

INVESTIGATION OF THE EFFECTS OF POWER OUTAGES ON PRODUCTION IN FIRMS

A CASE OF KILIMANJARO INTERNATIONAL LEATHER INDUSTRIES

CO. LTD-KILIMANJARO REGION.

DOTTO STEPHEN CHACHA

October, 2022

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**A REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF BUSINESS ADMINISTRATION LEADERSHIP AND
GOVERNANCE OF THE INSTITUTE OF ACCOUNTANCY ARUSHA**

October, 2022

DECLARATION

I, **Dotto Stephen Chacha** declare that this research proposal is my original work and that it has not been presented and will not be presented to any other learning institution for a similar or any other degree awards.

Signature _____

Date _____

CERTIFICATION

I the undersigned, certify that i have read and hereby recommend for acceptance for defense by the Institute of Accountancy dissertation proposal titled: **Investigation Of The Effects Of The Effects Of Power Outages On Production In Firms: A Case Study of Kilimanjaro International Leather Industries Co. Ltd-Kilimanjaro Region** in partial fulfillment of the requirements for the Degree of Master of Business Administration Leadership and Governance of the Institute of Accountancy Arusha.

(Supervisor Signature)

Date:

DEDICATION

To my entire family for their effort in supporting my studies throughout run.

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I give thanks to the Almighty God for his love, care and blessing while undertaking my studies
I further thank my course lecturers and co-students of Master of Business Administration for
close collaborations in undertaking ground assignments to the course.

In a special way I would appreciate and thank my research supervisor Dr. Solomon Muguba for
his/her continued coaching and guidance while preparing this report. He/she really saw me
through and greatly helped me in shaping this proposal to its current look.

ABSTRACT

The main objective of this study was to investigate the effect of power outages on production in different firms in Kilimanjaro Region, a case of International Leather Industries Co Ltd. This study was attributed by the fact that Tanzania as many other developing countries experience a serious challenges on power outages compared to the developed nations. In Kilimanjaro Region, studies indicate that currently there is a very big challenge on power outages than ever before, power outages in Kilimanjaro region challenges have increased by 80%. Several factors are mentioned to be causing a serious outages in the region for which some of them severe changes of weather, motor vehicle accidents near power lines, equipment failure, fallen trees, strong winds and lightning. Through the use of descriptive analysis the data in both Qualitative and Quantitative form were used to answer research questions. The study further employs a questionnaire as a method for data collection. Variance Inflation Factor (VIF) and tolerance analysis were carried out to test for multicollinearity in the Regression Model. Interviewed employees were asked what should be done by Kilimanjaro International Leather Industries Co Ltd management to improve employees' working environment including power outage. Power supply in an organization is worthwhile as it significantly contributes to better organizational performance and profitability. From this study, areas for further study can be deduced. First research is needed in which other organizations are involved in tackling the challenges of infrastructure facing their organizations using the same variables to test the findings of the current study.

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ABBREVIATION AND ACRONYMS

URT	- United Republic of Tanzania
IAA	- Institute of Accountancy Arusha
TANESCO	- Tanzania National Electric Supply Company
DANESCO	- Dar Es Salam Electric Supply Company

CHAPTER ONE.

PROBLEM SETTING

1.0 Introduction.

This chapter introduces and discussed in details the research problems with which objectives have to be met. Subsections of this chapter includes background information regarding study, statement of the problem, objectives of the study, research questions, significance of the study, significance of the study, limitations of the study, scope/ delimitation of the study and the definitions of the key terms.

1.1 Background of the problem.

Energy in form of electricity is believed to be a fundamental input factor in reducing costs of productions in industrial productions process. Frequently power outages is mentioned to disturb the industrial production value chains and supply of affordable products to the society. This factor has mentioned to be a driving force of an increase in consumer price index in any country. By definition, power outages is referred to as the power cut, power failure, power blackout/ the loss of the electrical power network supply to an end user, whereas power outages area major challenge for firms and have negative effects on productivity and performance (Karen et al.2021). Power failures are critical and sensitive in the areas where the environment and the community are not safe (Njirajini 2021). In developed nations specifically USA and Europe the risk of blackouts and power are not that risky because few people used air conditioning in their homes whereas the state is racing to fill its gas storage as the source of power; while in Europe depends on Russia for natural gas which would be enough to trigger blackouts in some countries (Ghazzawi, 2020).

In Africa the situation is different since power is mentioned to be a big challenge, as statistics shows that in North Africa and Middle East Have the highest number of blackouts and the highest numbers of power outages that affects their households and their companies'

performances also economic development (Andersen & Dalgaard, 2012). whereas the research shows the effects of power outages in sub-Saharan Africa over the period from 1995-2007. its illustrated that the annual economic growth in the developing world is facing constraints from being achieved due to the constant power outages that hinders the accomplishment of different activities and growth in the firms and companies. According to Eberhard et al., (2011) the general deficiency of the power sector in Africa has constrained Africa's economic and social development with its adverse effect on employment. It can't be denied that African economic and social development depends mostly on the activities of small and medium scale enterprises. Henceforth, reports by World Bank found that electricity is a major obstacle to firm activities and must be taken to great consideration as a matter of concern to all publics.

African companies keeps on adopting various mechanism in minimizing power costs and stable power supply. Example in recent decades, Nigerian enterprises have begun to relocate elsewhere, particularly to neighboring countries, where power is stable and affordable. Some large corporations that have relocated or shuttered their operations include (Mayah, 2010). Nigerian enterprises are burdened with high costs of infrastructure installation and maintenance. Based on a report by Mayah (2010), 820 manufacturing enterprises shut down TEPOMSBSW 7 between 2000 and 2008. In January 2010, the Manufacturing Association of Nigeria (MAN) conducted another poll, and Adeloje (2010) revealed that 834 manufacturing firms closed their doors in 2009. This rise is worrisome because it surpassed the combined figure of the previous eight years, from 2000 to 2008, in just one year (2009). This poll, which usually contains five industrial domains by which the nation is categorized in terms of manufacturing operations from the country's six geopolitical areas, From the data of manufacturing enterprises closing their doors in Nigeria, deeper examination reveals a broader overflow of economic implications. Mayah (2010), reported that the manufacturing sector's 5 percent share of the country's GDP in 1999 had reduced to 4.9 percent by 2000. Furthermore, the large number of closed

manufacturing enterprises in recent years has exacerbated Nigeria's rising jobless rate. According to Adeloje (2010), when a company winds up, its employees become victims in the frontline. For example, in the 834 enterprises reported by MAN to have closed in 2009 alone, it is estimated that 83,400 jobs were lost. As a consequence of the inadequate power supply condition, practically all manufacturing enterprises that have continued to operate have to run private power plants at a high cost, as seen by the amount spent on power generator importation into Nigeria. According to the England African Review of Business and Technology, Nigeria has led the pack of generator-importing nations for the third time in a row, outpacing any other country since 2002. Recently, an increasing number of international firms operating in Nigeria have improved their own power generation capabilities through Independent Power Projects (IPPs). Despite this, some of these businesses have continued to make tremendous profits and meet their shareholders' commitments. However, such output reflects the fact that an increasing proportion of manufacturing costs are being passed on to final consumers, the majority of whom have seen their disposable incomes steadily decline due to inflation caused by the government's destructive policies.

World Bank's severe assessment of the electricity sector's performance best encapsulates the implications on Nigeria's MSME's sector. Manufacturing enterprises in Nigeria regard inadequate infrastructure, notably electricity supply, to be their most crucial constraint, according to Mayah (2010), who also mentions the country's harsh investment climate. Addressing the insufficient power and other infrastructure issues consumes more management time than any other business issues (World Bank, 2019).

Studies tried to find out the impact of the number of power outages experienced in a typical month on the production efficiency of firms in Africa. The finding shows that the number of power outages experienced in just a month had negative impacts on different firm's production efficiency (Eberhard et al, 2011).

Improved concern in the critical relevance of a consistent supply of electrical power for the growth of micro and small businesses in Nigeria in recent times (Moyo 2012; Akuru & Okoro, 2014; Forkuoh & Li, 2015; Nurudeen et al., 2018). Insufficient electricity supply had a serious impact on MSMEs in the Nigeria, with MSMEs subjected to about 11.6 hours of power cuts daily (Nwanakwere 2019). Businesses lose 15.6 times the annual sales owing to this low power supply, according to the assessment, and spend up to USD 2,126.93 (360.52 Naira per 1 US Dollar) on energy each year. Micro and small sized enterprises are widely acknowledged as engines of inclusive economic growth, job creation, poverty reduction, and income disparity reduction (Aremu & Adeyemi, 2011; SMEDAN, 2017). The role of the South Western region of Nigeria in the socioeconomic development of Nigeria is well documented. According to the NBS (2020), it accounted for 44.33 percent of national internally generated revenue in the first half of the year, owing to the 144,498 registered micro and small sized enterprises spread across 77,818 square kilometers of land. Addressing the growth needs of these businesses in this region can lead to improved socioeconomic activities in the region, other regions and large scale development in Nigeria. Most academics concurred that power outages have an adverse influence on micro and small businesses (Aremu & Adeyemi, 2011; Moyo 2012; Oginni & Adesanya, 2013; Akuru & Okoro, 2014; Forkuoh & Li, 2015). However, there continues to be a debate about the resultant effect, if all other factors are accounted for. Cissokho and Seck (2013), in a study subject to criticism showed that power outages had a positive influence on the performance of small businesses. This study investigated the association between power interruptions and performance in Senegal through Envelopment Interpretation non-parametric technique (DEA). The results were ascribed to SMEs' ability to use strong management techniques to mitigate the consequences of Senegal's ongoing power outages. Based on certain studies, fixing power outage concerns does not ensure improved performance by micro

and small sized enterprises because other, crucial issues to consider exist in business growth development (Bose et al., 2013).

Moreover, statistics shows that Power projects that install capacity in Africa will need to grow by more than 10% annually or more than 7,000 MW a year, just to meet Africa's suppressed demand and keep pace with projected economic growth (Abosti, 2016). Since lacking power infrastructure and power outages decrease economic growth it's suggested that Africa should attempt to exploit full capacity of electricity generation in their countries. Through which leads to huge investment projects in new generation capacity; this investment will improve the distressing effect of power crisis on production process of firms in Africa (Njiraini, 2021).

The problem of power outage in Tanzania has been a major concern for both the industrial, public and domestic power consumers due to the negative impacts of power outages which has led to the high operational costs of production, high production costs and high product costs. The power outages can be traced back from the use and introduction of electricity that was introduced in the late 1908 by the colonial authorities. In 1931 two electricity companies were introduced as (DARESCO) and the Tanganyika national electricity company (TANESCO). Furthermore in the time of independence 1961, the government acquire shares in both utility companies and in 1975 the government acquired all shares and created one state owned utility called the Tanzania, National Electric supply company (MEM, 2012). Moreover, in Tanzania apart from low generation capacity in which the countries demands and the available electricity is low, poor electric supply infrastructure; power cut, power out, blackout ture with old pylons, cables, transformers which easily blow and other challenges for instance technical problems, few experts and lack of organized communication that delays services provision: for example when there is a blow of electricity or the fall of a pylon it may take days even more than a week to resolve the problem through which causes negative impacts to production in different firms and also different areas where we reside in.

1.2 Statement of the problem

Power outages are said to be a very big setback on different activities in different sectors and areas. Whereas the presence of power is important in our daily activities in our households, workplaces and everyday environment and surroundings. For instance, Nhazzawi et al, (2020) discussed that power supply in developing countries is mostly characterized by unreliable and inefficiency resulting in disruption of costs for operating firms. Through which the firm's performance are presented by the sales, employment, and productivity growth rates. In addition to that statistics have indicated that power outage is a common problem facing many countries in the world. Moreover, In Tanzania statistics have shown that they face problems and setbacks due to interruption and the shortage of electricity/ power that leads to the poor implementation of different tasks, low production or no production, interruption of different official responsibilities. . Based on the circumstances the study intended to focus on investigating the effects of power outages on production in different firms in Kilimanjaro region at Kilimanjaro International Leather industries Co. Ltd.

1.3 General objectives of the study

The general objective of the study is to investigate the effects of [power outages on production in different firms in Kilimanjaro region at the Kilimanjaro International Leather industries Co. Ltd.

1.3.1 Specific objectives of the study.

The specific objectives of this study are altered as follows;

- i. To identify the factors for power outages in Kilimanjaro International Leather industries Co. Ltd.
- ii. To identify the challenges facing power outages in Kilimanjaro International Leather industries Co. Ltd.
- iii. To determine the effects of power outage in Kilimanjaro International Leather industries Co. Ltd.

1.4 Research questions

- i. What are the factors for power outages in Kilimanjaro International Leather industries Co. Ltd.?
- ii. What are the challenges facing power outages in Kilimanjaro International Leather industries Co. Ltd.?
- iii. What are the effects of power outage in Kilimanjaro International Leather industries Co. Ltd.?

1.5 Scope of the study

The studies aim is to investigate the effects of power outages on production in Kilimanjaro region. Whereas the study was guided by three objectives as; to identify the factors for power outages, to identify the challenges facing power outages and to determine the effects of power outages. The study conducted in Kilimanjaro region in different chosen firms; also, the researcher selected this area of study in order to provide empirical evidence from the centered area on the subject matter.

1.6 Limitations of the study

Theofanidis, (2018) defines limitations of the study as those characteristics of methodology that impacts the application or interpretation of the results of the study. In conducting this study, the researcher faced challenges of shortage of fund to meet expenses of things such as transport, stationery and general logistics in data collection and report production because the researcher is self-sponsored. Also, the researcher is also expected to face the challenge of time because the researcher is both a student and employed. Therefore, time for tasks like data collection was a challenge to the data collection through which the researcher prepared a schedule of events to help in meeting the intended time. Finally, the researcher also was limited in getting the respondents on time because during data collection, respondents were busy with their daily activities.

1.7 Significance of the study

This study is significant to different persons that are altered as follows:-

1. Researchers and future researchers on areas of energy provision and energy efficiency will benefit from this study as it is easy to merge the theories revised under the study to develop in the available gap towards improving social lives. Moreover as the information is already among the important information bank knowledge that can be used by different academicians, practitioners, reviewers, institutions and future researcher to further their study on power outages effects on production.
2. The research findings will be used to guide policy makers in addressing the problem of power outage and deploying the recommendations suggested by this study to improve the situation in the country. In addition to that it helps the power providers in introducing and new systems and renovate the already used while planning on eradicating the problem so as to help in eradicating the problem of power outages.

1.8 Organization of the research proposal.

The research was divided into three parts that includes; the introduction part which encompass the Problem setting that is part of Chapter one, the chapter entails the introduction of the study. It includes the background of the problem, statement of the problem, the research objectives including the general objectives and the specific objectives, research questions, limitations and delimitations of the study, significance of the study and the definition of the key terms of the study. Chapter two provides the presentation of the review of the related literature to the study that includes theoretical literature review and empirical literature review as well as the knowledge gap. Chapter three outlines the explanation of the research methodology which comprises research design, data collection methods, population and sampling procedures, data analysis, presentation and interpretation plan, validity and reliability and ethical consideration.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature review discussed the theoretical literature review and empirical literature review. The theoretical literature review provides basic concepts, theories and models relating to the study. This chapter presents a review of the literature related to the study. It includes theoretical and empirical literature review as well as the knowledge gap and the conclusion.

2.1 Operational definition of the key terms.

Power outages: is referred to as an interruption of power supply, especially electricity also known as a power cut, power failure or a blackout (Ghazzawi, 2020).

Production is referred to as the process of making a product that is goods or services by transforming raw materials into final goods by using the required factors of production (Mishra, (2022)

2.3. Theoretical literature review.

2.3.1. Challenges of power outages on production.

Disrupt communications, through the power outage may cause the interruption of conversations between the customers and the personnel in the organization. Also interrupts the communications within the organization; this involves the system controls and other areas (Mishra, 2022).

Close retail businesses, grocery stores, gas stations, ATMs, banks and other services. according to Kavishe, (2019) The loss of power or electricity effects different business and firm and sometimes brings about the fall of production of goods and services that the fall of the organization itself, moreover may lead to the closing of the clothes.

Cause food spoilage and water contamination. Electric failures have brought about the damage of some equipment's and also losses for the food processing industries and other firms and companies. For instance they lead to the damaging and rotting of food (Sebastian, 2021).

Prevent use of different devices. The power outages bring about the shutting down of different equipment's and devices that are used in performing different duties and responsibilities that is termed as a setback in the organizations (Mishra, 2022).

2.3.2. Theoretical framework.

This study will be guided by Resource Dependence Theory (RDT) by Pfeffer and Salancik (1978). The theory is illustrated as follows:-

Resource Dependence Theory was found by Pfeffer and Salancik in 1978. Whereas the theory is focused on determining how the external resources affect the behavior of the organizations, in which external resources are the tenet link between the strategic and tactical management of any organization. The theory analyses that the study is guided through depending on resources that originate from the surrounding organizational environment that involves other organizations. Through which the organizations depend on many resources such as, labor, capital, raw materials etc. hence an organization relies on other organizations to get different important equipment's and services that they may need to keep their organizations flourishing and functioning to meet their intended objectives.

The theory relates with the study as the impacts of power outages on production in different firms; whereas the power outages is referred to as the electricity loss or blackout; in Tanzania electricity is generated and provided by the Tanzanian National Electric Supply Company (TANESCO). Through which different firms rely on in getting electric services that are used in manufacturing activities in industries, running of different office equipment such as computers, and other heavy, small machines and systems that use electricity in their offices. As the theory implies that the firms rely on TANESCO in order to get electric services: when there is

disruption as the power outages, blackouts and electric loses leads to damages and hindrance for the firms in producing their products and providing services that their customers may need and them as the organization may need to accomplish their duties and responsibilities.

2.4 Empirical Literature review.

This section explores about the empirical literature that explores on different journals and studies that were done in different countries around the world including Tanzania relating to the researched study that states the Impact of power outage on production: case study of selected firms in Kilimanjaro region.

To identify the factors for power outage.

According to Kavishe, (2015) researched on coping with power interruptions in Tanzania. The study aimed at examining coping strategies of power interruptions in small scale industries, exploring the perceptions of staffs in the industry and among TANESCO towards interruptions in power supply and to describe the coping strategies developed by the industry under study. The study used qualitative methods and techniques including interviews observations and document reviews. The results showed that there is difference in perception and explanations of power interruptions among the respondents from the industry and TANESCO. The results narrated that most of the government policies and strategies that were implemented were low and deprived and needed reforms and innovations on power generation and distribution with their little efforts in maintaining the situation, monopoly of the TANESCO, dependency of hydropower and implementation of energy policies. Henceforth the study concludes that there is a need of increasing generation capacity, improving infrastructure and the use of alternative electricity sources, additionally to that there should provide more capital for infrastructure improvements and innovations since there is high demanded of electricity than the amount supplies. Low rainfall, low reservoir levels, almost complete dependence on hydropower and increasing demand for energy resulted in nationwide power outages in 2015 and 2016 that hit

Zambia's manufacturing electricity-dependent firms. The manufacturing sector's absolute and relative grid energy consumption fell from 2015 to 2016. Firms unable to self-generate enough diesel-fuelled energy were forced to delay production and firms which delayed production lost clients. The power shortages have sparked a call to arms for Zesco, the Zambian power utility, to expand national installed energy capacity and diversify its portfolio of energy supply. In so doing, Zesco has aimed to raise tariffs to cost-recovery levels inclusive of capacity charges so that it can deliver that extra supply: it did so twice in 2017, while seeking to do so again in 2019. At the same time, the Ministry of Finance called a moratorium on further sovereign guarantees from being issued that would be required to contract energy on a public private partnership basis given Zesco's financial history (Ahmed, 2019).

Firms using voltage regulators, capacitors or power surge factor units decreased their chances of damage to inventory or equipment by 50%. Self-generation as an independent variable was statistically significant in determining whether or not production delays occurred, which in turn was associated with loss in clients. 72% of respondents acquired use of a diesel generator, and less than 5% did not use their operational generators. More than 50% of their oldest generators were from 2015 and 2016, the years of the worst outages. Statistically significant predictors of installed self-generation capacity were firm size, how many hours a week a firm manufactured, whether it exported, and whether it belonged to the food and beverage subsector. Statistically significant predictors of the extent to which a firm used its generators were its size, whether it exported, whether it was located in the town of Kitwe and whether it did not belong to the basic metals subsector. The tariff differential for peak and off-peak hours is significantly lower than Zambia's neighbouring Zimbabwe which is similarly reliant on Kariba North Dam. The differential for manufacturing wages paid at off-peak hours can far exceed Zesco's tariff differential (Sianjase, 2019).

Ghazzawi et al, (2020) discussed on the examination of the effects of power outages on the performance of manufacturing industries in the MENA region in the Middle East and North Africa where as the study discussed on the power supply and challenges faced power supply in developing countries in Middle East and North Africa. The findings of the study showed that the power supply in this countries have been characterized by unreliability's and inefficiency the brought about disrupting of costs, poor performance and poor production of goods and services in the manufacturing firms also the dropping and falling of the country's economic growth. To which the author recommended that the government and leaders should raise concern on the issue of power supply services, also there should formulate appropriate policies and reforms of strategies, plans, laws and regulations targeting the power infrastructure so as to restrain the economic growth in these regions.

Garside et al, (2015) prepared a report on better power in Tanzania electricity sector. Whereas the workshop aimed at hosting interviews on the information channels and feedback mechanisms for electricity services in Tanzania. Were as the specific objectives were to analyses the accountability and customers feedback relevant to the electricity sector, evaluate what customers and citizens need better information about, what works well and why also what is not working and why and analyses different opportunities and new innovations that emerge that could help fill the existing information gaps that exists. The report researched surveyed on 2000 households conducted by the Tanzanian NGO Twaweza that assed customer's awareness and perception on the existence of energy production, services and delivery. Also discussed on how to reach about the improvements that were analyzed in the complaints by the customers and the power failures that TANESCO have noticed in their systems and infrastructure.

To identify the challenges facing power outages.

Moreover according to Sebastian et al, (2021) researched on the assessment on the assessment of the impact of Electricity Power Outages on University Students' in Lusaka, Zambia. Whereas Zambia has been facing different challenges concerning power outages or power rationing in he recent years. This study aims to assess the impact of power outages on UNILUS students' routine and academic life, Lusaka, Zambia. This study focused on the effects on students' socioeconomic and school performances. Methodology Primary data was collected using a descriptive cross-sectional survey and in-depth structured interviews in questionnaire form by conducting a quantitative study. The study sample included twenty-one undergraduate students, seven from each majoring stream: the school of law, business, and public health at the University Of Lusaka, Zambia. Data analysis The SPSS software, Version 16 of the Windows tool, was used in data analysis. A descriptive data analysis on frequencies and percentages was conducted on all the sections of the questionnaire. The study's Results showed the students' routine life. Some of the students' school performances were very much affected. Some students felt that the effects would be more severe if load shedding were carried out at night and in the rainy season. Through which was concluded that power outage affected the daily routine and academic life that led to decrease in study time, especially at night time, hence affecting their school performance.

Adeniran (2021) conducted a study in Nigeria to identify the challenges facing power outages in manufacturing industries, the findings indicated that, the relationship between power outage and its impact on micro and small businesses, a vital ingredient for economic progress, but with varied outcomes. Yet, the energy crisis of the 1950s and 1960s fueled interest in the link, leading to an increase in scholarship on the role of power outages in MSME development and the implications for industrial sector and the entire economy (Jiang, Chen, and Zhou, 2011). Available research also includes studies for East Asian and Pacific countries (EAP) estimates

on the economic and environmental impact of electricity shortages (Fisher-Vanden et al, 2015). Power failures are a developmental issue in most developing countries, particularly in Sub-Saharan Africa, because they slow down the engines of economic growth and inclusive development. (Moyo, 2012; Kaseke and Hosking, 2013; Akuru & Okoro, 2014; Forkuoh & Li, 2015; Abeberese 2017; Grainger and Zhang, 2019). The impact in Nigeria is not an exception (Ogbuagu et al., 2010; Moyo 2012; Akuru & Okoro, 2014; Nyansu 2016 ; Nurudeen et al., 2018; Nwanakwere, 2019). Nyansu (2016), utilizing the Ordinary Least Square (OLS) technique and the chi square investigated the useful electrical power supply to the country's MSMEs. The scholar noticed that regular power failure had forced the adoption of alternative source of generating electrical power in order to overcome the limited national grid supply of electrical energy to their firms. According to the article, this has resulted in higher costs of goods and services, as well as lost revenue. The study posits that the government should do all possible to ensure that the industrial sector has adequate electricity supplies. Similarly, using descriptive and OLS analysis, another study examined the variables influencing electrical energy supply and capacity utilization in Nigeria, and showed that epileptic power supply hampered manufacturing sector efficiency (Ogbuagu et al., 2010).

To determine the effects of power outage.

Qui et al, (2020) researched on the power outage trends and impacts of investments in smart grid technologies in Australia. The research found an indication that the frequency and duration of power outages are decreasing over time. Also, we found that weather is a major cause of outages in the Australian distribution sector but not the main one. It is to our belief that weather might be the main cause of power outages in the transmission sector as many studies indicate. A positive relationship between the number of customers and the magnitude of an outage was found. Also, a relationship between power outage duration (time to restore power) and the magnitude of the outage was found. Large outages of larger than or equal to 500MW are found

to be uncommon. Also, results showed the signs that power outages events are period-of the day dependent, and season of the year dependent. The number of power outages maybe decreasing with the deployment of smart grid technologies, however, the researcher found no strong signs of improvement to the duration of power outages or the time to restore power. Seek & Cissokho, (2013) explored on the assessment of electric outages the performance of small and medium enterprises in Senegal. The paper assesses the impact of electricity outages on firms' productivity in Senegal, using cost technical and allocative efficiency scores. Results based on survey data from 528 businesses indicate that power outage duration has a positive significant effect on cost and technical efficiencies, and SMEs were more successful in doing so than larger ones. Furthermore, power outages' frequency, duration and their perceived severity have negative effects on scale efficiency. Finding a solution to the power outage issue while affecting negatively cost efficiency, seems to promote technical and scale efficiencies. Further, having a loans and/or a credit line appeared to have positive effects on technical and scale efficiencies.

Electricity insecurity can influence investment decisions, but it is neither the only nor the most significant factor considered by SMEs in their operation and investment decisions, nor by external investors. Electricity insecurity seems to affect the growth of medium and large-scale firms more than small firms, and seems to influence the location of investments by SMEs. Countries with high frequency of power outages have few small firms in electricity-intensive sectors (such as manufacturing) since only large firms are able to invest in generators to mitigate the effects of outages (Alby et al., 2011). Evidence from India suggests that in countries with high levels of electricity insecurity, firms may not have an incentive to move to productivity-enhancing industries or to grow larger, since doing so comes with the cost of having to rely on electricity (Abeberese, 2012).

The most significant effect vulnerable supply of electricity has on small business' operations is cost. Cost is a variable input in the measurement of profit. Profit is only realisable where cost of production is less than revenue. As a fixed cost therefore, SMEs' access to sufficient and affordable supply of electricity is therefore a crucial determinant of profitability and growth. Low levels of infrastructural development and poor services can drive up firms direct and indirect costs and bias their technological choices away from energy intensive ones which in turn increase the overall cost relative to competitors in other regions. SMEs suffer operation and maintenance costs arising out of power fluctuations (Lai et al., 2008). Haanes et al., (2011) identified "reduced costs due to energy efficiencies" as the second highest possible source of sustainability next to improved brand reputation. In other words, the higher the frequency and longer the duration of interruptions, the greater the cost incurred by small businesses and vice versa and lesser or greater their ability to sustain their business interests. The Centre for Policy Analysis (CEPA, 2007) identified that the 2007 power rationing exercise in Ghana resulted in increased local manufacturing costs. Velasquez and Pichler (2010) also reiterated that sufficient and affordable supply of energy (in this case, electricity) has had a decisive significance for economic activities and economic growth can or may be restricted by resource energy. Since a country's economic growth is a composite of economic activities of small and medium enterprises, the less cost they have to tolerate, the better a country's chance at harnessing their input towards greater levels of gross domestic product and growth. Okpara (2011) consents that; SMEs can contribute immensely towards economic growth and poverty reduction. Another effect of power fluctuations on businesses is related to their level of competitiveness. Arinaitwe (2006) has revealed from his research that the rate at which SMEs fail in developing countries is higher than in the developed world. Irjayanti and Azis (2012) in their research found that as a result of the free market system, Indonesian SMEs were fighting stiff competition from foreign products and firms who have the ability to produce better quality products. In their research,

they found that high cost of energy accounted for 62% of respondents' identification of barrier factors against Indonesia SMEs. A research carried out by Data Bank Ghana Limited, a research and investment company in Ghana, estimates that, Ghana's economy could lose about 1.4 billion dollars due to the impact of electric power crisis on the manufacturing, services and informal sector of which SMEs play a very pivotal role. Therefore, to forestall these losses there is urgent need to better structure the production and distribution of electrical power so as to enhance our chances of growing the economy and achieving the goals of any development initiatives. In another study by Alam (2013) which sought to identify the relationship between electric power consumption and foreign direct investment, the researcher found out that there was causality for electric power consumption and foreign direct investment as well as economic growth. Alam (2013) therefore recommended a policy framework that will ensure that there will be a continuous supply of electricity in order to make advances in economic growth. Studies connecting power fluctuation to profit are fewer as most studies tend to consider the entire gamut of related factors that inhibit the performance of SMEs. For instance, the Confederation of Tanzanian Industries (CTI) argues that Tanzania's manufacturing sector also experiences unreliable, inter mittent power supply, frequent rationing and outages and such occurrences cause manufacturers to experience poor service quality, unplanned power stoppages and interruptions, voltage fluctuations, phase failures and unbalanced voltages (CTI, 2011). Burlando (2010) also identified that a month-long blackout in Zanzibar in Tanzania caused a large decline in household income among those employed in occupations that required electricity. Workers relying on electricity had to reduce work hours by an average of 8% per day during the blackout period (Burlando, 2010). The August 14, 2003 blackout that occurred in New York, Michigan, Massachusetts, Ohio, New Jersey, Connecticut and Vermont all in the United States of America, caused an estimated loss of \$6.4 billion (Anderson & Geckil, 2003). In another study conducted in Indonesia, it was revealed that among the many barriers to SME

development supply and price of reliable electricity was mentioned by 62% of the 180 respondents as being a major barrier to SME development (Tambunan, 2009). In the same research report, high production capacity deficiency, limitation in sales and high labour costs accounted for 21%, 36% and 18% respectively. In a another study in Indonesia, it was found that SME sector account for 99% of businesses in Indonesia making them the most significant contributor to Indonesia's economic development (Iriyanti, Maya and Azis, Anton Mulyono, 2013). Other studies by Wang (2002) on outage costs and strategy analysis of the hi-tech industries revealed that production process spans weeks and sometimes months in planning and execution. A slight variation in the load of supply can therefore render the objects they produce obsolete. Wang (2002) further revealed that a power interruption lasting between 1 and 4 seconds can result in a loss of more than US\$ 3 to 10 million of damage to their properties (Frederick and Selase, 2014).

It is well documented that Africa still has significant untapped fossil fuel reserves, which could provide much-needed foreign direct investment and export revenue. Despite the clear and necessary long-term decline in demand for fossil fuels, shorter-term demand and prices remain buoyant, providing strong commercial justification for their exploitation and a necessity to smoothen the transition. Fossil fuel projects are, however, increasingly challenging and more expensive to finance given the acceleration of global net-zero policy and related disclosure for investors. Developed economies around the world have for decades enjoyed the benefit of both cheap domestic energy as well as export revenues from fossil fuels. This associated export revenue is an obvious economic benefit of fossil fuels over domestic renewable energy. According to Our World in Data, Africa accounts for only 3% of cumulative global CO₂ emissions.¹ Africa is, however, being swept along in the global energy transition and increasingly coming under the same net-zero policy pressure as developed economies such as the EU, which has contributed 33% of global CO₂ emissions. While the importance of global

decarbonisation and a sustainable planet is foremost, the journey to achieve net zero is clearly highlighting the risk of further entrenching economic winners and losers. Africa is home to 17% of the world's population, but it accounts for only 4% of global power supply investment. It is estimated that only 58% of the continent's population have access to electricity and two-thirds of Africa's existing grids are considered unreliable. Excluding South Africa, nearly one billion people across 48 countries in sub-Saharan Africa share roughly the same generation capacity of Germany providing for 83 million people (Africa Energy Review, 2021).

Many African economies remain heavily reliant on fossil fuel revenue for their national budgets and have experienced considerable negative fiscal and economic impacts since the global COVID-19 pandemic broke out. This caused reductions in physical demand for energy products as well as price volatility. The fiscal position of these countries was already weak prior to the pandemic and since then has further deteriorated. GDP in oil-exporting countries in particular is estimated to have contracted by 2.6% in 2020. The recovery in 2021 is projected at 2.6%, and a strong rebound in the oil price (increasing by 70% in the first ten months of 2021) may still show a stronger recovery than expected. However, this recovery still places many countries below the pre-COVID-19 base position and with the risk of further waves of the pandemic to consider. Since the COVID-19 pandemic began in early 2020, governments around the world have instituted fiscal stimulus packages in response to the crisis. In Africa, these stimulus packages have however resulted in increased public sector debt levels, debt service payments, and overall increased fiscal strain. Notwithstanding the significant innovation and related cost reduction being realised from renewable energy technologies, the required capital investment for sustainable energy supply in Africa must cover the generation, much-needed sector reform as well as grid and utility strengthening. This is often unaffordable to poorer economies, which is evident in the slow pace of electricity growth in Africa relative to developed countries. A conservative estimate done by PwC of the cost to achieve net zero for Africa by 2050 is \$2.8tn.

Such investment levels are increasingly unaffordable for many African economies and increased reliance on international finance will be needed if progress is to be made towards sustainable access to affordable energy for all Africans. Increasing policy pressure from developed economies to accelerate the net-zero journey is undoubtedly impacting Africa and the loss of export revenue opportunities from fossil fuel commodities further reduces long-term budgeting capacity. Global policy pressures manifest in many ways, from withdrawal of financial support for fossil fuel related projects, mandatory emissions related disclosures, and emissions reduction pressure. Markets are also changing through the addition of various forms of carbon related taxes, both direct and indirect, which have the potential to exclude African countries from global supply chains due to their inability to price competitively (World Bank, 2021).

2.5. Knowledge Gap

Studies have been done in different areas pertaining Power outages including Tanzania; for instance: Qui et al, (2020) researched on the power outage trends and impacts of investments in smart grid technologies in Australia. Others explored on the assessment of electric outages the performance of small and medium enterprises in Senegal Seek & Cissokho, (2013). Other discussed on the assessment of the impact of Electricity Power Outages on University Students' in Lusaka, Zambia (Sebastian et al, (2021). In addition there are studies that were done in Tanzania. Such as Garside et al, (2015) prepared a report on better power in Tanzania electricity sector and others researched on coping with power interruptions in Tanzania (Kavishe, 2015). However, none of the previous studies attempted to investigate on the effect of of power outages on production in Kilimanjaro regions. Hence, the current study filled that gap by investigaing on the e effect of power outages on production in Kilimanjaro regions.at the Kilimanjaro International Leather industries Co. Ltd.

A parallel research line carried out the analysis for specific countries in SSA. Moyo (2012) finds negative effects of power outages on the productivity of manufacturing firms in Nigeria. He

indicates that the main causes of power disruptions in Nigeria are the poorly built facilities and inadequate power infrastructure, and the surge in the demand for electricity by Nigeria's manufacturing sector. He insinuates that there is an urgent need for governmental interventions to improve power supply through deliberate efforts to develop and improve the power infrastructure. Cissokho and Seck (2013) assess the impact of power outages on firm productivity using a survey dataset composed of firms located in Senegal. They find that electricity disruptions lead to increases in production costs, and that they negatively impact scale efficiency of firms. Also, they find that smaller firms adjust better to power outages in general compared to larger firms. They call for governmental interventions to improve the quality of the power infrastructure, and to facilitate the access to loans and credits for businesses in order to enhance productivity of firms and to promote their competitiveness and growth.

Some studies carried out the analysis for countries in South Asia (SA). Abeberese (2017) analyzes the relationship between electricity costs and the performance of manufacturing firms in India. She finds that firms tend to decrease their electricity consumption with higher electricity prices, inducing them to switch to less electricity-intensive production processes. These implications may result in missed productivity-enhancing opportunities. Abeberese (2017) shows that higher electricity prices have negative effects on firm output, labour productivity and machine/equipment intensity. She notes that higher intensities in electricity use have important implications for productivity growth, underlining the importance of making electricity affordable and available for manufacturing firms in India. Also, she suggests that the government in India should facilitate interruptible contracts, which should be financially affordable and politically feasible, rather than raising prices or making structural changes in power plants. Fernandes (2008) analyzes the determinants of total factor productivity of firms located in Bangladesh, and finds that power supply problems have significant negative effects on firm performance. Also, Grainger and Zhang (2019) emphasize

the adverse effects of power outages on the performance of manufacturing firms in Pakistan, and they indicate that a more reliable power supply would significantly contribute in improving firm productivity.

The empirical literature also comprises studies for countries in East Asia and the Pacific (EAP). Fisher-Vanden, Mansur, and Wang (2015) estimate the impact of electricity shortages on the economy and the environment in China. They find that firms exposed to limited power storage suffer from low productivity, and that firms subjected to frequent and long durations of power outages may resort to alternative means of getting electricity such as, self-generating, purchasing intermediate goods, and/or improving technical efficiency. Using a dataset covering energy-intensive firms from a variety of industries in China, they find that many firms underwent a re-optimization, shifting from energy to materials (*i.e.* buying instead of making), and that there is no statistical evidence of increases in self-generation. Also, they find that firms have partially reduced their carbon emissions despite incurring extra costs. Ba Trung and Kaizoji (2017) examine the effects of business environment on the productivity of manufacturing firms in Vietnam, and they find that inadequate power supply has detrimental effects on firm performance. They indicate that Vietnam, and other developing countries in general, are required to implement institutional reforms to improve infrastructure and the provision of public goods and services.

Analysing the implications of power outages for firm performance can be linked to a broader empirical literature that examines the promoting effects of improved service infrastructure on economic growth and firm productivity (*e.g.* Tybout 2000; Esfahani and Ramírez 2003; Eschenbach and Hoekman 2006; Eifert et al., 2008; Yeaple and Golub 2007; Um, Straub, and Vellutini 2009). For instance, Eifert et al. (2008) find that costs related to inadequate infrastructure and services, including electricity infrastructure, constitute high shares of total production costs in SSA, negatively impacting firm performance. Using a dataset that comprises

developed and developing countries, Yeaple and Golub (2007) show positive relationships between infrastructure and industry-level productivity, and they report adverse implications of power outages for firm performance. Also, Um, Straub and Vellutini (2009) reveal that adequate service infrastructure that comprises a reliable power supply system has positive effects on national economic growth rate and on total factor productivity in the MENA region. However, they find that the return on infrastructure is lower in the MENA region compared to other geo-economic regions.

The impact of the quality of electricity supply on firm productivity is less well understood. Infrastructure quality overall has a significant impact, at least as important as factors such as crime and access to finance, and unreliable electricity supply seems to be the infrastructure element with the strongest negative effect on enterprise productivity, especially in Africa (Escribano et al., 2009). Electricity insecurity tends to negatively affect the total factor productivity and labour productivity of manufacturing SMEs. As with electricity access, the impact of electricity insecurity on productivity varies depending on factors related to both the external context that a firm operates in and its internal capabilities (World Bank, 2010; Cissokho and Seck, 2013). In general, power outages seem to affect small firms more than large firms (Moyo, 2012). The duration of outages (typically measured by hours in a day) has far greater negative impact on firm productivity than the frequency of outages (days per month that outages occur). The impact of outages is not universally negative: a study in Senegal found that outages had a positive effect on manufacturing firms and SMEs, because outages stimulated better management practices to mitigate the negative impact of power cuts and less efficient, lower productivity firms had gone out of business (Cissokho and Seck, 2013).

Electricity infrastructure and consumption generally grow with productivity and growth, but causation is difficult to establish. A number of studies support the conclusion that electricity enhances productivity at the economy-wide and the firm level (Fedderke and Bogetic, 2006;

Kirubi et al., 2009; Grimm et al., 2011). Many small manufacturing firms use electricity predominantly for lighting and communications (Mayer-Tasch et al., 2013). Overall, firms with access to electricity tend to have higher productivity than firms without. However, preexisting conditions (location, access to finance, and management competence) have a strong impact on how access to electricity affects an SME. Electricity access seems to have lower positive impact on productivity of micro enterprises. This may be partly because such firms do not use electricity-dependent machinery and processes, and partly because they lack backup power capacity to cope with outages if they do increase their reliance on electricity-dependent processes post-electrification (World Bank, 2008; Grimm et al., 2011).

The competitiveness of manufacturing firms that experience electricity insecurity might be expected to be affected by the additional costs they incur due to outages. However, there is little evidence that their unit costs of production are affected. Analysis of data from the World Bank Enterprise Surveys and informants in four countries does not reveal a clear or strong relationship between unit costs and outages. Although one study found that firm performance is sensitive to the cost of indirect inputs (Eifert et al., 2008) and in electricity-insecure Nigeria the closure of manufacturing firms has been attributed to high infrastructure costs (Akuru et al., 2011), energy accounting for the largest share, electricity costs are on average a small proportion of manufacturing SMEs' total production costs. Changes in electricity costs are not likely, therefore, to significantly affect unit costs and sales price. Materials costs, which can account for 80-90% of total production costs, will often be unaffected by outages. Firm competitiveness is also dependent on product quality and the ability to meet orders on time, as well as unit costs. Electricity insecurity may impact both of these factors, for example, by causing firms to resort to manual methods which reduce product quality, or to halt production and delay order delivery. However, there is an absence of empirical analysis and enterprise survey data does not capture this information (World Bank Enterprises Survey, 2014).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides the description of the research methodology which includes: research design, data collection methods, population and sampling procedures, data analysis, presentation and interpretation plan, validity and reliability and ethical consideration.

3.1 Study Area.

The study was conducted in Kilimanjaro region. Kilimanjaro is one of the 31 administrative regions in Tanzania, the capital city of Kilimanjaro is the Municipal of Moshi, and According to the 2012 national census the region had a population of about 1,604087. Moreover, the region comprises of six districts that are, Hai, Moshi, Moshi rural, Mwanga, Rombo, Same and Siha district; moreover, the region forms the part of the Northern tourism circuit and it is the home of Kiimanjaro national park. The region is bordered by Kenya in the east, to the south by Tanga region, to the southwest by Manyara region and to the west by Arusha city.

3.2 Research design

The study applied a quantitative research approach for testing the research objectives, quantitative research approach is argued to be important in research because it is a more objective approach also its clearly communicated through statistics and numbers and covers a large number of the population (Saunders, et al., 2017). In connection to this, the research design was descriptive design in nature, because descriptive design was applied to describe the effects of motivation on employee performance, also according to Creswell, (2014) defines descriptive design as a quantitative survey design that provides a numeric description of trends, attitudes and opinions of a population by studying a sample of that population; hence was useful as help report things the way they are directly from the field.

3.3 Research approach.

In conducting a research study there are three approaches that can be used as qualitative research approach, quantitative research approach and the mixed research approach. The researcher used the quantitative research approach that is referred to as the approach that involves investigating facts which are observable using statistical techniques (Kothari, 2012). This approach collects and analyses the numeric data that was gathered through the use of questionnaires method and analyzed through the descriptive statistics technique. The researcher decided to use the quantitative research approach due to the nature of the data which are numeric, also it helped the researcher in gaining in depth information and understanding also reaching many participants at the same time that is time and cost saving.

3.4 Data Collection methods.

As the study applied a quantitative research approach for testing the research objectives and literature review, the researcher used questionnaires that was administered to a number of employees in selected firms in Kilimanjaro region, in generating the intended information from the respondents. Questionnaires are termed to be costs saving and time saving also reaches a large group of people at once, hence not time consuming in administering. In this study, the questionnaire techniques enabled the researcher to reach all groups included in the study at the same time thus, the collection of data was easy and cheap. Hence the closed-ended questionnaire was prepared and had four options for respondents to indicate their level of agreement or disagreement as follows: 1= Strongly Disagree, 2= Disagree, 3= Undecided 4=Agree and 5 = Strongly Agree.

Table 1 A Five-Point Likert Scale

Mean Range	Interpretation
4.30 – 5.00	Strongly Agree
3.50 – 4.20	Agree
2.70 – 3.40	Undecided
1.90 – 2.60	Disagree
1.00 – 1.80	Strongly Disagree

Source: Researcher, (2022)

3.5 Targeted population

Population involves a larger group of people, institution or thing that has one or more characteristics in common on which a study focuses. It consists of all cases of individuals or elements that fit a certain specification (Kothari 2004). The target population was the employees in the selected firm that are the employees from Kilimanjaro International Leather industries Co. Ltd.

3.6. Sample and Sampling techniques.

The sample size of the population will be 45 in number, whereas the total population sampling was applied as the sampling technique to collect data from the research participants from selected firms in Kilimanjaro region. The sample technique is simple random sampling whereby the employees (research participants) are subjected to random selection as the selecting of subsets of the population where each member of the population has an exactly equal chance of being selected since it creates an equal opportunity sample to be representatives of the targeted population (Masanja, 2018). In this case, the participants had equal chances of being selected in the study.

3.7 Data analysis methods and interpretation.

In data analysis as the process of systematic applying statistical/ logical techniques to describe illustrate, condense and recap, evaluate and ensure integrity of the data collected, (McKubre,

et al, 2018), the descriptive statistics used to analyze demographic characteristics, question one, two and likewise question three.

3.8 Reliability and validity of research instruments.

Validity and reliability test are instrumental to determine the credibility and authenticity of the research instrument. In this case, this study has applied several methods to determine the reliability of the research instrument. Content validity used to test all aspect of a given construct of the questionnaire. The content validity was determined using the content validity index. This process involves administering the questionnaire to 5 experts in academic research and other 5 experts in the industry who are engaged in 360-degree feedback appraisal system to provide relevance of each research question in the questionnaire. According to Kothari, (2012). The following is the formula to determine the content validity index (CVI).

CVI = $\frac{\text{Item rated relevant/Very relevant by both rates}}{\text{Total number of items in the instrument}}$

Furthermore, construct validity will be applied to determine the construct of every research question in the questionnaire. Specifically, construct validity was determined using factorial analysis of the questions in the research instrument.

The reliability of the research was determined by a pilot study. The pilot study was conducted by selecting 30 participants to fill questionnaires and therefore subjected to Cronbach Alpha Coefficient test to determine the internal consistency of the research instrument, If the coefficient is greater than 0.7, then the study proceeded forward without any other improvement in the set of questions identified in the questionnaire. However, if the coefficient was less than, 0.7, then the questions in the questionnaire is subjected to further improvements so as to improve the internal consistency of the study (Noble & Smith, 2015).

3.9 Ethical considerations.

Ethical consideration in research is an essential tool and necessary to ensure that participants are treated with dignity and respect during the study. These are moral principles that guide researchers to conduct and report research without deception or intention to harm the participants of the study or members of the society as a whole, whether knowingly or unknowingly (Adom, et al, 2018). Before data collection in the field, the researcher's sake permission and an introduction letter for this study that was obtained from the University Authority. Permission to conduct the study was requested from all appropriate authorities starting with Bariadi District Council. After the permission has been granted, the researcher consented to the participants to participate in the study through informing them on the purpose, minimal risks, benefits and methods associated with the study.

In addition to that the participants were told on their rights to participate and quit from the study any time when they wish to do so. To ensure confidentiality and anonymity, only unique identification number w used and no personal identifying information was collected from the study participants. In connection to this, the data collected will be used for academic purposes only. Furthermore, all communications were conducted with transparency and honest to safeguard the interest of the research participants and the researcher.

3.10 Feasibility / Pilot study Test

A pilot study, also called a 'feasibility' study - a small scale preliminary study was conducted at Hai district before the large-scale study.

The aim of the pilot study was to test the reliability of the questionnaires. According to Ebrahim (2003), a pilot test is necessary for testing the reliability of data collection instruments. Cox (2000), explains that reliability of research as determining whether the research truly measure that which was intended to measure or how truthful the research results were. Pilot study was

conducted to detect weakness in design and instrumentation and to provide proxy data for selection of a sample (Kuvaas 2010).

The researcher selected a pilot group of 10 individuals from the target population to test the reliability of the research instrument. The pilot data was not included in the actual study. The pilot study allowed for pre-testing of the research instrument. The clarity of the research instruments to the respondents was established so as to enhance the instrument's validity and reliability, (Kothari, 2006). The pilot study enabled the researcher to be familiar with research and its administration procedure as well as identifying items that required modification.

3.11 Data Reliability and Validity

3.11.1 Data reliability

Cronbach's alpha coefficient used to test the internal reliability of the measures in the questionnaire. The adoption of Cronbach's alpha based on the ground that it has the most utility for multi-item scales at the interval level of measurement; it requires only a single administration and provides a unique, quantitative estimate of the internal consistency of a scale (Sekaran, 2010; Cooper and Schindler, 2011).

Internal reliability is the consistency of a set of measurement items or the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects (Cronbach, 1951). It is the extent to which a questionnaire tests observation or any measurement procedure and produces the same results. That is, the stability or consistency of scores over time or across ratters (Burns and Burns, 2012). A measure is considered reliable if a person's score on the same test given twice is similar. Various variables may impinge upon reliability of findings. For instance, respondents may be biased or not be in mood of answering questions with degree of interest.

To minimize such variables, Sekaran (2010) advice that respondents must be carefully chosen to ensure they are willing to participate in the study and will answer questions with minimum degree of bias. One methods of testing reliability were used in this study which is internal consistency test. Internal consistency of the research instrument used Cronbach's Alpha.

Cronbach's Alpha is a reliability coefficient that indicates how well items in a set are positively correlated to one another (Sekaran, 2006). According to Bryman and Bell (2015), generally reliability of 0.7 to 1.0 is considered acceptable. Cronbach's Alpha that was less than 0.6 was generally considered to be poor, those which was 0.7 was acceptable and those over 0.8 is good; the closer the reliability coefficient gets to 1.0 the better. Findings of internal reliability test in Table 2 indicates that a Cronbach in this study is 0.809 which is good.

Table 2 Reliability test

Cronbach's Alpha	N of Items
0.809	26

3.11.2 Validity tests

Content validity refers to the extent to which differences in observed scale scores reflects true differences among objects on the characteristic being measured rather than systematic or random error (Huang, 2012). Content Validity Index (CVI) was used to determine the content validity of the questionnaire focusing on the experts' ratings of items' relevance as it also detects flaws, limitations, weaknesses in design, instrumentation and provides proxy data for selection of a probability sample (Cooper Schindler and Sharma, 2012). It was also measured by agreements among experts that the scale was measuring what is expected to be measured where researcher and with supervisor agreed on correct measures to be used. Therefore, investigation of the effect of power outages on production in different firms in Kilimanjaro region

at Kilimanjaro International Leather Industries Co Ltd were studied to ensure content validity and pilot study of 10 respondents was made to see how the methodology instruments fits.

3.12 Test of Assumption of Study Variables

3.12.1 Test of multicollinearity

Variance Inflation Factor (VIF) and tolerance analysis were carried out to test for multicollinearity in the Regression Model. Multicollinearity refers to the degree of correlation between predictor variables (Field, 2019; Martz, 2013). The rule of thumb under regression model is that the predictor variables are not highly correlated with each other. Multicollinearity in the data occurs when the independent variables are highly correlated with each other. When VIFs = 1 indicates no or little Multicollinearity; VIFs > 1 indicates moderate Multicollinearity; VIFs between 5 – 10 indicate high correlation and when VIFs > 10 assumes that coefficients are poorly estimated and that multicollinearity in the regression model is a problem that should handle accordingly (Sheskin, 2011). The analysis (Table 3) shows a mean VIF of 1.299 and tolerance of 0.793 where by the VIFs for all predictor variables were found to be equivalent to 1 (VIFs = 1), indicating that multicollinearity is probably not a problem among the predictor variables.

Table 3 Testing of Multicollinearity

Variable	Tolerance	VIF
Factors for power outage	0.837	1.195
Challenges facing power outages	0.926	1.082
Effects of power outages	0.615	1.624
Mean VIF	0.793	1.297

3.12.2 Testing of Normality

Kurtosis and Skewness tests were conducted to detect whether the sample drawn from the population were normally distributed. Skewness measures the deviation of distribution from symmetry while Kurtosis measures Preakness of the distribution. For perfectly symmetrical data, the value of Skewness and Kurtosis is 0 (Field, 2013; Pallant, 2013 and Ghasemi and Zahediasl, 2012). If the value of Skewness and Kurtosis is significantly different from 0, then data are obviously non-normal. However, since it is quite unlikely to achieve perfectly symmetrical, the values of Skewness and Kurtosis approximately ranges between -1 and +1. A descriptive analysis in Table 4 revealed approximate normal distribution of the data related to all three variables under this study (Table 4).

Table 4 Testing of Normality

	Std. Deviation	Skewness	Kurtosis		
	Statistic	Statistic	Std. Error	Statistic	Std. Error
FFPO	1.022	-0.362	0.165	-0.867	0.327
CFPO	1.079	0.186	0.165	-1.578	0.327
EPO	0.729	-0.946	0.165	0.277	0.327

FFPO= Factors for power outages, CFPO= Challenges for power outages, EPO= Effects of power outage.

3.13 Findings of Pilot Test

Pre-testing was done to modify and remove ambiguous items on research instruments (Kothari, 2004). This enabled the content validity and reliability of the questionnaire and interview schedule used in the study. Reliability is the stability or consistency of scores over time while validity is referring to the extent to which an instrument truly measures what it was intended to measure or how truthful the research instruments are (Golafshani, 2013). In order to check and improve reliability and validity, a pilot study was undertaken in Hai district in Kilimanjaro Region. The developed research instruments were pre-tested using an identical sample in the specified strata and the process helped in appraising data collection instruments. It also helped to ensure that research instruments were stated clearly and had the same meaning to all respondents. To achieve high precision pilot studies, 1% to 5% of the sample constituted the pilot test size (Lancaster, *et al.*, 2012). A total of 10 respondents who are the employees in Same district were sampled for pilot testing. The reliability coefficient of the research instruments was checked using Cronbach's alpha where a threshold of 0.70 was used (Sekaran, 2013). The Cronbach

alpha values of all the variables were above 0.70 implying that the instruments were sufficiently reliable for measurement.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter focuses on the presentation and discussion of findings of the study conducted at Kilimanjaro International Leather Industries Co LTD (KILT CO LTD) Kilimanjaro office which was taken as a case study, and findings were drawn from the data based on the study specific objectives and pertinent questions. The main objective of the study was to investigate the effects of power outages on production in different firms in Kilimanjaro Region, a case of Kilimanjaro International Leather Industries LTD. For the purpose of this study include factors for power outages, challenges facing power outages, likewise the effects of power outages. Data in this chapter are presented according to the research method which was used in the field, namely, the questionnaire with five Likert scale marked with Strongly Agree, Agree, Uncertain, Agree, and Strongly Disagree. The six statements on which the respondents provided their views focused on how each of the the specific objects determine the investigation of the effects of power outage. Specifically, the study aimed at determining:

- i. Identifying the factors for power outage on production in different firms in Kilimanjaro International Leather Industries Co LTD (KILI CO LTD)
- ii. Identifying the challenges facing power outages in Kilimanjaro International Leather Industries Co LTD (KILI CO LTD).
- iii. Determining the effects of power outages in Kilimanjaro International Leather Industries Co LTD (KILI CO LTD)

4.1 Identifying the factors for power outage on production in different firms in Kilimanjaro International Leather Industries Co LTD (KILI CO LTD)

This specific research objective aimed at identifying the factors for power outage in Kilimanjaro International Leather Industries Co Ltd. The Likert scale items on which respondents reacted were Motor vehicle accidents near power lines, strong winds, fallen trees. The results indicated that 90.5(%) of the respondents strongly agreed with motor vehicle accidents near power lines, 6.5(%) agreed, 0 (%) disagree, 0(%) strongly disagree and 3% Uncertain. Also, 57(%) of the respondents strongly agreed with motor vehicle accidents, 34(%) agreed, 1 % disagree and 1.5% strongly disagree and 6.5% Uncertain. Moreover, 7% strongly agreed, 3.5 agreed, 2% uncertain, 28% disagreed and 64.5% strongly disagreed on absence of motor vehicle accidents near power lines and strong winds. The results are presented in table 4.2.

Table 5 Response on the factors for power outage on production in different firms in Kilimanjaro International Leather Industries Co LTD (KILI CO LTD)

S/No.	Factors for power outages	Strongly agree		Agree		Uncertain		Disagree		Strongly disagree		Total %
		Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
1	Motor vehicle accidents near power lines	187	93.5	11	5.5	2	1	0	0	0	0	100
2	Strong winds	108	57	74	37	13	6.5	2	1	3	1.5	100
3	Fallen trees	14	7	7	3.5	4	2	54	27	121	60.5	100

The results in Table 4.2 reveal KILI CO Ltd in Kilimanjaro regional office have accepted motor vehicle accidents near power lines, both strong winds and fallen trees, as this was indicated by the majority (92%) of the respondents who disagreed and strongly disagreed with the absence of motor vehicle accidents near power lines, strong winds and fallen trees. The findings in Table 4.2 further indicated that the main factor for power outages is motor vehicle accidents near power lines approved by 99% of the respondents. These findings corresponded with those of Alsabri (2012) who found out that employees of KILI Co Ltd who were involved in the study were highly appreciated with motor vehicle accidents and fallen trees, and Njanja (2013) who similarly

found that motor vehicle accidents near power lines and fallen trees influence power outage on the participants included in the study.

According to Abotsi (2015) energy is an integral part of any production process. However, Africa currently faces major electricity shortages with a number of power outages. Report by International Energy Agency (IEA) (2011) indicates that Africa presents the lowest electrification rate among developing countries with approximately 31% of people having access to electricity in sub-Saharan Africa, and about 14% of electrification rate in the rural areas. IEA (2009) reports that more than 77% of the rural population in Africa have no access to electricity and this rate reaches 88% for sub-Saharan Africa countries. The power generation capacity in sub-Saharan Africa is lower than that of any other region in the world, and capacity growth has also stagnated (Eberhard et al., 2011). The World Bank enterprise surveys provide an expedient measure of the reliability of grid-supplied power. Data from the World Bank enterprise surveys indicate that most firms in Africa experience frequent power outages. The number of power outages experienced in a typical month could go as high over 100 times. Over the years, the World Bank survey of firms reported that electricity is a major obstacle to their activities. The data available show that power outage is worst in Angola, DRC, Ghana, Nigeria, Tanzania and Zambia.

A more recent study by Abotsi (2015) shows that the number of productivity. The channels through which power outages affect industries include; the effect on the production process (efficiency channel), the extra cost to firms in search of alternative sources of energy and the costs associated with the replacement or repair of broken machines and equipment as a result of the power outages and finally the effect on the quality of a good or service produced (quality channel) (Cissokho and Seck, 2013). This is why this study attempts to find out the impact of the number of power outages experienced in a typical month on the production efficiency of firms in Africa. According to Alam (2013) increases in the incidence of power outages reduce the output and profits of some electricity-intensive industries. Also, according to Eberhard et al.

(2011) the weakness of the power sector in Africa has constrained economic growth and development in the region. Moreover, the International Labor Organization (ILO) (2014) reports that African economic growth rate in 2013 proved too low to generate sufficient employment opportunities for a rapidly growing population, (ILO, 2014). Meanwhile the engine through which the growth objectives of developing countries can be achieved are these firms (Abotsi et al., 2014). Therefore the need to explore the influence of power outages on firm production efficiencies cannot be overemphasized. Studies elsewhere on power outages focused on the impact of power outages on output of firms (Alam, 2013) and the costs of power outages (Adenikinju, 2005; Beenstock et al., 1997; Bernstein and Heganazy, 1988; Caves et al., 1992; Lee and Anas, 1992). Only few of these studies looked at the impact of the number of power outages on production efficiency of firms. For example, Cissokho and Seck (2013) deployed Data Envelopment Analysis (DEA) to show that power outages have negative effects on scale efficiency. But the use of DEA has the drawback of assuming that all errors in data measurement and other random disturbances are interpreted as indicating technical inefficiency. This study therefore contributes to literature by deploying stochastic frontiers analysis (SFA) to establish the impact of the number power outages on the production efficiency of firms in Africa (Abotsi, 2016).

Furthermore, Buguza (2013) environmental factors such as strong winds and fallen trees, affect power outages in production firms. The reason for environmental factors over non environmental factors is that environmental factors affecting power outages require permanent solution such as clearing environment by cutting down trees around power lines and afforestation to the areas which are not very close to the power lines unlike human factors such as motor vehicle accident which can be easily minimized. This implies that Kilimanjaro International Leather Industries Co Ltd need to have increase more effort in tackling these

factors, which in turn affect organizational performance and profitability as well as to meet customers' social service interms of power supply.

The study done by Meikle et al, (2019) factors affecting power outages in production industries in Zambia, the findings revealed that while power shortages were one key feature of 2015 and 2016 that adversely affected their operations, the annual reports also mentioned (for the food processing companies) the drought (which also caused the power shortages), increases in fuel costs (which would have been caused by higher demand for diesel fuel for self-generation), inflation (which would have been caused by increased fuel costs), depreciation of the local currency (which would have been caused by inflation), high interest rates (which would have been imposed to control inflation), and low copper prices (likely determined by exogenous market forces). The power shortages of 2015 and 2016 have resulted in Zesco endeavouring to aggressively expand its installed energy capacity and diversify away from its almost complete dependence on hydropower (interviews with Zesco economists on 10 November, 2017 and 6 June 2018; Zesco Ltd, 2017c). In so doing, Zesco has aimed to raise tariffs to cost-recovery levels it did so twice in 2017 (Zesco Ltd, 2017a). There has been speculation that it has been endeavouring to do so again in 2019 to charge a tariff inclusive of capacity charges so that it can deliver the required extra supply of installed capacity (African Energy, 2019; Phiri, 2019). At the same time, the Ministry of Finance called a moratorium on further sovereign guarantees from being issued (Mwanakatwe, 2018) that would be required to contract energy on a public private partnership basis given Zesco's financial history (interview with a developer on 23 April, 2019). The impact of the power outages of 2015 and 2016 therefore still have important policy implications for today as Zesco seeks to avoid future outages when Zambia next experiences low rainfall. This research was born out of a commission that University College London won to assess the impact of power outages on Zambia's manufacturing sector in October 2016. The International Growth Centre, largely funded by the UK's Department for International

Development (2018), had commissioned the study following almost two years of acute power outages. As its name would suggest, the International Growth Centre aims to promote sustainable growth in developing countries. The study's focus on the impact of outages on the manufacturing sector was then not surprising given the established association between manufacturing and economic growth. Africa in general and Zambia in particular have already seen a period of de-industrialisation, but as Stiglitz (2017) and Barton (2016) suggest, as a result of poor policy rather than natural economic evolution. Given Zambia's more recent resurgence of industrialisation, undersupply of infrastructure poses a threat to its and more generally Zambia's economic growth. (Ahmed,2019).

4.2 Challenges facing power outage in Kilimanjaro International Leather Industries Co Ltd

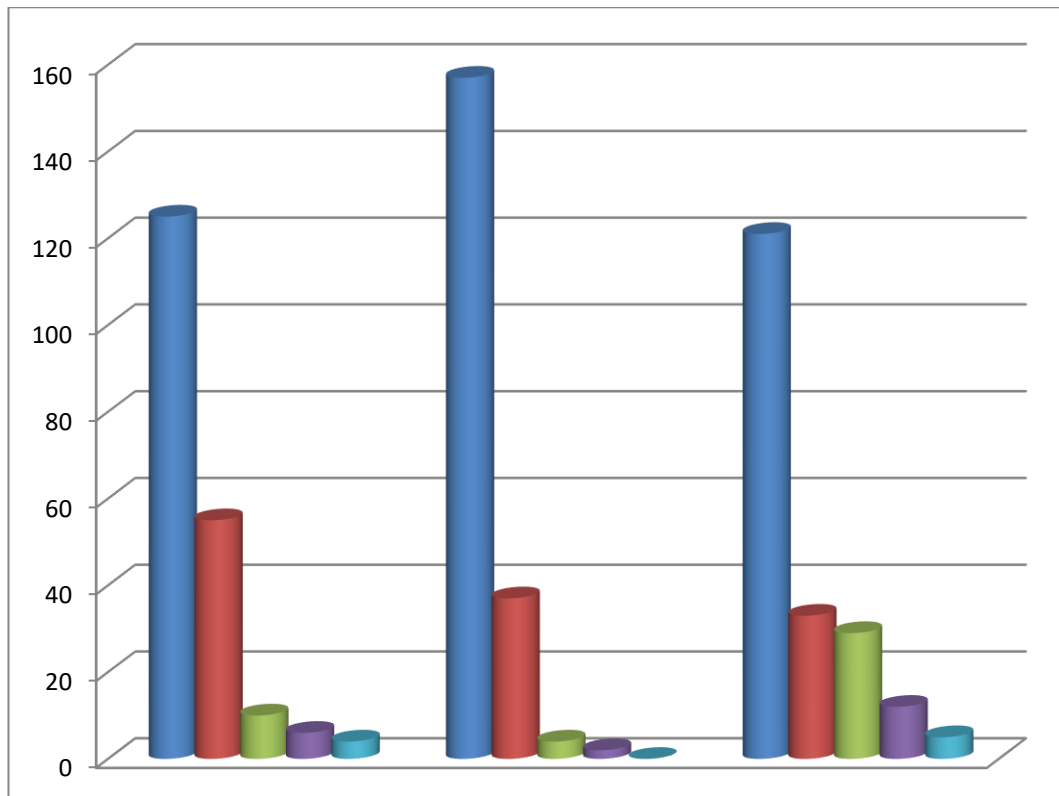
This study objective aimed at identifying the challenges facing power outage in Kilimanjaro International Leather Industries Co Ltd. To enable the researcher, get relevant information related to specific objective, the participants responded to three statements, these statements are; Shortage of funds for infrastructure maintenance, Poor irregular inspection of power lines, Outdated of power lines infrastructures like electrical poles. Their responses are documented in Table 4.2

Table 6 Responses on challenges facing power outage

S/No.	Challenges of power outage	Strongly agree		Agree		Uncertain		Disagree		Strongly disagree		Total %
		Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
1	Lack of irregular inspection	125	62.5	55	27.5	10	5	6	3	4	2	100
2	Poor infrastructure	157	78.5	37	18.5	4	2	2	1	0	0	100
3	Shortage of funds	121	60.5	33	16.5	29	14.5	1	0.5	5	2.5	100

From table 4.3, the findings of the study revealed that 180 (90%) of the respondents agreed and strongly agreed that poor irregular inspection of power lines inspection; 10 (5%) disagreed and strongly disagreed, and 5 (2.5%) were uncertain. With respect to Benefits, 194 (97%) agreed and strongly agreed that poor power lines infrastructures influence Kilimanjaro International Leather Industries Co Ltd performance while 2 (1%) disagreed and strongly disagreed; 4 (2%) were also uncertain. Besides, 154 (77%) agreed and strongly agreed with the view that lack of irregular power lines inspections and poor powerlines infrastructure have influence on power outage but 17(8.5%) disagreed and strongly disagreed and 29(14.5%) were not sure.

Figure 1 shows clearly the challenges of lack of irregular powerlines inspections, poor infrastructures and shortage of funds for powerlines infrastructures.



SA= Strongly Agree, A=Agree, U=Uncertain, D=Disagree, SD=Strongly Disagree.

Figure 4.1 Degree to which lack of irregular powerlines inspections, poor infrastructures and shortage of funds

Key: F=Frequency, SA=Strongly Agree, A= Agree=Uncertain=Disagree, SD= Strongly Disagree

Figure 4.1 Illustrates that lack of irregular powerlines inspections have high influence on power outage (97%) of the respondents agreed and strongly disagree, followed by poor powerlines infrastructures (90%) agreed and strongly agreed and finally, shortage of funds for environment management (77%) agreed and strongly agreed. The higher level of lack of irregular powerlines inspections for influencing power outage compared to poor infrastructure as well as shortage of funds to the working environment and working condition may be associated with availability of

enough labour force who are skilled and compatible to handle the issue related with power outage in power lines around Kilimanjaro International Leather Industries Co Ltd. The findings of the study are reflected in Table 4.1 findings that lack of irregular powerlines infrastructure inspections are highly contributing to power outage within the entire environment, such as outdated of poles of powerlines, the findings which have been empirically established (Alsabri, 2012; Njanja, 2013; Buguza, 2013). Nevertheless, it should be noted that, this finding has not to be interpreted that shortage of funds are less important to the extent that they can be neglected. In fact, powerline infrastructures have to be maintained with better facilities and good working conditions of employees to enable them to work comfortably and efficiently especially in maintaining of powerlines infrastructures. The general implication of the findings in Table 4.2 and the same applies in Figure 4.1 is that the Kilimanjaro International Leather Industries Co Ltd accompanied with the government should seriously give more consideration to do irregular powerlines inspections, maintenance of powerlines infrastructures and financial assistance so as to ensure that the challenges associated with power outage should reach the end. Experience from many developing countries especially in Sub Saharan countries and in particular Tanzania reveals that, there are numerous challenges of power outage facing production sectors and strategic development projects which in turn lead to poor performance of the entire sector.

According to Ghazzawi et al,(2022) Power supply in developing countries has been generally characterized by unre-liability and inefficiency, resulting in disruption costs that adversely impact the economic performance of firms. Ineffective privatization policies, corruption, increasing fuel costs, lack of public investment, political instability, and poor economic regions of 16.5 times, and to the second longest average duration of a power outage incident amongst geo-economic regions of 4.9 h. Taken together, they reveal that manufacturing firms in the MENA region are exposed to the longest average total duration of power outages per month amongst geo-

economic regions, standing at 64 h. Also, they show that the average perceived value of losses of manufacturing firms in the MENA region due to power outages is important, standing at an average of 4.8% of total sales. These statistics could be indicative of significant negative effects on the performance of the MENA's manufacturing firms in terms of sales and productivity, signifying that the impact of power outages on business activities should be comprehensively examined through various channels and under different circumstances (Kinda, Plane, and Véganzon`es-Varoudakis 2011). Also, they raise concerns that the absence of appropriate policies and reforms targeting the power infrastructure would restrain economic growth in the MENA region (Ghazzawi et al, 2022).

Power outages have generally direct and indirect effects on the overall performance of firms, causing increases in economic costs, reductions in produced quantities, and eventually decreases in sales and productivity (Arnold, Mattoo, and Narciso 2008; Fattouh and El-Katiri 2013; Fisher-Vanden, Mansur, and Wang 2015). The direct effects of power outages can be underlined through the following points. First, power outages generate costs that could be instantaneous (not proportional to the duration of power outages) such as losses of computer files and programmes, and that could be proportional to the duration of power outages, such as idle machinery and labour (de Nooij, Koopmans, and Bijvoet 2007). Second, power outages cause disruptions of the production process, leading to reductions in intermediate and final outputs. Third, increasing shortages in power supply compel firms to undertake precautionary measures and to use alternative power sources such as generators (Fisher-Vanden, Mansur, and Wang 2015). These measures could impose additional economic costs on firms. Fourth, higher frequencies and durations of power outages could accelerate and/or cause deterioration of production machinery and equipment, eventually causing breakdowns and/or damages. Fifth, high frequencies and long durations of power outages could negatively impact the productivity and efficiency of the labour force, and

Table 1: Power outages reported by

manufacturing firms by geo-economic region. Geo-economic region Number of power outages per month Duration of a power outage incident (hours) Value of losses due to power outages (% of total sales) Middle East and North Africa (MENA) East Asia and the Pacific (EAP) Eastern Europe and Central Asia (ECA) Latin America and the Caribbean (LAC) South Asia (SA) Sub-Saharan Africa (SSA) High income, OECD countries High income, non-OECD countries Source: The World Bank's Enterprise Surveys (WBES) database. Performance of Manufacturing Firms 3

could generate opportunity costs associated with idle machinery and labour force. 4 The indirect effects, which encompass behavioural responses of individuals, are associated with negative implications of power outages for both consumer confidence and labour force (Munasinghe 1980). High frequencies and long durations of power outages tend to increase the costs of living, deteriorate individuals' well-being and demotivate them from performing their jobs (Munasinghe 1980). The indirect effects of power outages could also reduce demand, which could in turn induce markedly decreases in firms' sales, efficiency, and productivity. 5 The implications of power outages for the performance of manufacturing firms in the MENA region come in addition to other challenges, particularly those associated with deficiencies in business climate and infrastructure that lessen firm competitiveness in the domestic and international markets (Kinda, Plane, and Véganzon`es-Varoudakis 2011). Energy is often deemed to be an important factor that affects the economic growth rate since production is normally determined as a function of capital, labour and energy, inter alia (Berndt and Wood 1975; Munasinghe and Gellerson 1979; Stern 1993, 2000; Esfahani and Ramírez 2003). Thus, a reliable power supply service in terms of availability, quality, and costs is expected to promote firm performance (Arnold, Mattoo, and Narciso 2008). In this context, Kessides (1993) indicates that an adequate power infrastructure tends to raise the productivity of other factors of production and, hence, firm productivity. Also, there exist some macroeconomic evidence from the MENA and other developing geo-

economic regions that underscore the negative effects of power outages and/or the positive effects of reliable energy supply system on national economic growth rates (e.g. Ferguson, Wilkinson, and Hill 2000; Um et al., 2009; Bhattacharya and Wolde((2012).

4.3 The effects of power outage in Kilimanjaro International Leather Industries Co Ltd.

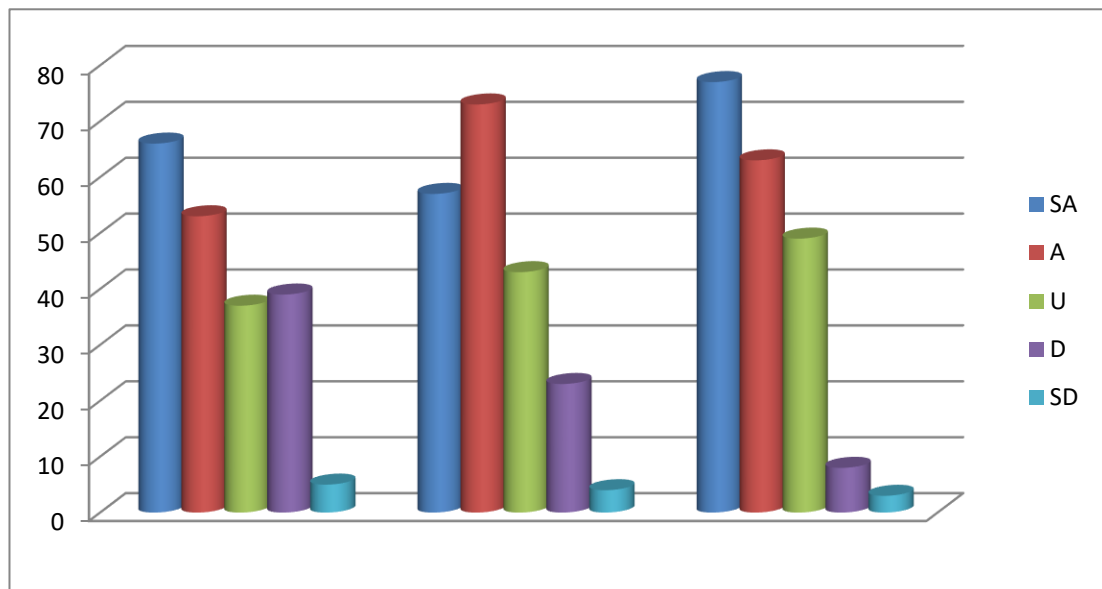
To understand the degree to which the effects of power outage to the development and performance of the firms particularly in Kilimanjaro International Leather Industries Co Ltd firms influence poor firms performance, the respondents were instructed to express their opinions on three statements; Low level of firms or company production leads to shortage of products in the markets, shortage of employment opportunities due to poor production, destruction of property around the powerlines, loss of life. 'Recognition responsibility and accountability of employees of the firms and motivate employees so as to have a positive perceptions with powerline infrastructures as part of life, recognize their commitment to the organization and improve morale, Giving more autonomy or discretion to choose how to accomplish their work allow them to take responsibility for their job and tasks related with powerline management and employees dedicate their skills and efforts towards work if they feel that their effort is accomplishing something important to the sustainability of the industries, from that matter in the questionnaire, and then the researcher analyzed their responses as indicated in Table 4.3

Table 7 Responses on the effects of power outage

S/No.	Effects of power outage	Strongly agree		Agree		Uncertain		Disagree		Strongly disagree		Total %
		Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
1	Low level of production	66	33	53	26.5	37	18.5	39	19.5	5	2.5	100
2	Destruction of property	57	28.5	73	36.5	43	21.5	23	11.5	4	2	100
3	Loss of life	77	38.5	63	31.5	49	24.5	8	4	3	1.5	100

Table 4.3 indicates that on low level of production of the products 118 (59.5%) of respondents agreed and strongly agreed on contrast 45 (22%) disagreed and strongly disagreed, and 37(18.5%) of the respondents were uncertain. With regard to low level of production of the products, 128 (65%) agreed and strongly agreed. On the other hand, 27 (12.5%) disagreed and strongly disagreed and 42 (21.5%) were uncertain. On the aspect of growth or progress of production, 141(70%) agreed and strongly agreed; 11(5.5%) disagreed and strongly disagreed and 49 (24.5%) were uncertain. Figure 4.2 highlights the degree to which low level of production, destruction of property and loss of life.

Figure 2 Degree to Which low level of production, destruction, and loss of life



Key: F=Frequency, SA=Strongly Agree, A= Agree=Uncertain=Disagree, SD= Strongly Disagree

Figure 4.2 Demonstrates that low level of production account the influences performance more by 72% of the respondents agreed and strongly agreed, followed by destruction of property by 63 % and lastly loss of life by 59.5 % of both agree and strongly agree. These findings implied that management have to give more consideration on maintenance of powerlines infrastructure and implement employees' welfare, such as short-term and long-term training on environment management. These findings match with those of Njanja, et. al., (2013) who generally established that rlow level of production, destruction of property, and loss of life have direct effect on firms' performance. On the other hand, Quresh, Zaman and Shah (2010) specifically showed that low level of production has maximum effects to the organization, to the employees, to the community around the company and to the government at large. The findings contradict with the current study which has found out that low production has maximum effect on employees' performance. This discrepancy may be attributed to contextual differences in which the two studies were carried out at different time and at different locations. The previous study was conducted in Pakistan while the current study was conducted in Tanzania. But also, it might

be caused by the sample involved in the study in the sense that they might have differed on which variable they valued most. Similarly, Ngimbundz (2009) found that low level of production and destruction of property have effect on the sustainability of the organization. Implication to be drawn from the findings is that lack of employment opportunities can be used to discourage the community to cooperate with the organization on the issue of powerlines management rather than relying on low level of production which can lead to some effects, such as salary and bonuses, which may be not be effectively implemented by the organization, which are limited by the rate production of the firm and budget of the company.

According to the study conducted by Ghazzawi et al,(2020) the findings revealed that Power outages have generally direct and indirect effects on the overall performance of firms, causing increases in economic costs, reductions in produced quantities, and eventually decreases in sales and productivity (Arnold, Mattoo, and Narciso 2008; Fattouh and El-Katiri 2013; Fisher-Vanden, Mansur, and Wang 2015). The direct effects of power outages can be underlined through the following points. First, power outages generate costs that could be instantaneous (not proportional to the duration of power outages) such as losses of computer files and programmes, and that could be proportional to the duration of power outages, such as idle machinery and labour (de Nooij, Koopmans, and Bijvoet 2007). Second, power outages cause disruptions of the production process, leading to reductions in intermediate and final outputs. Third, increasing shortages in power supply compel firms to undertake precautionary measures and to use alternative power sources such as generators (Fisher-Vanden, Mansur, and Wang 2015). These measures could impose additional economic costs on firms. Fourth, higher frequencies and durations of power outages could accelerate and/or cause deterioration of production machinery and equipment, eventually causing breakdowns and/or damages. Fifth, high frequencies and long durations of power outages could negatively impact the productivity

and efficiency of the labour force, and could generate opportunity costs associated with idle machinery and labour force.

The indirect effects, which encompass behavioural responses of individuals, are associated with negative implications of power outages for both consumer confidence and labour force (Munasinghe 1980). High frequencies and long durations of power outages tend to increase the costs of living, deteriorate individuals' well-being and demotivate them from performing their jobs (Munasinghe 1980). The indirect effects of power outages could also reduce demand, which could in turn induce markedly decreases in firms' sales, efficiency, and productivity.^[5] The implications of power outages for the performance of manufacturing firms in the MENA region come in addition to other challenges, particularly those associated with deficiencies in business climate and infrastructure that lessen firm competitiveness in the domestic and international markets (Kinda, Plane, and Véganzonès-Varoudakis 2011).

Energy is often deemed to be an important factor that affects the economic growth rate since production is normally determined as a function of capital, labour and energy, inter alia (Berndt and Wood 1975; Munasinghe and Gellerson 1979; Stern 1993, 2000; Esfahani and Ramírez 2003). Thus, a reliable power supply service in terms of availability, quality, and costs is expected to promote firm performance (Arnold, Mattoo, and Narciso 2008). In this context, Kessides (1993) indicates that an adequate power infrastructure tends to raise the productivity of other factors of production and, hence, firm productivity. Also, there exist some macroeconomic evidence from the MENA and other developing geo-economic regions that underscore the negative effects of power outages and/or the positive effects of reliable energy supply system on national economic growth rates (such as Ferguson, Wilkinson, and Hill 2000; Um et al., 2009; Bhattacharya and Wolde 2012).

This paper contributes to the empirical literature by examining the effects of power outages on the performance of manufacturing firms in the MENA region, using both objective and perception-based measures of power outages. It complements the existing empirical studies that investigate the implications of power outages for firm performance and national economic growth rate in other geo-economic regions (e.g. Abeberese 2017; Abotsi 2016; Cissokho and Seck 2013; Igwe, Onjewu, and Nwibo 2018; Kaseke and Hosking 2013). Also, it adds to the empirical literature by investigating whether different patterns of power outages have varying effects on firm performance, and whether the effects of power outages exhibit variations with firm size. Besides, it presents a methodological contribution where perception-based measures of power outages and other firm variables are instrumented, and different estimation approaches are implemented. This paper relies on a dataset extracted from the WBES database, which characterizes a comprehensive source of firm-level data in developing economies. Firm performance is represented through three main indicators: annual sales growth rate, annual employment growth rate and annual labour productivity growth rate. The extents of power outages are depicted by objective measures covering durations and frequencies of power outages, and by perception-based measures that are derived from firms' perceived severity of power outages such as, perceived value of losses due to power outages and identification variable on whether electricity constitutes a major constraint for firm operation (Fakih, 2020).

Moreover, some studies carried out the analysis for countries in South Asia (SA). Abeberese (2017) analyzes the relationship between electricity costs and the performance of manufacturing firms in India. She finds that firms tend to decrease their electricity consumption with higher electricity prices, inducing them to switch to less electricity-intensive production processes. These implications may result in missed productivity-enhancing opportunities. Abeberese (2017) shows that higher electricity prices have negative effects on

firm output, labour productivity and machine/equipment intensity. She notes that higher intensities in electricity use have important implications for productivity growth, underlining the importance of making electricity affordable and available for manufacturing firms in India. Also, she suggests that the government in India should facilitate interruptible contracts, which should be financially affordable and politically feasible, rather than raising prices or making structural changes in power plants. Fernandes (2008) analyzes the determinants of total factor productivity of firms located in Bangladesh, and finds that power supply problems have significant negative effects on firm performance. Also, Grainger and Zhang (2019) emphasize the adverse effects of power outages on the performance of manufacturing firms in Pakistan, and they indicate that a more reliable power supply would significantly contribute in improving firm productivity.

According to Farhanabanana (2013) conducted a study on the impact of industrial production and level of products as well as employee's motivation on work performance. The findings indicated that low level of production play an important role in decreasing of employee's morale and the revenue of an organization. This results in lowering the income of the organizational performance. Broni (2012) conducted a study on the effects of power outage in firms' production and come up with the findings that power outages affect the worker's motivation in the catholic university college of Ghana. Structured and semi structured questionnaire administered to 154 respondents selected from a staff population of 200. The study discovered that destruction of property, loss of life and lack of employment opportunities were the main effects of poor performance of the organization. According to Usugami (2006) conducted a study on the similarities and differences in power supply and rate of production in industrial management between Korean and Japanese. The survey results revealed that the majority of Korean and Japanese executives regard power outage is the main effect of production process in production firms. Employment stability is determined by the stability of power supply and high rate of

production done by the firms. Another study done by Karskakovska (2012) conducted a study on the analysis of the effects of energy supply in industrial sector. The study results provided more similarities than differences. The employees from both genders and all age subgroups are mostly affected by low level of industrial production, lack of motivation by industrial management, good compensation packages for example money and good work environment whenever they get injuries in working environment which can be resulted from power outage. Based on the findings recommendations were given to managers in terms of improvement of motivation policies and practices and working environment.

Interviewed employees were asked what should be done by Kilimanjaro International Leather Industries Co Ltd management to improve employees' working environment including power outage. The responses were given and indicated in Table 4.11. The results indicates that about 49 respondents suggested the ways to improve working environment and employees' motivation as follows; conducting irregular powerlines inspections wiring system and training so that they can be safe throughout the working time this was from 60% of the respondents, Maintenance and renovation of powerlines infrastructures about 40% of respondents and Improve budgets, accountability Transparency about 20% of respondents, the above points was the ways to improve power outage and firms performance in Kilimanjaro International Leather Industries Co Ltd. According to Vroom theory employees was motivated through improving their working environment and rewarding system. The level of effort and motivation is based on three key factors, expectancy, instrumentality and valence (Jennaluv, 2011). As suggested by Herzberg theory, work hours and good working environment improve production performance and motivate workers other than money. He also found that some factors such as responsibility, achievement, a challenging work environment and personal growth can make people happier at work (Magloff, 2012). As stipulated in Maslow hierarchy of need theory every human being have his/her own needs which are physiological needs, safety needs, love, esteem

needs and self-actualization. The level of production for particular industry of firm may differ from one geographical location to another depending on the stability and availability of power supply. The availability and stability of power supply are among the factors that help the managers to understanding the actual capacity and ability of their organization (Likert, 2012). According to Brian (2013) Equity theory deals with social relationships and fairness. Employees' can be motivated if there is a sense of fairness. The findings of this study are supported by findings in the similar study done by Raghava (2009) conducted a study on the working environment, facilities and motivating hospitality industry employees. The study confirmed good working infrastructures, irregularly inspection of infrastructures, trust each other, responsibility, availability of funds, feedback appraisal and flexibility of working hours to be motivating factors or the ways to improve production. Another study conducted by Manzoor (2012) on the impact of poor infrastructure in working environment, power outage in working environment, shortage of funds to run the organization, poor management, lack of employee motivation on organization effectiveness are the major factors to deteriorate the performance and development of the firm. The organization should design their rules, working policies and organizations structures that give space to the employee to work well and appreciate them on their tasks fulfillment and achievements. This will surely lead to organizational growth and lead to attainment of development. According to Broni (2012) the study was carried out to asses' effects of poor working environment, shortage of funds to run the organization and lack of irregular inspections of powerlines inspections in collaboration with the entire institution which is responsible for power supply, for the case of Tanzania we mean TANESCO. In fact, if all these are not accommodated and not considered automatically the organization cannot grow and achieve the intended goals. The situation has led to the poor performance of the institution owned by the Catholic University College of Ghana. Structured and semi structured questionnaire administered to 80 respondents selected from a staff population of 154. The study indicated that

the ways to improve production of industry or a firm and access the development, good working environment were largely responsible for the improvement of performance. A study on the effect of power outage on production in different firms in Kilimanjaro International Leather Industries Co Ltd is the key to success in Tanzania. The study revealed that most employees interviewed from Kilimanjaro International Leather Industries Co Ltd are destruction of property, loss of life and lack of employment opportunities are the major effect of power outage on production in different firms in Kilimanjaro International Leather Industries Co Ltd, (Baraka, 2013)

CHAPTER FIVE

CONCLUSION, RECOMMENDATIONS, POLICY IMPLICATION AND CRITICAL EVALUATION OF THE STUDY

5.0 Introduction

This chapter focused on conclusion, recommendation, policy implication, and critical evaluation of the study based on the drawn discussion of findings. discussion of findings drawn from this. The main objective of the study was to investigate the effects of power outages on production in different firms in Kilimanjaro Region, a case of Kilimanjaro International Leather Industries Co Ltd. The factors for power outage in Kilimanjaro International Leather Industries Co Ltd, the challenges facing power outage in Kilimanjaro International Leather Industries Co Ltd and the effects of power outage in Kilimanjaro International Leather Industries Co Ltd. The following discussion is guided by findings presented in chapter four.

The study concluded that, in order to improve the production on production in different firms in Kilimanjaro International Leather Industries Co Ltd, the management of Kilimanjaro International Leather Industries should make the use of Equity theory and Herzberg theory. As stipulated in Herzberg theory in order to fully motivate employees' both motivating factors and hygiene factors need to be addressed. Motivating factors include a sense of achievement, job interest and recognition while hygiene factors include working conditions, supervision and money (Kermally, 2005). The research shows that the employees' who were interviewed most of them they felt safe, loyal, valued and taken care of. This indicates that Kilimanjaro International Leather Industries Co Ltd employees are motivated and contributed on organization performance in terms of other matters apart from power supply services. Highly motivated employees' increases profitability of the organization and ensure that organization attain its intended goals are met timely. The most factors influencing poor production in different firms on

Kilimanjaro International Leather Industries Co Ltd was severe weather, motor vehicle accidents near the power lines, equipment failure, fallen trees and strong winds.

5.1 Conclusion

General conclusion emerging from this study is that both motor vehicle accidents near powerlines, fallen trees and strong winds have a positive effect on poor performance of different firms. In particular the study has established that employees are highly in favour of financial rewards, especially salary and bonuses whenever needed but still the production of different firms is badly affected by power outages. On the other hand, lack of irregular inspections around power lines infrastructures in collaboration with people from TANESCO have also been found to be of great impact of production in different firms in Kilimanjaro International Leather Industries Co Ltd performance, poor powerlines infrastructures which are not repaired now and then play a major role to deteriorate the development and performance of different firms in Kilimanjaro International Leather Industries Co Ltd, shortage of funds to motivate employees and to make services of powerlines wherever needed. Nevertheless, it is obvious that most of employees and employers in Kilimanjaro International Leather Industries Co Ltd have not yet realized the effect of power outage in terms of economic development, social development, loss of life, destruction property and shortage of employment opportunities. It is also likely that employees may underperform even when they are highly paid with other good fringe benefits apart from good workplace and working condition like the challenges of power outage in their organization, as experience has shown. Therefore, finally this study concludes that motor vehicle accidents near the powerlines, poor weather which is associated with floods, fallen trees around the powerlines infrastructures and strong winds play a major role to hinder the development and sustainability of the organization and fail to achieve organizational goals and objectives, which does not mean that the challenges should be left as it is without looking for a permanent solution.

As it questioned, this study revealed that these factors contribute on organization poor performance in Kilimanjaro International Leather Industries Co Ltd. The contribution of employees' motivation in Kilimanjaro International Leather Industries Co Ltd is high productivity and profitability, reduce labour turnover and absenteeism and increase morale of work but the challenge is upon power outages. Apart from that, the study has also indicated that the factors hindering good performance of production in different firms in Kilimanjaro International Leather Industries Co Ltd and organization performance in Kilimanjaro International Leather Industries Co Ltd was lack of irregular inspections of powerline infrastructures, poor powerlines infrastructures and shortage of funds to run the daily activities including powerlines maintenance. However, the role of employees' motivation in Kilimanjaro International Leather Industries Co Ltd was to improve output of the production firms, improve level of efficiency of the products produced, employee satisfaction and stability workforce. Also, the study discovered that, the ways to improve powerlines infrastructures in Kilimanjaro International Leather Industries Co Ltd is to have irregular powerlines inspections in collaboration with people from TANESCO, Maintenance of powerlines infrastructures like the replacement of the outdated electric poles, increasing and introducing new sources of revenues so as to have stable economic base of the organization. The study concluded that, in order the employees' to be highly motivated and to contribute in organization good performance the challenge of power outages in different firms in Kilimanjaro International Leather Industries Co Ltd should be tackled to a high extent. The management of Kilimanjaro International Leather Industries Co Ltd should make the use of alternative sources of power which can be used when there is short term and during long term of absence of power supply. The research shows that the employees' who were interviewed most of them they felt safe, loyal, valued and taken care of. This indicates that Kilimanjaro International Leather Industries Co Ltd employees are motivated and contributed on organization performance apart from other factors like the power infrastructures. Highly

motivated employees' increases profitability of the organization and ensure that organization achieve the target and intended goals are met timely. The most factors influencing power outage in different firms in Kilimanjaro International Leather Industries Co Ltd are addressed.

5.2 Recommendations

Based on the discussion of the study findings, the following are recommended:

Power supply in an organization is worthwhile as it significantly contributes to better organizational performance and profitability. Therefore, it needs a planned budget to effect it because the study has found that employees are still highly motivated by financial rewards but they are being affected by power outage. In this regard, managers and human resource managers should prioritize the improvement of powerlines infrastructures so as to eliminate the challenges of power outage to the organization.

Also, development of clear policies of employees' working environment and facilities so that they can work comfortably to facilitates increase in production of the products in different firms something which can accelerate to economic development of the organization. This is because any organization needs highly performing environment which can deliver services to the customers, and therefore, be able to achieve competitive edge in the market.

Furthermore, organizations, including Kilimanjaro International Leather Industries Co Ltd, should conduct in-house training among themselves so as they can manage to handle various issues within the organizations especially which are seems to have a direct impact to sustainability of the organization, as most employees seem to be unaware of who is responsible infrastructure management around their working environment, the training programme should be organized and will help them to change their mindset. This will influence them to be intrinsically motivated to work rather than continuing heavily relying on extrinsic rewards in the process of improving production in different firms.

Finally, Kilimanjaro International Leather Industries Co Ltd as an organization and other stakeholders, including the government and non-government organizations (NGOs), should offer support financially and technically to improve infrastructure in different production firms such as powerlines infrastructures so as to increase production of the products from the entire production firms.

Based on the findings of this study recommended that electricity infrastructure is directly linked to business profits and economic development of the organization and national at large. Highly Kilimanjaro International Leather Industries Co Ltd motivated organization look for better ways to solve the challenge of power outage in different production firms in order to increase production and improve social services and employee's welfare. The Kilimanjaro International Leather Industries Co Ltd (KILICoLTD) Management should give more consideration on factors for power outage, challenges facing power outage and effects of power outage in Kilimanjaro International Leather Industries Co Ltd (KILCoLTD) management should strongly pay attention on these issues accordingly, create new organization structure which is clear and provide equitable solution to the challenges. Also, should ensure that organization have good and current work facilities or equipment in order to solve power outage challenges effectively. Also, there is a need for (KILICoLTD) employees to involve in decision making to find out the way forward for solving the challenge of power outage. Employees' participation in decision making made employees to feel as part of the organization and stimulate employee's performance in the organization (KILICoLTD). The employees' who are highly motivated will perform his or her duties to the best of their abilities and ultimately improve organization performance and improving the challenges of power outage in Kilimanjaro International Leather Industries Co Ltd (KILICoLTD).

5.3 Policy Implication

This study sought to investigate the effect of power outage on production in different firms in Kilimanjaro region at Kilimanjaro International Leather Industries at KILICoLTD Kilimanjaro regional. The variable included in the study were factors for power outage in Kilimanjaro International Leather Industries Co Ltd, challenges facing power outage in Kilimanjaro International Leather Industries CoLtd and the other one is the effects of power outage in Kilimanjaro International Leather Industries CoLtd. The findings revealed that motor vehicle accidents near the powerlines, fallen trees and strong winds were the major factors influencing power outage. On the other hand, the study revealed that destruction of property, loss of life, poverty rate increased and shortage of employment opportunities, have also impact on different production firms' performance. All these findings from this study have policy implications as explained in the following paragraph.

Policies and strategies that encourage diversification of rewarding systems should be developed from the perspective of both employer and employees by involving employees in the designing process of reward systems. While promoting diversity it is important to ensure that intrinsic reward system supports extrinsic one. This support can be in the form of a congratulation letter, hand shaking or in any non-monetary form that should make an employee who performs better feel that their contribution to the organizational performance has been recognized and appreciated. Becoming less reliant on extrinsic reward is part of the diversification.

5.4 Critical Evaluation of the study

The findings from this study are valid and reliable because of the well pre-tested research instruments used to collect data which were also later systematically analyzed and interpreted. Not only that but also the sample size of 120 respondents involved in the study was big enough to be representative of 154 employees who comprised the total population of the study. On top of this, the sampled employees had enough working experience with KILICoLTD Kilimanjaro

regional. Before starting the study, they were informed of the importance of the study to the researcher and their organization. Therefore, the information which they provided was valid and reliable to the extent which makes this credible.

Another encouraging observation that maximizes the credibility of this study is that its findings are empirically supported by previous studies on the same subject, including those conducted outside of Tanzania. The finding that motor vehicle accidents near the powerline is commonly occurs at KILICoLTD Kilimanjaro region is in line with those of Alsabri (2012), Njanja, et.al., (2013), and Bugusa (2013). On the other hand, the findings revealed poor infrastructure of powerline affect production on different production firms is also supported by Tsai (2014), Quresh, Zaman and Shah (2010), and Ngimbundzi (2012).

From another perspective of the critical evaluation of the study, it is very important to note that this study involved only one KILICoLTD regional office, as a case study. Therefore, the findings of this study cannot be generalized to comply with other KILICoLTD offices or other organizations in Tanzania or elsewhere in Africa and the world at large. This is because infrastructures on production firms using power supply as source of energy, experiencing the challenge of power outage. Organizations differences of production firms are seriously affected by the challenge of power outage, the situation leads to low level of production of goods and services, these challenges negatively affect the organization performance.

However, this study is provocative because it makes organizations and other stakeholders to continues thinking of the best power system to adopt in order to tackle the factors affecting production in different production firms affecting organization's performance. This is because up to date there are different schools of thought among researchers and scholars. Those who attribute high degree of production process of goods which accelerates economic development of the county Therefore, this study provokes further studies.

5.4 Limitation of the study

In the course of conducting this study there were some obstacles which were encountered. However, they were carefully handled to avoid minimization of validity and reliability of the study findings. First, the initial budget of the study ran out because of price increase in the market. This situation impelled the researcher to add extra budget in order to accomplish the study. Some of the respondents were not available when the researcher was making follow-up of the questionnaires. This limitation was addressed by resorting to convenient sampling to ensure that all questionnaires were collected timely. Also, the researcher encountered difficulties in accessing some documents for review as they were regarded confidential. However, this problem was tackled by appealing to some influential people at the study area who helped to access the required documents. Generally, the study was successfully accomplished.

5.5 Areas for further research

From this study, areas for further study can be deduced. First research is needed in which other organizations are involved in tackling the challenges of infrastructure facing their organizations using the same variables to test the findings of the current study. Second, another research can be conducted involving different human and natural variables. More importantly, further studies are needed because so far there is still a very serious challenges of power outages in various production firms' performance in order to add knowledge on this subject.

Furthermore, this dissertation covers small part of selected theories of production and levels of production it is possible to deepen the study in order to get a detailed framework and discover contribution of power supply on organization performance. More investigation in the contribution of power supply on organization performance should research further. This study aimed at investigating the effects of power outages on production in different firms in Kilimanjaro International Leather industries Co Ltd, a case of Kilimanjaro Region at Kilimanjaro International Leather Industries Co Ltd. The study concentrated on Kilimanjaro Region only therefore area

for further study, other researcher should consider to carry studies in other region and in different geographical areas.

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APPENDICES

Questionnaire

My name is Dotto Chacha Pursuing a Master in Business Administration Leadership and Governance at the Institute of Accountancy Arusha. As a partial fulfilment of the program, I am required to conduct a study in relation to my field of study. Therefore, this study fulfils that purpose.

The main aim of the study is to investigate the **effects of power outages on production in Kilimanjaro international leather industrial company Ltd.**

I kindly request your assistance to fill this questionnaire. All information will only be **used strictly for the research purpose and will be confidential**

Your support is highly appreciated

This questionnaire consists of 3 sections 1, 2, AND 3.

Section 1: General Information

Post Graduate Studies and Research

Thanks

Section 1: General Information

1 **Gender:** Male Female

2 **Age:** 18-24 25-34 45-54 55-65

3 **Year of Study:** First Year Second Year Third Year Beyond 3 Years

4 **Education:** Secondary/Certificate Diploma Bachelor degree Post-graduate

5 **Status:** Part-time Full-Time

SECTION B: Factors for power outage in Kilimanjaro International Leather Industries CoLtd

6. Factors for power outage in Kilimanjaro International Leather Industries Co Ltd a case of Kilimanjaro Region.

This subsection is concerned with identify the factors for power outage in Kilimanjaro International Leather Industries CiLtd Please tick (√) in the box which best describes the extent to which you agree with each of the following statements. Rate your response on a scale of 1 to 5;

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

S/N	TRAN	1	2	3	4	5
1	Motor vehicle accidents near powerline					
2	Caused by the incidence of fallen trees					
3	Prevailing of strong winds					
4	Severe poor weather					
5	Occurrence of floods during rain season					

7. Challenges facing power outage in Kilimanjaro International Leather Industries CoLTD.

This subsection is concerned with identifying the factors for power outage in Kilimanjaro International Leather Industries Co Ltd a case of Kilimanjaro Region.

Please tick (√) in the box which best describes the extent to which you agree with each of the following statements. Rate your response on a scale of 1 to 5;

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

S/N	VARIABLES	1	2	3	4	5
1	Lack of irregular powerlines inspections					
2	Poor powerlines infrastructures like electric poles					
3	Shortage of funds for powerlines infrastructure rehabilitation					
4	Shortage of specific employees to be assigned					
5	Poor management					

8. Effects of power outage in Kilimanjaro International Leather Industries CoLTD.

This subsection is concerned with identifying the effects of power outage in Kilimanjaro International Leather Industries Co Ltd. Please tick (√) in the box which best describes the extent to which you agree with each of the following statements. Rate your response on a scale of 1 to 5

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

S/N	VARIABLES	1	2	3	4	5
1	Destruction of property					
2	Loss of life of the people around the area					
3	Low level of production					
4	Shortage of employment opportunities					
5	Poor social services					

Appendix II

RESEARCH BUDGET

S/N	ACTIVITIES	ITEMS	COST (TSHS)
1	Proposal Preparation	Internet services	20,000/-
		Typing and printing	50,000/-
		Photocopies	50,000/-
		Binding	30,000/-
		Transport	20,000/-
		Meals	50,000/-
		Validity & Reliability	100,000/-
		Sub- total	320,000/-
2	Data Collection	Printing and photocopies	50,000/-
		Transport	200,000/-
		Meals	150,000/-
		Sub- total	320,000/-
3	Data Processing and Report writing	Printing and photocopies	250,000/-
		Transport	50,000/-
		Binding	40,000/-
		Meals and accommodation	80,000/-
		Publishing	150,000/-
		Sub- total	720,000/-
		Grand Total	1,440,000/-

Source: Researcher (2022)

Appendix III

RESEARCH TIME FRAME

Activities	Dates (Year, 2021)						
	Jan 2022	Feb- March 2022	April 2022	May 2022	June 2022	July- Aug 2022	Sept 2022
Topic Selection							
Proposal Preparation							
Proposal Defense							
Data collection & Analysis							
Research Report Preparation							
Research Report Defense							
Submission of bound books							

Source: Researcher (2022)