

**INFLUENCE OF COVID-19 PANDEMIC ON THE SUCCESSFUL
IMPLEMENTATION OF GOVERNMENT'S STRATEGIC PROJECTS IN
TANZANIA: A CASE OF THE CONSTRUCTION OF STANDARD GAUGE
RAILWAYS PROJECT**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF PROJECT
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2022

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation titled: **“Influence of COVID-19 Pandemic on the Successful Implementation of Government’s Strategic Projects in Tanzania: A Case of the Construction of Standard Gauge Railways (SGR) Project.”** in partial fulfilment of the requirements for the degree of Master of Project Management of the Open University of Tanzania.

.....

Dr. Raphael Gwahula
(Supervisor)

.....

Date

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DECLARATION

I, **Mtowa Kibonge Jumanne**, declare that, the work presented in this dissertation is original. It has never been presented to any other university or institution. Where other people's works have been used, references have been provided. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfillment of the requirement for the Degree of Master of Project Management (MPM).

.....

Signature

.....

Date

DEDICATION

This work is dedicated to my parents for their support and spiritual prayers during my entire studies. Also, my dedication goes to Sr. Maria Regina for her tireless supports spiritually and financially.

ACKNOWLEDGEMENT

First, I would like to thank God for his guidance and good health throughout my life and my entire study, especially during the time for accomplishing this dissertation.

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ABSTRACT

The COVID-19 is a global pandemic that changed the global economic perspective. Even though, the government of Tanzania did not declare lockdown or curfew like most of the countries in the world, but this pandemic still affected different sectors such as economic, social and environmental domains. However, a severe impact is being taken place in various government projects especial project progress, costs and duration which leading to projects delay or termination. This study assesses various influence of COVID-19 pandemic during implementation of the Standard Gauge Railways (SGR) project in Tanzania and necessary measures required to improve or ensure the successfulness of the project. The study used survey research strategy to collect data from 50 respondents. Quantitative data from questionnaires were edited, coded and analyzed descriptively by using Statistical Package for Social Sciences (IBM-SPSS version 20) software whereby frequency and percentages were obtained. Results of the findings indicated that, demographic, economic, environmental and social factors in this study have significant relationship to the successfulness of the project due to the techniques applied to combat the impact of COVID-19 pandemic. However, this study recommends that, the execution of the SGR project should continue as it was before the pandemic but considering health guidelines and recommendation against COVID-19 disease. Also, prior order should be set on what to be done physically and what to be done online depending on the sensitivity of the matter. Moreover, online activities with the help of communication software are highly recommended for replacing physical project activities. Hence, technologies discovered and adopted during pandemic such online training and workshop should continue even after the end of COVID-19 pandemic because they save time and cost of the project.

Keywords: Impact of COVID-19, Implementation and Government's Strategic Projects

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LIST OF ABBREVIATIONS AND ACRONYMS

CDC	Centers for Diseases Control and Prevention
COVID-19	Corona Virus Disease discovered in the year 2019
DPM	Deputy Project Manager
FAT	Factory Acceptance Testing
HA	Alternate Hypothesis
HO	Null Hypothesis
IT	Information Technology
JNHS	Julius Nyerere Hydropower Station
Ko-Rail	Korea Railroad Corporation
PHD	Doctor of Philosophy
PM	Project Manager
QA	Quality Assurance
QC	Quality Checking
SAT	Site Acceptance Testing
SGR	Standard Gauge Railways
SPSS	Statistical Package for Social Science
TRC	Tanzania Railways Corporation
US	United States
VIF	Variance Inflation Factor
WHO	World Health Organization
3D	Three Dimensions

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This chapter presents the background information of the study. It consists of the background to the problem, statement of the problem, research objectives and questions, significance and organization of the study

1.2 Background of the Problem

COVID-19 stands for Corona Virus Disease discovered in year 2019 responsible for the global pandemic. This disease was originally circulated among bats which are the natural animal reservoir. In late 2019, the corona virus mutated and start causing diseases to humans whereby the outbreak started in China and then spread around the world. Around three months into outbreak, there have been 109,578 confirmed cases of COVID-19 and 3,809 deaths. Up to June, 2021 there has been approximately 201 million cases of COVID-19 and 4.27 million death globally according to World Health Organization (WHO) statistics (*COVID Live - Coronavirus Statistics - Worldometer*, n.d.).

However, to battle this outbreak, all public healthcare systems around the world with the assistance from World Health Organization (WHO) and Centers for Diseases Control and Prevention (CDC) decided to aggressively taking public health measurements such as quarantining, curfew, testing and ensuring hospitals have the right equipment and staffing.

In additional to causing diseases, corona virus can spread very quickly. Usually, this virus spread when people cough or sneeze and also when a person become in contact

with the contaminated surface areas with corona virus such as door handles, chairs, cups or anything touched by the affected person.

Hence, to prevent or maintain community transmission, some schools, business as well as projects had shut down. Also, some sporting events, conferences and other large gathering have been postponed or cancelled. Healthcare systems recommended people to wear masks while in public services or crowded places, stay at least 2 meters apart, cleaning or sterilizing surfaces and careful hand washing or sanitizing and avoiding touching eyes, nose and mouth.

However, the COVID-19 prevention or safety measures was not the same in all countries especially in Tanzania during the outbreak. For example, the Government of Tanzania did not declare lockdown, curfew and did not close its borders like many other countries in the world, most activities continued within the country as usual, but yet, some activities in business operations and projects still got affected by the outbreak because most business and on-going government projects are contracted to the international or foreign companies.

Thus, this research will be based on finding out what activities were affected during implementation of on-going government projects such as the construction of Standard Gauge Railway (SGR) project, what measures used to assure the project success during the presence of COVID-19 outbreak and recommending for techniques or methods to be used for other future projects during crisis such as pandemic diseases like COVID-19 outbreaks.

1.3 Statement of the Problem

COVID-19 is now the global health emergence occurred in past two years from 2019 to 2021. About three hundred seventy nine million people have been diagnosed worldwide since year 2020 up to 2021 and most countries have already been affected by this pandemic Sami Ur Rehman et al., (2021). Due to that, countries were forced to adopt various preventive measures such as lockdown, quarantine, social distancing, sanitizing and curfew in order prevent transmission of disease which leading to direct impacts of the performance of various organizational services as well as projects.

However, the government of Tanzania did not declare lockdown or curfew like most of the countries in the world, but this pandemic still affected different sectors such as health, economic, social and environmental domains. Also, a severe impact is being taken place in various government projects due to the outbreak of COVID-19 which directly affected progress, costs and the duration of projects leading to projects delay and threat to projects termination or cancellation.

Most studies focused on how much COVID-19 pandemic affected socio-economic activities in private and government sectors Jallow et al., (2020), the early responses due to the COVID-19 outbreak Mofijur et al., (2021) and mentioned various measures taken to battle the spread and transmission of COVID-19 disease Salami et al., (2021).

But these studies failed to suggest and recommend strategic measures and technique to be used to ensure the sustainability of ongoing projects conducted during and before pandemic crisis like COVID 19 disease for the future uses when these pandemics occurs again.

Thus, this study focused in assessing various influence of COVID-19 pandemic during implementation of the major ongoing projects in Tanzania such as the construction of SGR project and providing necessary measures and techniques required to improve and insure their successfulness. Factors such as demographic, economic, environmental and social contributed greatly by providing solutions required to save and recover these projects from the threats of termination or failure due to the impacts of COVID-19 pandemic.

1.4 Research Objectives

1.4.1 General Research Objective

This study aims to assess various impacts of COVID-19 pandemic during implementation of the Standard Gauge Railways (SGR) project in Tanzania and necessary measures required to improve or assure the project success.

1.4.2 Specific Research Objectives

- (i) To determine demographic factors contributing in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19.
- (ii) To establish economic factors contributing in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19.
- (iii) To assess environmental factors contributing in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19.
- (iv) To identify social factors contributing in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19.

1.5 Research Questions

1.5.1 General Research Question

What are the factors to be considered in contributing the improvement or assurance of the successfulness of the Standard Gauge Railways (SGR) project due to the impacts of COVID-19 pandemic in Tanzania?

1.5.2 Specific Research Questions

- (i) What demographic factors determined to contribute in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19?
- (ii) What economic factors established to contribute in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19?
- (iii) What environmental factors assessed to contribute in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19?
- (iv) What social factors identified to contribute in successfulness of SGR project in Tanzania during pandemic crisis such as COVID-19?

1.6 Relevance of the Research

The world as well as the government of united republic of Tanzania are aware that the COVID-19 pandemic is still a threat to our healthy, economic and environment up to date and have been changed into different levels due to the corona virus mutation. It is most likely to experience other more waves of this pandemic in future days to come.

Thus, the findings from this research will help government institutions such as Tanzania Railways Corporation (TRC) to look at strategies used during COVID-19 pandemic in order to assure successfulness of other future project phases like

construction of SGR line from Dar es Salaam to Mtwara, Dar es Salaam to Arusha or Isaka to Kigoma.

In addition to that, the conclusion and recommendation will help the policy makers and the government of Tanzania in implementation of other on-going strategic projects such as the construction of Julius Nyerere Hydropower Station (JNHS), new Bagamoyo port, Dodoma stadium and so on without being affected by new waves of COVID-19 diseases or any other pandemics or outbreaks.

Furthermore, the fact that this is academic research, it is ought to equip the scholars with the knowledge to understand how to meet project objectives and appreciate strategies used to implement a project during pandemic diseases like COVID-19 diseases. However, this study will also be used as a partial fulfillment for the award of a master's degree in Project Management from the Open University in Tanzania.

1.7 Organization of the Study

This study consists of six chapters. The first chapter presents the background of the study that presents the researchers' views regarding the study. The second chapter puts forward the literature review where relevant literatures are reviewed and gaps identified. The third chapter presents the research methodology where designs, strategies and analysis were presented. The fourth chapter presents the results of the findings, the fifth chapter presents discussion of the research findings and lastly the sixth chapter presents the conclusion and recommendations arising from the research findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter presents the literature that will be reviewed; it commences with the presenting the definition of key terms, theories that will guide the study, empirical review, research gap as well as conceptual framework.

2.2 Conceptual definitions

2.2.1 Impact

An impact is the outcome or influence, which caused by the occurrence of a certain action. It is the real change in the real world, which have an effect on an individual or a community according to RCUK, (2011). In research, there are many different kinds of impacts such as social, attitudinal, awareness, policy, economic, cultural and health. However, impact statement describes clearly about the issue or problem that the research addresses by adopting a problem from a case to be studied as well as action taken or intended to resolve that problem.

2.2.2 COVID-19

According to Handayani et al., (2020), COVID-19 is the abbreviation for Corona Virus Disease which discovered in the year 2019. It is the infectious disease which caused by the corona virus originated from China then to the rest of the world. This disease is spread when the respiratory virus called corona transmitted through droplets generated when an infected person coughed or sneezed as well as droplets from saliva and discharge from the nose.

According to World Health Organization (WHO), COVID-19 affect different people in different ways. Some of infected people required hospitalization due to the seriousness of disease in their bodies but most of infected people developed mild to moderate illness and recover without hospitalization. The symptoms for COVID-19 are fever, dry cough, tiredness, difficult breathing, chest pain as well as the loss of speech and movement and it may result to severe death.

The best way to prevent and slow down transmission is to take all necessary measures as suggested by health institutions such as World Health Organization and Centers for Disease Control and Prevention (CDC) including washing hands, avoid contacts with other person, wearing facial mask and using alcohol-based rub or sanitizer frequently and not touching your face.

Also, the quarantine should be conducted for infected people as well as those who travelled from outside the country. Thus, due to above mitigation for the transmission of COVID-19 disease, the pandemic has forced the government to implement strict social mitigation to reduce morbidity and mortality from acute infections, this according to Moser et al., (2020).

2.2.3 Pandemic

As the word outbreak means the sudden rise in the number of cases of a disease which occur in a community or a certain geographical area and may also affect several countries, but pandemic involves the disease outbreak of the entire world. COVID-19 disease is an example of pandemic disease due its rapid transmission globally. Pandemic often caused by the new virus like newly discovered corona virus, which

spread quickly from person to person worldwide. Unlike epidemic, pandemic affect a greater number of people in a wide geographical area often worldwide and create social disruption, economic loss as well as general hardship.

2.2.4 Implementation

Implementation is the carryout, execution or practice of a plan, designs, models, ideas, methods, standard, specification or policy for doing something. In project management, implementation is the action that follow any preliminary thinking such as plans and designs in order to accomplish a certain goal or objectives. It is comprised of set of activities and tasks, which are put into action aimed to deliver the desired output or result. This was explained by Lucidchart Content Team, (2017).

2.2.5 Government's Strategic Projects

Government's strategic projects in Tanzania are those special projects selected from the project portfolio of the government and approved by the parliament. It is to believe that, when this project executed successfully, they will boost up the national economy and improving great services to its citizens (*Top Ongoing Mega Projects in Tanzania*, n.d.).

2.3 Theoretical Analysis

Two theories were used to underpin the study. These theories include COVID-19 in project performance theory and impact of COVID-19 on sector dimension theory. These theories are elaborated hereunder.

2.3.1 COVID-19 in Project Performance Theory

COVID-19 is now the global health emergence occurred in past two years from 2019 to 2021. About three hundred seventy nine million people have been diagnosed

worldwide since year 2019 up to the year 2021 and most countries have already been affected by this pandemic as explained by Sami Ur Rehman et al., (2021).

Due to that, countries were forced to adopt various preventive measures such as lockdown, quarantine, social distancing, sanitizing and curfew in order prevent transmission of disease which leading to direct impacts of the performance of various organizational services as well as projects. According to Gil-Alana & Monge, (2020) and Narayan, (2020), their studies examines the impact of COVID-19 on performance of public companies. Based on their analysis, they proposed the following research hypothesis saying, “COVID-19 has negative impact on the performance of companies”.

However, not all companies undergo the negative effects due to the COVID-19 pandemic, institutions such as Information Technologies companies were not affected by the pandemic because most of their workers could be able to work even from home, all they needed was computer and internet if necessary and the operation continued as usual. But, when comes to construction projects such as the construction of Standard Gauge Railways Network in Tanzania, the project undergoes direct negative impacts because of activities like quarantine which decrease project workforce in site. Thus, COVID-19 affected I.T project differently compare to traditional projects such as construction projects like SGR project.

2.3.2 Impact of Covid-19 on the Sector Dimension Theory

According to Phan and Narayan, (2020), a sector refers to the detailed division of the organizational structure system of business unit or individual engaged in homogeneous production in the national economy. Early the study was conducted by

Phan and Narayan, (2020) to investigate responses and reaction of countries about stock market to COVID-19.

The investigates assumed that the COVID-19 has the same impact to all sectors which was not true. The supply demands varied differently depending on the nature or characteristics of industry during the pandemic. However, the most affected part in economic sector was procurement and purchasing process (importing) of materials and equipment for projects or business operation. This was due to borders closure policy and international route control hence leading to project delays and termination.

2.4 Empirical Analysis

2.4.1 General Studies

COVID-19 was originally circulated among bats, which are the natural animal reservoir. In late 2019, the corona virus mutated and start causing diseases to humans whereby the pandemic started in China and then spread around the world. This disease is mainly transmitted via the airborne route when people inhale droplets from the affected person. To avoid further transmission, most countries were put under lockdown, closing borders, curfew and quarantines the citizens.

A study done by Jallow et al., (2020) explained the changes that the infrastructure sectors have had to undertake in order to adhere to the COVID-19 rules such as lockdowns and quarantines while being productive by establishing new and old technological tools such as video chats and meeting via online platform like zoom and skype. Also, 3D designs models were used to visualize the projects during the online

meeting instead of visiting the site physically in order to comply with COVID-19 rules and follow social distance guidelines.

According to Alsharif et al., (2021), the study focused on investigating the early impacts of COVID-19 pandemic on the U.S construction industry since the declaration of national emergency on 13th March, 2020 which resulted into economic slowdowns, widespread business disruption and significant hardship.

The risk management activities were established in order to enhance safety and adopting COVID-19 rules which requires employees to wear cloth face mask, offering COVID-19 related training, social distancing and administering temperature check prior to entry into the workplace which allow some people to execute the project during the pandemic.

2.4.2 Studies in African Countries

Studies has been documented based on the impact of COVID-19 in African countries during the project execution with varying empirical conclusion. For instance, Agyekum et al., (2021) from Ghana argued about the impact the country faces due to the mitigation measure taken by the government in order to stop the transmission of COVID-19 disease.

In response to pandemic, the Government of Ghana set up the committee in order to limit, contain and stop the spread of virus. However, the suggested measures provided by the committee to the Government affected various socioeconomic activities leading to project failure, delay or termination.

Hence, Prachee Javedekar, (2020) suggested about partial lockdown which will allow few sectors to operate in order to maintain country's economy. One of the sectors which allowed to operate was mining industry, given that the gold mining and crude oil exports have contribute greatly to Ghana's economic growth over the past years.

Even though, only few people were allowed to work in various projects, the government still took safety measures to protect those few workers so that they can continue with their tasks as delegated to them. Such measures included reduction of working hours and labor earning; working in shifts to avoid large number of people in same working area and reducing aggregated demands for goods and services.

Also, Anakpo and Mishi, (2021) conducted effective analysis study for business response to COVID-19 in South Africa and discovered that business response such as virtual connection, innovative e-commerce and increasing business hours are more effective business response compared retrenchments, decreasing working hours and ordinary e-commerce which are considered to be lesser effective measures against the impact of pandemic. Furthermore, business characteristics such as industry types like gas, electricity or water supply are considered to be more resilient to COVID-19 effects.

2.4.3 Empirical Studies in Tanzania

The study of Kamazima et al., (2020) argued that Tanzania did not undertake same measures as recommended by World Health Organization (WHO) in battling COVID-19 pandemic compared to many other countries in the world but instead they invent

and innovate some spiritual healing activities as well as traditional therapy such as chewing, drinking and steaming of traditional herbs.

Surprisingly, this study finds out that the methods used was successful in battling the COVID-19 pandemic and recommended for the medicinal herb's laboratory test in Africa. In addition to that, Tanzania did not undergo lockdown or curfew and normal activities continued as usual while adopting some few COVID-19 safety measures as recommended by World Health Organization (WHO) including wearing facial mask, sanitizing and safe distancing between people. Hence, the impact of COVID-19 in Tanzania was not the same as compared to other countries especially those which undergo total lockdown.

A study by Haji, (2021) assesses about the level of risk on the total government revenue collection from the extractive industries and national expenditure budget performance and find out the increasing of negative and perceived risks on the government revenue mobilization, utilization and collection due to the existence of COVID-19 which then affected the national budget expenditure in short- and long-term periods. However, it was not recommended to stop or cut down major recurrent government expenditures in developing economies in order to support ongoing projects in Tanzania.

2.5 Research Gap Identified

Based on the studies discussed from the analysis of theoretical and empirical literatures in this chapter, most of studies were focused on how much COVID-19 pandemic affected socio-economic activities in private and government sectors, their

early responses and mentioned various measures taken to battle the spread and transmission of COVID-19 disease.

But these studies failed to suggest and recommend strategic measures or methods used to ensure the sustainability of going projects, business and organizational operation during pandemic diseases so that they can be used in the future crisis such as other pandemic diseases or outbreak.

Even though the study of Jallow et al., (2020) explained about the use of technological tools and methods such as online meeting and online presentation of 3D models in order to keep projects going, but these methods are not compatible to the traditional or construction projects such as Standard Gauge Railways (SGR) project in Tanzania which requires more physical activities rather than virtual activities from online conferences.

Hence, this study focuses more in solving problems caused by the COVID-19 pandemic by providing more solutions and alternatives to insure the successfulness of the ongoing projects during COVID-19 crisis and encourage the starting of new construction projects under the presence of COVID-19 pandemic

2.6 Conceptual Framework

Conceptual framework is the tool researchers used to define an abstract idea or theory used to develop new concept or to reinterpret existing one in order to give the relationship between independent and dependent variables as described by Kothari, (2004). Consider the Figure 2.1.

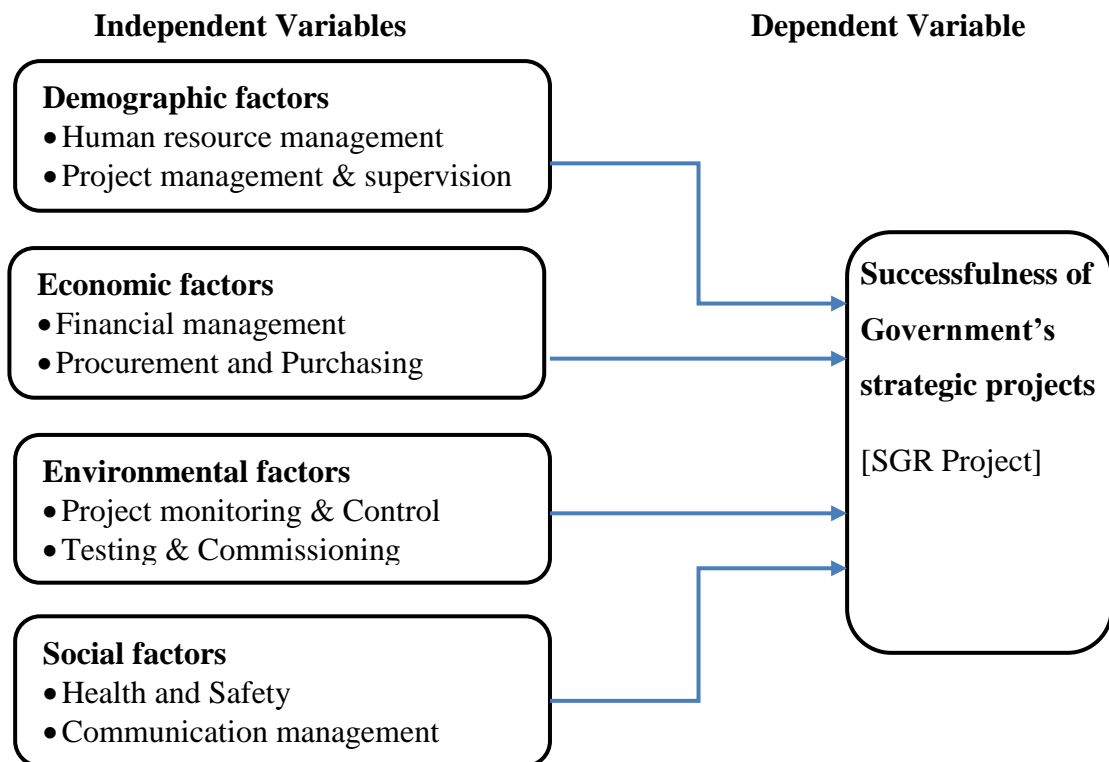


Figure 2.1: Conceptual Framework

Source: Own developed (2021)

It is the researcher's own position on the problem and gives direction to the study including the use of modification of models from previous studies in order to suit the enquiry. Based on the formulated research objectives, this study will be guided by the conceptual framework, which shows various independent variables with relation to one independent variable as shown in the Figure 2.1.

Demographic factors focus on respondent's information showing their gender, age, education level, title and experience in order to understand human resources on site and how they are managed into execution of project during COVID-19 pandemic.

Financial factors focus on providing general information on how much the pandemic affected the project financial especially on procurement and purchasing of project

tools and material, rapidly increase of project cost due to project activities delay and how finances were managed during crisis to assure the sustainability of the project.

Environmental factors focus on working environment and physical activities such as installation, monitoring, testing and commissioning which involve the physical interaction between project members. The idea was to provide the alternative solutions and suggestions in order to assist project managers and supervisors on how to handle these activities without risking expose project members into infection of COVID-19 disease.

Social factors focus on making sure that, all social activities are conducted at site with strict safety awareness by carefully following healthy and safety guidelines from health institutions. Hence, identifying and suggesting communication tools and technologies in order to assure safe relaying of project information among stake holders to make activities such as meeting, training, workshop and reporting possible.

2.7 Theoretical framework

In this framework, the theory of COVID-19 in project performance and impact of COVID-19 on sector dimension theory are used to support the evaluation of contributing factors in the successfulness of government strategic projects during pandemic crisis such as COVID-19 disease.

These two theories inform this study objectives on how much this project was affected due to the occurrence of COVID-19 pandemic, not only in project activities but also

the units or departments as well, hence giving ideas on the research focus areas in order to make sure that researches objectives are met as per objective requirements to ensure the successfulness of the project.

Thus, dependent variable focused on the evaluation of project activities by determining demographic, economic, environmental and social factors contributing to ensure successfulness of project execution in the middle of pandemic crisis. The dependent variable is successfulness of government's strategic project.

2.8 Statement of Hypotheses

In line with objectives and researches questions of this study, the following hypotheses were tested;

- (i) Null Hypothesis (H_{O1}): Demographic factors determined does not contribute to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.
- (ii) Alternative Hypothesis (H_{A1}): Demographic factors determined contribute to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.
- (iii) Null Hypothesis (H_{O2}): Economic factors established does not contribute to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.
- (iv) Alternative Hypothesis (H_{A2}): Economic factors established contributes to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.

- (v) Null Hypothesis (HO_3): Environmental factors assessed does not contribute to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.
- (vi) Alternative Hypothesis (HA_3): Environmental factors assessed contributes to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.
- (vii) *Null Hypothesis (HO_4):* Social factors identified does not contribute to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.
- (viii) *Alternative Hypothesis (HA_4):* Social factors identified contributes to the successfulness of ongoing strategic projects in Tanzania during pandemic crisis.

2.9 Summary

This chapter has provided the review of literatures that has resulted into the gap filling. Moreover, independent and dependent variable relationship has been established among variables used in the study. The chapter that follows is the research methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter presents the research strategies, the population surveyed, study area, sampling design and procedures, variables and their measurements, methods of data collection, data processing and analysis, expected results, work schedule and work plan; budget, references and tools attached.

3.1 Research Philosophy

The way which helps to determine how data should be collected in a research work is called research philosophy, this was according to Bryman and Bell, (2015). What is recognized to be true and what is supposed to be true are the two beliefs in which research philosophy revolves around. When a researcher makes certain assumptions, which are based on research study, the assumptions should be reflected on research philosophy, Kumar and Reddy, (2014).

There are two types of research philosophy namely positivism and interpretivism philosophy. To describe research problems from an objective view-point positivism research philosophy is used, and to describe problems from subjective matter interpretivism research philosophy is used, by Becker et al., (2008). Positivism research philosophy is widely used because of its objective nature by the researchers researching now-a-days. It mainly follows the empirical study of the subject matter; hence it is widely perceived. The reality manipulated with variation is done in positivism research philosophy Creswell and Plano Clark, (2017).

This study adopted positivism research philosophy. For the efficient measurement, the idea of the research needs to be optimized. This study uses positivism research philosophy since it based on factual data of the subject. Data which can be collected by observations are factual data, described by Saunders et al., (2015). The hypothesis formation and ultimately proving them wrong or right is the major target of positivism. To find the impact of COVID-19 pandemic during the execution of Standard Gauge Railways (SGR) project, this philosophy provides quantifiable findings. Due to the objective nature of this study, positivism research philosophy was the most appropriate.

3.2 Research strategies

This study adopted a survey research strategy whereby questionnaire is used to solicit information. A survey research strategy is a research approach in which the researcher uses scientific sampling and questionnaire design to measure characteristics of the population with statistical precision. Most of the time, the elements in the sample surveyed are selected purposively or at random to make inference about the population as a whole. The purpose of a survey study is to establish the relationship between variables in order to examine the impact of COVID-19 pandemic during the implementation of government's strategic projects especially the construction of Standard Gauge Railway (SGR) network in Tanzania.

Butts, (1983) defines a survey research design or strategy as a significant way of generating a "what is" questions from a clear and specific objective in order to succeed data gathering procedures.

Therefore, given the interpretive position adopted in this research and the nature of the research questions, the survey research design was considered the most appropriate design to employ because it provides a systematic way to collect data, analyze information and report the results, thus understand a particular problem or situation in great depth. Moreover, this study applied quantitative approaches to obtain the required data. This approach aims to explain the phenomenon by collecting numerical data that analyzed by mathematical based methods.

3.2.1 Area of the Research

This study was conducted on the ongoing Standard Gauge Railways (SGR) project from Dar es Salaam to Dodoma and involved technical personnel from three companies, which are Tanzania Railways Corporation (TRC) as the client, Korea Railroad Corporation (Ko-Rail) as the project's consultant and YAPI Merkezi Company as the contractor of the project.

The SGR construction covers the total distance of 722Km from Dar es Salaam to Dodoma and it comprise of 9 construction camps which are: Ilala, Soga, Ngerengere, Kwala, Kingolwila, Kilosa, Gulwe, Ihumwa and Makutopora. Hence, all technical personnel for the SGR projects who are also potential respondents are available from these camps.

However, the reason for choosing the construction of Standard Gauge Railway (SGR) project in this study is because, SGR is one of the major projects in Tanzania designed and built to enhance transportation services and boosting national income. This project is considered to be one of the government's strategic projects based on its

scale, costs and expected results. Hence, it is from this background that, this study assesses the influence of COVID-19 pandemic during the implementation of government's strategic projects with the reference to the construction of Standard Gauge Railways (SGR) project.

3.3 Survey population

In this study, technical personnel from the Standard Gauge Railways (SGR) project were used to examine the impact of COVID-19 pandemic during the implementation of the government's strategic projects. Such respondent were technicians, engineers and project managers from different three companies involved in the SGR project. Moreover, the questionnaires were also given to few random respondents from procurement, survey, planning, social and environment departments in order to cover all necessary areas of this study. Thus, out of 200 personnel, a sample size of 50 respondents which is equivalent to 52% of the population were involved in the study.

This came from four departments from each profession namely; Civil (3 respondents), Mechanical (3 respondents), Electrical (3 respondents) and Telecommunication (3 respondents) whereby 12 respondents from each company ($12 \times 3 = 36$) plus additional 14 random respondents from procurement, survey, planning, social and environment departments at TRC company only summing up to 50 respondents. This affirms the argument by Mugenda (2003) who recommended a sample range between 10 to 30%.

3.3.1 Sampling Design and Procedures

According to Kothari, (2008), sampling procedure refers to as a technique used in choosing the item for the sample whereas the procedure stands for the sample itself.

Sampling procedures can be classified into two as explained by Saunders et al., (2007) which are probability and non-probability sampling.

Probability or representative sampling is the one in which the chance of each case is being selected from the population is known and is usually equal for all cases. Non-probability or judgmental sampling is the one in which the chances of each case being selected from the total population is not known.

Due to the nature of this study, one type of probability sampling called stratified sampling technique was used to come up with the sample that resulted in achieving the research objectives. This stratified sampling is a technique which involves dividing the population into sub-population (strata) and then sampled separately and proportionally.

The population of the study consists of employees from TRC, KoRail and YAPI Merkezi companies who involved directly with the construction of Standard Gauge Railways (SGR) project. Thus, the employee respondents are stratified according to the population in their respective companies to come with the sample of the study.

3.4 Variables and Measurement Procedures

The study examined the influence of COVID-19 during the implementation of government's strategical projects by assessing the risks that the project teams faces on site during the pandemic and how to mitigate them, determining demographic factors or strategies that might be contributing in meeting project objectives at a time of pandemic crisis within the required project time frame and assessing environmental

factors which might be contributing in assuring that project resources, materials and activities such as procurement and acceptance testing are done successfully as per customer's requirements in the presence for COVID-19 crisis.

However, data sources were obtained from the respondents through the administration of questionnaires as well as project documents such as construction plans for the SGR project and documents distributed by ministry of health to the project members explaining in details about the impact of COVID-19 and measures to avoid the disease transmission.

Furthermore, questionnaires guide is used to prepare the structured questionnaires to be administered to employees in all three companies involved in the SGR projects targeting technical personnel from various departments in order to get information. Copies of questionnaires were organized based on the prerequisites of a good questionnaire, i.e. short, simple and organized in a logical progression moving from relatively simple to more difficult issues as recommended by Yin, (2003).

The validity and reliability of tools were tested. However, internal validity was achieved by ensuring that questionnaire items answered the research questions. The answers in questions are verified or clarified. The questions were phrased logically and sequentially in simple language. Expert opinions were sought from the supervisor in order to ensure validity.

In addition to that, a pilot study carried out to determine the reliability of the questionnaires guide. Reliability analysis are subsequently done using Cronbach's

Alpha which measures the internal consistency by establishing if certain items within a scale measure the same construct. Kothari, (2004) noted that the accepted alpha value is 0.7, thus forming the study's benchmark.

3.5 Methods of Data Collection

There are two types of data collection methods which are primary and secondary data collection whereby primary data are original data collected from the field that has never been collected before, this was explained by Megel and Heermann, (1994) while secondary data refers to those data obtained from literature sources which have been collected by other people for some other purposes, explained by Saunders et al., (2000). However, both primary and secondary data collection will be used in this study.

In primary data collection, the questionnaire will be used as the method data collection as it is considered by many researchers to be the most appropriate method for data collection. Saunders et al., (2007) argued that a questionnaire as a general term to include all techniques of data collection in which each person is asked to respond to the same set of questions in a predetermined order. Hence, a questionnaire will always be self-administered that allows the respondents to fill it themselves. But for secondary data collection, documents such as journals, conference papers, publications, tendering documents, performance reports, contract documents, project plans and various reports available at TRC, KoRail and YAPI Merkezi will be used.

3.6 Data Processing and Analysis

Quantitative data was summarized after data collection from the field where the filled-in and returned questionnaires were edited for completeness, coded and entries to be

made into research tool called Statistical Package for Social Sciences (SPSS version 20). Coding technic process will be done in order to transform raw data into easily tabulated form by assigning symbols to help in condensing the responses into few categories for the purposes of data analysis. Descriptive statistics were used to analyze the data. Then, data were presented in the form of frequency distribution tables, graphs and pie charts that facilitated description and explanation of the study findings.

3.6.1 Multiple Linear Regression Analysis

Hair et al., (2014) explained that, multiple regression analysis was used to predict the relationship that exists between variables as assumed that more than one independent variable and one dependent variable are used. This study used multiple regression analysis in data analysis because it has four independent variables that include; demographic, economic, environmental and social factors and one dependent variable, which is successful implementation of government's strategic projects. The researcher is interested to measure the contribution of each independent variable to dependent variable.

The following regression model will be used

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Whereby:

Y = Dependent Variable (Successful implementation of government's strategic projects)

β_0 = y intercept (Constant)

β_1 = regression coefficient of demographic factors

β_2 = regression coefficient of economic factors

β_3 = regression coefficient of environmental factors

β_4 = regression coefficient of social factors

X_1 = demographic factors

X_2 = economic factors

X_3 = environmental factors

X_4 = social factors

ε = error term

CHAPTER FOUR

RESULTS AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents analysis of the findings based on the specific objectives of study. The results of the data collected were presented in frequency and percentage within tables or charts. The data was collected from 50 respondents who were the employees in the SGR project from the client, consultant and contractor companies. The employees' response rate was 100% since all the respondents contributed their thoughts on this study.

4.2 Demographic Factors that Might be Contributing in Successfulness of SGR Project in Tanzania during COVID-19 Pandemic

Demographic factors for the study involve employees working on the constructions of standard gauge rail line from Dar es Salaam to Dodoma. Characteristics, which were considered include gender, age, level of education, work title, profession and years the respondents had worked within the SGR project.

4.2.1 Gender of Respondents

This study involved employees from TRC, Ko-Rail and YAPI Merkezi Company focusing to establish the gender of the SGR project members / employees who took part in the study. Consider table 4.1, which indicates the gender of the employees who responded to the study. As shown on Table 4.1, results indicate that, 32(64%) of the respondents were males whereas 18(36%) out of 162(100%) were females. It shows that, most of the participants in the study were males.

Table 4.1: Gender Distribution for Employee Respondents

Gender	Frequency	Percent
Male	32	64.0
Female	18	36.0
Total	50	100.0

4.2.2 Age of Respondents

The study also intended to know the range of the age of the respondents among employees involving in the SGR project. Table 4.2 shows the age distribution for all project members involved in this study.

Table 4.2: Age Distribution for Employee Respondents

Age	Frequency	Percent
18-30	28	56.0
31-40	18	36.0
41 and above	4	8.0
Total	50	100.0

The results show that the majority of the employee respondents were of the age between 18 and 30 of which they were 28, which is 56% of all the employee respondents. SGR Project members with age between 31 and 40 were 18 which is 36% of respondents and the one between 41 and above were only 4 which is 8%.

According to the secondary data from World Health Organization website explained that, the COVID-19 affects more older people than the youths, then the finding implied that hiring young people (youth) at the age between 18-30 will help project completion because these people are barely affected by COVID-19 diseases and most

of them recover quickly compared to old people. Thus, this study promotes and encourage organizations to hire young people as they tend to be strong, immune and partially affected by diseases which made them fit for the project and site works.

4.2.3 Education Level of Respondents

The study aimed to establish the education level of all the respondents involving in the construction of SGR project. The findings revealed that the majority of the staff in the construction of Standard Gauge Railways (SGR) project had a first degree of which were 40 in number which translates to 80% of all the employee respondents, this was followed by the staff with second degree which was 6 (12%). Furthermore, the study revealed that 4 (8%) employee respondents had ordinary diploma.

Thus, from the findings, it is clear that the employees in the SGR project are well educated of which was advantageous for coming up with reliable data. Table 4.3 shows the distribution of employee education levels in both frequency and percentage.

Table 4.3: Education Level of the Employee Respondents

Education Level	Frequency	Percent
College	4	8.0
First degree	40	80.0
Second degree	6	12.0
Total	50	100.0

4.2.4 Experience of Respondents

The study also intended to know how long the employees had been involved in the construction of SGR project in Tanzania as project members. However, this research

intended to identify those project members or employees who have been there since the beginning of COVID-19 pandemic as their data is much more reliable for supporting the validity of findings. Table 4.4 shows the experience of all employees involved in the study.

Table 4.4: Experience of Employee Respondents

Years	Frequency	Percent
1 Year	10	20.0
2 Years	15	30.0
More than 3 years	25	50.0
Total	50	100.0

As shown on Table 4.4, 10(20%) out of 50(100%) respondents had at least one-year experience in the SGR project while 15(30%) of the respondents had two years of working experience and the majority which is 25(50%) had more than three years of experience in the construction of SGR project in Tanzania.

Hence, the result shows that 50% of project members have more than three years in the SGR project in Tanzania. As the COVID-19 pandemic started at the year 2019 up to date, this gives the notation that project members with more than 3 years in the project have more valid information about the influence of COVID-19 pandemic in all scenarios.

This indicates that, project members in the SGR project knows all the necessary measures, procedure and strategies on how to battle the impact of COVID-19 disease in their working areas.

4.2.5 Work Title of Respondents

This part of the study aimed to identify decision makers in the SGR project. Based on the job title of respondent, the findings of this study will assure the researcher about the reliability of data expressing various decision made in the project to battle impacts of COVID-19 pandemic.

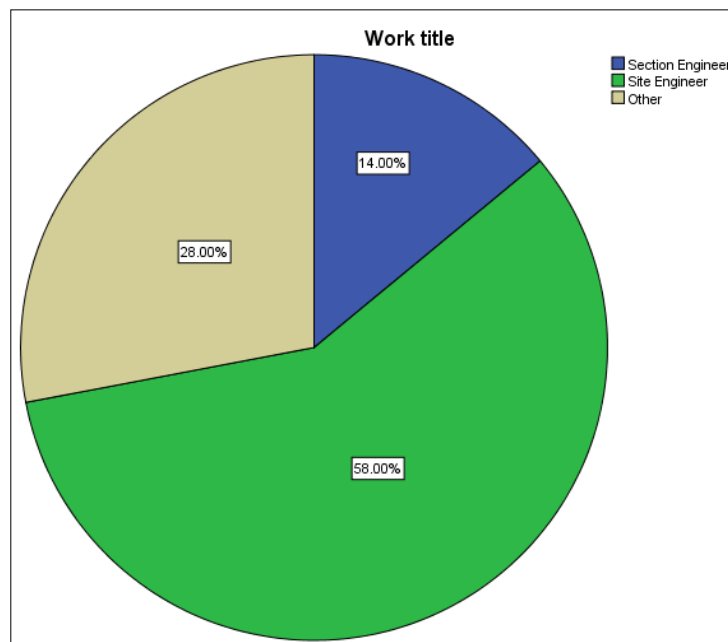


Figure 4.1: Pie Chart for Work Title of Employees Respondents

From the Figure 4.1 shows 7(14%) of respondents were section engineers, 29 (58%) were site engineers and the remain 14(28%) are the respondents from other profession apart from SGR technical personnel/engineers.

However, engineers are the key personnel in all site works in SGR project, they are the supervisors of project activities and decision makers in the field. Also, engineers are responsible for the well-being of other team members, the progress of the project on their area and all site information regarding the status of the project. Engineers act as the link between low level employees and the management.

Thus, the finding of this study gives the notation that, the organizational top management received enough information about project team members on the field about project activities and status and how much they were affected by the COVID-19 pandemic which helped the management to make the right decision regarding safety procedures and measurements based on SGR project activities and employee's wellbeing in order to assure project success.

Hence, it was revealed that demographic factors in this study have significant relationship to the successfulness of the project techniques to battle the impact of COVID-19 diseases and assure the successfulness of SGR project in Tanzania.

4.3 Economic Factors that Might be Contributing in the Successfulness of SGR Project in Tanzania during COVID-19 Pandemic

The study sought to establish economic factors, which might contribute in the successfulness of SGR project in Tanzania during COVID-19 pandemic. This part focused on the various project activities as well as project performance dimensions called triple constraints of project management. Any change or disturbance in these factors will heavily influence the value of investment in the project.

Moreover, failure of any of the project activities or any of the project triple constraints in project management may lead into national financial losses. As the secondary data from the ministry of works and transportation explained that, the government of Tanzania invest 7.1 trillion for SGR project from Dar es Salaam to Dodoma and expecting huge financial return (national income) during its operation.

Thus, this part illustrates the respondent's perception on the impact of COVID-19 in the project activities and suggestion of which among the triple constraints of project management should be changed in order to maintain project goals.

4.3.1 Perception of Employees on Project Activities

The employees were asked about the impact of COVID-19 pandemic in various project activities such as planning, designing, installation, inspection for quality assurances or quality control, testing for Factory Acceptance Testing (FAT) and Site Acceptance Testing (SAT), procurement and Commission.

4.3.1.1 Planning

The Table 4.5 below shows descriptive statistics employees' perception on the impact of COVID-19 in the SGR project planning.

Table 4.5: Employees Perception on SGR Project Planning

Impacts	Frequency	Percent
Not affected	19	42.2
Partial affected	20	44.4
Strongly affected	11	13.3
Total	50	100.0

The result of the findings shows that 20(44.4%) of respondents indicates that SGR project planning were 'partially affected' by the COVID-19 pandemic. While 19 (42.2%) of other respondents agreed that the SGR project plans were 'not affected' and the remain 11(13.3%) respondents indicates that project planning were 'strongly affected' by the impact of COVID-19 pandemic. This indicates that, these project

planning activities can still function at the time of pandemic crisis but with closer supervision from the project or planning manager. Hence, there will be no need of shutting down of planning tasks during pandemics such as COVID-19 disease.

4.3.1.2 Designing

Consider the Table 4.6 shows descriptive statistics employees' perception on the impact of COVID-19 in the SGR project designing.

Table 4.6: Employees Perception on SGR Project Designing

Impacts	Frequency	Percent
Not affected	25	54.3
Partial affected	18	39.1
Strongly affected	7	6.5
Total	50	100.0

The result of the findings shows that 25(54.3%) of respondents indicates that SGR project designing were 'not affected' by the COVID-19 pandemic. While 18(39.1%) of other respondents agreed that the SGR project designs were 'partially affected' and the remain 7(6.5%) respondents indicates that project designing were 'strongly affected' by the impact of COVID-19 pandemic.

This indicates that, these project activities can still function at the time of pandemic crisis but with closer supervision as SGR project involves designing and building contract which was not affected by pandemic and still continues up to date which showing good signs for successfulness of the project.

4.3.1.3 Installation

Consider the Table 4.7 shows descriptive statistics employees' perception on the impact of COVID-19 in the SGR project installation.

Table 4.7: Employees Perception on SGR Project Installation

Impacts	Frequency	Percent
Not affected	8	8.7
Partial affected	22	47.8
Strongly affected	20	43.5
Total	50	100.0

The result of the findings shows that 22(47.8%) of respondents indicates that SGR project installation were 'partially affected' by the COVID-19 pandemic. While 20 (43.5%) of other respondents agreed that the SGR project designs were 'strongly affected' and the remain 8(8.7%) respondents indicates that project designing were 'not affected' by the impact of COVID-19 pandemic. This indicates that, these project activities such as installation of materials and equipment can still be on service at the time of pandemic crisis but with closer supervision from the site or section engineer in the field.

4.3.1.4 Site inspection

Site inspection is the task performed by site and section engineers to check or inspect and control the quality (QA/QC) of products, service or activities on the field to assure the project is execution as per requirements. Table 4.8 shows descriptive statistics employees' perception on the impact of COVID-19 in the SGR project inspection for QA/QC.

Table 4.8: Employees Perception on SGR Project Inspection for QA/QC

Impacts	Frequency	Percent
Not affected	8	10.6
Partial affected	32	68.1
Strongly affected	10	21.3
Total	50	100.0

The result of the findings shows that 32(68.1%) of respondents indicates that SGR project inspection for QA/QC were ‘partially affected’ by the COVID-19 pandemic. While 10(21.3%) of other respondents agreed that the SGR project inspection for QA/QC were ‘strongly affected’ and the remain 8(10.6%) respondents indicates that project inspection for QA/QC were ‘not affected’ by the impact of COVID-19 pandemic. This indicates that, inspection activities can still function at the time of pandemic crisis but with closer supervision and obeying safety rules and regulations against COVID-19 disease.

4.3.1.5 Testing

Testing activities in SGR project divided into two parts which are Factory Acceptance Testing (FAT) which is conducted before installation from the manufacture and Site Acceptance Testing (SAT) which is conducted on the field after installation. Table 4.9 shows descriptive statistics employees’ perception on the impact of COVID-19 in the SGR project testing for FAT and SAT.

Table 4.9: Employees Perception on SGR Project Testing for FAT and SAT

Impacts	Frequency	Percent
Not affected	8	10.6
Partial affected	14	29.8
Strongly affected	28	59.6
Total	50	100.0

The result of the findings in the table 4.9 shows that 28(59.6%) of respondents indicates that SGR project testing for FAT and SAT were ‘strongly affected’ by the COVID-19 pandemic. While 14(29.8%) of other respondents agreed that the SGR project testing for FAT and SAT were ‘partially affected’ and the remain 8(10.6%) respondents indicates that project testing for FAT and SAT were ‘not affected’ by the impact of COVID-19 pandemic.

This is due to safety measures taken to battle COVID-19 pandemic such as closing of borders and disallowing engineers to travel abroad for factory acceptance testing (FAT) of materials and equipment before importation. This, give the notation that, more energy and strategies should be focused in these activities during pandemic to ensure everything goes smoothly as planned without affecting the project time line.

4.3.1.6 Procurement

Procurement involves the purchasing of material and equipment to be used for SGR project implementation. Most of project material and equipment were imported from abroad. This part focus to illustrate how much procurement activities affected by the COVID-19 pandemic.

Table 4.10: Employees Perception on Procurement in SGR Project

Impacts	Frequency	Percent
Not affected	11	9.3
Partial affected	14	32.6
Strongly affected	25	58.1
Total	50	100.0

The result of the findings shows that 25(58.1%) of respondents indicates that procurement in SGR project were ‘strongly affected’ by the COVID-19 pandemic. While 14(32.6%) of other respondents agreed that the procurement in SGR project were ‘partially affected’ and the remain 11(9.3%) respondents indicates that procurement in SGR project were ‘not affected’ by the impact of COVID-19 pandemic. These results give the general review on the impact of strategic measure taken to battle COVID-19 pandemic. Safety measures against COVID-19 such as closing borders, shutting down markets and other business activities affected procurement and purchasing of project material leading to project delaying due to the long waiting of purchased materials and tools for project construction from abroad.

4.3.1.7 Commissioning

Commissioning is the final phase in the project execution dealing with assurance of all project systems and components installed in the SGR project. It is the process involving various final tests to assure the project is ready for operation. This part aimed to identify how much this activity has affected by the COVID-19 pandemic.

Table 4.11: Employees Perception on the SGR Project Commissioning

Impacts	Frequency	Percent
Not affected	10	20.0
Partial affected	20	40.0
Strongly affected	20	40.0
Total	50	100.0

The result of the findings shows that 20(40%) of respondents indicates that the SGR project commissioning was ‘strongly affected’ by the COVID-19 pandemic. While

20(40%) of other respondents agreed that the SGR project commissioning were 'partially affected' and the remaining 10(20%) respondents indicates that the SGR project commissioning were 'not affected' by the impact of COVID-19 pandemic.

As the COVID-19 pandemic hit Tanzania, civil engineering activities were in commissioning phase while other activities still on design and execution phase. Thus, the results indicate that, most civil works were strong affected during commission compared to the commission of other activities such as electrical and telecommunication works which were partially affected by the pandemic. This gives the notation that, each project activity can be affected differently and independently based on time frame of crisis and the impacts of the disease at the moment.

4.3.2 Perception of Employees on Project Performance Dimension

Three major dimensions that define the project performance are scope, time, and costs. These parameters are interrelated and interactive. It is evident that any change in any one of dimensions would affect the other.

For example, if the scope is enlarged, project would require more time for completion and the cost would also go up. If time is reduced the scope and cost would also be required to be reduced. Similarly, any change in cost would be reflected in scope and time. Successful completion of the project would require accomplishment of specified goals within scheduled time and budget.

Therefore, project financial status, budget and national economy depends on the variation and management of these three-performance dimension of SGR project,

which are most likely to be affected by COVID-19 pandemic. Figure 4.2 shows Employees perception on the three project performance dimensions.

Figure 4.2 shows that 24(48%) of respondents indicates that, ‘Time’ or project duration among the other three dimensions should be changed or varied due to the impacts of COVID-19 in the SGR project. However, 6(12%) of other respondents suggested that ‘Scope’ of the project is the one should be changed due to pandemic crisis while the other 5(10%) of respondents suggested that ‘Cost’ of the project should be changed. Moreover, 15(30%) of the remain respondents indicates that the three dimensions in project performance should remain the same.

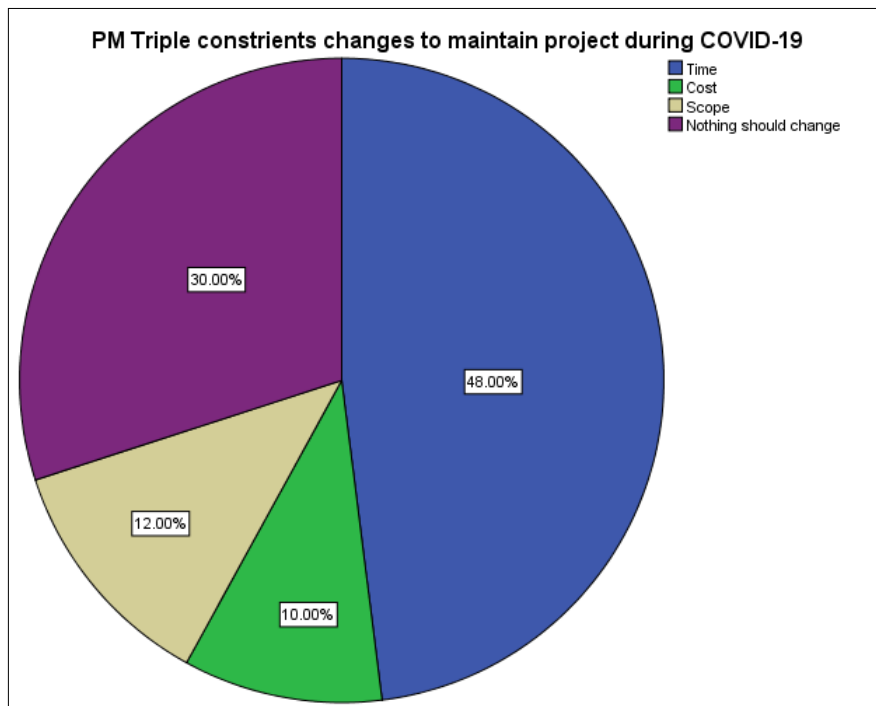


Figure 4.2: Employees Perception on Project Performance Dimensions

Hence, the majority 24(48%) of project members suggested that, out of three triple constraints of project management, ‘time’ should be changed. This indicates that project time frame should be expanded in order to give enough time and space for the

delayed project activities such as procurement and factory acceptance testing. However, variation in project time frame disturb the scope and cost of the project as well, hence requires more capital and funds apart from initial investment of Tsh 7.1 trillion to insure the successful of SGR project from Dar es Salaam to Dodoma.

4.4 Environmental Factors that might be Contributing in the Successfulness of SGR Project in Tanzania During COVID-19 Pandemic

Environmental factors make up physical, social and attitudinal environment in which SGR employees live and conduct their project activities. The study focused to illustrate environmental factors that might be contributing in the successfulness of SGR project in Tanzania during pandemic crisis by looking into project physical activities based on monitoring and control as well as testing and commissioning by assessing respondent's working environment and safety strategies against COVID-19 disease.

4.4.1 Respondent's Working Stations (SGR Camps)

Every working station or SGR camp in the SGR project in Tanzania has its own working environment, rules, guidelines and cultures due to the nature of leadership or administration of that particular area. Hence, each SGR camp was affected differently by COVID-19 pandemic and safety measure taken was not the same. Consider in the Figure 4.3.

The chart from the Figure 4.3 indicates the number of respondents in each SGR camp. The result of the finding indicates that, the main SGR camp of Soga comprise of 29(58%) of all respondents while other working station shows that 5(10%) for Ilala camp and 3(6%) for Ngerengere camp.

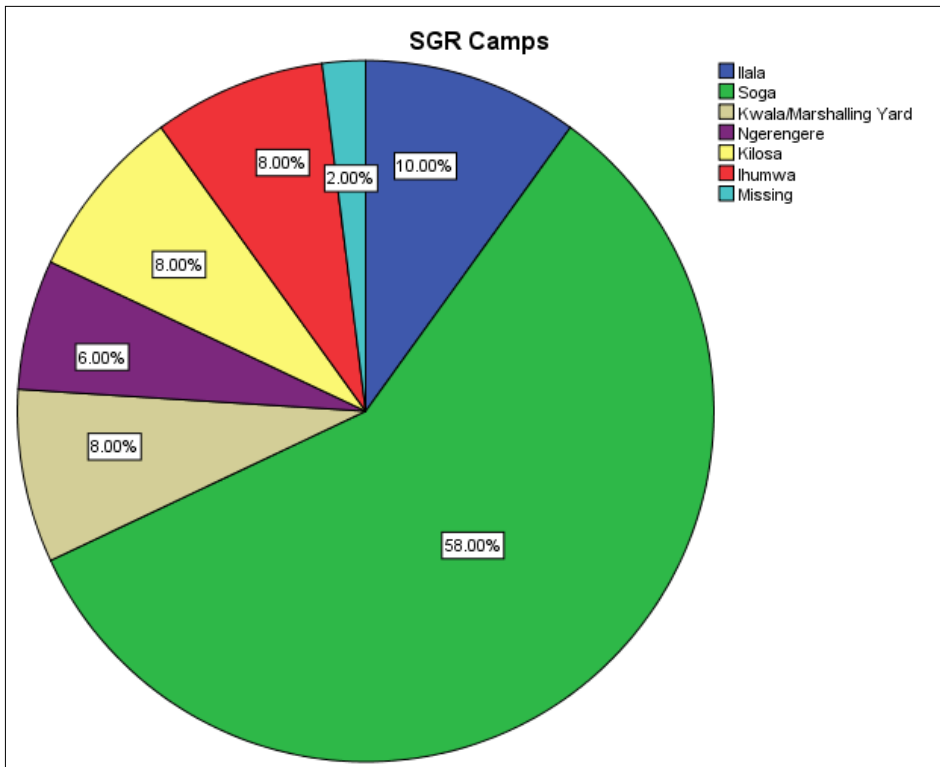


Figure 4.3: Number of Respondents from each SGR Camp

Hence, Kwala/Marshalling Yard, Kilosa and Ihumwa comprised 4(8%) of respondents each while the remain 1(2%) are the camps with no respondents such as Kingolwila, Gulwe and Makutupora whereby their respondents are section engineers and staying in other camps including Ngerengere, Kilosa and Ihumwa respectively.

4.4.2 Perception of Respondents Regarding Strategies Taken to Combat COVID-19

This part of study focused on environmental issues which can affect human health such as COVID-19 disease and assessing strategies taken to battle them in order to ensure project success.

The employees were asked whether they are satisfied with the strategies used to overcome the impacts of COVID-19 pandemic and continue the implementation of SGR project.

Table 4.12: Employees Satisfaction on the Strategies against COVID-19

Perceptions	Frequency	Percent
Strongly disagree	1	2.0
Not sure	4	8.0
Agree	14	28.0
Strongly agree	31	62.0
Total	50	100.0

The result of the finding indicated that 31(62%) of respondents ‘strongly agree’ with the statement, 14(28%) also ‘agree’ with methodology used against the pandemic. Only 4(8%) of respondents were ‘not sure’ and the remain 1(2%) respondent ‘strongly disagreed’ as shown in the table 4.12 above.

Based on the findings, 62% of respondents strongly agreed with the strategies used in the work environment to battle COVID-19 pandemic while only 2% disagree. This give the notation that project members are satisfied with safety procedure applied to protect SGR employees against COVID-19 disease.

The respondents were asked if their companies provided the best protection tools and services to protect project members against COVID-19 diseases.

Table 4.13: Employees Perception on Tools and Services used against COVID-19

Reviews	Frequency	Percent
Strongly disagree	1	2.0
Not sure	3	6.0
Agree	16	32.0
Strongly agree	30	60.0
Total	50	100.0

The result of the finding indicated that 30(60%) of respondents ‘strongly agree’ with the statement, 16(32%) also ‘agree’ with tools and services provided against the pandemic. Only 3(6%) of respondents were ‘not sure’ and the remain 1(2%) respondent ‘strongly disagreed’. Consider table 4.13.

However, the findings reveal that 60% of respondents strongly agreed that, Companies involved in the construction of SGR project provided the best protection tools and services to ensure employees’ safety in their working environment. This implies that, protection gears and treatment against COVID-19 disease to the SGR employees were satisfactory.

The respondents were asked if they would like to recommend for safety measures taken in SGR project against COVID-19 pandemic to be used in other ongoing government projects.

Table 4.14: Employees Recommendation on Safety Measures against COVID-19

Reviews	Frequency	Percent
Strongly disagree	1	2.0
Not sure	4	8.0
Agree	10	20.0
Strongly agree	35	70.0
Total	50	100.0

The result of the finding indicated that 35(70%) of respondents ‘strongly agree’ with the statement, 10(20%) also ‘agree’ with safety measures used against the pandemic. Only 4(8%) of respondents were ‘not sure’ and the remain 1(2%) respondent ‘strongly disagreed’. Hence, the statement was supported by 70% of SGR project members whom strongly agreed to recommend for the safety measure taken against COVID-19 pandemic in SGR project to be applied in other ongoing government projects.

The working environment was assessed in this part by asking employees if continue working during pandemic such as COVID-19 is very risk and causing them to work into dangerous environment, hence it is not recommended to do so.

Table 4.15: Employees Perception on Working Environment During Pandemic

Reviews	Frequency	Percent
Strongly disagree	19	38.0
Disagree	18	36.0
Not sure	9	18.0
Agree	3	6.0
Strongly agree	1	2.0
Total	50	100.0

The result of the finding indicated that 19(38%) of respondents ‘strongly disagree’ with the statement, 18(36%) also ‘disagree’ working during pandemic crisis is risk and dangerous and do not recommend to do so. Only 9(18%) of respondents were ‘not sure’ while the remain 1(2%) respondent ‘strongly agreed’. Consider table 4.15.

The output implies that, if safety procedures are followed as instructed, the working environment for SGR employees will be consider safe and suitable, hence it will be recommended to continue working during pandemic.

4.4.3 Strategies used to Support Physical Project Activities on site During COVID-19

Physical project activities are those activities, which conducted directly on site or field such as project monitoring and control as well as testing and commissioning. Such activities including technical meeting, testing, training, site visits and inspection.

These activities involve interaction between project member but due to the impact of COVID-19, these activities were shutdown.

This part of the study illustrates on strategies or alternative ways to make sure these activities continue in order to succeed the project objectives. Figures below, shows the bar chart with highest frequency based on respondent's perception on the strategies to support cancelled physical site activities.

4.4.3.1 Online technical meeting

Result of the finding shows that 31(63.27%) of respondents 'strongly agreed' on online technical meeting and other 11(22.45%) also 'agreed'. 5(10.20%) 'disagreed' while other 1(2.041%) 'strongly agreed' and the remained 1(2.041%) were 'not sure' whether to conduct online meeting or not. Consider the figure 4.4 below;

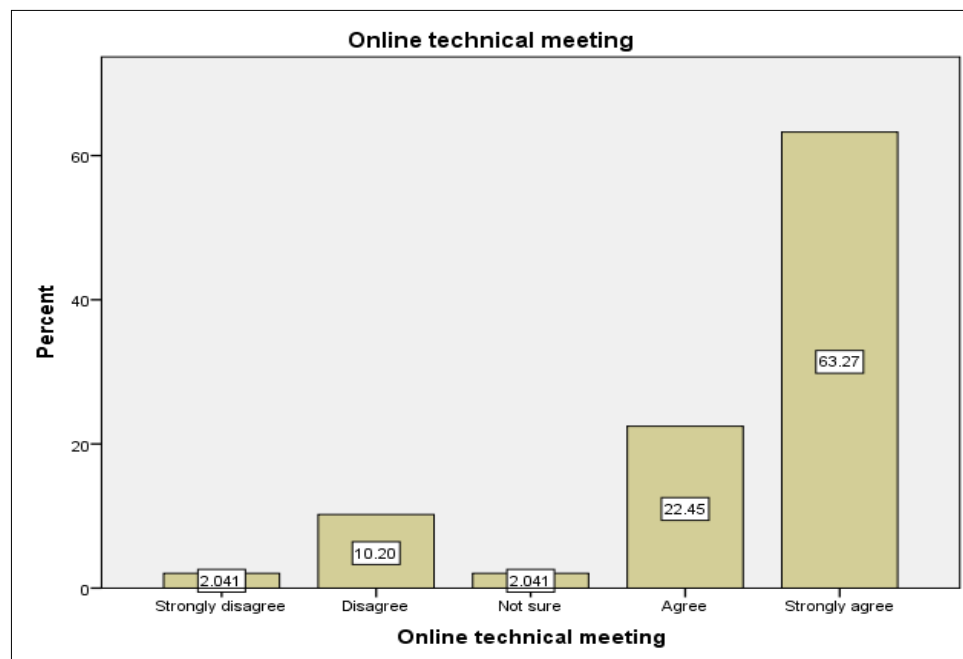


Figure 4.4: Employee Response on Online Technical Meeting

The result implies that all project meeting can still being conducted online without compromise the safety of project members. This result also gives the notion that project information will continue to circulate among stakeholder through online medium and ensure their well-being against COVID-19 disease.

4.4.3.2 Online testing for FAT and SAT

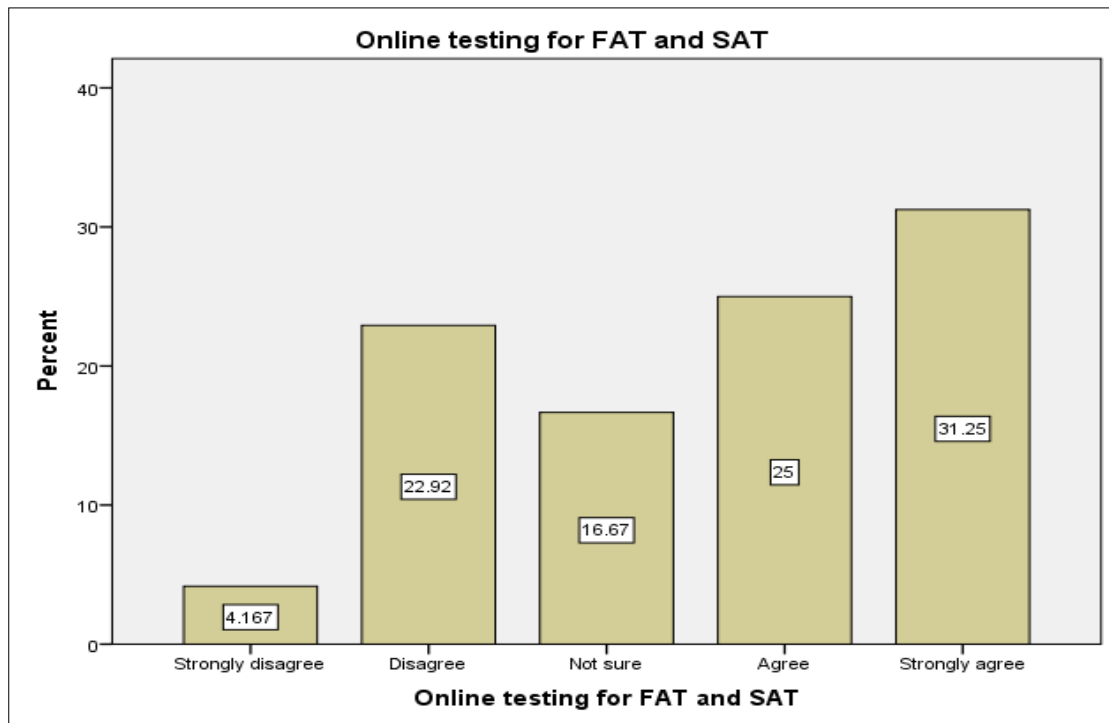


Figure 4.5: Employee Response on Online Testing for FAT and SAT

Result of the finding shows that 16(31.25%) of all respondents ‘strongly agreed’ on online testing for FAT and SAT while 13(25%) also ‘agreed’ and 11(22.92%) ‘disagreed’. 8(16.67%) were not sure and the remain 2(4.18%) ‘strongly disagreed’. Consider the Figure 4.5.

As the result revealed that 31.25% of respondents strongly agreed with online testing procedure conducted during pandemic and also supported with other 25% of

respondent of agreed with this strategy. This implies that, this strategy solves the delaying problem which caused by closing of international borders/airport and disallowing project engineers to participate on factory acceptance testing (FAT) abroad and site acceptance testing (SAT) on the field.

4.4.3.3 Employees' Retrenchment

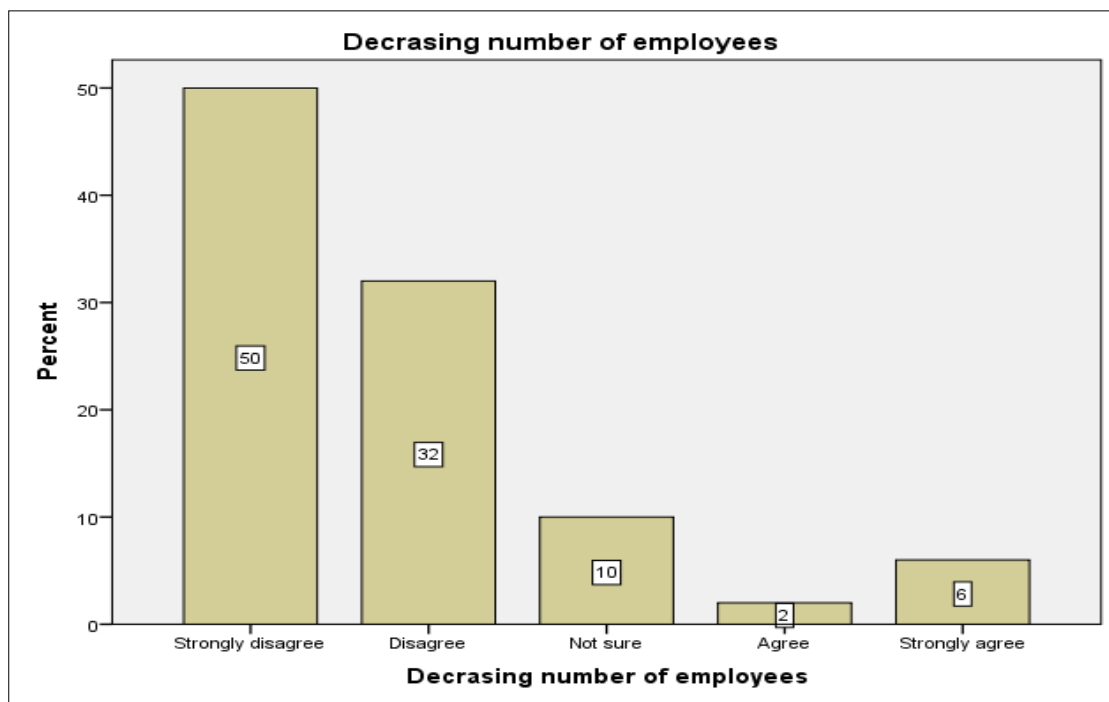


Figure 4.6: Employee Response on Employee's Retrenchment

Result of the finding indicate that 25(50%) of respondents 'strongly disagree' with decreasing number of employees and 16(32%) 'disagreed'. 5(10%) of employees were 'not sure' while 3(6%) 'strongly agreed' and the remaining 1(2%) 'agreed'. Hence, based on the result showing that the majority of respondents responded negatively about retrenchment program as one of the factors to battle with the impacts of COVID-19 pandemic, this implies that retrenchment will not be the solution but instead will be another problem, hence it is not recommended.

4.4.3.4 Night shifting strategy

Result of the finding indicate that 19(38.78%) of employees were ‘not sure’ whether to promote a night shift strategy or not but only 14(28.57%) ‘agreed’. 7(14.29%) ‘strongly agreed’ and 6(12.24%) ‘disagreed’ while remain 3(6.12%) ‘strongly disagreed’.



Figure 4.7: Employee Response on Night Shift Strategy

The results imply that, night shift strategy may or may not be used as the part of project strategy to ensure project success, hence to be used during critical condition.

4.4.3.5 Online Training

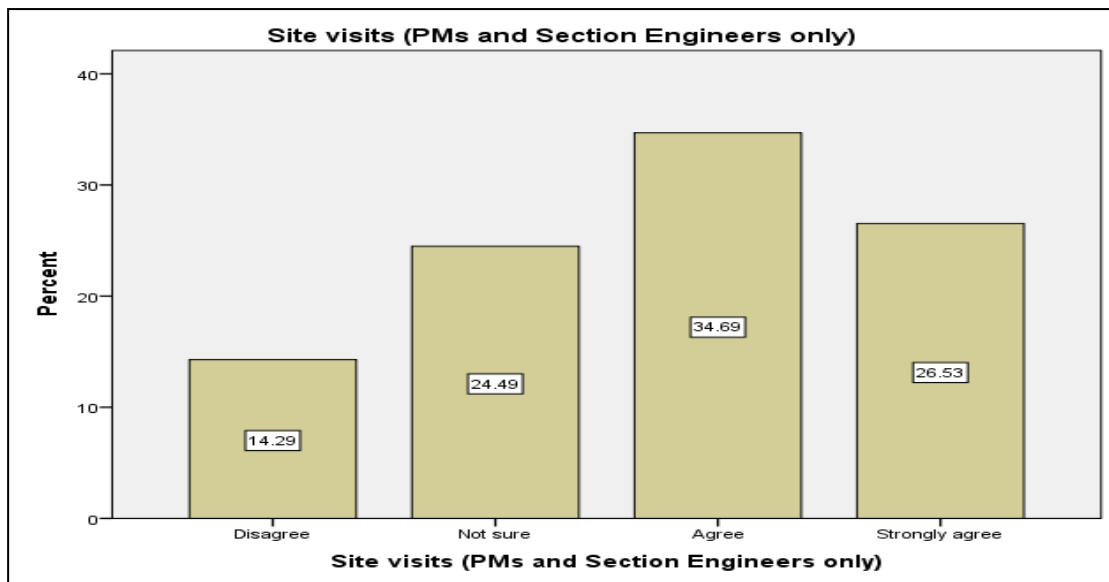
Result of the finding indicate that 28(55.10%) of all respondents ‘strongly agreed’ on conducting online training, 16(32.7%) ‘agreed’, 3(6.1%) ‘disagreed’ and the other 3(6.1%) were ‘not sure’. Consider Table 4.16.

Table 4.16: Employee Response on Online Training

Response	Frequency	Percent
Disagree	3	6.1
Not sure	3	6.1
Agree	16	32.7
Strongly agree	28	55.1
Total	50	100.0

Majority of respondents which is 55.10% of respondents strongly agreed on the online training instead on physical one. This result implies that, this strategy saves a lot of money and time as the project member used just their communication devices and software to receive learning materials from trainers.

4.4.3.6 Site Visit

**Figure 4.8: Employee Response on Site Visit Attendees**

Result of the finding indicate that 17(34.69%) of all respondents 'agreed' that of project managers (PM) and section engineers should attend site visits while 13(26.53%) 'strongly agreed' on it. Only 12(24.49%) are 'not sure' while the

remaining 7(14.29%) ‘disagreed’. This implies that, during physical activities such as site visit and inspection, the attendants should be fewer as much as possible in order follow safety procedure recommended by health institutes.

4.4.3.7 Site Inspection

Result of the finding indicates, 18(36.17%) ‘agreed’ that there should be fewer inspectors during site inspection while other 12(23.40%) were ‘not sure’. 10(19.15%) ‘strongly agreed’ while 7(14.99%) disagreed and the remaining 3(6.36%) ‘strongly disagreed’.

Table 4.17: Employee Response on Number of Inspectors on Site

Response	Frequency	Percent
Strongly disagree	3	6.36
Disagree	7	14.99
Not sure	12	23.40
Agree	18	36.17
Strongly agree	10	19.15
Total	50	100.0

Hence, environmental factors revealed that, most physical activities can be replaced by the online activities with the right tools and services. In case of mandatory physical activities, only few key personnel should attend to minimize risk of COVID-19 exposure.

4.5 Social Factors that might be Contributing in the Successfulness of SGR Project in Tanzania During COVID-19 Pandemic

This part of the study illustrates how much COVID-19 pandemic affected employees’ lifestyle on the SGR sites and identifying factors used to adopt pandemic environment

into normal circumstances in order to assure project implementation as planned. The study was focused on social activities such as communication, health and safety of SGR project members against COVID-19 during social interaction and on-site physical activities.

4.5.1 Safety Measures Taken against COVID-19 Pandemic

This part of study meant to identify cases and death of SGR project personnel caused by COVID-19 disease and recommending safety measures taken to protect project members against COVID-19 pandemic.

Respondents were firstly asked if they knew anyone in the project teams who got infected by COVID-19 disease and number of deaths. See the Table 4.17.

Table 4.18: COVID-19 Cases on SGR Project

Inputs	Frequency
Infected	17
Death	8
Recovered	9

Based on the data gathered from respondents, the result of the finding indicates that there were 17 cases of COVID-19, 8 deaths and 9 recovery.

Then, respondents were asked about which safety measure applied in the project to battle the impact of COVID-19 during the execution of the SGR project in Tanzania.

Their response is illustrated in the table 4.19.

Table 4.19: Employees Response on Safety Measure Taken to Combat COVID-19

Safety measures against COVID-19	Frequency
Hand sanitizing	50
Temperature measurement	46
Wearing mask	50
Safe distancing	40
Working from home	13
Working in shift	30
Quarantines	30
Curfew	4
Lock down	14

The result of finding indicates that all 50 respondents agree that hand sanitizing and wearing mask was used as safety measure against COVID-19 pandemic. However, 46 out of 50 respondents agrees on temperature measurement, 40 out of 50 respondents agreed on safe distancing, 30 respondents out of 50 agreed on both working in shift and quarantines while 14 respondents agreed on lock down and 13 respondents agreed on working from home. Only 4 respondents out of 50 respondents agreed on curfew.

4.5.2 Personal Impact of COVID-19 to SGR Project Members

Respondents were asked if the COVID-19 pandemic affected them personally. The result of finding indicated that 21(42%) of respondents were not affected by COVID-19 while the remained 29(58%) specified how much COVID-19 affected them personally.

Table 4.20: Impact of COVID-19 on Individuals in SGR Project

Impacts	Frequency	Percent
Affected	29	58
Not affected	21	42
Total	50	100.0

4.5.3 Communication Management

To ensure social interaction and smooth deliverance of project information, respondents were asked to recommend for communication strategies applied during COVID-19 crisis.

Table 4.21: Responses Based on Communication Strategies Applied During COVID-19

Communication strategies	Strongly Agree	Agree	Not Sure	Strongly Disagree	Disagree
a) Normal meeting	13%	26.1%	13%	10.9%	37%
b) Online seminar or webinar	54%	36%	4%	4%	2%
c) Whatsapp chat	30%	36%	18%	2%	14%
d) Online meeting	66%	28%	4%	2%	0
e) Progress reports (Soft copy)	57.1%	34.7%	8.2%	0	0
f) Short videos about the project progress	45.9%	38.8%	14.3%	0	2%
g) Face to face	4.1	0	0	22.4%	32.7%

In case of normal meeting strategy, the result of the finding indicates that 18(37%) respondents 'disagreed' with this communication strategy while other 12(26.1%) 'agreed'. 6(10.9%) 'strongly disagree' and other 7(13%) 'strongly agreed' while other remain 7(13%) were 'not sure'.

For the online seminar strategy, the result shows that 27(54%) respondents 'strongly agreed' with this communication strategy while other 18(36%) 'agreed'. 1(2%) 'strongly disagree' and other 2(4%) 'disagreed' while other remain 2(4%) were 'not sure'.

For the case of "Whatsapp chat" social network, 18(36%) of respondents 'agreed' with this communication strategy while other 15(30%) 'strongly agreed'. 9(18%) were 'not sure' and other 7(14%) 'disagreed' while other remain 1(2%) 'strongly disagreed'.

For the case of online meeting communication strategy, result of findings indicates that 33(66%) respondents 'strongly agreed' with this communication strategy while other 14(28%) 'agreed'. 2(4%) were 'not sure' while other remain 1(2%) 'strongly disagreed'.

For the case of progress report to be submitted in soft copy, the findings show that 29(57.1%) respondents 'strongly agreed' with this communication strategy while other 17(34.7%) 'agreed' while other remain 4(8.2%) were 'not sure'.

For the case of presenting short videos about project progress, the findings indicate that 23(45.9%) respondents 'strongly agreed' with this communication strategy while other 19(38.8%) 'agreed'. 7(14.3%) were 'not sure' and other 1(2%) 'disagreed'.

However, when it comes to face to face communication, the result of the finding revealed that 26(32.7%) of respondents 'disagreed' with this communication method while 20(22.4%) 'strongly disagreed' and the other 2(4.1) 'strongly agreed'.

Moreover, respondents were asked to recommend for the best video conference tool capable of establishing online communication. The data gathered show that 33(66%) suggested that 'zoom' software should be used as means of online communication while 9(18%) recommended for 'Whatsapp conference' and the remaining 8(16%) recommended for 'skype' communication tool. Consider table 4.22.

Table 4.22: Employees Response to Recommend for the Best Online Communication Tool

Tools	Frequency	Percent
Zoom	33	66.0
Skype	8	16.0
Whatsapp conference	9	18.0
Total	50	100.0

Finding of the study suggest that, social activities during COVID-19 pandemic are supported by safety procedure conducted on the SGR sites such as hand sanitizing, temperature measurements, wearing mask, safe distancing, working in shifts and quarantines.

However, communication management was conducted to ensure safe interaction among project members in which majority of the respondents strongly agreed with online seminar, whatsapp chat, online meeting, progress report in soft copy, short videos about project progress in 54%, 30%, 66%, 57.1% and 45.9% respectively. But also, respondents disagree with normal meeting and face-to-face communication in 37% and 52% respectively. This implies that, online communication is more functional and safer compared to physical interaction such as meeting and face-to-face conversation.

Thus, 66% of all respondents recommended for online communication tool called 'Zoom' in order to establish safe and reliable communication among project members and other stakeholders.

4.6 Relationship between Demographic, Economic, Environmental and Social Factors and Successful Implementation of SGR Project During COVID-19 Pandemic

4.6.1 Assumption of Multiple Regression

Multiple regression analysis assumes a number of assumptions about the collected data (Pallant, 2005). Some of the assumptions include; linearity assumption, normality assumption, Autocorrelation's assumption, Multicollinearity assumption and Multiple linear regression analysis.

4.6.1.1 Linearity Assumption

This assumption requires that, relationship between dependent and independent variables should be linear in nature. Pearson correlation was used to establish this assumption.

The results show that successful implementation of government's strategic projects such as the construction of SGR project has significant positive linear relationship with independent variables ($p < 1.000$) [1- Tailed].

However, the relationship between the variable has strong positive or negative value such that, demographic factors (+ve), $r(50) = .361$, economic factors (-ve), $r(50) = -.085$, environmental factors (+ve), $r(50) = .142$, and social factors (-ve), $r(50) = -.152$ as demonstrated in Table 4.23.

Table 4.23: Linearity Assumptions

	Successful implementation of government's strategic Projects [SGR Project]	Demographic factors	Economic factors	Environmental factors	Social factors	
Pearson Correlation	Successful implementation of government's strategic Projects [SGR Project]	1.000	.361	-.085	.142	-.152
	Demographic factors	.361	1.000	.386	.037	-.245
	Economic factors	-.085	.386	1.000	-.098	-.065
	Environmental factors	.142	.037	-.098	1.000	-.176
	Social factors	-.152	-.245	-.065	-.176	1.000
Sig. (1-tailed)	Successful implementation of government's strategic Projects [SGR Project]	.	.005	.279	.162	.147
	Demographic factors	.005	.	.003	.400	.043
	Economic factors	.279	.003	.	.249	.326
	Environmental factors	.162	.400	.249	.	.111
	Social factors	.147	.043	.326	.111	.
N	Successful implementation of government's strategic Projects [SGR Project]	50	50	50	50	50
	Demographic factors	50	50	50	50	50
	Economic factors	50	50	50	50	50
	Environmental factors	50	50	50	50	50
	Demographic factors	50	50	50	50	50

4.6.1.2 Normality Assumption

This assumption demands the independent variables errors to be normally distributed. Skewness and Kurtosis were employed to test normality. Moreover, all variables' errors are assumed normally distributed as per rule of thumb for Skewness-Kurtosis of ± 2.58 . The test is depicted in Table 4.24.

Table 4.24: Skewness and Kurtosis Coefficients Showing Normality Assumption

Variables	N Statistics	Skewness Statistics	Std. Error	Kurtosis Statistics	Std. Error
Demographic factors	50	-.632	.712	.123	.245
Economic factors	50	-1.132	.712	1.013	.245
Environmental factors	50	-.562	.712	-.140	.245
Social factors	50	.356	.712	-.674	.245

4.6.1.3 Autocorrelation Assumption

Autocorrelations means that errors between independent variables remain independent (Osborne and Waters, 2002). Durbin-Watson was used to check this assumption. Moreover, Field (2009) notes that, Durbin-Watson guarantees low autocorrelations when its coefficient lies between 1.5 and 2.5. Table 4.7 shows the results.

Table 4.25: Durbin-Watson Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.448 ^a	.201	.130	.1424	.201	2.827	4	45	.036	1.696

a. Predictors: (Constant), Social factors, Environmental factors, Economic factors, Social factors

b. Dependent Variable: Successful implementation of government's strategic Projects [SGR Project]

4.6.1.4 Multicollinearity Assumption

To test this assumption, the Variance Inflation Factor (VIF) and Tolerance Rate were determined. VIF and tolerance conform to the thumb rule, which implies extremely low collinearity between independent variables. Stevens (2009) suggest that, low VIF

and large tolerance implies presence of low multicollinearity. Tolerance rate coefficient ranges between 0 and 1 whereas VIF ranges between 1 and 10.

Table 4.26: Multicollinearity Assumption

Variables	Tolerance	VIF
Demographic factors	.802	-.632
Economic factors	.838	-1.132
Environmental factors	.955	-.562
Social factors	.912	.356

4.6.1.5 Multiple Linear Regression Analysis

The findings of the regression analysis ought to indicate its R Square variable implying that, independent variables explain the percentage of the model variations. The results indicate that, the model was statistically significant at ($p < 1.000$). Table 4.27 shows the analysis.

Table 4.27: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig
1	.448 ^a	.201	.130	.712	1.000

Regression coefficients on Table 4.28 suggest that, all variables were significant predictors ($p < 1.000$) of the model. This informs that one unit increase of demographic factors explains 0.3 increase in successful implementation of construction of SGR project during COVID-19 pandemic. An Increase in one unit of economic factors suggests -0.2 unit decrease of successful implementation of construction of SGR project during COVID-19 pandemic. Also, one unit increase of environmental factors

explains 0.09 unit increase in successful implementation construction of SGR project during COVID-19 pandemic. In addition, single unit increase in social factors explains -0.02 decrease in successful implementation of construction of SGR project during COVID-19 pandemic respectively.

Table 4.28: Regressions Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.978	.341		2.869	.006
Demographic factors	.315	.106	.443	2.976	.005
Economic factors	-.249	.146	-.249	1.712	.094
Environment factors	.092	.134	.094	.690	.494
Social factors	-.026	.086	-.043	-.307	.761

The following regression model was used

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Then;

$$Y = \beta_0 + DF \beta_1 + EF \beta_2 + Env. F \beta_3 + SF \beta_4 + \epsilon$$

Whereby:

Y = Successful implementation of government's strategic projects [SGR Project]

β_0 = Constant

β_1 = regression coefficient of demographic factors

β_2 = regression coefficient of economic factors

β_3 = regression coefficient of environmental factors

β_4 = regression coefficient of social factors

DF = Demographic Factors

EF = Economic Factors

Env. F = Environmental Factors

SF = Social Factors

ε = error term

Hence,

$$Y = 0.9 + 0.3 \beta_1 + -0.2 \beta_2 + 0.1 \beta_3 + -0.03 \beta_4 + \varepsilon$$

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Overview

This chapter provides conclusions and recommendations of the study. It starts with summary of the findings, followed by conclusion, and recommendations for practice and area for further studies.

5.2 Summary

This study aimed to assess various influences of COVID-19 pandemic during implementation of the Standard Gauge Railways (SGR) project in Tanzania and necessary measures required to improve or assure the project success. The study comprised of four specific objectives including demographic, economic, environmental and social factors that might be contributing in the successfulness of SGR project in Tanzania during COVID-19 pandemic.

The first objective revealed that, demographic factors in this study has significant relationship to the successfulness of the project techniques to battle the impact of COVID-19 diseases and assure the successfulness of SGR project in Tanzania.

The second objective revealed that, variation of project performance such as ‘time’ and delaying of project activities such as testing and procurement might disturb project capital and investments leading to project termination and economical losses.

The third objective revealed that, most physical activities can be replaced by the online activities with the right tools and services. For the case of mandatory physical

activities, only few key personnel should attend to minimize risk of COVID-19 exposure.

Also, dangerous working environment can be converted into safer place by following all safety procedure against COVID-19 pandemic as instructed by health organizations.

The fourth objective revealed that, social activities during COVID-19 pandemic can be supported by safety procedure conducted on the SGR sites such as hand sanitizing, temperature measurements, wearing mask, safe distancing, working in shifts and quarantines. Also, online communication tools should be established to ensure safer social interaction among employees.

5.3 Conclusion of the Study

This study primarily aims to assess various impacts of COVID-19 pandemic during implementation of the Standard Gauge Railways (SGR) project in Tanzania and necessary measures required to improve or assure the project success.

Findings of the study provided a statistical evidence that demographic factors can be contributed into successful implementation of SGR project in Tanzania. It is evident that economic factors from this study will help encourage project managers to focus more on the project activities which are highly affected by the impact of COVID-19 pandemic to ensure project success.

The study also emphasized that, environmental and social factors has led to advanced technologies such as the use of online communication tools and improving self-awareness due to safety procedure taken against COVID-19 pandemic.

5.4 Recommendation of the study

This study recommended that the execution of the SGR project should continue as it was before the pandemic but considering health guidelines and recommendation against COVID-19 disease.

Set priority order on what to be done physically and what to be done online depending on the sensitivity of the matter. Moreover, online activities with the help of online communication software are highly recommended for physical project activities such as meeting, procurement (online purchasing), training, seminar, testing and workshop. However, only few technical personnel should attend site visits and inspection for project quality assurance and control.

Some of project activities such as installation and commissioning should be conducted according to the contract, however all necessary measures to prevention infection of COVID-19 pandemic should be followed and being practiced.

Technologies discovered and adopted during pandemic such online training and workshop should continue even after the end of COVID-19 pandemic because they save time and cost of the project.

5.5 Area of further study

This study aimed to assess the negative impact of COVID-19 in the project implementation. Further study should be conducted to identify positive impacts of COVID-19 pandemic and to determine how much this disease might benefits the community.

Moreover, impact of COVID-19 have been changing from time to time due to mutation of virus itself and nature of the geographical environment. Also new methods such as vaccination have been established in order to combat COVID-19 disease, hence further studies should be carried to assess the impact of COVID-19 diseases after the majority of people being vaccinated.

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APPENDICES

Appendix I: Questionnaire for respondents

This is part of the study that is concentrated on the impacts of COVID-19 pandemic during the implementation of government's strategic projects such as the construction of Standard Gauge Railways (SGR) network from Dar es Salaam to Dodoma. Respondents are guaranteed that this is only for scholarly work and no other reason. Therefore, respondent's confidentiality is guaranteed.

1. **Gender**

Gender	Tick
Male	
Female	

2. **Age**

Age	Tick
18-30	
31-40	
41 and above	

3. **Level of Education**

Level of Education	Tick
Professional certificate/College	
First degree	
Second degree	
PHD	
Other:	

4. **Company**

Company Name	Tick
Tanzania Railways Corporation (TRC)	
YAPI Merkezi	
Korea Railroad Corporation (Ko-Rail)	

5. **Work Title**

Title	Tick
Project Manager (PM)	
Deputy Project Manager (DPM)	
Section Engineer	
Site Engineer	
Other:	

6. **Profession**

Profession	Tick
Civil Engineer	
Electrical Engineer	
Signal and Telecom Engineer	
Mechanical Engineer	
Other:	

7. How long have you been the part of SGR project teams?

Participation period in SGR project	Tick
1 Year	
2 Years	
More than 3 years	

8. Which SGR Camp are you from?

SGR Camps.	Tick
Ilala	
Soga	
Kwala/Marshalling Yard	
Ngerengere	
Kingolwila	
Kilosa	
Gulwe	
Ihumwa	
Makutupora	

9. Is there any project member in your Company got infected by the COVID-19 disease? Tick where appropriate.

Yes ()

No ()

If **Yes**, how many project members were infected by COVID-19 disease?

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10. Is there any project member in your Company died from the COVID-19 disease? Tick where appropriate.

Yes ()

No ()

If **Yes**, how many project members died from COVID-19 disease?

.....

11. Which of the following safety measures were taken against COVID-19 pandemic during execution of SGR project in Tanzania?

Safety measures against COVID-19	Tick
Hand sanitizing	
Temperature measurement	
Wearing facial masks	
Safe distancing	
Working from home	
Working in shift	
Quarantines	
Curfew	
Lock down	
Other 1.:	
Other 2.:	
Other 3.:	

12. Please, explain how much COVID-19 pandemic affected you personally?

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.....

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13. In the scale of 1 to 3, rate which of the following project activities are more affected by the COVID-19 pandemic?

Project activity	ongly affected (3)	tial affected (2)	ot affected (1)
Planning			
Designing			
Installation			
Inspection for QA/QC			
Testing for FAT and SAT			
Procurement			
Commission			
Other:			

14. On a scale of 1 to 5, rate the following statements regarding strategies taken to battle the COVID-19 pandemic and ensuring project success.

ES/STATEMENT	Strongly Agree (5)	Agree (4)	Not Sure (3)	Strongly Disagree (1)	Disagree (2)
a) I am satisfied with the strategies used to overcome impacts of COVID-19 pandemic and continue execution of the SGR project.					
b) Company provided the best protection tools and services to protect project members against COVID-19 disease.					
c) I would like recommend safety measures taken in SGR project against COVID-19 pandemic to be used in other ongoing government projects.					
d) Continue working during pandemics such as COVID-19 is very risk and dangerous, hence it is not recommended to do so.					

15. On a scale of 1 to 5, rate the following recommended communication methods to be used in order to deliver projects information during COVID-19 pandemic.

Communication methods	Strongly Agree (5)	Agree (4)	Not Sure (3)	Strongly Disagree (1)	Disagree (2)
h) Normal meeting					
i) Online seminar or webinar					
j) Whatsapp chat					
k) Online meeting					
l) Progress reports (Soft copy)					
m) Short videos about the project progress					
n) Letters					
o) Email					
p) Normal calls and messages					
q) Face to face					

16. For online meeting and conferences, which tool do you recommend?

Online communication tool	Tick
Zoom	
Skype	
Whatsapp conference	

17. On a scale of 1 to 5, rate the following recommended strategies to be used in order to accomplish project objectives during COVID-19 pandemic.

Strategy recommendation	Strongly Agree (5)	Agree (4)	Not sure (3)	Strongly Disagree (1)	Disagree (2)
a) Online technical meeting					
b) Online testing for FAT and SAT					
c) Decreasing number of employees					
d) Promoting night shift strategy					
e) Progress reports (Soft copy)					
f) Online training					
g) Site visits (PMs and Section Engineers only)					
h) Inspection: Less inspectors					
i) Other 1:					
j) Other 2:					
k) Other 3:					
l) Other 4:					
m) Other 5:					

18. Please suggest which of the three constraints of project management should be changed in order to ensure the project completion during COVID-19 pandemic.

Triple constraints of project management	Tick
Time	
Cost	
Scope	
None of the above	

19. Due to the various impacts of COVID-19 pandemic in the projects, what do you suggest about the project execution?

Suggestion about project execution	Tick
The project should be terminated	
The execution of the project should continue	
The execution of the project should wait for the pandemic to pass	

20. List advantages of COVID-19 pandemic during implementation of SGR project if any.

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21. On your own opinion, how do you prefer project activities such as Factory Acceptance Testing (FAT), Site Acceptance Testing (SAT), site inspection, site visits, procurement and purchasing of materials be conducted during COVID-19 pandemic?

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Thank you for your contribution.