	
		Packaging	509.21	865.00	183.30	170%	
RG-6	Km	Drawing	10.00	10.00	0.00	100%	
Drop Wire	Km	Drawing	4173.80	3247.80	801.00	78%	
		Insulation	2375.86	1976.07	859.66	83%	
		Packaging	3593.62	4626.89	454.48	129%	
Fiber optic	Km	loading stage	26330.04	17569.97	7559.50	67%	
		buffering stage	4783.07	3082.60	1684.87	64%	
		SZ stage	1192.18	918.90	340.30	77%	
		Inner sheathing	141.87	92.31	59.56	65%	
		outer sheathing	987.37	638.95	423.43	65%	
		Total (Km)	**19334.00**	**18198.87**	**3465.84**	**94.13%**	
		Man Power					
		Labor Productivity					

BMET® ENERGY TELECOM INDUSRTY AND TRADE PLC

Production and Quality Report

Month December 2020			Total				
Product Type	Unit	Process	Tested Qty (Km)	Pass (Km)	Fail (Km	Performance %	Root Cause for Fail
CAT-6	Km	Insulation	4462.80	3717.80	700.00	83%	Copper Quality Problem Raw Material Quality Problem Change In Product Type Power Interruption Welding/Repair Machine Mechanical Failure
		Pairing	1232.70	965.20	74.90	78%	
		Assembling	552.69	541.29	6.20	98%	
		Sheathing	509.51	473.86	39.65	93%	
		Packaging	498.25	544.96	21.69	109%	
RG-6	Km	Packaging	50.00	50.00	0.00	100%	
Drop Wire	Km	Drawing	2783.80	2633.80	150.00	95%	
		Insulation	2322.02	2321.75	0.00	100%	
		Packaging	2553.48	2633.73	12.50	103%	
Fiber optic	Km	loading stage	23455.57	22458.59	0.00	96%	
		buffering stage	3008.11	2942.74	8.30	98%	
		SZ stage	865.86	867.87	0.00	100%	
		Inner sheathing	254.10	254.10	0.00	100%	
		outer sheathing	854.72	842.17	12.45	99%	
Conduit 16 mm	Pcs	Insulation	27.82	27.82	0.00	100%	
		Total (Km)	**1249.00**	**1158.62**	**1004.94**	**92.76%**	
		Man Power					
		Labor Productivity					