Barriers to Technological Innovations of SMEs in Cameroon.

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Abstract

Cameroon is amongst the low- and middle-income economies which has currently acknowledged the advantages of technological innovation although technological transfer (TT) are disrupted by many barriers. This research illustrates the main obstacles to technological innovation and transfer (such as product and process innovation) in Cameroon utilising Technology Innovation theory and Technology Transfer paradigm (TT) and other related literature.

Semi-structured interviews and questionnaires were completed by Cameroonian entrepreneurs of SMEs and the data has been analysed using the content analysis method. The results show that, shortage in energy supply, unstable internet connections with low bandwidth are one of the main hindrances plaquing technological innovations of SMEs. In addition, understanding the impact of government bottle necks such as the institutions and policies on technological innovation. Other, minor factors such as the training mechanism in Cameroon and technical know-how knowledge were also cited by entrepreneurs as a hindrance to innovation.

This study will be of interest to several groups in Cameroon (such as entrepreneurs, policy makers and investors) through being a unique paper to address technological innovation. Its impact on the economy of the country, hindrances, and ways to evade them. Governments investing in tech innovation will get the country out of the lagging state of technology.

Keywords
Technological Innovation, Technology transfer, Small and Medium-sized Enterprise (SME), Cameroon.

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1 Introduction

Technological developments play a fundamental role in the economic progress and success of the economy and society. However, technological innovations have been one of the vital problems plaguing modern society due to its unpredictability and effect of the fast-paced technological developments. Over the decades, several technologies have revolutionised working habits, living as well as how enterprises operate and make strategic decisions. Amongst these notable changes include the internet which is widely used by entrepreneurs in marketing and exchange of goods and services, big data which improves patient care monitoring without physical presence, artificial intelligence (AI) such as speech recognition used for Apple and Google products, virtual reality (VR) which is used in the management of pain and anxiety, augmented reality (AR) presence economical ways for companies engaging and marketing their services and merchandise or helping society, just to name a few. These change the development of business strategies by enterprises and their competitiveness in the business world. However, emerging countries are lacking in the adoption of technological innovations.

This parade in new technologies is affecting every sector of the economy. Forbes identifies three sectors at risk of technological innovations: telecom by blockchain, sporting goods by new printing technologies and shipment and logistics. Blockchain, new 3-D printing technologies and the development of 5G network which is the new buzz in the telecom industry are making other technologies look obsolete. As such, leaving no room for enterprises that struggle to adapt to faster ways to survive in the market. Furthermore, the Mckinsey Global institute (MGI) describes twelve fields in where technological advancements have the greatest human, industrial and economic impact: mobile internet, artificial intelligence (AI), internet of things (IoT), cloud computing, robotics, autonomous vehicles, genomics of the next millennium, energy conservation, 3-D printing, innovative technologies, cloud computing, innovative discovery of petroleum and energy and green tech (David Essex, 2013). These technologies are making their mark in the domain of investment, transportation, employment, construction and more. Such revolutionary technological innovations were chosen based on a rate of changes in technology development, affected consumer value, potential for disruptive economic effect and economic impact potential.

In the improvement of living conditions for people and their environment technological innovations play an important role, progress of global economies, and organisational innovative business models. Technological innovation could either be sustainable or disruptive. Sustaining technology innovation progressives from moment to time. From another perspective disruptive technology brings about a rapid change and can replace the old technology hence bringing about a huge impact, consequently it is important for companies and leaders to understand technology, develop technical expertise, and adopt innovations that are necessary for their organisations to accomplish competitive advantage in their management styles.

The capacity to innovate has been characterised as the ability to bring about revolutionary market developments in technologies, process or products (Eggers et al., 2014). Therefore, the consequence of creativity on economies and the obstacles stirring creativity of small and medium sized enterprises (SMEs) must be explored. This will encourage entrepreneurs to make organisational assessments on how to integrate technology into their corporate plans to desire strategic edge in this era of ever-growing technologies. Moreover, the relevance of SMEs in any society can only be important on the basis of their impact on their societies (Holmes et al., 2010). The effects of technological innovations on jobs, implementing new goods and services and different phases in their corporate models. By giving them a strategic advantage in the word economy and its effect on the economy, as well as competition in the foreign market, develop countries will benefit the most from technical advancements.

New technology will create a change in solving immediate socio-economic problems like provision of basic social amenities such as heath amenities, access to basic IT services, elimination of hunger and the eradication of common illnesses. The integration of technology in developing countries will make a substantial contribution in progress and transition of their economies. Emerging economies also need local creativity to solve unique problems associated to their specific setting. Inevitably, an effective management plan must be designed and implemented to assist in the adoption process to encourage creativity capacities of entrepreneurs.

Not all future emerging technology can adjust the equilibrium, the way humans live and function and the business value chain. Most will drive massive changes in the way people are living and the global economy. That´s why it is essential for entrepreneurs and decision makers to recognize that innovations are important for them to plan and act appropriately. Faced with constant technological change, business leaders are kept on their toes to constantly update their organisational strategies to boost their internal efficiency via reaping the benefits of technological innovations. Thus it becomes crucial for SME entrepreneurs (M. B. Subrahmanya et al., 2010) to rethink market strategies in this rapidly shifting patterns of technology. Considering this fast-evolving technological innovation, entrepreneurs are recommended to have leap-frogging attitudes.

1.1 **Aim of Research**

This paper aims to improve the awareness of SMEs technological innovation in developing countries. And how energy supply, internet and telecommunication and government bottlenecks affect technological innovation of SMEs in Cameroon. SMEs are an important part of economies in emerging countries due to their innovativeness and job creation function. New technology becomes a significant determinant of SMEs´ competitiveness in developing countries and their long-term growth. However, SMEs are less engaged in the creative process unlike major corporations. Because of their limitation in the source of funding, lack of finance, lack of basic infrastructures, technical knowledge, and government policies.

Hence, the study aims to demonstrate to decision makers and governments of emerging countries, the supporting roles they can play in fostering a sound business climate for SMEs in developing countries to participate in the innovation process and innovation acceptance through technology. Thus, presenting different opportunities for investors in Cameroon. Entrepreneurs of developing countries such as Cameroon, can adopt these technologies to gain competitive advantage and increased productivity domestically and internationally. Considering the explanation of the relevance of technological innovation and SMEs adoption, I developed a logical structure (as shown in Figure 1 below), to be investigated to confirm the influence of technological adoption and adaptation on SMEs productivity and competitiveness.

SMEs in emerging countries are roots of growth within economies of countries. In their role of driving growth and improving the standard of living of its citizens through the provision of jobs. For example, Muriithi,(2017) found that in Africa, SMEs provide about 60% of job creation in the Africa. In support for this, the study undertaken by Amoah & Amoah, (2018) uncovered the fact of the part played by SME employment in Ghana is immense. The study supported the fact that SMEs provide a large percentage of employment. SMEs in Ghana employ roughly 82%(2018, p. 154) of the workforce. In addition, 86% of these employment provided were temporary while 81% are permanent (2018, p. 155).

For SMEs to bring about this growth within the economy, innovation and introduction of technological innovations is paramount. As seen in figure 1 below, when SMEs adopt such advances in technology or simply innovate by introducing improved services and products, new ideas and business process. Competitive advantage is obtained within the scope of its access to exposure to foreign marketplaces, a boost in capital turnover, and increase in productivity. Flexibility in carrying out business activities aids in reducing time spent on business processes. Innovations greatly affect job growth and serves as a path to economic development in small-scale enterprises. The strategic application of technical advances in SMEs has a significant effect on the overall success and exposure of SMEs to global audience. Hence, indeed predominant that governments implement appropriate technology-innovative approaches for

small businesses to upgrade their business efficiency and boost employment development.

In addition to the priority given to SMEs in the economies of advanced and developing countries alike. They face a myriad of challenges which hinder their adoption of technological innovations and hence their growth. Limitations for example the unavailability to finance, government policies (political instability and corruption), lack of basic infrastructure (such as electricity, internet, and education) and the knowledge in technology.

The governments role in the advancement of SMEs through innovation an the implementation of innovation strategies shapes the influence of innovation (Chege & Wang, 2020). The leadership of every economy is responsible for maintaining a stable business environment for its entrepreneurs. This field of the economy is inclined to suffer shortcomings without the existence of government funding for small-scaled businesses. The business environment such as a sound tax system, provision of energy supply, internet, financial and technological support sets the stage for technological innovation. Despite the requirement for a sound business environment most emerging countries government do not provide these business-friendly conditions for business thereby hindering technological innovation.

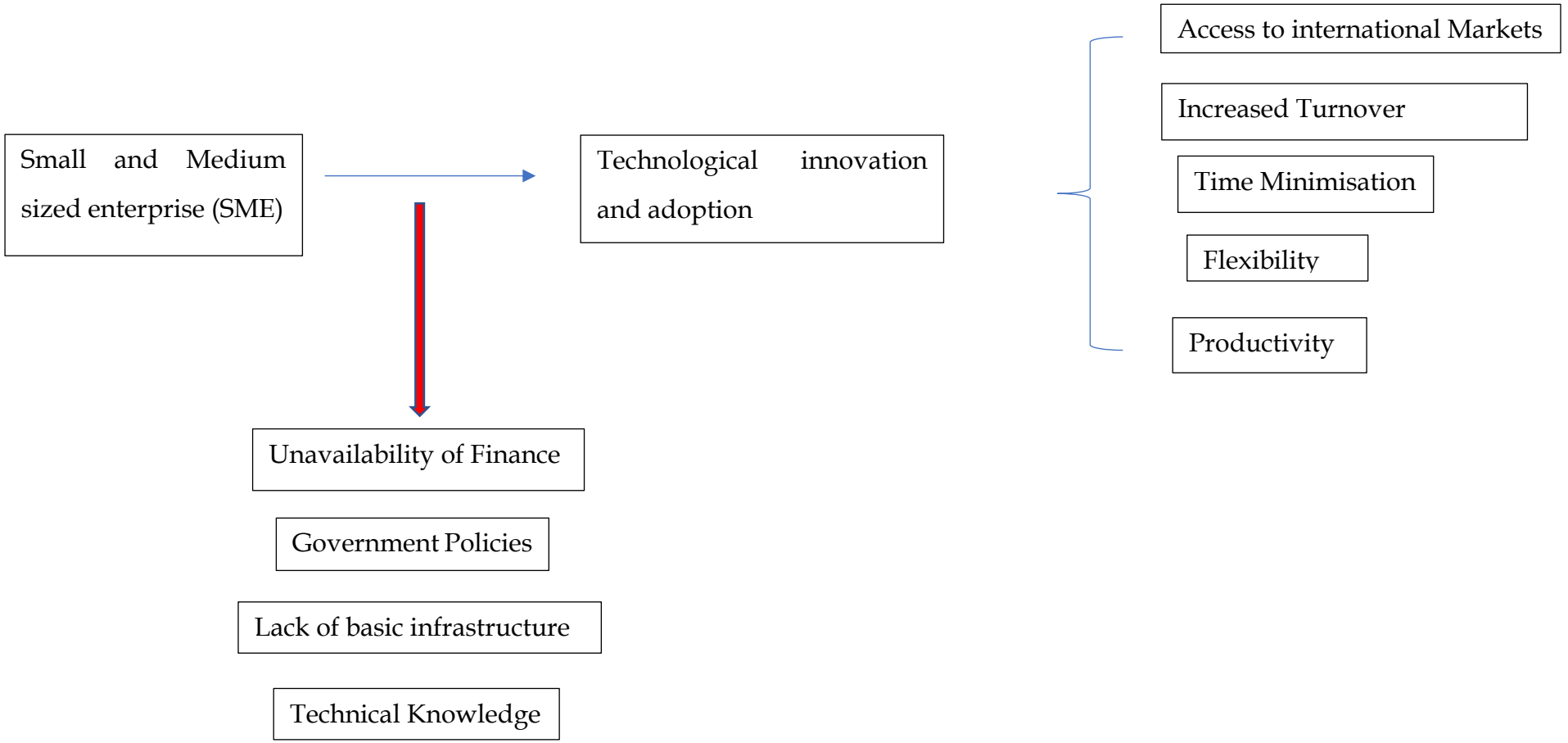

Figure 1 Simplified diagram of the conceptual framework (Author´s conceptual approach)

In addition, results from this paper will support governmental and non-governmental organisations concentrating on the SME sector growth to guide them on how to adopt creative market strategies to achieve comparative advantage locally and internationally. This will help inform and allow policy designs that will favour SME sector innovativeness to foster progress and prosperity. Regardless the progress and sustainability of the entire economy.

1.2 **Research Question**

The research is undertaken to comprehend the challenges encountered by entrepreneurs of SMEs in Cameroon. In achieving the objectives stated above the following research questions are recommended.

1. What are the qualitative perceptions of entrepreneurs of SMEs in Cameroon on the effect of energy shortage on technological innovation?
2. How do entrepreneurs of SMEs in Cameroon understand and reason telecommunications services and technological innovation?
3. How do government policies hinder technological innovation?

This paper seeks to unravel the perceptions of SME entrepreneurs in Cameroon on the effect of energy shortage, telecommunication services and government policies on technological innovation. Besides the above stated research questions, it is necessary to examine the technological preferences of Cameroonian entrepreneurs. And understand their impressions of innovation via technology on their businesses and livelihood. As shown in table 1 below, to render the easy to discern the hindrances to technological innovation in Cameroon it is paramount to comprehend their technological choices. The reason for their choices and their perceived impacts on their businesses and livelihood.

Table 1 summarizes the various objectives to be attained with respect to the different questions put forward.

Objective	Questions considered
Technological preferences of entrepreneurs in Cameroon	What are the innovative technological preferences in Cameroon?
Impact of technological innovation on SMEs	What has been the contribution of innovative technologies in the productivity or output of SMEs in Cameroon?
Drawbacks to innovative technologies on SMEs	What are the hindrances to innovative technologies for SMEs in Cameroon?

1.3 **Limitations**

Given the time frame for the completion of the current analysis, it gives a shortcoming to the research time frame to acquire enough data and the present political and social unrest/conflict in the country made accessibility to respondents difficult. In addition, frequent electricity cuts and internet cuts data collection was difficult, because respondents could not get connections to the internet to keep to agreed time of interview with respondents. Given all this shortcomings, the gathering of data was delayed by the political and social unrest. Including the shortage and the absence of basic social amenities for instance the internet and electricity. However, interviews were successfully scheduled with some entrepreneurs to come to the findings and conclusions of this study. Although phone interviews were chosen to be executed for this research this research because of the difficulty and unavailability of finance for the interviewee to meet respondents physically, it was nearly impossible to get responses as quick as possible on the scheduled time frame.

The complexities of the survey population dominated by entrepreneurs, further complicated the gathering of data since majority of respondents were engaged in money making activities. Thus, rendering the data collecting process long and timely. And constant reminders were necessary to motivate most respondents to book an interview and respond to the questionnaire.

Another drawback includes the respondents not responding to all questions with the fear of the government. Which is what has characterised the present status of the country. Even though, anonymity and privacy were guaranteed by the scientist.

"*I did not give information for two questions because I believe you have them*"

Thus, giving limited data for analysis. Despites this shortcoming, adequate information was collected to make the necessary analysis for this study.

The content of this study is summarised as follows. The next chapter reassesses past data on innovative technologies, characteristics of SMEs and developing working hypothesis. Subsequently, the approach to collecting data and analysis is presented. Finally, results are discussed and analysed. Eventually findings and suggestions.

2 Literature Review

The chapter comprehends the different views on innovative technologies, how technological changes affect firms and industries. By examining past research works to gain insights on the understanding behind Innovative technologies, strategic decision making and how it influences SMEs. Thus, helping to lay down the groundwork for this study. This topic is intertwined with digital business management, which covers technological innovation and strategy formation.

2.1 Technological Innovation theory

The theory of "technological innovation" was first coined in the 1940´s by Joseph Schumpeter, during the era of industrial revolution. It was used to describe technological progress as "creative destruction" (Schumpeter, 1942, pp. 82–85). It occurred when machinery improvements to the manufacturing processes such as the assembly line caused craftsmen to be displaced from their jobs. So, the question of innovation through technology has long plagued the economy. To date the analysis of the Schumpeterian theory of creativity has been cited in various studies related to technological innovation (Baden-Fuller & Haefliger, 2013; Kogan et al., 2017; Souto, 2015; Witell et al., 2016) and it is called the Schumpeter hypothesis.

Schumpeter (1934) considers creativity to be special consolidation of modern and ancient expertise to create newly improved products and services. Schumpeter argued that until advanced goods and services, business processes, or creativity is put into the market and generates enormous revenue. Innovation can only be named innovation if it brings on additional value. Further innovation only creates value for an enterprise that develops it and implements it. Either by putting on the market a new product or by changing its business process. This theory is well represented in the Oslo manual (2018) where the Schumpeterian theory is recognized as the backbone of innovation theories.

Companies get a good desire to search into innovative solution to unresolved issues thus achieving a (provisional) revenue-monopoly and competitive prospect in markets characterised by technical creativity. (Coccia, 2017a) used this reasoning to clarify the origin of innovative technologies (problem-solving innovation) which promotes technology and industry shift in the Schumpeterian environment of creativity-based competition. This structure successfully clarifies the interpretation of how businesses produce new goods and processes to improve the strategic edge in a fast-changing market. Generally speaking, the concept suggests that related issues underpin modern technical frameworks and progressive inventions which provokes technological innovations over time. This can be seen in the innovation bases industry (drug research sector) where motivation to identify new product lines for unanswered health challenges provide leading firms with competitive advantage in the industry. Technical know-how and problem-solving operations are essential to the creation of many invention since they will be translated into useful consumer technologies and strategic processes for business edge.

Nonetheless, innovation is attributed to several other variables for example, research in specific fields for the collection of technological information. The willingness to identify and execute innovative, practical and cost minimisation solutions does have a direct impact on operational and financial performance (Ozkaya et al., 2015). Another consideration about innovation production is the complex capacity: the possibility for organisations to adapt, frame and modify foreign and domestic skill sets to cope with increasingly market changes (Coccia, 2014). New technology is indeed attributable to corporate development which is a systematic mechanism for companies to achieve comparative advantage. Strategic leadership managers play a crucial role in organisational transformation of processes since they serve as inspiration for others with their own visions. By building community enthusiasm including the provision of reward for meeting expectations in demanding markets (Khalili, 2016).

The profound nature of innovation affirms the design of disruptive knowledge. As a result, the extent of innovation of a firm´s progress is an important topic when discussing innovativeness (Bouncken et al., 2015). Considering this, it becomes vital to differentiate between worldwide innovation, innovation, and firm innovation. Firm innovation is correlated with technology adoption while worldwide and market innovation represents profound innovations into the market. As describe in the definition of innovation by Covin et al. (2016) capability of firms delivers about extreme business change. From another perspective as recommended in the Oslo Manual (2018, p. 25) 4 forms of inventions must be acknowledged: Product invention, business process creativity, marketing changes and organizational resourcefulness.

Innovation of goods is defined as "*a new or improved good or service that differs significantly from the firm's previous goods and services and that has been introduced on the market*" (OECD & Eurostat, 2018, p. 21)

Innovation of market methods seen as "*a new or improved business process for one or more business functions that differs significantly from the firm´s previous business processes and that has been brought into use by the firm*"(OECD & Eurostat, 2018, p. 21)

Marketing innovation stated as "*the implementation of a new marketing method involving significant changes in product design, packaging, product placement, product promotion and pricing*" (Oecd, 2005, p. 169)

Innovation of organisations "*is the implementation of a new organisational method in the firm´s business practices, workplace organisation or external relations*" (Oecd, 2005, p. 177)

In the instance of this research technological innovations of the firm encompasses all the above innovations. The criteria for substantially distinct traits refer to new goods and business methods introduced by a corporation and inventions initially created by certain business entities or individuals with hardly any changes. Thus, the concept of innovation requires the inclusion of diffusion. The introduction by a corporation of a new and enhanced product or business model, particularly though the new and enhanced product or business method has already been implemented in the marketplace or placed into operation by certain businesses in the same industry. For

instance, a regionals company´s implementation of a new model of business created and introduced by the mother company is a breakthrough for its affiliates. Conversely, it is not an invention to implement a new or updated commodity or operating process that is in operation in another segment or branch of similar company.

Technological innovations are adjust business processes, emergence of entirely new goods and services, and transfers the value pools away from producers to consumers (Leipziger et al., 2016). Technological innovations have the potential to impact employment, productivity, growth, and competitive advantage of enterprises(Alvarez et al., 2015; Coccia, 2017b; Kogan et al., 2017; Marcolin et al., 2016). Hence, business organizations will often need new business model innovations to cater for the shift in value. Christensen (2013) examined how technological and market structural shifts in the manual "the innovator´s dilemma ……", have been inescapably rapid and continual thus posing a nightmare to entrepreneurs. Attention is paid to the disk drive industry. Making use of multi-method study for his research he found that when new technologies emerged that provided a better and cheaper substitute that customers valued, incumbents tend to commercialize and maintaining its marketplace.

Notwithstanding, innovations turned out not only to boost performance but also provides an entirely new product characteristics for example ease of use, flexible and lightweight, just to name a few; start-ups lead while incumbents fail. As such, the emergence of technological innovation apparently linked to the replacement of new(small) businesses for existing (large) firms. This study revealed that there existed two types of technological change, each with a unique effect on entrepreneurs and industry leaders. The first sort sustained; the rate of technological change moves from incremental to radical. The dominant firms in the industry also develop and adopt new technologies. In contrast, innovation of the second sort disrupted redefines performance, resulting in the failure of large firms.

From Christensen´s findings he introduced a framework for disruptive technologies that consist of three principles. Firstly, in many industries the pace of technological changes outweighs the growth in the demand for the new technology. Hence incumbents tend to cater for this high market demand and provide an opening at the bottom of the markets which makes it easy for start-ups to explore and grow. Secondly, there is a critical distinction between the types of innovations –Is it in the scientific know-how or in the strategic business plan? – which emerges within the corporation. The first one gives large firms the chance to market their goods at higher profits to the highest bidder, and next, less occurring version of innovation called the ´disruptive technology´ as coined by (C. Christensen & Raynor, 2013, p. 66) in this journal called "The Innovator´s Solution" which almost never happens in many industries therefore causing start-ups to beat incumbents. And they provide a novel blend of characteristics which are appealing to clients within close proximity to the business bottom (Markman & Waldron, 2014). Third, existing firms do constraint their innovation capacity to existing customer so investments appearing unattractive to incumbents (large firms) are attractive to newcomers (small firms). As a result

incumbents re not inspired to improve their technological innovation that will promise them a low profit margin, target a small customer group, and incorporate inferior goods and services to existing customers. Although, this served as a guidepost to understanding market disruption in disk drive. Other researcher conducted several deductive explorations to confirm the association to other industries. Consecutive researchers have studied pharmaceutical, auto, television (Ansari et al., 2016; Yin et al., 2017).

The analysis of information above provides endorsement for the tenets and provided further elaboration to the concept of technological innovation. Further, Laurell & Sandstöm (2016) analysed the instance of Uber a taxi hailing platform which disrupts the taxi services market, as an institutional and technological disruption. This was studied in response to the argument of Uber satisfying this classical criterion of disruptive innovative technologies by Christensen et al. (2016). However, Laurell & Sandstöm(2016) identifies both institutional and technological disruptions caused by Uber.

2.2 **Technological Innovation as a competitive tool**

Christensen et al (2016, p. 49) further provided a comprehensive system of technological innovation model and how incumbents are overthrown by new competition. The disruptive process is described as a course whereby start-ups and SMEs with limited resources can challenge the business of incumbents. Categorically, when big firms emphasis on innovating services and commodities for the cost-effective clients, which end up ignoring the requirements of other division of customers thereby leaving a loophole for start-ups. Start-ups with a disruptive mindset begin to target the ignored consumer segment by the incumbent, hence gaining grounds in the market and providing differentiated products at a lower price to the consumer segment (Kumaraswamy et al., 2018, p. 1026).

OECD (2005, p. 146) defines innovation "*as the implementation of new or improved product (goods and services), or the process, the implementing of a new marketing method, or a new organisational method in business practices, workplace organisation or external relations*". In simpler terms, technological innovation which brings about new merchandise and services introduced at the bottom of the business displaces incumbents. New goods and services introduced possesses qualities like convenience, affordability, accessibility, and ease of use. Incumbents listening to their most demanding clients and chasing higher profits tend not to respond quickly to the changes in clients wants. This is detrimental given the exponential changes of clients wants and needs in this technological age. Incumbents are hence faced with the "innovator´s dilemma" to continuously restricting its products and services in favour of its high-end clients while ignoring the low-end market clients. Start-ups then move to the high-end markets providing the services that the incumbent´s ´profitable clients´ need while enjoying the advantage of their early success.

When mainstreams clients start adopting the goods and services of start-ups, disruption occurs. The red lines in Fig 2 represents how products and services

improve overtime in relation to client's readiness to pay for performance (shown by the blue lines). As incumbents provide products of high quality and services (upper red line) to satisfy their profit driven clients. They under look the needs of the low-end clients and most of the mainstream clients. This leaves an opening for the start-ups to infiltrate the market with better offerings (lower red line) and then gradually move up market to threaten large firms supremacy.

Figure 2 The Disruptive Innovation Model (C. M. Christensen et al., 2016, p. 49)

Danneels (2004, p. 249) describes Disruptive Technology as "*… a technology that changes the bases for competition by changing the performance metrics along which firms compete. Customer needs drive entrepreneurs to seek certain benefits in the products they use and form the basis for customer choices between competing products*". In this view he argues that destructive technologies transform the foundation for competition, as they add new output attributes to their products in which old products cannot compete.

According to statistics Finland, technological creativity indicates any recent improved goods or business process whose technological property shows a difference from before. Further the product or process can be considered as innovative if they achieve a specific advantage for the enterprise. Therefore, technological innovations give companies sustainable market advantage. However, innovation efficiency is affected by both structural and organisational factors. The theory of disruptive innovation was criticized for not adequately addressing the dynamics of innovation. However, this criticism was addressed by Christensen et al. 2015 to include a clarification and expansion of the definition of innovations not only encompass technical advances but advances in the corporate model and emerging consumer footholds should be

included. Many of the innovations instead of affecting incumbents rather delivers a forum to create and undermine relationships with others already existing amongst affiliates in the ecosystem. Business ecosystems are of importance to industries wherein different parts of the product or the technology granted by numerous companies which must be compatible to each other to generate utility for the clients (Kapoor & Agarwal, 2017; Valkokari, 2015).

Innovations often contribute to changes in the ecosystem of organisations, current functions, relationships, rules, and transactions. Thus, this has blurred the line between industries and sectors. For instance, the emergence of the transportation ecosystem surrounding ´self-driving cars´ didn´t just affect ´conventional carmakers´, it also made it hard to draw the line between technology firms and car manufacturing firms(Yin et al., 2017). Likewise, the scenario of Airbnb´s model of business has transformed the hotel industry making it hard to differentiate and categorise the companies by regulators. Therefore, it even threatens to distinguish who is a service provider and who pays for the service.

Understanding this phenomenon it is required, in specific to consider the impactt of such related interdependencies in ecosystems (Jacobides et al., 2018). Understanding this relative phenomenon affirms the obstacles faced by incumbents and start-ups disrupting the existing markets (Kapoor & Klueter, 2015). For example, the watchmaking industry in Switzerland was disrupted by the introduction of the Quartz movement (Raffaelli, 2018), a similar case can be seen in the ´Open Access´ publishing model. ´Open Space´ publishing allows usage of scientific literature unregulated thus disrupting the relationship amongst researchers, schools and readers on the ´Toll Access´ model where a payment is required upon reading and accessing publications (Thananusak & Ansari, 2019).

As the influence of technological innovations and SMEs on the society increases. Studies analysing their relationship has been reported (M. B. Subrahmanya et al., 2010; Zhu et al., 2012). Innovative SMEs amongst SMEs take the lead in active technological innovation focusing on strengthening their competitive power. However, constant creativity is not an option, but rather an assignment for businesses in the IT industry. All in all, today´s technological innovation is all about competitiveness and survival in a world of accelerated technological change.

2.3 **Technology Transfer (TT) Paradigm**

Many scholars suggest that middle-income countries cannot take the same direction of technical advancement as developing countries in that it is better, cheaper, and faster to adapt and adopt technology that already exist than create their own. Technology Transfer has been the brain box and performing an even greater role in advancing economic progress. For instance, (Alshumaimri et al., 2017; Bozeman et al., 2015; Leipziger et al., 2016; Wonglimpiyarat, 2016) demonstrates the function of government policies and innovation incubators in universities for effective technology transfer in Thailand. Hence, laying down a path for emerging countries to copy to appreciate the role of technology transfer.

These countries with low income often lacking the necessary resources such as finances, R&D centres, appropriate policies to assist build the new technology, and the receptiveness of this new technology is another fact that must be considered. It is more feasible to adopt and adapt these technologies from emerging countries because the risk of making new ones is greater than adopting them from existing organisations somewhere else. Emerging nations should take advantage of this kind of innovation to produce goods, services, and processes faster and cheaper than to begin from scratch which can guarantee growth in the economy and competitiveness in the market, place locally and internationally. Some companies with open minds, engage in the development, modification, and improvement of software products over the years leading to technological transfer which has resulted to the procreation of brand-new products.

Given all this background information on how emerging countries could benefit from gaining competitive advantage as well as experience rapid economic progress is pertinent to delineate what "Technology Transfer" or "Technology Diffusion" means. Bozeman (2000, p. 629) explains what technology transfer is using Roessner´s words "*Technology transfer is the movement of know-how, technical knowledge, or technology from one organisational setting to another*". Technological transfers tend to promote innovation in countries where these transferred technologies are used to have new products created, processes, or services in an economy. They are often shaped by government policies, and how these policies assist in constructing human and institution capabilities emulated in technology outputs (Bozeman et al., 2015). For the most part, technology transition has been debated in the past, focused on the multinational transfer of innovation from emerged economies to emerging economies. However, nowadays interest is growing in domestic transfer and how government policies shape technology transfer (Kuhlmann & Ordóñez-Matamoros, 2017b).

Many governments and legislative laws are putting emphasis on technology as economic progress stimulator via programs such as collaboration between industries and universities, incubator programs to assist in the creation of innovative technologies and science fairs to showcase and persuade investors. Such programs can be seen implemented in nations like USA, Finland, and Australia, just to name a few. Emerging countries should carefully design and implement such policies to help

extract them from their lagging technologies I an ever-growing technology world at this time.

For instance, in Australia on the 29th of January 2001, the Prime Minister unveiled the "*Backing Australis´s Ability Innovation Action Plan*" which was a wide variety of funding measures totalling about $2.9 billion in the time span of 5 years. Which included funds on specialist projects, project-specific facilities, and national testing centres for the "National competitive grants programs" totalling $ seven hundred and thirty-six millions, both obtained $337 million and $155 million n their financing, respectively. As reported in study by the Australian parliament (Matthew James & Rann Ann, 2001). In addition, the initiative proposed 2 additional knowledge board centres, media, and Biotechnology, worth $176million. Improvements in R&D tax concessions with an additional $227million for "cooperative Research centre" development. Both the "R&D launch system" and new technology commercialisation also known as COMET, the innovation access service and other services received an extra $736 million for research grants and academic sector. However, official public research organisations did not receive any extra direct funding (Matthew James & Rann Ann, 2001). Upon adoption, this program resulted in an economic growth rate of 3.5% and substantial decrease in unemployment levels.

Although the government's role in technology transfer is pertinent, other key players include educational institutions and entrepreneurs. Government policies must provide a suitable environment for technology transfer by firms through limited regulations on enterprises, comfortable tax system, enterprises should be protected by the correct policies on `intellectual property right´ and trade deals (Bozeman, 2000). On the other hand, universities should act as instructors and orienting students to gain technological skills. And universities can be considered as main source of fundamental research. For instance, Aalto University in Finland serves as a hub for technological research work and so does many universities in Finland and the USA. Thus, setting a precedent for emerging countries leaders and policy makers to re-examine their educational institutions, to help them in their lag in the technological sphere.

A cooperative action plan between universities and the government as originators of technological innovation plays a vital part in the transmission and acceptance of technological innovation. Thus, insinuating that academic agencies and administration labs produce new technologies and industries utilises the technology. Bozeman (2000) described the main provisional gain between government labs and academic labs in the transfer of technology. Indicating that, government labs have the probability to execute an integrative research unlike university labs with limited scientific equipment. A major advantage that university labs have over governments labs are the presence of fully trained scientist, engineers, and entrepreneurs that will not merely be future educators and researchers but will also contribute to technology transmission via job placements at work after training. In their preparation process, students are also a pool of inexpensive labour and promote scholarly study. middle-income countries to meet at the pace of technical advancement of the rest of the world,

this model implies that they must embrace and adapt to technology that are present in other parts of the word rather than develop new technologies. This process will take them out of the lagging gap for technological innovation faster and contribute to a faster growth of their economies, and markets (Bozeman, 2000; Bozeman et al., 2015; Bradley et al., 2013).

Furthermore, the effectiveness of technological transfer depends on who is transferring the technology, how it is been done and what is being transferred. The convenience and encounter of the technology by the receiving agent must also be considered to fully understand the effectiveness of technological transfer. Thus, placing importance on the fiscal influence of technology transfer is considering how responsible is the technology transfer. Bearing in mind sustainability, equity, inequality, health, and safety and improving living standards via coping with societal demands and major dilemmas. For instance, in the `software´ world where the transfer of technology is made easy.

Emphasis is must also be made on the fact that creativity and development of technological innovation will bring about economic growth and development. Yet, acknowledgement is to be made that fiscal significance must not be used as the best indicator for effective technology transfers. Since some general fiscal impacts can bring about inequality, hence undesirable situations. Therefore, attention must be put when designing and implementing innovation programs because economic outcomes are prone to benefit few persons in the economy. For instance, most citizens in the society do not care about economic growth or development. They care about improved health care services, chances for good education, accelerated chances of having a good job, provision of basic amenities and living in a safe environment. Which is often not the case with emerging countries, which are characterised by civil wars, political unrest, lacking or no social amenities like water, schools, transportation, hospitals and little or no professional training for a guaranteed job.

Technology innovation policies are often funded by taxes and the standards of the policies are often made to satisfy if not all or most of their citizens. On the other hand, while formulating and implementing creativity policies, public beliefs must be considered to make it impossible to reject o ignore. Thus, policies must be formulated, executed, and administered in ways to affect the citizens way of life and not focus entirely on achieving macroeconomic aggregates such as economic growth and development.

Bradley et al. (2013) posits that technology transfer no longer takes a definite path. Due to a one-size-fits-all attitude, imprecise process such as oversimplification of the process of technological transfer. Hence, they present an optional approach to technological transfer that states the advancement of educational institutions as enterprising and influential in the transfer of technology. The definite path for technology transfer described by Bradley et al. (2013), explained in simplified terms states that a research discovers a new technology, then this technology is reported to the "Technology Transfer Office" which is then evaluated and a decision is made if it is worth being patented. Followed by the application of the patent rights which are

them marketed to interested persons such as entrepreneurs and technology industries. Then a negotiation is made between the parties and then the technology is licensed to the entrepreneur or firm. This new technology either ends up being adhered by the technology firm or used as a start-up business. The motivation for beginning the technology transfers process can stem from students interests in solving a problem or scholarships from the corporation or the government (Hsu et al., 2015; Kochenkova et al., 2016; Link & Scott, 2017). Whatever initially drives the research work be it the students zeal to find solution to a dilemma or a partnership between an organisation and the university or a government, the conventional TT cycle begins from a researcher´s creativity.

For over a decade educational institutions have been encouraged to join in Technology Transfer (TT) process eventually promoting the commercialisation of newfound technologies by government sponsored universities. Due to the realisation of the commercialisation of newfound technologies by educational institutions, many scholarly institutions have set up a Technology Transfer Office (TTO) at their universities (Fitzgerald & Cunningham, 2016; Link et al., 2017). Olcay & Bulu (2016) further emphasis that TTO are essential networks for universities to collaborate with enterprises, publish information, and perform a crucial part in the awareness of information, overflow of knowledge and avenues for the creation of new businesses. Yet, not all inventions discovered by a researcher is reported to the TTO as it relies basically on the motivation package within the university (Weckowska, 2015). Thus, slowing down the process or even putting it on hold. This presents a shortcoming to the linear model; consideration must be made on the non-disclosure to the TTO.

In evaluating if the invention is commercially feasible the TTO compels researchers to channel their work vis the TTO either formally or informally. In general, the researcher must hand over its discoveries to the TTO as well as the authority to mediate licences in their name (Buckley et al., 2019; Sadek et al., 2015). The TTO evaluates the most feasible innovation based on their level of profitability, potential licensing, the innovation industry, how competitive the new invention can be in the market and flexibility to be transformed to other uses (Siegel & others, 2018).

Moving on to the next phase of the process involve filling for the patent right of the innovation. Educational institutions are often shorthanded on finances and filing for a patent are mostly costly and expensive especially filling for global patents. Thus, most inventions discovered and reported to the TTO ends up getting a patent right to cover it locally thus protecting the innovation at a low cost (Bradley et al., 2013). In addition to the high cost of filling for a patent, the process has a lengthy and costly chain of activities to fulfil it. As reported by uspto, (2020) it takes averagely 22 months for patents for be filed and granted. Thus, making the TTO offices to discriminately choose the innovations which are worthy of licensing. Besides the course of filling for the patent, an attorney is required to explore, draw up and register the patent application. So is a business analyst to determine how viable the invention is. Although, these services are pricey they do speed up patent acquisition. Hence, making it a lengthy process for TTO to start commercialising its new technology.

Upon the filing of the patent the TTO next task is to connect with corporations that desire to adapt the technology (Clayton et al., 2018). In cases where the research is cooperation funded this stage becomes easy, as it needs only the transfer of the technology to the firm. The TTO should manoeuvres differences in interest both between the firm and the institution, as well as the institution and the scientist (Bradley et al., 2013). These difference in interest stem from the financial gains of the patenting and licensing and recognition by the educational institution. To manage this discrepancies, it is important to strike a balance.

The license or patent belongs to the educational institutions and commit to license the patent to corporations willing to adapt the technology. As soon as a suitable corporation is identified, negotiations begin. This negotiate is the compensation the institution gets for licencing the technology to an organisation often called "licensing royalty"(Bradley et al., 2013). This entails a proportion of the revenue generated from the invention. Upon the execution of the license and the transfer of technology, it is further refined to be developed as a business. Academic institution does set the stage for innovation, it is worth noting that a discrepancy is experienced between the invention of the innovation and the commercialisation. Technology Transfer entails transformation and usage which can change the technology to a different form from what the initial innovation divulge. Effective technology transfer does not stop albeit the transfer of technology to the corporation. However, when the technology is used in the development of new goods, services, processes, and organisational changes (Leonard-Barton & Sinha, 2017).

The formation of an independent companies and start-ups offer an alternative path for "entrepreneurial scientists" to disseminate and commercialise their academic discoveries which the university is unable to license the innovative technology acquired via research work. Sometimes when the technology seems too risky not to attract investors, starting a business with the technology becomes the only viable option (Boh et al., 2016). The convenience of a technology transfer resulting in the establishment of companies provide the potential to bring about job creation, lofty returns on the investment especially when the company is made public, guarantee income and hence economic stability. Thus also confirming the idea that an improvement in the wellbeing of the citizens leads to economic development (Bozeman et al., 2015; Fini et al., 2017).

Conclusively, Bradley et al. (2013), articulates an alternative view for transferring of technology is by readjusting some traditional segments and proving new avenue for innovations to be implemented. On the other hand, technology transfer should be a collective depiction network- based entity promotes collaboration, creativity, and openness amidst the educational institution and business partners involved. Meaning for technology to be transferred effectively, it does not take a linear form as stated by other researchers.

2.4 **Technological Innovations of SMEs in Developing Countries**

A need for rapid change is required by organisations in this era of rapid technological developments that affects managers and organisations. To accomplish productivity and competitive market survival, organizations are more decentralized by strategically differentiating themselves. Policy makers are becoming more mindful of the influence of creative activities as the principal driving force of the economic progress and well-being of their citizens. Especially in field of health, education, biotechnology, ICT. Specifically, Small and Medium Enterprises (SMEs) must grasp technological innovations to develop competitive situation in their industry as well as in their economies. SMEs in economies of every country contribute to economic advancement, curbing unemployment and poverty (Ayyagari et al., 2014). Hence, the significance of SMEs for emerging economies which are often characterised by high unemployment rate, low economic activity, and poverty cannot be ignored.

Nonetheless, the diffusion and adoption of technology by middle-income countries is pricey and dependent on aspects that aid the course of technological innovation. In addition, it calls for convenient establishments and approach which can model and ease the course of technological adoption. Fu & Gong (2011) articulate that along with the proficiency of finding the acceptable technology and the convenient means of transmission, designing schemes which are adaptable to the economic, social, cultural, and environmental settings of the society.

Because of supposition that, governing bodies of economies is to adapt and enforce policies on technology and innovation to promote progress via research and development, monitoring, and technology transfers to improve growth. Such policies increase efficiency through the process of innovations, build new markets and maintain old ones through product innovation, protect employment, curb poverty, render their businesses competitive internationally and locally which affects the livelihood of developing countries.

According to Kuhlmann & Ordóñez-Matamoros (2017) there exists three prospects in the debate of the innovation policies' position in providing growth conditions for emerging countries. The first, view is the `conservative view´ which posits that innovation strategies in developing countries are not effective and sufficient due to the lack of basic amenities. For instance, electricity, water, infrastructures such as schools, roads, hospitals. The unavailability of basic amenities preoccupies the governments of developing countries in a way that investing in innovation activities makes it almost impossible. This is evident in the percentage of GDP used to invest in innovative activities. They further state that emerging countries tend to invest only about 2 percent of their GDP in innovative activities. For example, according to theGlobalEconomy.com, (2020), on the input side of innovation, Cameroon faces a shortcoming in infrastructure, investment in human capital and research. Which supports the `conservative view´ stated above by(Kuhlmann & Ordóñez-Matamoros, 2017b), that the governments of emerging countries do not invest in innovative activities. Hence, middle income countries can only achieve progress through a slow

and incremental process rather than a fast and risky investment in innovative activities.

The next perspective discussed by (Kuhlmann & Ordóñez-Matamoros, 2017b) is the `progressive view´. In which the only way to come out of "poverty trap" is taking huge and risky investment in R&D and "technological innovation". With government policies targeted at academic and business "elites". Because they are recognised as the main actors in bringing about progress. India presents a perfect example for how entrepreneurs have been recognised as agents to bring about economic growth in the economies. Proving how small groups of entrepreneurs do bring about frugal changes to the way of life to the people of India and hence economic progress (Pansera & Sarkar, 2016; Prabhu & Jain, 2015). This prospect is also backed by Naudé et al. (2011) stating that fast economic growth in developing countries relies upon the entrepreneurs of the country especially in developing countries. Their being able to adapt and take in technological knowledge in a creative way. However, the extent of engagement of entrepreneurs in technological innovation is a function of the business environment and government policies.

The last perspective, explains that in order for developing countries to be able to get out of the "poverty trap" profound change in innovation policies by governments must be re-examined to gain economic progress and get out of the "poverty trap". In this respect, the promotion of scientific research and the production of innovative technology is necessary. From this viewpoint, innovation strategies should be updated and guided by suitable models to approach the existing societal problems. On the other hand, preventing projects that are undefined, incompetently regulated and executed. Proving that problems stems from not including all the parts of the society during the design and implementation of these policies. Based on the second and third viewpoints, in emerging countries something can and should be done differently to counterattack the "poverty trap".

Developing countries like Cameroon are actively looking for new ways to grow their businesses to become locally and internationally competitive. Innovation is commonly seen as one of the means available for achieving this expected growth yet there are few studies examining the barriers to innovation of emerging countries, due to the new nature of this study and the newness of the concept (Gupta & Barua, 2016; Jaffe & Lerner, 2006). Small and Medium sized organisations will benefit advantages of innovation by implementing innovative approaches that continuously increase their operating performance and incorporate creative practices that creates competitive advantages and boost business outcomes (Bhaskaran, 2006).

The role SMEs play is recognised in all economies. Especially in respect to the convenience of SMEs such as their dynamic corporations, internal versatility, and quick response to changes in market conditions. Also, SMEs have been recognized as the engines of contemporary economies because of its all-round investments in technological innovation, job development and export generation (World Bank, 2014). It has been acknowledged by governments as the motor of job formation and the enhancement of income properity. For instance, in the European union nine to every

ten enterprise is an SME and in 2013 provided about 88,8 million jobs (EC, 2016) and contributing around 58% of all industry gross value added. There are approximately 125million officially licensed SMEs working in 132 countries, according to the world bank (2019), an they account for 90 percent of all companies in these countries.

While SMEs in emerging economies face the global markets, it requires firms adaptation and survival. Hence, small firms are bound to put forward products with differentiating properties using available technology. The capacity o SMEs to innovate is critical because innovation gives companies and ultimate competitive edge in their economies (Enkel & Gassmann, 2010; Love & Roper, 2015; Sandu et al., 2014). In addition to their responsibility for scale inadequate infrastructure, limited finance and skills, small companies in developed countries must face these shifts. Hence technological innovation can stimulate growth of individuals and companies at the micro/macro level. Innovation became the source of sustainable competitiveness of SMEs especially technological innovation. SMEs are somewhat different from big corporations, as most of them lack a structured innovation process (Nieto & Santamaría, 2010). Partly due restricted to insufficient resources (i.e. capital and workers) devoted to the process that creates a downward spiral which prevents the majority of small businesses from significantly growing, though SMEs possess R&D consultants, they do not spend as much as large companies do because they spend a considerable amount of their capital on trying to overcome institutional shortfalls (Narula, 2004).

Data shows SMEs will be innovating in another way contrasting big enterprises by building business networks (Gronum et al., 2012), network between SME and inquiry organisations (Masiello et al., 2015), inter firm cooperation(Gronum et al., 2012; Masiello et al., 2015; Zeng et al., 2010). Innovation is primarily based on the early stages of innovation, discussing external technologies and intellectual property acquisition, thus networking SSMEs with technologies providers (Bianchi et al., 2010; Brunswicker & Vanhaverbeke, 2015a).

SMEs face myriad challenges when it comes to inventing new products and or service or initiating a new process of doing things and some of these challenges include people management especially as regards networked creativity (Colombo et al., 2012; Hotho & Champion, 2011), limited resources such as Finances (Eniola & Entebang, 2015b), awareness of innovation opportunities (Sağ et al., 2016), environmental dynamism (Soto-Acosta et al., 2018). It is on this note that discussions to explore the various factors that surround the challenges small and medium sized enterprises face when striving for technological creativity in their economies.

Limited studies conducted on barriers on technological innovation of SMEs in emerging economies. However, understanding different attributes that contribute to SMEs innovation in developing countries can assist by comparing the existence of these factors in developing economies.

Rahayu & Day (2015) identified anticipated advantages, technical preparedness, entrepreneurs creativity, IT skills and IT experience as factors driving SME´s adoption of technology. In this era of technological innovation, non-adopters of innovative technologies will be left behind by adopters. Policy makers and governments have recognised innovation as the key to international competitiveness and have recognised equity financed small firms as means of taking advantage of bringing new ideas, technology, and process to the economy. Hence the need to focus on the factor´s affecting innovation of SMEs negatively should be considered.

As underlined by Oakey (2013) and Wynarczyk et al. (2013), SMEs adoption of technological innovation is impeded by systemic internal and external challenges such as smallness, access to technical information and finance. Technological progress is imperative for businesses who want to create and maintain a competitive edge both domestically and internationally especially SME in developing countries with their smallness, lack of finance and innovative capacity.

SMEs are usually versatile, more adaptable to changing environment and possess the best position for creating and implementing new business ideas and products. However, the ability for SMEs to adopt innovative technologies depends on the sector, resources, and business environment. Although creativity habits are hard to develop, however perceived to be a big force of creativity culture in SMEs through organisational learning in corporation operations (Halim et al., 2015). Further, an entrepreneur´s education and motivation plays a significant position in innovativeness rather than a firms capabilities to adapt new technology(Martínez-Román & Romero, 2017) , as well as collaboration with external partners such as consultancy services (Saunders et al., 2014). Numerous research contributes to empirical evidence to support the concept that interconnections amongst entities across different industries of emerging countries society hinder and/or promote domestic technological innovation creation and exploitation (Juma et al., 2001; Mazzoleni & Nelson, 2007; Ramani et al., 2017).

From a report performed by Ismail et al., (2011) shows high ICT costs, financial deficit and Information on the availability and use of ICT, security concerns and ICT applications not tailored for SME use for business acts as a major obstacle for innovation in SMEs. Furthermore, Esselaar et al., (2007), explains why due to the poor infrastructure in Africa and the network problems with fixed line, SMEs face a big hurdle in adopting ICT which enable innovation in SMEs. This problems in the landlines have been associated to the absence of rivalry in the telecommunication industry (Mbuyisa & Leonard, 2015a, p. 864).

Mbuyisa and Leonard (2015a) in their paper also put forward illiteracy as a major factor why SMEs do not explore ICT. Despite this claim the literacy rate in African has risen substantially, same as internet access. According to UNESCO in 2017 it stood at 65% and presently the literacy rate stands at 70%. This fact thus leads to the concept of "Computer Literacy". In 2017, the International Telecommunication Union (ITU) explains that 22% of the African population are internet users. As of 31st December 2019, this number stands at 39.3% (internetworldstats, March 2020). SME

entrepreneurs in Africa have some level of education and possess the basic skills required for using applications that can be beneficial to their businesses. Especially using the internet and social media.

Technology has altered the status quo of customers behaviours, the supply chain, and the mainstream marketplace. Such developments have major consequences for SMEs hence the adoption of innovative strategies such as e-commerce, has become a strategic priority. Additionally, technological innovation (e-commerce) allows small and medium sized firms entering new markets and the strategic advantages. (Hossain & others, 2016).

The business environment has been highlighted by (M. A. Abou-Shouk et al., 2016; Nassar & Faloye, 2015a; Waithaka & Mnkandla, 2017) as a significant impediment to acceptance of technological innovation of SMEs. The Business environment can either be internal or external. The required infrastructures for technological innovation are unavailable in developing countries and happen to be one of the characteristics of these countries. Infrastructure here includes the availability of internet access, technical skills and knowledge, electricity supply. Adeyeye et al (2018) found that barriers such as infrastructure and knowledge are key criteria for enhancing the company´s innovation not only at firm level but also expertise inquiry activities. Apulu and Ige (2011) in their study on the adoption of technologies found that the lack of stable electricity supply proved to be the main inhibiting factor in the adoption of technology. In addition to the fact that most entrepreneurs in Nigeria self-generate electricity vis the use of generators which further increases their costs of production (Adeyeye et al., 2018, p. 2). Environmental pressures playing important aspect in perceived benefits and the acceptance behavior of SME entrepreneurs. The business environment can also be represented by the political system, government regulations and policies, and lack of public infrastructure that comprises a significant barrier to technological acceptance (Eniola & Entebang, 2015a). Thus, government policies that lack supportive roles for SME development prohibits the growth and performance of SMEs.

Nassar & Faloye (2015a) in their paper on the barriers to innovation in Nigeria identified lack of technical personnel, resistance to change, inadequate financial resources and inadequate government assistance as a barrier for SMEs in Nigeria in the adoption of innovative technologies. Backed by the work of Aalam et al.(2019) who affirms the fact that resistance to change, lack of Finance, business environment such as taxation which increases in innovation cost, unfavourable business environment and unskilled labour acts as innovation obstacles for SMEs in emerging economies. Taxation is a major obstacle to innovation, followed by resistance to change and unfavourable market condition which came second. And finally lack of finance, unskilled labour and corruption ranked last (Aalam et al., 2019, p. 18). The above-mentioned barriers of innovation for SMEs as per this study are those that are useful for successful implementation of growth in SMEs in developing countries such as India.

Market barriers such as knowledge and infrastructure have a negative intensity on a firm´s innovativeness. It thus means, if firms are unable to access information and resources they would fail to innovate. For instance, in Nigeria where a fundamental amenities deficit such as energy shortage, leads companies to spend more on getting private energy supply than innovative activities. Thus, reducing diverting resources away from innovation to survival. However, some scholars have argued that some of these barriers acts as an incentive for innovativeness than an obstacle to innovativeness (Adeyeye et al., 2018, p. 14; Goedhuys et al., 2016; Nguyen et al., 2016). The findings indicate that problematic bureaucracy such as corruption is the one type of constraint that does not inhibit innovation. Innovative firms keeping in mind legislative restrictions and by virtue of their capability to innovative solutions to addressing limitations are more innovative.

Even though, innovative business practices may exist in an emerging country, if not supported by adequate governance strategies or policies can hinder it. The availability of basic infrastructures like formal education, telecommunication, transportation R&D centres, economic, legal, and technical tools provide a satisfactory environment for innovation. Yet, these basic amenities are absent in developing countries and thus hinder innovation. Constitutional organisations and the presence of corruption, unreliability, conflicts, instability and untrustworthy, all act as deference to innovation (Kuhlmann & Ordóñez-Matamoros, 2017b). Incapacity for government officials to plan and execute inclusive policies at promoting the use and adoption of technological innovation. The law makers are described as "solution advocates" instead of "problems advocates" in Kuhlmann & Ordóñez-Matamoros (2017) paper on the governance of innovation in emerging countries. Meaning that policy makers often implement favourable solutions as a function to their political interest instead of suitable solutions that coincided with the citizens needs and wants. This often happens because of lack of avenues for inclusive dialogue of the citizens participation. Most developing countries are under authoritarian role and are mostly government for the politicians and not a government for the people. Due to this, it often leads to small companies lacking interest and involvement in the strategies implemented. Which often favour a minority of the population.

The literature makes meaning easier as to how businesses gain strategic edge in the fast-growing markets by developing creative products and processes. By considering the three different theories uses to better understand how firms carry out innovation, supporting factors of innovation and the inhibiting factors.

As shown in table 2 below, the Schumpeterian theory of innovation posits that innovation can only be named innovation when it I profitable for the organisation. Innovation happens in the form of the creation of new goods and services and ne business processes which maximises their strategic edge in the fast-moving market. Further supporting factors such as problem-solving innovation, technological advancement of knowledge, dynamic capability of firms and transformational leadership does encourage innovation.

To further the understanding of how small firms, innovate to gain competitive advantage over larger firms, disruptive innovation theory is used by Christensen. Small firms are often more creative profit/cost effective and hence more successful in performing R&D. by taking advantage of the spill over knowledge from larger firms and higher educational institutions. Innovations are expected to be relatively good for small businesses where the scale is negligible and thus take advantage of their versatility and closeness to the market. To produce new goods and services at attractive prices to a niche customer base. Where small firms take advantage of the customer range ignored by the large firms to produce cheaper and better goods and services thus gaining competitive advantage. The interdependence on different stakeholders in the innovation cycle thus help to foster innovation in small firms. Furthermore, low operational costs postulate grounds for innovation. While the lack of necessary infrastructures tends to inhibit creativity especially for small firms which ae often lacking in infrastructure.

Technology transfer paradigm gives a framework on how small firms in emerging economies could copy to ease their innovativeness. The transfer of technology is the most beneficial to take especially for economies with limited amount of their GDP to spend on innovative activities.

Table 2 Conceptual understanding of innovation method of firms and inhibiting factors

Theory	Focus on Technological innovation	Supporting factors	Inhibiting factors
Shumpeterian Theory	- Production of new goods and services - Introduction of new business process - Organisational innovation	- Problem solving innovation - Advancement in technological knowledge - Dynamic firm capability	
Disruptive innovation theory	- Gain competitive advantage by producing distinguished goods and services at a cheaper price than leading firms	- Resource leveraging - Low operational costs - Interdependence of different stakeholders in the cycle of innovation	- Lack basic infrastructures for innovation
Technology transfer paradigm	- Technological adoption and adaptaation	- Government policies - Human (entrepreneurs) and institutional(educational) capabilities	- Lack of appropriate policies - Lack of institutional capabilities - Lack of collaboration between educational institutions and the private sector.

3 Methodology

3.1 Data Collection and Research Methods

Qualitative approach to data has been argued by different scholars of its appropriateness. If for instance, the purpose is to learn from the participants in a setting or process in the way they experience it. Also, the significance they put to it and how they interpret their experiences. Qualitative research methods are focused on interpreting and understanding information that cannot be translated into numbers but can better be expressed in words which best suits this research. Qualitative research method is naturalistic as stated by Punch (2014, p. 118) and studies humans, events happening in their natural surroundings. The key targets and places or this research are organisations, entrepreneurs and companies. So t s important for qualitative approaches to discus and obtain access to the field rather than quantitative analysis (Eriksson & Kovalainen, 2015). With reference to this, the site and setting for this research are entrepreneurs of SMEs in Cameroon which makes qualitative methods appropriate for this research. According to Punch (2014, p. 117) methods of qualitative analysis

"*Is a complex, changing, and contested field – a site of multiple methodologies and research practices. ´qualitative research´ therefore is not a single entity, but an umbrella term that encompasses enormous variety*".

The diversity in the technique of qualitative analysis lies in the strategies, designs, collection of data and research approaches. Unstructured interviews are administered to respondents via the use of personal interviews. Personal interviews as a predominant source of empirical data is an effective way to reach the views, meanings, and interpretations of individuals circumstances without any previous categorization that may restrict the field of inquiry.

Interviews were conducted by phone and mailed or self-administered questionnaires because of flexibility both on the part of the researcher and the participant given the limited budget and time. The respondents of the study are spread across the 10 regions of Cameroon hence a phone interview will prove to be less costly. Telephone interviews are proven to display less response bias in that the interviewer is not physically present in the room to manipulate the respondent, resulting in stronger and more precise information compilation (Musselwhite et al., 2007).

A second call can be arranged if the interview must be rescheduled. On the other hand, telephone interviews can be unfair because it excludes participants who do not own phones and participants whose numbers are not publicly listed who otherwise could participate in the research. In addition to flexibility and convenience, phone interviews are increase privacy and anonymity for respondents (Cachia & Millward, 2011). Given the different time zones of the interviewer and the participants, Musselwhite et al. (2007) posits that telephone interviews are advantageous in that the interview can be more conveniently timed for participants in different time zones.

Participants all live in Cameroon with a different time zone from interviewers place of resident hence making the phone interview advantageous for the process.

To get a broad aspect to the study purpose entrepreneurs from different sectors of the economy are selected. Focus is placed especially on the North west and west region of the country because of the high concentration of SMEs in the area. As shown in Table 3, a total of 15 SMEs was purposively selected for the research data from different economic sectors to prevent the bias nature of inductively concluding for other sectors with information gotten from one sector. Entrepreneurs from 15 SMEs was chosen to answer above mentioned research questions and to achieve saturation in the data. Data for the study is obtained via interviewing managers/entrepreneurs of SMEs that employ between 10 to 50 employees, registered with the Ministry of Small and Medium sized enterprises, social economy and handicraft (MINPMEESA) and engaged in activities in the different sectors; health, information technology, agriculture, social entrepreneurs, finance and service sector.

Data was collected through questionnaires and telephone interviews with SME entrepreneurs-managers. All the respondents in this research were all entrepreneurs-managers. They own and manage their establishments. The focus on entrepreneurs of SEMs is because of their contribution in the society. That is the increased employment rate, increase in GDP and improvement of the living standards of individuals and society at large. A total of 10 phone interviews were conducted lasting for averagely 15 mins per interview. The interviews were recorded and notes where been taken also. This was then supplemented with 5 questionnaires, which comprised of 5 entrepreneur-managers falling in different business sectors which are; 2 respondents in the health sector, 2 from Finance sector and 1 from education, using stratified, random sampling of which make up 33% of the responses as shown in table 3 below. Questionnaires are used to supplement the interviews because entrepreneurs-managers could not find time for interviews and thus made it easy to collect responses without putting pressure on the respondent. Entrepreneurs were asked to explain their qualitative perceptions from the questions enumerated on appendix 2. Descriptive Statistics, such as percentages, were used to describe the frequency distribution of technological preferences and barriers to technological innovation. For the sake of the anonymity of the respondents, the annotation of respondent 1, 2,3 will be used for the data analysis to provide the ease for anyone reading the paper as illustrated in table 3.

According to the IMF reports as of 2011, agriculture and natural resources were responsible for the growth in Africa´s economies. However recently, the African Economic Outlook (AEO) contends technological innovation is Africa´s greatest opportunity of growth in its economies and acceptance of new technologies in the service sector like banking, education, health, and agriculture. In this same light, a better understanding of what is happening in the major economic sectors offer an overview of the country´s economic situation.

Table 3. Groups of respondents according to sectors

Sector	Respondents	Interviewed	Responded via survey	For anonymity of respondents
Social entrepreneur	1	√		Respondent 1
Health	2		√	Respondent 2
Information Technology	3	√		Respondent 3
Agriculture	1	√		Respondent 4
Education[1]	2		√	Respondent 5
Service industry	4	√		Respondent 6
Finance	2		√	Respondent 7
Total	15	10	5	

1 *The only respondent who isn´t an entrepreneur-manager, but a lecturer at a state university. Universities are seen to play a part in innovation and its transfer. Thus, it is important to know what the lecturers think.

3.2 **Research Design**

The study design is guided by the research objective and questions concerning research as mentioned in chapter 1. Technological innovation in the forefront for economic growth in Cameroons emerging economies. For developing countries to close the gap between the emerging countries and developed countries, both the entrepreneurs and government must have a leap frogging mindset. The main source of data was personal interviews and questionnaires where used to a lesser extend to get responses faster from entrepreneur who were willing to participate but had less time for the interviews. Data collection and analysis were guided by the disruptive innovation model to arrive at the findings and conclusion. Figure 3 below displays the steps taken in accomplishing the study purpose.

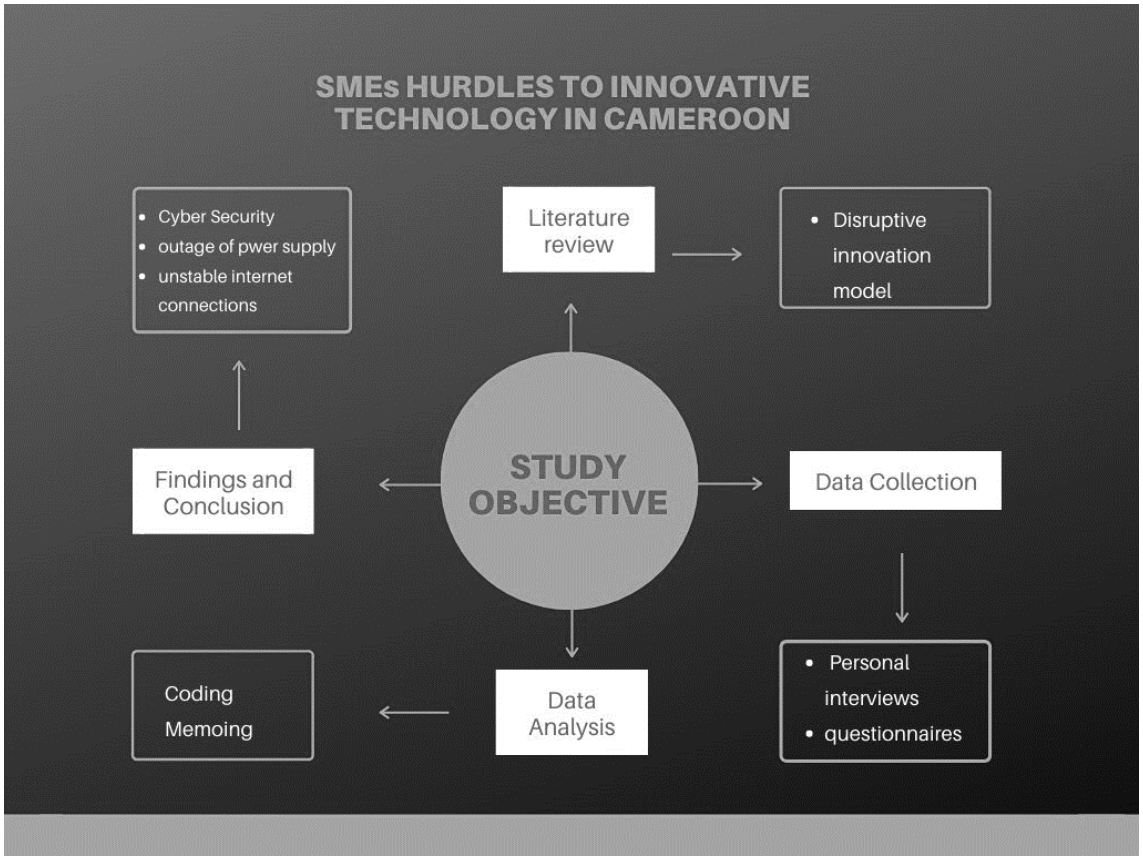

Figure 3. Research design

3.3 **Method of Data Analysis**

Qualitative research in social science studies the behavior of humans in their natural settings. The richness and complexity of qualitative research means there is no specific way of decoding and analysing data collected via qualitative methods of data collection. Miles and Huberman (1994) describes different techniques of qualitative information assembling to be interconnected, overlapping, complementary and sometimes mutually exclusive. Just like ´irreconcilable couples´. Due to their contrasting nature there is need for different analytical strategies, since qualitative data can be looked at form different perspectives (Punch & Oancea, 2014). According to Keith Punch (Punch, 2013, p. 169), the mixture of different ways of carrying out qualitative research analysis highlights the point that there is no single way or right way of accomplishing qualitative data analysis. Although, depending on the purpose of the study and data analysis method should be considered like the rest of the study rather than being an afterthought. What links all the proposed qualitative data analysis approaches should be interpreting data collected through accurate and intellectual ways in order to capture the complexities of the socials which we seek to explain (Silverman, 2015).

With respect to this research Mile and Huberman framework (M. B. Miles et al., 2014) data obtained from qualitative data collection (interviews) will be analysed. And this analysis will be divided into 3 elements: reducing data, presenting data, drawing conclusions, and checking them. As shown below in fig 3.

Data reduction in the first stage of the data analysis process in this research. Firstly, I will start by editing, segmenting, and summarising the data collected via interviews and questionnaires. Data collected from interviews were first transcribed to summarise the bulk of data gotten from interviews. In this same light the data gotten from the questionnaires were equally summarised. Here responses are reviewed and categorised into small chunks of categories to make the coding process easy. Where reduction of the data was done to reduce the bulky nature of the data.

In the second stage it will occur through coding and memoing. As stated by Saldana (2015, p. 4) a code is "*a word of phrase that symbolically assigns a summative, salient, essence-capturing, and or evocative attribute for a portion of language-based or visual data*". Simply codification is tags, names/labels. Hence, coding simply means summarising chunks of data into similar themes that is features meaningful for the data review. The importance of information reduction is reducing the statistics as much as possible without losing compelling information. Responses gotten from interview questions was compared against different stakeholders to identify abstract concepts. Codes assigned to the responses of the interviews were seen to be recurrent in the questionnaire responses thus confirming data. Related concepts are seen to have emerged both in the interview data and the questionnaire data. Making the process of data analysis simple to compare between the two ways of collecting the data chosen for this study.

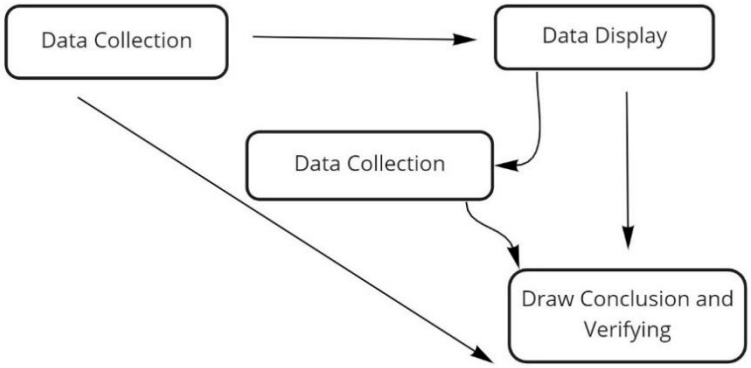

Figure 4: Components of data analysis (M. Miles, 1994)

Memoing which is the next logical step to take involves theorising reviews of ideas gotten from the codes and their relationship. Categories of the data are identified from the data collected. For instance, theories are developed from the data collected. As described by Azungah (2018) analysing qualitative data through the use of inductive approach which uses collected data as the base. Data display organises and displays data in an interactive mode either through graphs, charts, tables, and diagrams. This will be used at all the stages in data analysis. Statistics summary and presentation helps in coming to conclusions and testing conclusions. Although outcomes may arise during this research, they may be vague and inconclusive, they can only be finalised after going through all the data.

Qualitative Content Analysis is used for this research to analyse the data derived via the Miles and Huberman framework (M. B. Miles et al., 2014) as stated above. Upon choosing "Content Analysis methodology" for this research the integrity of the framework usually starts once the research planning is started. It is necessary for the researcher to consider direct and indirect sources in addition to the researchers pre knowledge of the concept to be studied to reduce any subjectivity or bias. The aim of using content analysis is to arrange and extract meaningful data collected through interviews and questionnaires in this study to make concrete conclusions. Unlike other qualitative research approaches content analysis is unrelated to any for specific discipline, and few guidelines are needed to be followed. For this reason, the possibility of misunderstanding scientific principles and discourse relating to data analysis is minimized. When results collected in a qualitative content analysis follows the laws, logical steps, sound theoretical framework and consistency, the chances of finding significant linkages between the factors and trends that are common in the material being investigated. The probability of the findings of the research being accurate is high.

Whatever approach is chosen for the analytical process, the amount of text collected via interviews and questionnaires of the participants are reduced to understandable themes and categorised together to find a valid interpretation of the data. Along these

lines the researcher seeks to attain trust and "*stay true*" to the text. It becomes imperative to understand how different researchers define content analysis for a better understanding of this method of data analysis. In 2018, Krippendorff describes content analysis as "*a research technique for making replicable and valid references from texts (or other meaningful matter) to the contexts of their use*" (p. 18). In using the technical principle Krippendorff stresses on its reliability and learnability of the method which exempts the scientist absolute influence.

The expectations of the reliability of techniques of research analysis should results in findings which are "replicable". Indicating that, scientists´ no matter the place or time and circumstances must generate similar results. Thus, presenting a form of reliability of results. Review of materials via content analysis offers fresh perspectives, improves scientists´ knowledge of specific behaviours in the given context. Researchers thus use content analysis to analyse and track the beliefs, concerns, and attitudes of interest groups either small or large or of diverse culture. Thus, content analysis becomes a valuable resource for scientists to evaluate participants, organisations, community, and societal attention in each context. Thus content analysis is described as a tool of social science (Riffe et al., 2019).

Downe-Wamboldt (1992) stresses that content analysis is beyond a method of tallying, because its aim has been to relate outcomes to the context and the setting that they were generated: "*Content analysis is a research method that provides a systematic and objective means to make valid inferences from verbal, visual, or written data to describe and quantify phenomena*" (1992, p. 314). Thus, given the recorded interviews and notes taken during the interviews and analysis of the data gotten from questionnaires, objective conclusions were drawn from the transcribed manuscripts and the notes to attain unbiased conclusions. Thus, conforming to the drawing of objective conclusions from the verbal data gotten from interviews and written data gotten from questionnaires.

On the basis of text interpretation, directed by the questions chosen by the scientist, qualitative content analysis advances specifically defined concepts which are updated and optimised in a discussion-loop collaborative procedure to improve legitimacy and utility as seen in the definition of content analysis put forward by (Mayring, 2000): " *an approach of empirical, methodological controlled analysis of texts within the context of communication, following content analytical rules, and step by step models without rash quantifications*" (2000, p. 2).

Finally, another definition put forward by (Drisko & Maschi, 2015) describes content analysis to typically give researchers the freedom to compact wide wealth of information be it sketches, behavior, attitude, just to name a few. Into logical parts of the material for reliability and validity of the study. Thus defining content analysis as " *a family of research techniques for making systematic, credible, or valid and reliable inferences from texts and other forms of communication*" (2015, p. 8).

Given the variations in focus and analytical methods, there however exist a strong consensus that content analysis is a systematic research approach used to make

reproducible and accurate assumptions from text and similar materials, using specific research design and method to attain reliable and valid conclusions.

However, (Bengtsson, 2016) states that it is important for the scientist to know exactly what he wants to find out and from whom and how. With respect to this paper inductive reasoning is made use of to draw conclusions from gathered data by analysing the text with "*an open mind*" to analyse relevant topics which respond to the research questions.

Data from this study will be interpreted using by explaining what it is that the participants really mean by sticking to their words, that is using their words and explaining clearly and evidently what is unseen in the text. In addition, the data will be analysed by making use of an interpretive words where attempts are made at identifying the hidden messages in the words of the respondent and what it is all about.

(Bengtsson, 2016) stated that in planning and performing content analysis emphasis mut be placed on the ethical aspects of the research to protect informants. Hence, in planning and executing this research ethical considerations were made for the safeguarding of the participants identity. Especially during the process of data collection and analysis. In drafting the interview questions and conducting the interviews (10) and 5 questionnaires to supplement the interviews, these ethical issues were considered. In that informants were informed about the research verbally and/or in written form about the research before deciding to take part in the research. And participation in the research was optional by respondents. Respondents anonymity was assured, and they were given the freewill to withdraw their data anytime possible without disrupting the friendship between both parties. Hence the data was collected by the freewill of the participants with clients anonymity guaranteed.

Discussions on the views, definitions, methods, and contextualisation in content analysis are discussed in many studies (Bengtsson, 2016; Krippendorff, 2018; Stemler, 2000). Yet, differenced appear to how the scientists form the framework of the research data interpretation: either by using distinctive steps (Downe-Wamboldt, 1992) or by following the script (Berg & Lune, 2001). Notwithstanding variations lie in the process of the analytical measures, likewise how the scientists considers the results of the information collected and consequently establishes the necessary relationships and make conclusions.

To preserve the consistency and trust of this study, four defined stages will be used in analysing the data collected: *decontextualization, recontextualization, categorisation and compilation* as shown in the figure 4 below.

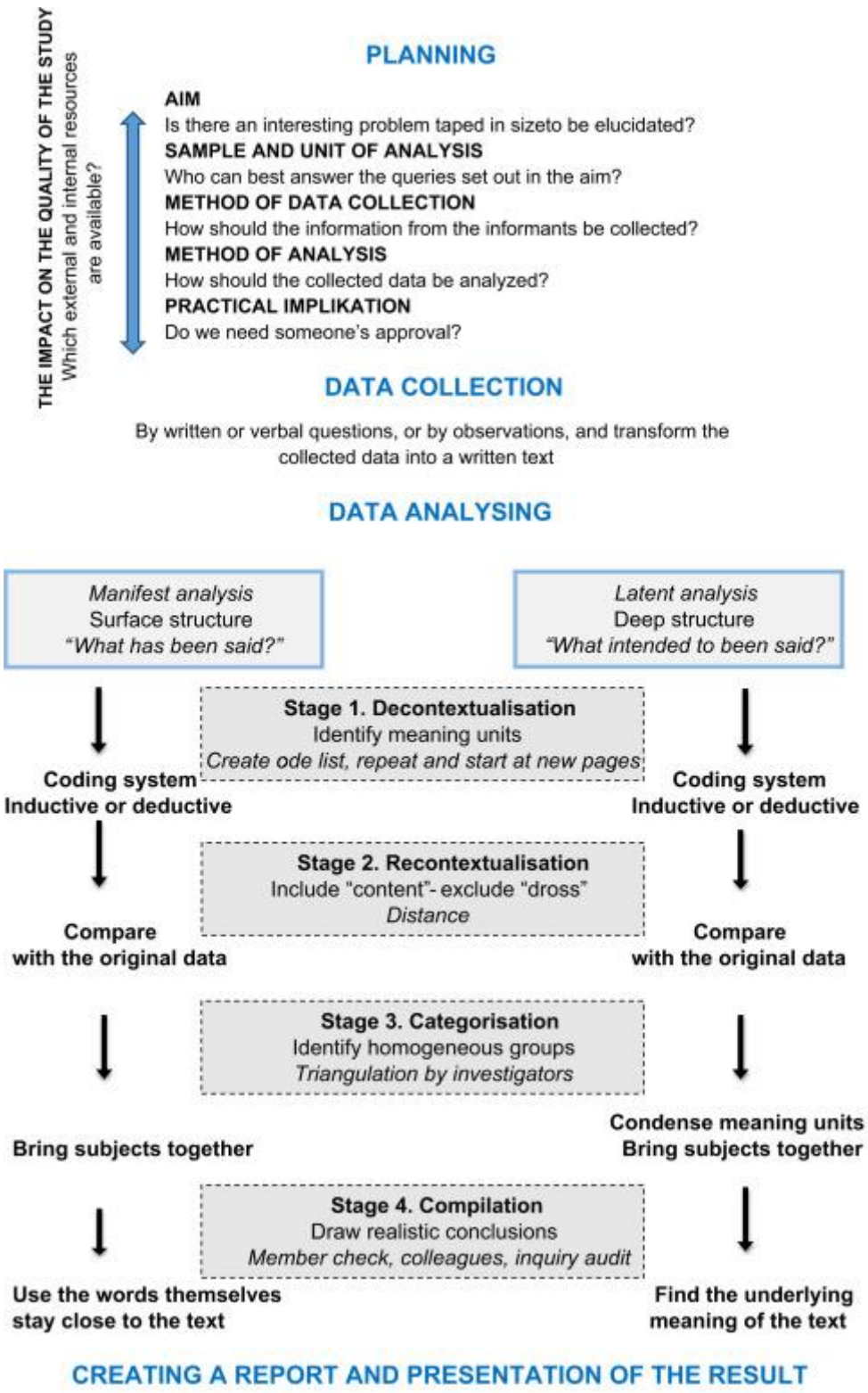

Figure 5 A summary of qualitative content analysis from preparation via presentation (Bengtsson, 2016)

To ensure the consistency and reliability of this research, every step was carried out repeatedly. Not only is repeating each stage important, but also charts showing how the data was transformed to results, to make the process of data interpretation clear. No matter of clear and explanatory the data processing method was, errors were bound to be made either due to personal feelings, rush to complete academic work, and fatigue. It is however the duty of the researcher to retain the efficiency of the project from beginning to end of the whole study to assure validity and reliability as much as possible.

Upon transcription of the interview data, getting acquainted with the data is paramount to understand exactly *"what is happening?"*, until it can be split into small meaningful parts which gives some of the information needed and it is these groups of sentences of paragraphs similar with each other that addresses the research questions set out in the objective of the study. This process is the *decontextualization* of the data gotten from the transcribed interviews. The labelled *`units´* are known as codes (Saldaña, 2015) that must be comprehended in relation to the purpose of the study. Codes here mean "…... a label; a name that most exactly describes what this particular condensed meaning unit is about. Usually one or two words"(Erlingsson & Brysiewicz, 2017, p. 94). These codes facilitate the understanding of theories whereby some information could be constructed into frames and patterns while analysing the data. Codes are generated deductively when the data processing goes on and repeated to boast *cohesion* and *accuracy* (Belotto, 2018; Smith & McGannon, 2018).

Keeping in mind the aim of the study, it is important to control if all the elements of the material must be considered. By going through the transcribed text over again but this time examining the text side by side already developed codes. It gives a better understanding of the data. This is the *recontextualization* process of data analysis by qualitative content analysis. It is crucial to distant yourself from the data to "*let go*" of irrelevant information that does not conform with the study´s objectives. This stage is often difficult for most researchers, in that without analysing the data objectively and dissociating from the data, all information is important. Especially data that does not conform to the research questions and study aims.

To make it possible to set up categories, the texts must be reduced in ways that will not lose content of the transcribed interviews. Based on the different aspects of the study, to capture the meaning of the information derived from the "*codes*". This step is called *categorisation*. A *category* is generated by putting together codes which are interrelated by their information and meaning (Erlingsson & Brysiewicz, 2017). This means that codes are grouped such that the groups identify specific elements, correlations, or variations of the meaning in the text. For example, the data acquired from interview sessions are put into categories based on the "manifest content" which is the information that is clear and evident from the text.

Upon categorising the data, interpretation and drawing conclusions on the data collected starts. (Bengtsson, 2016) states that controversy exists when carrying out a qualitative content analysis, especially in the way the investigator describes the data during the analysis process and its adaptation to results generated. Objectivity is

required when conducting a qualitative content analysis on the data collected by viewing the data impartially. Signifying that to foster reliability and validity the data must be interpreted without bias. Using the words of the respondents in the manifest analysis makes it easy to always refer to the initial message. Thereby, staying closer to the text and keeping as much information as possible. Despite this latent analysis will be used to deduce "hidden meanings" in the text. For instance, some of the data gotten from the transcribed interviews will be analysed by seeking the understanding of the hidden message in the text: what the content of the words are about?

All in all, It is important in qualitative content analysis to keep an awareness for pre-awareness so that this may not affect interpretation and/or performance.(Erlingsson & Brysiewicz, 2017) acknowledges the difficulty in maintaining the balance in perceptions, views and personal beliefs and not allowing them to affect the analytical process on purpose. To confirm the findings and validity of the analysis the results generated from the content analysis will undergo a participant test. That is the results are presented to the respondents for confirmation. Even though, it may be hard for the respondents to understand how the data is presented it is imperative that some confirmation must be obtained on the information collected from the respondent during the interview.

4 General Information on Cameroon

4.1 Background information on Cameroon

Cameroon is a West African country bordered to the North West by Nigeria, to the East by the Central African Republic and Gabon and Equatorial Guinea and Congo to the South. Its coastlines lie in the Bight of Biafra, part of the Gulf of Guinea and the Atlantic Ocean. With its political capital Yaoundé (centre region) and economic capital Douala located in the littoral region of the country.

Cameroon is a bilingual country because of its colonial history. From 1916 till independence in 1960 Cameroon was administered by the Britain and France, thus English and French are its official languages. Cameroon´s ethnically diverse population totals 24.3 million with a GDP of $88.9 million as at 2019. Unemployment stands at 4.2%. According to the Heritage Foundation (2019) Economic freedom score for Cameroon stands at 52.4, making the nation ranked as the most liberate country to do business in 2019. This score has risen by a 0.5 points with labour freedom and highest investment accounting for the greater percentage. Yet its ranking is below national and global averages. As for sub-Saharan African nations, Cameroon is ranked 29th out of 47 countries in terms of investment and freedom of labour.

The business environment in Cameroon has deteriorated as the country´s rank by the world bank in the report *Doing Business* fell 10 places from 2014 (148th) to 2015 (158th). However, it has not marred the innovation enthusiasm of entrepreneurs in the country. This is spearheaded by the young population aging from 30 to 45year making about 60% of the population. Corruption, the existence of a broad informal sector slows down the diverseness of the formal sector. In addition, poor infrastructure, endemic corruption, and poor tax system which have made its economic situation unpredictable. These has impeded economic development. The business environment can be made conducive by leveraging the benefits of ICT and the internet. Yet, Cameroon slacken in view of the rest of the globe, in comparism to inexpensive and efficient mobile communications, internet, and energy availability. Absence of competition in the telecommunication sector makes ICT access and the internet expensive and costly especially for entrepreneurs of SMEs.

Small and Medium-Sized enterprises (SMEs) make up about 95% of the country´s total enterprises and about 85% of the country´s GDP. Agribusiness and livestock farming, general trading, building and infrastructure maintenance and quite noticeable digital technology are the industries involved. According to Cameroon centre for economic and social policy research and analysis (CAMERCP-PARC). Between 2010 and 2016 about 61.366 SMEs were generated in Cameroon, of which 59.200 were small start-ups by Cameroonians whilst 2.166 were created by international companies. Small and Medium-sized businesses in Cameroon hire fewer than 20 workers and are mostly non-profit organisation or small-scale businesses (retail). A considerable number of SMEs are family owned businesses which tend to employ friends and family members with different expertise and educational background.

According to the GlobalEconomy.com (2019), the Global Innovation Index (GII) enumerates elements in national economies of a country that enables innovative activities. Such as research organisations, human resources, infrastructure, business awareness, technical know-how, technological advances, and innovative outputs such as new and improved products and services. With respect to GII Cameron is ranked 116th, with an average of 25.12 points during the periods of 2011 to 2019. The table below shows rankings of innovation index over 3-year span based on innovation input and output. These rankings are done with respect to these 7 Global Innovation Index (GII) range; business intelligence, technical expertise, human capital, research, innovative production, institutions, market sophistication and infrastructure. When compared to the definition of technological innovation by Schumpeter (1934, 1942). Innovation being measures as a function of the new products and services introduced into the economy this index can be used to gauge the innovative level of the country.

Table 4 Global Innovation Index of Cameroon, Source: theGlobalEconomy.com (2018)

	GII	INPUT	OUTPUT	EFFICIENCY
2018	111	115	98	75
2017	117	117	113	92
2016	118	118	113	93

Evidence from emerging countries show that technological innovation is a key player for improvements in an economy´s global production and distribution of goods (Etoundi et al., 2016). Thus, technological innovation is the new chance for growth in the economies of developing countries such as Africa (Kimenyi & Moyo, 2011).

In recent decades new opportunities have arose that make economies who adopt technological innovation to gain and sustain competitive advantage both regionally and internationally. This is making it easier for communicating and doing business in the region especially the growth of information and communication technology (ICT). The African Development Bank estimates the number of number of cellular subscribers to about a billion in Cameroon. Therefore, creating a huge potential for distribution of tangible and intangible goods and services through the mobile applications. Especially in the agricultural sector, where information technology is changing the lives of some Cameroonian farmers who previously relied on middlemen to market their produce and end products, there has been much progress. Presently, farmers can find clients for their products directly online hence increasing their profits by cutting out intermediaries.

In the sector of health sector, many young entrepreneurs have shown a leapfrogging mindset via the use technology to resolve some major public health problems. Examples include Alain Nteff co-founder and executive Director of gifted moms. This innovation provides medical follow-up to pregnant women and young moms in

remote regions and Arthur Zang founder of the CardioPad which helps doctors take remote electrocardiograms. Despite the unfriendly business environment, administrative and banking procedures youths in Cameroon are enthusiastic and pushing forward taking advantage of and using technology.

Enterprises in Cameroon can be categorised with respect to their features such as size and managerial feature. Large-size enterprises are formerly state established but are privatised, foreign affiliated and deal with export markets. Also, they operate in the Agro-processing sector, finance, transportation, and communication sectors. With about 100 and more employees. The medium-sized enterprises are either foreign affiliated or local-capital manufacturers, financed by foreign or local capital and targeting regional and neighbouring markets like Nigeria and Gabon. Employing about 50 to 100 employees. And Finally, Small-sized, and Micro enterprises/sole proprietorship employing about 1 to 50 employees, are enterprises which have some sort of internal management team. And individuals venturing into small businesses or enterprises still in their infant stages. Possessing very limited facilities, dealing in the sectors of retail, social services, cargo transportation just to name a few. They satisfy the local market but however, depend on neighbouring markets. Cameroon´s number of small and medium-sized enterprises has steadily increased. Accounting 69.4% of overall number of enterprises in Cameroon.

4.2 Research Analysis and Findings

This chapter looks at the main data analysis and the study results, to come out with conclusions. But first a recap of the primary objectives of this research and investigative questions to attain the objectives as stated in chapter 1.1 and 1.2.; Supportive role played by the government of Cameroon to enable a user-friendly environment for technological innovation of SME entrepreneurs in Cameroon. And the hindrances faced by these entrepreneurs in Cameroon in adopting technological innovations. As pertaining to the afore-mentioned research questions proposed for this analysis were as follow:

1. What are the perceptions of entrepreneurs of SMEs in Cameroon on the effect of energy shortage on technological innovation?
2. What are the opinions of SME entrepreneurs in Cameroon on the relationship between telecommunications services and technological innovation?
3. How do government policies hinder technological innovation?

These research questions were transformed into personal interviews as a source of empirical data and were administered through the phone and internet. The data is analysed in this chapter and the findings reported. As stated in chapter 4.3 the data analysis framework used is the Mile and Huberman Framework, using three main approaches: coding, memoing and drawing and verifying conclusions.

As stated in Chapter 4.1 a total of 10 interviews were conducted with supplementary 5 administered questionnaires; for this study from different sectors: health, agriculture, information technology, finance, and social entrepreneur. This study employed a limited use of literature as a source of data analysis. Hence, the results and data analysis will be presented next.

4.3 **Data Analysis**

This research is carried out making use of a systematic process of analysing data collected from interviews. Sections of the text addressing the aim of the study is identified and extracted. The material is then grouped into technological preferences of SMEs in Cameroon, hindrances, and the impact of technological innovation. The analytical method used followed the steps laid down by (Bengtsson, 2016), as a sequence of 4 main steps; decontextualization, recontextualization, categorisation and compilation.

Transcripts from the interviews were skimmed through to get a broader perspective of the situation before putting them together into meaningful parts. These meaningful parts contain the aim of the research questions and series of words and clauses which comprises interrelated features and addresses the research questions set out in the objective of the study. These meaningful parts of text (words and phrases meant to communicate the aim of the study) is coded in the contextualisation process using a coding system TP (technological preference), HT (hindrances to technological innovation) and IT (impact of technological innovation). This process is known as the "open coding system" in the document (L BERG, 2001).

Once the meaningful parts of the text are established, it is crucial that all elements of the material are covered in relation to the aim of the study. This is done by reading over the text again side by side with the original text to guarantee that the information is properly preserved. (Bengtsson, 2016) recommends that during this process (recontextualization), distancing from the data is required by the researcher. By letting go of unnecessary material especially those that do not harmonise with objective of the study.

The coded information is split into groups and categories to make sense of the data obtained from transcribed text. Extensive categories of significance are simplified to help construct categories. Which involves compressing the groups of phrases without losing its value. For instance, the content is separated based on the research questions used for data collection and relevant theories from the literature. The themes and categories arising from the meaningful parts of the text are established for categorisation. However, there is no widely accepted captions used in content analysis. Meaning there is no explicit way to identify categories. Yet, all categories should therefore be embedded in the data upon which they are derived.

The compilation stage which is the last stage in content analysis is based on a manifest level of interpretation which stays as close to the text as possible by using the respondents words. Considering the complexity of data contained in interviews, it was deemed necessary to carry out a manifest study that remains original to the actual sense and context of the text. The data will be presented below by topic and group. Similarly, a description of the data analysis process is tabulated below.

Table 5 Example of Data Analysis according to (Bengtsson, 2016)

Meaningful parts	Summarized meaning	Codes	Categories	Themes
Yes, I use social media a lot to get in touch with my clients and network especially Facebook	Social media as a preference for technology use.	Technology preference	Social Media	Choose social media to carry out daily activities
I use all the above in my enterprise. Some like google drive, google calendar, Facebook and WhatsApp more.	Social media use for daily business activities	Technological preference	Social Media	First choice is social media
One of the things, is the system of governance. You know, at times it is one thing for you to be in contact with a company or have access to certain facilities. You may want to do the business, but you encounter a stifled political system.	Part played by the government to hinder technological innovation	Hindrance to technological innovation	Government policies	Technological innovation is hindered due to Government policies
Because the system of government is characterized by a lot of bureaucracy, corruption and "man know man" influence. With all this kind of business environment and malpractices presented it can really mar our ability to effectively use the new technologies.	Government role in providing an enabling environment	Barrier to technological innovation	Business Environment	Government´s role in providing an enabling environment for technological innovation

One of the things that is cumbersome, and is the main hindrance is electricity. We have an unstable supply of electricity in the country. The electricity supply in the country is very unstable.	Short supply of energy	Drawback to technological innovation	Energy supply	Government´s role in providing social amenities.
They cuts are not announced. You need to do some work you just discover that there is a black out. For instance, you can be doing some work, and suddenly there is blackout. This is annoying and a difficult and stressful way to work.	Frequent electricity cuts	Marrs work and life.	Unstable energy supply	Lack of social amenities like electricity
It helps me for marketing, communication, accounting and storage of all company files and transactions.	Benefits of technological innovation	Advantage of technological innovation	Improves business transactions	Positive influence on technology
We have constant unannounced electricity cuts with no explanation from the government. When it comes to basic amenities in this country such as internet, water supply and energy supply. The condition is terrible. How can I invest in innovative technologies? when I cannot get the basic amenities for running my business. It is kind of a tradeoff to me. It is either I invest in technologies or these social amenities. Hence the government has a pertinent part to play when it comes to innovative technologies cause given all this, the electricity cuts, unstable energy supply, with high taxes and corruption. I do not see a way out.	Lack of social amenities	Prevention from investing in technological innovation	Lack of basic amenities	Government´s inability to provide basic amenities.

Meaningful parts	Summarized meaning	Codes	Categories	Themes
Then another thing, sadly we have the Internet. The internet is a big issue. You know we are in the age where; the internet has become a part of our daily lives. These Internet Service Providers (ISP) tell us they are offering 4G technology, but I can tell you we are operating in 2.5G; the bandwidth is poor, webpages take too long to load; the speed is slow.	Slow internet connection due to low bandwidth	Obstacles to technological innovation	Internet services	Poor internet connections
The government through these providers initiates internet cuts in times of political crisis. For instance, in late 2016 during the socio-economic uprising, internet cuts were initiated in some parts of the country for more than 3 months. After it was reinstated, some contents were blocked and access to some websites are limited	Government influence of Internet Service Provider (ISP)	Obstacle to adopting new technology or even limiting awareness of available technology	Government role on ISP	Government policies on internet service provision
It is going to change the dynamics. Because if we will succeed to engage in a partnership with companies who offer this technology, it is going to boost our finances and turnover.	New technologies will benefit my business.	Advantage of technological innovation	Impact of technological innovation	Positive influence on business.

Social media has made business easy and fast improving for those who can maximize its benefits. It provides us with marketing platforms to market our product and services whereby, you can be able conclude business deals online	Social media is preferred because it is easy to use	Technology preference	Social media	Role of social media in technological adoption
Time minimization due technology, Long distance barriers will have little or no effect, Minimal advertising expenses and optimization of report and control. Also, it is going to make business very flexible and reduces middlemen or third parties who usually cost the system to be long and complex	Technological innovation benefits businesses.	Positive influence of technological innovation	Maximization of profits and time management	Importance of technological innovation on businesses.
Another pertinent issue is the unstable electricity supply in this country. We have constant unannounced electricity cuts with no explanation from the government	Frequent electricity cuts	Marrs work and way of living	Unstable energy supply	Lack of social amenities like electricity
My company is totally dependent on the internet for all registration, accounting and billing aspects. We also use the air conditioners when we are working on clients in this hot Douala town. With power failure all these are not possible, and work becomes such a challenge.	Internet connections and power failure hinder work	Barriers to growth	Poor internet connections and power failure	Internet connections and power supply hinder technological innovation/adoption

Meaningful parts	Summarized meaning	Codes	Categories	Themes
Educational curriculum. The bottlenecks to get admissions to the only one state owned advance school of Technology. Lack of resources for student s to practically bring to light their ideas. Lack of possibilities to get state sponsored o r private sponsors to invest in young talents and help them develop. Shortage of mentorship program to help boost start-ups and entrepreneurs	Absence of training facilities	Obstacles to technological innovation	Government policies on educational institutions	Government rednecks
I am not an IT expert but an enthusiast of technology, particularly in pedagogy. There are different levels of technology that any university system must have like Webex, interactive molly boards , Big blue botton and Moodle. These are advanced technology in the learning management process but let´s talk basic technology such an E-mailing system to provide digital footprint and repository for administrative communication. Every student needs a school email to engage in the university digital space. Which is not a popular stuff in majority if not all of Cameroon´s higher education institution	Government role in educational structure	Obstacle to use of available technology in the academic sphere	Government provision of technological facilities in education sector	Lack of basic technology in the educational sector
GPS Systems, Tracking software's, GSM Systems, Servers, and Database Systems, A simpler example is Cloud Technologies. The Cloud technology, its concept is beneficial for small businesses like mine as well. The ease of access and use is another advantage.	Reap the benefit of this new technology.	Benefits of technological innovation	Impact of technological innovation	Increases my productivity.

4.5 Demographics of Cameroonian informants

The socio-economic analysis of the characteristics of the SMEs show that majority of the entrepreneurs have formal education with the minimal educational level being Bachelor of Science degree, Cameroonian context. For instance, 90% of entrepreneurs interviewed have a high literacy level. Which supports a study done by Mbuyisa and Leonard (2015b) which noted that illiteracy stands to be Sub-Saharan Africa´s critical problem of entrepreneurs adoption of new technological techniques. Besides, the level of literacy of the entrepreneurs of SMEs chosen for this study is high. According to World Population Review, adult literacy rate in Cameroon stands at 75%.

In addition, the study shows that 80% of the sampled SMEs have been in operation within the last 10 years and 20 % within the last 5 years. This shows that the rate of SME creation in the country is growing. Entrepreneurs are becoming interested in adopting technological innovations to maximise their competitiveness. According to MINPMEESA there was slightly higher number of SMEs of 0.60% in 2019 compared to 2018. However, a decrease was noticed particularly in the North West and South West region due to the socio-political situation which has crippled these regions for 3 years now. Coupled with the introduction of the `one stop shop´ for business creation, creation of individual businesses dominated at nearly 78%.

The results on table 3 show that 15 (100%) of the respondents said that energy shortage is the most important hindrance to technological innovation. 8 respondents indicated that (about 53%) Energy Shortage plays an important and very necessary part not only in technological innovation but also in their daily lives. This finding supports the study of Radwan and Pellegrini (2010) who found that, when there is an infrastructural deficit especially electricity. Firms tend to invest in private electricity generation rather than innovative activities. According to this discourse, what my findings imply is that the constraint of energy shortage does not only hinder innovativeness of firms but also reduce the resources for investment. Because rather than investing in innovative measures entrepreneurs invest in means of survival. This results conforms to the work of M. Abou-Shouk & Eraqi (2015) who found that external business environment such as social amenities such as power supply, water and internet, is not only scarce in less developed countries but is a common characteristic in these countries. In this same context, Apulu and Ige (2011) found that Nigeria´s lack of reliable electricity impedes the adoption innovative technologies and discourages investment in innovations.

15 entrepreneurs (100%) assert that internet and telecommunications services played a very important hindrance in their use of technological innovation, attain information and knowledge of the available of technological innovation. About, 12 (80%) government bottlenecks assert that the business environment is very unconducive for them to grow by using technological innovations and 7(46%) enlisted other factors such as expensive to acquire, run and maintain technologies, little or no information on the availability of technologies which can enable them achieve competitiveness. This point of view appears in previous research by Mbuyisa and Leonard (2017), in

their study of South Africans SME´ adoption of ICT and the obstacles faced by South African SMEs when adopting new ICT techniques.

Table 6: Technological innovation Barrier.

Technological Innovation Barrier	Number of respondents	Percentages
Energy Supply	15	100 %
Low Literacy level of technology	8	53%
Internet and telecommunication services	15	100%
Government bottlenecks	12	80%
Others	7	46%

Additionally, the results from Table 4 below reveal that out of the 15 respondents, 9 (60%) preferred social media such Facebook, WhatsApp, and different search engines in carrying out their business operations due to their availability and ignorance on the availability of other innovative technologies which can improve their business processes. According to J. Clement, (2020) 66.14% of the population use Facebook, 5.44% twitter and 4.44% Instagram as from Feb 2019 – Feb 2020. Also 3 (20%) used softwares in their business processes, 2 (15%) Financial technologies and 5% use some other form of technology.

4.6 **Research Findings**

Research findings from the data collected via interviews will be classified under sub-headings and illustrated by using tables and diagrams. And the interview question will be grouped according to the purpose of the questions. But not following the chronological order of the interviews.

4.6.1 Technological Preferences of SMEs in Cameroon

This research question is addressed by using interview questions 3, 4 and 5 as shown in appendix 2, to seek firstly if the entrepreneurs are aware of the available technologies and further investigate which of them are currently in use for their business process. And to further provide an opportunity for investors to capture investment opportunities. As portrayed in figure 5 below more than half of the entrepreneurs use social media for their business processes. An increasingly new interconnected world in Cameroon with social medias (Facebook, Instagram, twitter etc.), new end-users devices (mobile phones, laptops), new digital models (digital platforms, digital services) has created unprecedented opportunities for growth and inclusiveness within the country and between countries.

Social media is a computer-based technology that facilitates communication amongst friends, business partners and communities. Social media marketing especially through Facebook is gaining popularity over the past years. With the presence of approximately 2.5 billion users it presents a platform for entrepreneurs to meet a

broader customer base and business partners from all over the world. We are currently in an era where traditional based marketing is outdated, and social media marketing is taking the stage.

"*I mostly use Facebook online bloggers with a huge audience for publicity, these is because most Cameroonians are active on Facebook than mainstream media*" …… Respondent 2

"*Yes, I use social media a lot to get in contact with my clients and networks. Especially Facebook*" …. Respondent 1

"*I use a lot of technologies in my organisation. Some like google drive, google calendar, Facebook, and WhatsApp more. Most especially Facebook; I meet a wider audience there. And most of the people I am friends with on Facebook and other social media platforms like Instagram are considered potential clients. And Facebook is a platform where I can meet likeminded people, inspiration and investors which can help me grow in my business. When it concerns technology in Cameroon, I think the fastest way to reach your clients are on Facebook*" …. Respondent 3

Entrepreneurs make use of this to get connected to their customers, increase awareness of their brand thus boasting sales and revenue, by gaining the attention of potential customers and partners. Because entrepreneurs in Cameroon do not want to be left behind in the technological advancement of the world, hence profiting from the internet through social networks to support the advancement in businesses both locally and internationally. Giving them competitiveness in the international market.

"*On our medical tourism, we plan to introduce a hot line for patients with serious cases who want to seek treatment abroad to quickly reach to us via a text. We are currently talking with our software team about an innovative app for that*" … Respondent 2

"*GPS Systems, Tracking software's, GSM Systems, Servers, and Database Systems, A simpler example is Cloud Technologies; The Cloud technology, its concept is beneficial for small businesses like mine as well. The ease of access and use is another advantage*" …. Respondent 3

"*E-banking is a product designed for the purposes of online banking that enables you to have easy and safe access to your bank account. E-banking is a safe, fast, easy, and efficient electronic service that enables me to access the companies bank account and to carry out online banking services 24 hours a day and 7 days a week. It makes it easier for us to pay our suppliers*" … Respondent 7

"*Social media has made business easy and fast improving for those who can maximize its benefits. It provides us with marketing platforms to market our product and services whereby, you can be able conclude business deals online*" ...Respondent 4

"*Softwares like Sage. This help us in the domain of human resource management and Salary payments*" … Respondent 6

"*Emailing for Internal and external communication. WhatsApp: For frequent communication with employees and sometimes customers. Slack: Mostly for personnel and internal*

communication. Facebook mostly for communication. Cell phones for Appointment and follow up" …Respondent 5

"*I am not an IT expert but an enthusiast of technology, particularly in pedagogy. There are different levels of technology that any university system must have like Webex, interactive molly boards, Big blue botton and Moodle. These are advanced technology in the learning management process but let´s talk basic technology such an E-mailing system to provide digital footprint and repository for administrative communication. Every student needs a school email to engage in the university digital space. Which is not a popular stuff in majority if not all of Cameroon´s higher education institution*" … Respondent 5

As noted in the different responses from the respondents concerning the kind of technology they use in their day to day business, technologies which are easy to use and already available in the market become the preferred technology thus indicating that technology transfer is easier for entrepreneurs of SMEs in Cameroon that inventing new technologies.

Notwithstanding, Cameroon is a birthplace for many start-ups creating digital solutions for individuals and businesses through platforms. The CardioPad invented by 3 friends, which enables doctors to carry out electrocardiograms remotely. Another medical technological innovation, Gifted Mom helps provide medical follow-up for pregnant women and young mothers. Njorku a work platform that assist subscribers in Africa and over seven countries to career paths and placement. These technological innovations are cutting across many industries for instance; fashion and beauty, real estate (DigitalRenter), logistics (quick Ticket), entertainment (Muzikol), agriculture (Agro-Hub). Just to name a few.

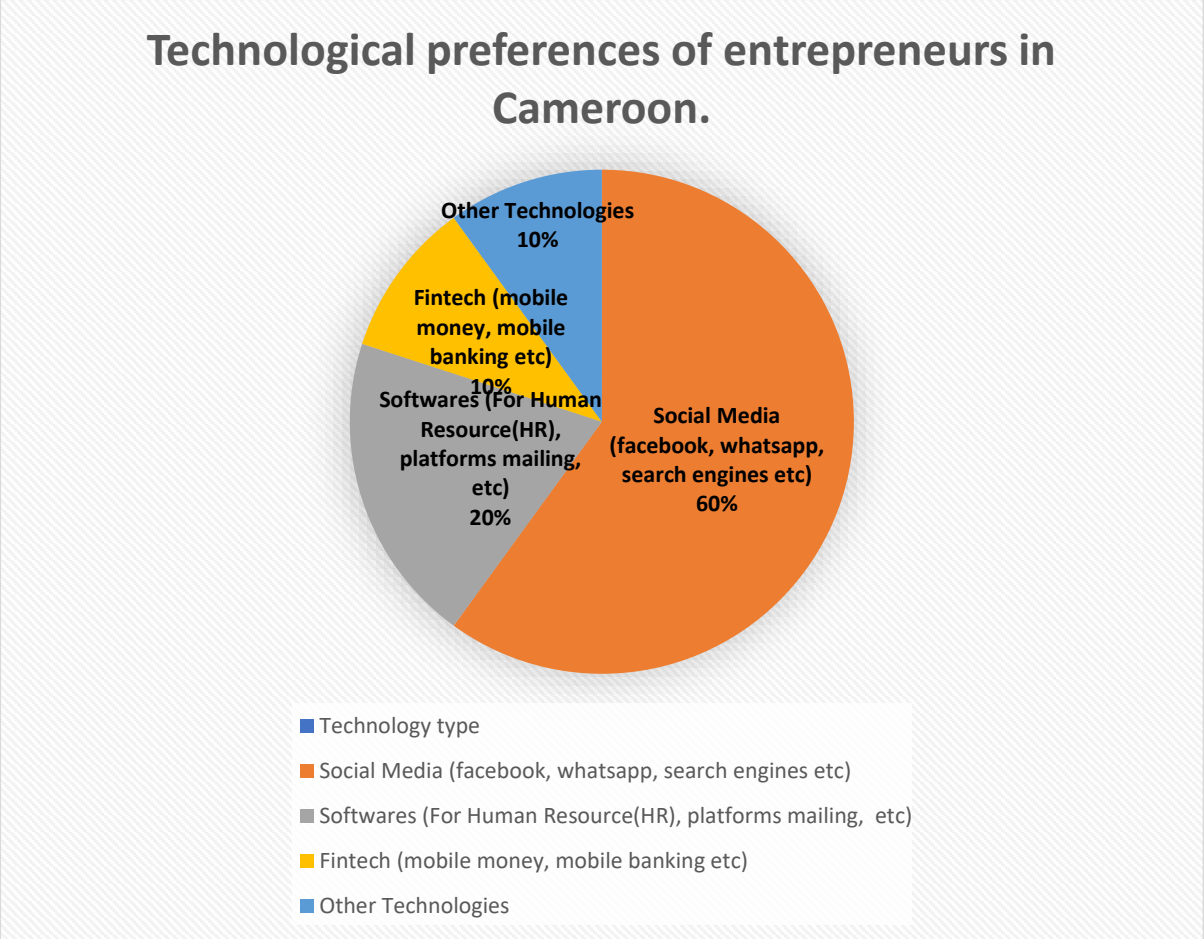

Figure 6: Technological Preferences of Cameroon entrepreneurs.

4.6.2 Hindrances to technological Innovation

With regards to principal aspects of technological innovation, each developing country faces problems which can be peculiar to their cultural or socio-economic environment. One of the main questions to be asked here; Does Cameroon economy present an environment to foster technology use for existing businesses and/or inventing new business models? Besides, the business environment within the course of the research, other hindrances included the unavailability of information especially on the technologies availability, training on the management of available softwares, inadequate power supply, adamant to change, unstable internet connections, finances, government bottlenecks and social amenities. Nonetheless, inadequate power supply, unstable internet connections and Government Bottlenecks will be analysed.

4.6.2.1 Energy Shortage

Keeping in mind the fact that power is scarcely available on a continuous basis for seven days of the week. And frequent unannounced cuts are carried out all over the country. This happens to be one of the main hindrances for entrepreneurs. several

respondents describe the situation of unstable energy supply and energy cuts as frustrating and difficult working conditions, as stated below;

"*We have very unstable electricity and shortage of electricity supply in the country. The cuts are not announced. For instance, you can be doing some work, and suddenly there is blackout. This is annoying and a difficult and stressful to work with*" ... Respondent 6

"*One of the things that is cumbersome, and is the main hindrance is electricity. We have an unstable supply of electricity in the country. The electricity supply in the country is very unstable*" … Respondent 2

"*All NTIC equipment work with energy without effective energy it's difficult to operate them. Constant power failure affects good functioning of equipment"* …Respondent 3

Cameroon´s daily newspaper, *Cameroon tribune* statistics reveal that there is lack of power supply in the country which has reached a peak of 100MW per day for the beginning of the year 2015, which coincides with summertime with high temperatures. And it is often characterised by a low water level in the barrages of Cameroon´s public electricity service concessionaire in Cameroon, Energy of Cameroon (ENEO). However, to combat this deficiency the government has turned to its emergency measures including the resurgence of the Thermal based plant at Ahala close to the capital of the country, Yaoundé. Which has a production scope of 60MW. This is one of the governments four Emergency Thermal Programs (ETP). Managed by Aggreko, a British company, being the only Thermal program, not been taken over by ENEO. However, due to the lack of trust in the government, citizens do not believe or trust the policies put in place by the government as stated by one of the respondents.

"*And, you know, the politicians try to play on the minds of citizens. They want the citizens to be dull, so that they can manipulate them easily. Like you see for instance, they will buy generators and call them thermal plants Cameroon. So, it means there is electricity shortage and to back up this electricity shortage they use generations. And they tell the population we are building thermal plants meanwhile they are using generators*" … Respondent 1

Another respondents describes the energy shortage and frequent electricity cuts as a lack in basic social amenities such as the internet, electricity supply and water supply to hinder him from investing or taking on new technologies. An describing the situation as a trade-off. Either invest in new technologies or invest in getting these basic social amenities. As stated below:

"*Another pertinent issue is the unstable electricity supply in this country. We have constant unannounced electricity cuts with no explanation from the government. When it comes to basic amenities in this country such as internet, water supply and energy supply. The condition is terrible. How can I invest in innovative technologies when I cannot get the basic amenities for running my business. It is kind of a trade-off to me. It is either I invest in technologies or this social amenities. Hence the government has a pertinent part to play when it comes to*

innovative technologies cause given all this, the electricity cuts, unstable energy supply, with high taxes and corruption. I do not see a way out" … Respondent 3

Further, ENEO reduced the evening consumption rate of its biggest consumer; Aluminium of Cameroon (ALUCAM), which depletes about half of the country´s energy production. At that time household consumption explodes. The building of several power plants and dams has been some of the alternative measures taken by the government to combat the energy shortage in the country. However, problems lie in the transportation of energy. This is because of the wooden poles used for energy transportation are often affected by bushfires, poor maintenance, and deterioration due to weathering.

Although, these changes have been put in place by ENEO which is the only supplier of energy in the country, there still exist shortages, unannounced cuts foe days which affects the productivity of many entrepreneurs, small or large. And given the limited sources of finance by SMEs, it makes it almost impossible to invest in other sources of electricity.

"*Energy shortage is one of the main hindrances to Technological innovation in Cameroon. Not only is there shortage and interruptions from electricity providers, there is also the high cost associated with it supply. Due to the fact, most small business operators who do not have enough resources at their disposal cannot invest in a secondary form or energy supply like for example solar energy. With this effect during the blackouts which for sometimes runs for days, no concreate work can be done, productivity and operations are affected*" …Respondent 3

According to Ministry of Economy, Planning and regional Development (MINEPAT) and to the local representatives of International Labour Office (ILO), this energy shortage contributes to hindrances in the development and use of technology of enterprises in the country and a loss by about a point in the GDP of the country. This can be reflected by the responses given by entrepreneurs involved in this study. When asked about the Hindrances they face in using the new technologies available for their different lines of business that can facilitate the development of their enterprises by administering innovative technology.

4.6.2.2 Internet services and Telecommunication

The internet and ICT services is often seen as a stimulant for growth and development in both emerged and emerging countries (Apulu & Ige, 2011). IT solution (internet and ICT services) help SMEs provide pertinent knowledge at convenient times. These tools at the same time gives a base for SMEs to gain competitiveness via integrating interrelationship between supply chain partners and the organisation likewise the provision of crucial knowledge.

The ICT and internet sector of the country is fast growing. It is enabling the country to better enjoy the advantages of the digital economy. Telecommunication and internet have become an important and dynamic sector in the economy. However, the internet/broadband penetration rate is low when compared to telephone (voice) communication. The three main players in the country for the provision of broadband internet and telecommunication services are CAMTEL, MTN (Mobile Telephony Network) and Orange. Besides, many new network service providers are coming into the market such as NEXTTEL, Mobile Virtual Network Operators (MVNO). These mobile operators have been in the playing field since 2006, when the market was overtaken by MTN as a major telecommunication and internet provider.

Although MTN launched 4G in 2015. In fact, households use 2G technology for internet access. Hence, the logic of why the penetration of mobile internet in Cameroon is struggling. Because 4G only exists on paper but the real-life situation is quite different. As stated by one of the respondents in the IT sector.

"……. *MTN launched the 4G networks in 2015, however the connection speed (bandwidth) are slow and poor. Added to the fact that some areas of my office can´t get steady internet connections because of an unstable signal propagation from their 4G modems. I need to sit at a spot to get connected to the internet either on the phone or my laptop, which makes my work cumbersome*" ...Respondent 3

Another Respondent stated

"*Another issue is the internet; this is a big issue! These Internet Service Providers (ISP) tell us they are offering 4G technology, but I can tell you we are operating in 2.5G; the bandwidth is poor, webpages take too long to load, the speed is slow. …….. the government through these providers initiates internet cuts in times of political crisis. For instance, in late 2016 during the socio-economic uprising, internet cuts were initiated in some parts of the country for more than 3 months. After it was reinstated, some contents were blocked and access to some websites are limited*" … Respondent 1

According to James Barton (n.d.), Cameroon´s Telecommunications Regulatory Agency fined local mobile and internet providers MTN, Orange and Viettel (now known as Nexttel) on the grounds of not meeting up to their agreed network improvement targets. The regulators asserted that the operators network standards were in fact "still deteriorating". Notwithstanding, entrepreneurs acknowledge the convenience of the internet service to their businesses in the country, despite the shortages.

"thanks to the internet we do constant research and get in touch with partners, we have a partner in China, America and the UK …… then again we have another partner that provides a mechanical parts for vehicle in Japan …… thanks to the internet we make contact with different partners"… Respondent 1

The internet users in Cameroon rose from 2000 to 2017 by about 99,59% and about 20% of the population are internet users. According to the internetworldstats (2020), as at December 2019 internet users in Cameroon stands at 6.1 million with a penetration rate of 23.1%. Thus, showing that the time Cameroonians spend being connected is on the rise. Individuals, as well as entrepreneurs acknowledge how the hyper-connectivity affects their interaction with one other, how they learn and work.

Despite the significance of internet and ICT services in this era technological era where everything is done online. The limited provided of this service gives monopoly in the market and hence they charge high rates of data plans and the internet connections are often slow and hinder innovation by entrepreneurs as described by one of the respondents.

"*Telecommunications services providers play a vital role in local technological innovations in that they control access to the internet and charge exorbitant rates for this. They also often block market-access to potential rivals when they fell their position is threaten or buy up ideas before they fully mature*" … Respondent 3

Disseminating creativity and ICT in several market practices and procedures, its impacts are numerous. According to research carried out by Tsambou & Kamga, (2017) 90% of entrepreneurs of SMEs use some form of ICT tool such as a computer, laptop or internet. Although ICTs are weakly embedded in the activities of SMEs according to their research. Indicating that only about two-thirds of SMEs are exposed to the web and a lesser percentage thus have a web portal in their organizations. What´s more, majority of SMEs makes use of the web for their business activities yet there exist low connection speed, high cost of data plans. Cameroon does have problems connecting to 3G whilst telecommunications providers claim they have 4G service.

Rivalry in the telecommunication sector and a substantial decrease in prices of computers and phones has however increased the internet-connectedness of small enterprises. Furthermore, they found that with respect to web adoption for SMEs business activities only about a quarter of SMEs are affected by the web usage for business activities.

4.6.2.3 Government bottlenecks

The role played by the government cannot be understated when it comes to technological innovations in any society. Everything the entrepreneurs are involved in; a part is played by the government. From the government to business management and the market climate under which the organisation works under. This data was analysed from questions 1 and 10. 80% of respondents acknowledged that it is easy to obtain business licenses while 20% of the respondents claimed it is a complicated and lengthy process. However, considering the overall interview group it can be said that ignorance plays a big role on the part of the 20% of respondents. The process to obtain the business licenses is easy as explain by one respondent.

"*From my experience, obtaining a business License in Cameroon is as simple as going to the (Enterprise Creation Procedure Centre) and submitting a list of documents which you'll obtain from there. Within (typically) 5 days (they say 72 hours) you will have your company documents. I consider the process* ***VERY EASY****. People who face difficulties are people who don't know the right procedure, so I guess I can say the biggest problem is that of* ***IGNORANCE*** "… Respondent 3

With the support of UNCTAD and the European Union, an electronic platform MyBusines.com has been put in place by the Cameroon government to monitor and promote the creation of enterprises in Cameroon. Launched in April of 2016, it has simplified the business creation process and helped in supporting entrepreneurship policies of the country. According to statistics from (businessfacilitator.org, 2017), 80% of the enterprises created are individual enterprises, with less than half of them who want to hire people, and the individual entrepreneurs typically range from ages 30 to 45 years predominantly male (71%). Taking this into consideration another respondent describes it as "*a one stop shop*" for company creation.

"*It is not a big issue when you know what you have to do. The government has made it very easy by having a ´one stop shop´ in which you can obtain your licenses within 72 hours. I mean like a building where you get everything to get your business registered, that is an improvement. But again, with the corruption in the country many people are not aware of the information and they get ripped off by lawyers with expensive and lengthy procedures. Therefore, it makes it difficult for those who do have access to this kind information" …* Respondent 1

According to (Trading Economics, 2020), Cameroon ranks 167th position, demonstrating that company start-up is made simpler by creating "one-stop shop", abolition of the conditions for verification of company premises and their related fees and exemption for the first 2 years of life of the newly founded companies from paying business license tax. Besides the efforts by the Cameroonian government to encourage enterprise formation, individuals still face the challenge of ignorance on the facilities placed at their disposal.

Another respondent describes how bureaucracy and government policies do limit the use new technologies in his business by the governments indisposition in issuing clearances promptly.

"*Barriers can be classified in four aspects: Operations, Resource, Regulation and Market-access. Too much time spend to obtain permits for operation. Resource is a major deal as production is sourced from abroad and stability and availability are a constant hurdle to overcome. Regulation wise, bureaucracy and the unwillingness from government agency to facilitate processes and issue clearance promptly can often limit access to potential markets*" ... Respondent 3

Furthermore, the respondent went ahead to describe how the process of getting admissions into the only available school of technology in the country is difficult. Which conforms to the technology transfer model by (Bozeman, 2000) stating that the interrelationship between educational institutions and government do foster technological innovation. However, policies which are not suitable tend to hinder either technological innovation or transfer.

"*Educational curriculum. The bottlenecks to get admissions to the only one state owned advance school of Technology. Lack of resources for students to practically bring to light their ideas. Lack of possibilities to get state sponsored or private sponsors to invest in young talents and help them develop. Shortage of mentorship program to help boost start-ups and entrepreneurs*" … Respondent 5

Quoting an example of how government policies hinder the use of innovative technologies by SMEs in Cameroon. One respondent explains how government agency do not comply with international bodies and the lack of grants to promote local talent is absent. Often projects or grants are granted on a favoritism basis. Which is the system of governance that prevails in the country.

"*A typical example is the case where government agency do not comply with international bodies and grants are not made available locally to promote talent or a case of lack of proper documentation when applying to these grants and seminars which leads to disqualification*"…Respondent 3

Another Respondent describes his experience with the stifled governmental policies as hikes in taxes, corrupt and a poor banking system.

"*But base on our experience what we face is tax hikes for small and medium size enterprises, corruption, poor banking system, illicit sales of drugs and medical devices and slow delivery service. For example, we are currently trying to provide medical bags to CBC and those are some of the difficulties we are encountering*" … Respondent 2

"*Tax system: the tax system is very bad and corrupt. This is experience during business registration as your type and capital is declared to be granted a business licence. The tax system is very high and long and will require you to grand financial benefits to the authorities in concern*" … Respondent 4

"*Time is one biggest problem in obtaining business licence in Cameroon because it has a very long procedure to follow and many stages to pass through before finally approved. Each stage of procedure required authentication and cost money hereby making the process to be long and discourages businessmen*" … Respondent 6

4.6.3 Impact of technological Innovation in Cameroon SMEs

The benefits of technical progress are no doubt and important requirement for economic growth and development in emerging economies, particularly Africa and Cameroon in specific. Improved processes of production or improved products maintains competitive advantage in markets compared with others, either locally or internationally. In today´s technologically inclined world, SMEs are concentrating on making use of technology to activate growth, build clientele and gain competitive advantage in the market. Technological innovation had been recognised as a source for SMEs to stimulate economic efficiency. SMEs act as catalyse of accelerated economic advancement and stability in growing economies.

Entrepreneurs of SMEs in Cameroon do not fail to recognise the positive effect of technological creativity on their business process. Indicated by respondents responses stated below:

"It is going to change the dynamics. If we can engage in the partnership it will boast our finances and turnover. However, it is very challenging for us because for us to enjoy these advantages, it will require huge capital investments to have a first consignment of goods. It will boast every part of our business and it also in terms of satisfying the public ……." … Respondent 1

Another respondent states,

"Improved Productivity and Efficiency will mean less time spent on business processes and more time on products and services and hence increased revenue" … Respondent 6

Another respondent in the agricultural sector doesn´t fail to recognise the impact of technological innovation on its business;

"It is going to make business very flexible and reduces middlemen or third parties who usually cost the system to be long and complex" … Respondent 4

Innovation is key to boost productivity in SMEs and integrate global markets. According to OECD (2019), digitalisation has presented an effective instrument to reduce size disadvantage of SMEs. In that, it presence contemporary financial services for SMEs via Fintech which has become a prominent way which firms use to raise funds thus boosting productivity. In addition, the size disadvantage of SMEs can be reduced through international competitiveness with the use of digitalisation. The description of the advantages of SME innovation is given in the table below.

Table 7. Advantages of technological innovation of SMEs

Competitiveness (International)	Appiah, Kenneth, Habte Selassie, and Rosemary Burnley (2015)
Growth	Subrahmanya, M. H., M. Mathirajan, and K. N. Krishnaswamy (2010)
Increased profits	Valdez-Juárez, Luis Enrique, Domingo García-Pérez-de-Lema, and Gonzalo Maldonado-Guzmán (2018)
Flexibility and Efficiency	Liao, Ying, and Jane Barnes (2015)

5 Discussion of Results.

This study investigated the hindrances to technological innovation by SMEs in Cameroon. Reviewing literature on technological innovation, it was discovered that the path emerging countries must take to adopt technological innovation is different from emerged countries. The technology transfer paradigm states that emerging countries can copy already existing technologies from emerged countries to get ahead in the lagging problem of technological innovation. Additionally, technological advancements are commonly identified as significant drivers towards developing countries´ economic transition.

However, most of these emerging countries do not possess the appropriate policies, infrastructures, governmental policies to encourage technological innovation. Although SMEs have been identified by several institutions to positively impact the economic growth and progress of developing countries´ economies. They often lack the basic incentives to ease their adoption. Most large and medium enterprises can often afford to diffuse technology easily form third world countries because they possess large availability of funds and connections with partners of the necessary required technology by their industries. This section on discussion of results will be divided into three sections based on the three main research questions of this study and one additional section to discuss the supporting findings of this study with respect to theories.

5.1 Shortage of energy supply negatively affects technological innovation.

The presented results above correspond to evidence obtained from several other research, which shows that that the lack of basic social amenities plays a negative role on the innovativeness of firms (Kuhlmann & Ordóñez-Matamoros, 2017b). Cameroon just like any middle-income country is characterised by the absence of basic social amenities such electricity, ICT services, water, insufficient medical facilities, and education. Also, increased rate of unemployment, inequality, and an overdependence on agriculture.

Findings from this study concurs with the study carried out by Kuhlmann & Ordóñez-Matamoros, (2017a) who acknowledges that although innovation lays a premise for growth and development in the general economy via employment security, reduction of poverty, prevention and treatment of infections among many other challenges facing emerging countries. Yet, disparities in income, gender inequality and lack of the availability of essential social infrastructures continue to be a major concern. Furthermore, demonstrating the different context of the definite position of "innovation policies" in the provision of Innovative development. Articulates that the `conservative view´ anticipates "innovation policies" put in effect in a state where there exist `infrastructural problems´ for instance lack of piped water, medical care, lack of elementary schooling and energy; renders the policies unsuccessful and inadequate. Thus, insinuating that where innovative policies are to be implemented, it becomes pertinent for these structural problems be unavailable because rather than

the government and firms investing in huge capital in innovation, they would rather invest in establishes these basic amenities.

Although, in other studies it was discovered that the mentality of health workers, convictions, readiness to use new technology, have a major impact on the implementation and adaption of new health technologies. With more factors such as little or no technical knowhow, absence of commitment, inadequate governmental and administrative guidelines (Nassar & Faloye, 2015b; Zayyad & Toycan, 2018). Whereas other researchers argue that the lack of these amenities acts as motivation for technological innovation rather than a hurdle (Goedhuys et al., 2016; Nguyen et al., 2016). From the results of the research, this point of view is a contrast. Respondents interviewed enumerated how the lack of a constant energy supply hinders their working life and daily lives too.

5.2 Negative relationship between lack of ICT services to technological innovation

Findings from this research found that slow internet services and low bandwidth negatively affected their adoption or innovation of new technologies. Which conforms with other studies which accentuates the role of internet services and ICT services in technological innovation or/transfer.

Expensive "data plans" by Internet Service Providers (ISP) which are due to monopolisation, in Cameroon are active ways to keep poor people in developing countries away from the digital age. Although the internet provides a platform in the use of specific softwares which are used for economic growth, education, health care services and entrepreneurship. A lack in this service hinders entrepreneurs to experience the social and economic benefits of internet technology. As proven by findings from this research where entrepreneurs acknowledge the importance of this technology in their growth, but their unavailability makes it difficult for their progress.

This research conforms with previous research carried out by Tsambou & Kamga, (2017) who found out that overall the impact of integrating innovativeness and ICT capability across all industries in the economy has a positive effect. This positive effect is attributed to the benefits of ICT such as efficacy, productivity, versatility, and support decision making. For this reason, the impact of technological innovation on performance just cannot be without ICT. In addition, any organisation which uses ICT enables managers and employees to speed up the innovation cycle, thus enhancing business performance in terms of cost saving and simplification. Furthermore, a mix of R&D and web access has a beneficial effect on SMEs efficiency. Which is also mirrored in the results of this study indicating how innovation will have a positive impact on their businesses however the lack of ICT services hinder innovation.

This same effect of ICT and innovation was also seen in a study carried out by Bontis et al., (2005) on big businesses in Taiwan. Nonetheless, upon considering the relationship between ICT investment and Innovation investment, a positive impact on performance can be perceived. Consequently, concentrating individually on ICT investment will not give organisations competitive advantage otherwise a business can only gains value by coordinating with several forms of innovation investment.

(West, 2015) in his paper states that poverty, data and communication charges, infrastructure barriers, policy, and operational barriers hinder individuals in developing countries from assessing the internet. Which is in line with this study where it was found that the cost of ICT services thus prevents entrepreneurs from investing in technological innovation.

Firstly, the background of Cameroon 37.5% (Sylvain Andzongo, 2020) of the population is poor, reviewing this stats with the above-mentioned fact by west, up to 37.5% of the population are poor and hence access to the internet is low too. Data from the study showed how the data and communication charges hindered entrepreneurs access to the internet same as an obstacle to technological innovation. Talking about the lack of infrastructure is a common characteristics of low middle-income countries and is also presented in the research data. Where entrepreneurs will rather take the trade-off of investing in providing basic amenities and infrastructures than invest in new technological innovation for their enterprises. Government policies have been seen to hinder access to the internet, where due to social and political unrest Cameroon was cut off from accessing the internet and even though it was reinstated some content where in accessible by the population. Therefore, hindering technological innovation. According to a report published by (World Bank Group, 2019) Cameroon is suffering from "*weak governance*" which is impeding the growth and its attractiveness to investment capability; giving the country a rank of 152 from 180 countries in 2018 transparency international corruption perception index and 166 from 190 economies in the World Bank´s doing business survey in 2019.

Conclusively, ICT and technological innovation inevitably leads to significant positive interrelationship with business growth. This outcome indicates that there is need for businesses to complement their innovation plans by investing in ICT or improving usage of currently existing IT.

5.3 Government policies hinder technological innovation

Technological innovation is substantially important for developing countries, however the existence of weak and ineffective governmental policies, illiteracy or the lack of technical know-how, political instability and the absence of modern technology services impedes the adoption and adaptability of technological innovation (Adeyeye et al., 2018; Esselaar et al., 2007; Mbuyisa & Leonard, 2015a). Also, interactions amongst state research institutions and future consumers of these technological advancements are often missing or deficient.

The business environment which is affected by the government policies put in place became a major reason for the hindrance of entrepreneurs of SMEs to adopting or adapting technological advancements. This was pointed out by numerous respondents on this study and the "business environment" was explained as the appropriate infrastructures for technological innovation which are often unavailable, the political system which are often comprised of high level of corruption and government regulations and policies which are not implemented or do not play supportive role to entrepreneurs, lack of technology know how due to educational institutions not promoting technological creation (Adeyeye et al., 2018; Eniola & Entebang, 2015a; Nassar & Faloye, 2015a).

Technology Diffusion theory lays down a path for technological diffusion of emerging countries which can assist in their lagging behind in the technology world. According to the technology transfer paradigm, government through education institution must help in the transfer of technology especially domestically. Since educational institutions are cited as major research institutions which are often not motivated by financial gains but by urge to discover something new through research.

The interaction of the government and the marketability of the activities educational institutions (Bradley et al., 2013). Thus requiring a relationship between educational research institutions and the government. (Bradley et al., 2013) suggested that the technological diffusion path do not however follow a linear path as put forward by other researchers of technological transfer (Bozeman, 2000; Bozeman et al., 2015). Yet this relationship does not exist in Cameroon´s educational system to help with the transfer of technology. Several changes must occur to ease success in technology transfer and hence development of an economy and competitive advantage. First the government will have to administer better reward system for university studies to encourage students to be continually involved in research.

As pertaining to the Market climate in the country, Tsambou & Kamga, (2017) in their research also found that many entrepreneurs (36.46%) of SMEs has a poor viewpoint on the business climate in Cameroon. Despite government´s attempts to enhance the business climate, a good proportion of business leaders on both SMEs and Large companies are cautious and nervous about the prospects of their businesses. Especially in the service and manufacturing sectors.

5.4 **Drivers of technological innovation and benefits**

According to Technological Innovation theory by Joseph Schumpeter (Oecd, 2005) often known as the "Schumpeter hypothesis". Technological innovations often lead to the creation of new goods and services in the market, and changes in business processes. Improvement in employment, productivity, growth, and competitive advantage were put forward as impact of technological innovation (Kogan et al., 2017). This advantages can be mirrored in the research findings above were respondents acknowledged how technological innovations such as their use of the social media enabled them create connections with potential partners all over the world. And with the help of their potential partners they do gain competitive advantage locally (Brunswicker & Vanhaverbeke, 2015b).

C. M. Christensen et al. (2016), further explained how it is possible for small and new firms to gain competitive advantage in the economy by using technological innovation. SMEs with innovative mindset end up gaining competitive advantage over large and established firms, in that large firms innovate based on cost-effective clients and ignore a section of the market. Therefore, forgetting a section of the market which are then exploited by SMEs, thus giving them a competitive advantage by providing differentiated products at lower prices (Kumaraswamy et al., 2018). This theory sets a foundation for technological innovation in developing countries´ by entrepreneurs of SMEs.

Entrepreneurs in Cameroon during this research are offering differentiated products and new service to consumers, thus enjoying a competitive advantage in their various fields. Which confirms to the Schumpeterian theory of innovation were innovation can only be called innovation if it brings gains to the one innovating. And innovation leads to the introduction of new goods and services in the market. As stated by respondent 1

"… we are trying to bring engineering solutions to the population, hydraulics in the drilling of boreholes and promoting the use of green energy and we also deal with import and exports of engineering solutions …"

As seen in the above quotation from the interviews, entrepreneurs are involved in assisting in the introduction of new goods and services to solve community problems and the transfer of technology thus confirming to all three theories of innovation used.

In terms of technological innovation, Cameroon has the potential for rapid growth in technological innovation. In that a larger percentage of the population are in the younger age group from 0 to 54 years make up approximately 93.02% of the total population (CIA World Factbook, n.d.) and engaged in some form of entrepreneurial activity . Which have been proven to be the most receptive age group for adoption of new technology. Results from this study shows that all the participants are in that age range and are willing to embrace new technology with added help from the

government. In addition, educational system of the country is stagnant and not progressing to accommodate eagerness for technological adoption. As reported by haliasaccess.org, (2018) only 3% of the country's GDP is spent on education, majority of state owned schools are lacking basic infrastructure and government aid to public and private schools has dropped substantially in the past 10 years. However, the state has tried to improve the teaching approach since 2010 to cultivate "critical thinking skills" through conventions to educate teachers on this new form of teaching.

Comprehensively, my results show that technological adoption has become a dynamic topic for discussion. And in emerging countries it seems to be the force to push them forward to catch up technologically with the rest of the world. However, the findings reveal that besides the zeal for entrepreneurs of SMEs to adopt technological advancements, they are faced by a myriad of obstacles such as the unavailability of basic infrastructures to assist in the adoption of technological innovation. With unstable energy supply, and ICT services in the country. It becomes impossible or hard for entrepreneurs especially for small businesses to embrace new technology. Cause rather than invest a lump sum of their capital for research and development they rather pay for these discrepancies in social amenities. The crown it all, the government does not play a supportive role to address these issues. Projects that merit governmental support are based on a favouritism system rather than benefits to the larger population. Leaving a lump sum of entrepreneurs seeking for foreign investors and partners.

Conclusively, no single theory is enough to elaborately explain the scope of technological innovation in Cameroon as shown on table 8 below. Therefore, all three theories do play a part in the understanding of technological innovation in Cameroon and its inhibiting and supporting factors. However, the scope of innovation in Cameroon are explained with bits and pieces of all three theories of innovation used in this study. Indicators of technological innovation in Cameroon can be seen in the introduction of new goods and services in the market and changes in business processes. Many respondents during this research mentioned how the use of new business processes leads to competitive advantage. The Schumpeterian theory of innovation and the disruptive innovation model explains this pattern of innovation in Cameroon. Where smalls firms are seen to gain competitive advantage in the market by producing differentiated products and service at affordable prices to the sector of the market ignored by incumbents. Some explained how innovation for them the adoption and adaptation of technological innovation is already available in other countries. Technology transfer model as per the literature above explain show advantageous and cheaper for emerging countries to transfer adopt and adapt technology rather than getting involved in technology creation.

Besides the barriers to technological innovation various supporting factors for innovation can be explain as seen in the results of this research. Educational institutions acting a medium for technology transfer was identified by respondents to be the supporting factors of technological innovation in Cameroon. Same as the

availability of human and institutional resources. As the literature on the Schumpeterian theory shows, a transformational mindset of an entrepreneur pushes technological innovation.

Online connectivity is an important element in innovation. Accessibility to the internet reduces communication costs and thereby improving local innovative activities. The advent of the internet broke regional borders, the connection between economic players. Business processes became simpler and quicker so as innovation activities. Internet connectivity has been proven to be most essential in innovative activities than the speed of the internet (Xu et al., 2019). However, the speed of connectivity has been mentioned by most entrepreneurs in this study to hinder innovation and daily lives. The internet being a driving force for most economies nowadays in the innovation process. Internet service providers are required to grant all users with equal network level and speed, such that users could not be diverted or eroded of the service. Given this innovation is an ongoing method of information acquisition and transfer. Therefore, expanding the scope of technical and economic progress. Innovative possibilities improve the probability of seeking social improvements and solutions. Limiting the scope of creativity via restricted internet access would thus hinder the innovation process. As shown in the results of this research, whereby the limitation to the access of the internet and the restriction of some contents affect not only the creativity of entrepreneurs but also their social welfare.

Another aspect which arose during this research is the enabling and hindering role of educational institutions as elucidated in the technology transfer paradigm used in this study. With the increasing connectivity between technological innovation and educational institutions attention has been drawn to educational institutions aiding in the transfer of technological innovation. Higher educational institutions are presently playing active roles in innovation creation, information creation and sharing. Diverse sectors in the economies recognise the value of information sharing and finding partnerships with scientists, not only to improve their knowledge base but also to achieve strategic advantage. However, to encourage partnerships between universities and industries, government and industries financial support are required in resource distribution. Moreover, to promote scientific research and technological growth in universities state policies must provide funding for study projects and assure the distribution of appropriate policies.

Given the above argumentation, no one party can carry out the innovation process. The interdependence on the different players in the economy set the right innovation climate. For instance, universities participate in the training and moulding of entrepreneurs (future) by lecturer who are involved in the knowledge sharing process. Together with government funding to aid in scientific research and cooperation with different industries to promote innovation activities. Same as an innovative entrepreneur with the knowledge needs good innovation climate first provided by the educational institution, then by the government and the industries (in partnership with the universities)

Table 8 Conceptual understanding of concepts and findings

Findings	Indicators	Schumpeterian theory of innovation	Disruptive innovation theory	Technology transfer theory
Focus of innovation	• Increase productivity and efficiency	√		
	• Reduction in cost of producing		√	
	• Increase turnover and finances	√	√	
	• Gaining competitive advantage locally and internationally		√	
	• Introduction of new goods and services	√	√	
	• Technological adaptation and adaptation			√
Supporting Factors	• Educational institutions			√
	• Entrepreneurial mindset (transformational leadership mindset)	√		
	• Interdependence of players in the sector and private sector.			√
	• Resource leveraging		√	
	• Low operational cost	√		
Inhibiting factors	• Energy supply			
	• ICT services			
	• Institutional capabilities (expert experience)	√	√	√
	• Government policies			√
	• Infrastructure		√	
	• Technical knowhow			

6 Conclusion

This thesis was undertaken to consider technical progress in emerging countries. Its implications on the economies of emerging nations and specifically to comprehend the difficulties/hurdles faced by entrepreneurs of SMEs in Cameroon in using technological innovation to foster growth and competitiveness locally and internationally.

Three main objectives were put forward in Chapter 1 of this article; to find out the Technological preferences of entrepreneurs in Cameroon, incidence of technological creativity in SMEs and drawbacks to innovative technologies on SMEs in Cameroon. In addition to meeting the objectives, I answered the various investigative questions (1) What are the qualitative perceptions of entrepreneurs of SMEs in Cameroon on the effect of energy shortage on technological innovation? (2) How do entrepreneurs of SMEs in Cameroon understand and reason telecommunications services and technological innovation? (3) How do government policies hinder technological innovation?

The results validate the following: (1) Entrepreneurs in Cameroon prefer the use of the internet and social media especially Facebook, as the major ways to gain competitiveness in the market locally and internationally. (2) Technological advancements and the provision of internet and ICT services enables innovative technologies. Entrepreneurs of enterprises gain competitive advantage in the form of increased profitability, flexibility, and competitiveness. (3) Government bottlenecks such as providing an enabling environment for business, corruption and poor functioning of its institutions act as hindrances to technological innovation of SMEs.

The opportunity to adapt effectively by creating rewards for quality development and ingenuity needed to build sustainable competitive advantages leads greatly to technological competence and inventions. Nonetheless, SMEs´ low capacity to support the services they need is an obstacle to the growth of domestic technological innovation. Agencies governing SME policies to promote SMEs´ creativity and technological adoption must advance the adoption of technological innovation/diffusion infrastructures because of their ability to boost growth efficiency of SMEs.

Findings from the literature analysed, show that entrepreneurs/individuals and the government all have a role to play in fostering technological innovation in Cameroon. The government playing the greater role in that for technological innovation to strive in an economy there must exist an enabling environment (Foster & Heeks, 2015). Be it through policies and regulations making the business climate good for entrepreneurs or institutions put in place to enhance technological innovation. Another theory analysed from the data was competitive advantage of innovative technologies. Small and Medium sized enterprises in emerging economies experience a myriad of obstacles, with their size, finance availability, infrastructure, and low productivity. However, technological innovations could function as a springboard for these SMEs to gain competitiveness locally and internationally.

In terms of creativity, creative destruction has become a widely used concept. Schumpeter related this to the industrial revolution phase in which the old processes are forced out by ne processes. Innovation is the idea behind this type of explanation. It underlies global development and is a key tool that can be use by economies to achieve stability. Low income and middle-income nations like Sub Saharan African can benefit from this type of innovation. Cameroon for instance, can take the opportunity presented by innovation from emerging countries rather than coming up with new innovations. In the form of technological diffusion as described by many researchers (Bozeman, 2000; Bozeman et al., 2015). Networks and interrelationship between the government and educational institutions will also promote the propagation of technological innovation. Only in extreme cases should technological innovation be initiated from inside the nation (or domestically) to suit the societal needs.

Besides the huge advantages in creativity, most developing countries do not invest in them. Owing to the unavailability of the appropriate training, availability of the tools of innovation such as energy supply and the internet. The introduction of these technologies is not necessary, but the development of new engineering and management expertise for these technologies to local factors and requirements ensures technological competitiveness. Some firms (SMEs) in Cameroon sometimes have inadequacies in technical skills required to make technological innovativeness function at its optimal levels. Due to lack availability of basic amenities and unavailability finances to acquire these skills and technology from abroad.

However, changes in traditional mindsets of the entire population and entrepreneurs is required to ease the adoption of technological innovation. The next generation of emerging technology aims to offer cost saving ways, yet to encourage completely novel approaches of functioning and to fundamentally transform the partnership between individuals and the state. Creative technologies need new mentality. Leaders ought to move their companies to flexible methods of operation to focus on new methods. To do so successfully, leaders should ensure that their employees possesses the appropriate qualifications. They must be prepared not only to welcome emerging technologies but open their organisations to public interactions in new ways that will take them out of their status quo.

Nonetheless, the part played by ICT in innovation is important and the extent to which the usage of ICT in SMEs is embedded allows it to boost the innovation cycle, thus increasing the efficiency considering the cost reduction and cycle rationalisation, to make making it possible for SMEs to welcome creativity and be innovative access to ICT services are paramount. For SMEs to develop a new service or commodity, they need to have access to the internet I order to launch new offer and promote, develop various activities such as digital trade and customer sharing experience, also seeking future alliances. ICT services effectively brings a significant shift in mindset and the way data is handled by SMEs. ICT engages in the disintegration and value-added growth. In addition, ICT enhances decision-making standards and promoting engagement and coordination amongst workers and executives in an organisation.

Finally, the production and execution of technologies is accompanied by ICT, thereby improving the productivity of small and medium businesses.

Tech policies are based on a coherent view of what kind of tech can be used to produce the desired development that can change the economy. Also, for technological innovation to thrive, it needs supportive and dynamic economic policies and institutions. For instance, the Australian Federal Government has instituted more than 1200 grants to innovative initiatives, tax breaks for entrepreneur, programs of assistance to help entrepreneurs and small to medium-sized enterprises to innovate, commercialise and grow. Such programs include tax reward for research and creative ideas, programs for businessmen to get funding and creating networks with investors, just to name a few and non-governmental programs which include, Tech23, iAwards, Optus-Innov8 seed. The US and Japanese government can also be examples of government whom institute programs and policies to encourage SMEs to reduce the structural and financial hurdles (Council, 2009, p. 77). Programs like this would go a long way to encourage innovativeness in SMEs.

The researcher believes that this research will help entrepreneurs of SMEs in Cameroon to reflect on the potential to get involve in technological innovation and transfer to gain competitiveness domestically and internationally. And to look upon the hindrances to technological creativity as a springboard for innovation, instead of a stumbling block. However, for this mindset to be effectively cultivated, the government must make policies that coincide with the countries needs and provide an enabling environment to entrepreneurs for progress and growth. The availability of basic social amenities such as electricity and internet will help open entrepreneurs to a world full of many technological possibilities which can help them increase their productivity and competitiveness. In this light, the government must work hand in hand with educational institutions to provide fundamental training for technological innovation.

Cameroon is well into its early stages of technological innovation and adoption, there is also need for the government to design policies and providing a conducive environment to encourage entrepreneurs to adopt innovation and be innovative, such as investing more in providing the basic social amenities needed to stimulate creativity. For instance, the reformation of the educational system to provide avenues for students to execute research which can contribute to possible innovation. Furthermore, a restructuring of the tax system must be re-evaluated to attract investment both domestically and internationally. Finally, the findings show proof of the obligation for technological innovation in the nation to enhance the progress and productivity of the economy.

Given the impact of the revolution in manufacturing and now the innovation revolution it is pertinent that transformation must take place in educational institutions in Cameroon. In this light, today´s job market needs graduates who have these skills and technical know-how which fulfils societal needs. And the university should help graduates acquire these skills through educational innovation. Innovative educational programs involve advancements in research and technology, technology

in education and technological training. The education sector is supported by evidence as amongst the critical elements of the country's innovative system. Educational institutions who choose innovative base standards produce innovative leaders in the employment market. Hence, Cameroon should embrace changes to its educational programs. By creating a sphere for the convergence of information and knowledge in accordance with the world economy´s demands. Also, forming an educational system that fosters research.

The creation of new and informative technologies in Cameroon´s educational sector would promote science and technology. This is a primary and required prerequisite for the advancement of industrial society, where the architecture of educational programs must be pass on, along with information to potential practitioners on a regular basis. Know-how transforms into fundamentally unfinished technologies to create strength for the socio-economy of the nation. Education and technology are profoundly incorporated in the nation, social life and its degree impacts the quality of living and the probability of substantial economic growth in Cameroon and the world.

Economic forces decide the growth path of higher education; becomes an enabler in the changing of the traditional education systems. The key role of these institutions is ensuring the continuous training of human resources for the profitable use in this constant changing global market space (Mykhailyshyn et al., 2018).

The sustainability of the school system as a force of the national innovative system is reliant on myriads of dependent and independent variables. Dependent factors including the foundation of capital, human capital, and the operational modes. For example, the external factors are the function of policies made by the government (operational environment). The principal concept of digital state strategies in the vocational education sector should be the funding of university education, research, and technologically innovative activities in university institutions. This provides intellect-oriented pattern of the learning process, such that the knowledge and competencies of students become improved in developing knowledge and competencies in innovative activities. Ensuring that they can be exposed to creative technical practices.

In addition to government funding of higher educational institutions evidence proves that governments support to SME innovative programs assists entrepreneurs in the innovative process. It is the role of the state and local authorities to provide vital assistance to SMEs.(Gupta & Nanda, 2015) demonstrate government support for SME innovation in the form of assisting SMEs in the acquisition of state-of-the-art technological equipment, basic social amenities such as road infrastructure, energy supply at affordable rates, and the provision of funds for R&D endeavours go a long way to advance innovation. Thus, the government and politicians in Cameroon should learn to give a supporting role to SMEs.

In addition, a major barrier to the innovativeness of SMEs has been proven to come from red tape and undesirable policies of the government. The necessary environment for SMEs to operate are developed often by key government policy makers. These

policies must be designed in hand in hand with other stakeholders of economic growth like entrepreneurs of both small and large enterprises. Government support for technical growth and creativity of SMEs in Cameroon should be done by the creation of an enabling climate, set up guidelines which are in line with international standards and frequent annual review to ensure conformity to these guidelines. The setting up of technological growth centres, technological consortiums, incubator centres and knowledge exchange networks should be the priority of policy makers in Cameroon.

The financial needs of entrepreneurs have been another barrier to technical progress for SMEs in Cameroon, besides its minor role played in the technical development of the economy. Although, innovative programs can only be supported by continuing financial support by governing bodies. Yet many of the small institutions in emerging countries still lack access to finance. Thus, the speed of technological advancement due to their lack of financial needs are marred. Governments are responsible for providing the necessary finances for the growth and development of their economies. The Cameroonian government should provide this financial security for SMEs providing support for creativity and innovativeness, interest free loan for innovative activities, restructuring of the tax policies to assist organisation to be creative and competitive.

All in all, organisations (small or large) can improve their creative skills to maintain competitiveness within this competitive environment by developing innovative capabilities. Examination of my results shows that competitiveness can be accomplished and preserved by access to necessary capital for innovation-related practices. These resources take ranges from technical know-how, sate-of-the-art equipment, human capital with the necessary skills (i.e. employers with technical skills). Entrepreneurs-managers of SMEs must ensure he availability of these resources which act as an enabler for operational growth. With these absent, many companies will not survive albeit the availability of innovative ideas. On the other hand, initiatives and political strategies accelerate technological innovativeness and competitiveness of SMEs. Political strategies in Cameroon often lead to disadvantageous condition or SMEs to operate. Governments must ease its policies such as tax rebates, provide funding for the training of the workforce via higher educational institution, providing avenues for knowledge sharing and corporation networking of companies.

Conclusively, this study using the qualitative approach to determine the major hindrances to technological innovation of SMEs, found three main hindrances; energy shortage, unreliable internet and telecommunication services and government red tapes. Although other hindrances like finances, technical know-how, technological awareness and knowledge, and the perceptions of the society are not found to be of much significance. All the hindrances are interlinked because without the internet services entrepreneur-manager cannot get the important knowledge of the available technologies for their line of work. And without the appropriate policies in place, even

with creative ideas, much cannot be done. And the government above all must provide thee appropriate policies to enable creativity.

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Appendix

Appendix I: Map of Cameroon showing border countries and its ten regions

Appendix II: Sample interview questions (same questions were used for the survey).

Research Topic: Hindrances to technological innovation of SMEs in Cameroon.

Topic Sentence

Technological innovation is the process where an entrepreneur/corporation/business starts a journey in which technology is seen as a critical source for market competitiveness. In simpler term, it sees technology as a way of improving market price of goods or services. For instance, internet of things (IoT), Fintech (financial technology, e.g. mobile banking), block chain, virtual reality (VR) and artificial intelligence (AI). It includes Digitalisation, which is the implementation of projects that involve digital technologies in the business process. For example, Digital marketing via social media. For example, google, Facebook, WhatsApp, 3D printers, Softwares)

Aim of study

The aim of this research is to investigate the hurdles experienced by entrepreneurs of small and medium sized enterprises in Cameroon technological innovations. To further make known the availability of alternative innovative technologies to entrepreneurs to foster their competitiveness and growth. Furthermore, this research will enlighten policy makers and governments on the necessary areas to invest taking advantage of technical advances by SMEs in Cameroon.

Ethical Concerns

Upon your participation in this research anonymity is guaranteed both in keeping your answers confidential and identity. Nothing discussed during the interview will be disclosed to any third party. All the information collected during this interview will serve its sole purpose; only for this study. Participation for this research is voluntarily and you are at liberty to withdraw from this study at any stage during this research. Taking part in the study do include audio recordings and will be safe guarded to protect respondents.

1. How can you rate the **ease of access** involved in obtaining a business license in Cameroon?

Very easy	Easy	Indifferent	Difficult	Very Difficult

2. How many **employees** do you have in your organization?

100 and above employees	
51–100 employees	
1–50 employees	

3. Are you aware of the **availability of the different technologies** that can make your business grow? Exemplify if possible.

4. What technologies do you **currently use** for your business process?

5. What **new technology** will you like to implement in your business process?

6. With the above-mentioned technologies in use what **effects on your business' productivity** do you wish to achieve?

7. What **added advantage**s will the new (not yet in use) technologies bring to your business process?

8. What **hindrances do you face that prevents** you from using the new technology in your business process?

9. What kind of existing technological innovation do you prefer to use in your day to day activities of your enterprise?

10. Based on the barriers to technological innovation can you explain how these affect your activities?

11. In the case of Cameroon in particular, what are the barriers to technological innovation? Please explain

12. What role does energy shortage play to hinder technological innovation or diffusion in your opinion? Please be as explicit as possible

13. What role does the telecommunications services play with technological innovation? Please provide details.

14. How does government policies, business environment hinder the use of innovative technologies for SMEs in Cameroon? Can you please give examples?

15. What impacts does technological advancement have on your business operations?

16. What clear proposals can you recommend for the government to improve your use of technological innovations?

Availability of finances	
Better internet services	
Provision of technology materials	
Training programs for tech awareness	