

Determinants of Firm Growth: The Case of Sachet Water Firms in Minna, Nigeria

¹Usman Baba Isah, ²Zubairu Umaru Mustapha, ³Dauda Abdulwaheed, ⁴Ibrahim Sojeko, ⁵Bilkisu Mohammed Ovosi, ⁶Ekanem Ediuku

^{1, 2, 3, 4} Department of Entrepreneurship and Business Studies, Federal University of Technology, Minna, Nigeria.

⁵ School of Vocational and Technical Education, Department of Business Education, Federal college of Education, Zaria, Nigeria.

⁶Department of Business Administration, Nile University of Nigeria.

Email : babasokomba@gmail.com , uzubairu@gmail.com , d.waheed@futminna.edu.ng , sojeko200658@gmail.com , ovosibilqees@yahoo.com , ekaniem1@gmail.com

ABSTRACT

Purpose: The objective of this study was to analyse the influence of Entrepreneurial Infrastructure (EI) on profitability of Sachet Water Firms (SWFs) in Minna.

Design/methodology/approach: This was done through the use of personal interviews for collection of qualitative data from owners/managers of SWFs. Population of the study included all the 165 SWFs in Minna and the sample size was 10 which was determined by interview saturation point. Thematic analysis was used in analyzing the transcribed audio recordings of the interviews conducted.

Findings: Findings revealed that there is EI deficit in Minna, which has led to increased expenses on provision of alternative EI by SWFs and has increased their operational costs thereby reducing their profitability.

Research limitations/implications: Firstly, with thirty-six states in Nigeria, findings of this study, covering the Capital of only one of the States (Niger) cannot be generalized for the entire country, rather it must be taken within the context of the region covered. Secondly, only one industry out of many that make up the Nigeria economy is selected for investigation. Thirdly, the researcher was faced with the negative attitude of some respondents who were not willing to participate in the research or provide the needed data for analysis. Lastly, not all the SWFs in Minna were included in the study, only those that have operated for up to three years were included. Future studies can bridge this research gaps by carrying out research in other parts of Nigeria on the same subject matter.

Practical implications: Findings of this study would be of help to the existing SMEs in Nigeria, particularly the SWFs in further understanding the complexities of the infrastructural challenges militating against their growth and how to overcome them.

Originality/value: This study contributes to the body of knowledge on the nexus between EI and general performance of SMEs.

Paper type: Research paper.

Keyword: Entrepreneurial infrastructure; qualitative data; profitability; sachet water; thematic analysis.

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I. INTRODUCTION

Sachet water is a phenomenon that has gained widespread acceptance in Nigeria as an alternative to the erratic pipe-borne water supply system of the government (Dzodzomenyo et al., 2018, Adefemi & Azeez, 2019). It is an alternative that is readily available and affordable (Adefemi & Azeez, 2019). The increasing rise of Sachet Water Firms (SWFs) is largely due to the government's inability to provide adequate, potable and safe drinking water for the populace (Dzodzomenyo et al., 2018). Sachet water (popularly known as "pure water") is a low-cost treated and purified drinking water packaged in sealed polyethylene bags (sachets) and customised for sale to the general public at a profit (Cohen & Ray, (2018), Iduh et al., (2018), Marie Regina Kansole & Beidari, (2020). During the dry season in Nigeria, about 70% of adults drink, at least, a sachet of water per day, this highlights the huge market potentials of the industry. SWFs create employment opportunities and reduce poverty amongst those involved in the business. They also play complementary roles of ensuring availability of relatively clean, potable and safe drinking water, thereby reducing incidences of water-borne diseases and filling the gap created by the inefficiencies of government (Musa & Aileku, (2017), Daramola et al., (2019). All these have had a significant positive impact on the nation's economic growth and development, but not without some critical challenges.

There are so many determinants of growth for Small and Medium Enterprises (SMEs) in Nigeria, chief among them is Entrepreneurial Infrastructure (EI), which is the focus of this study. Sachet Water Firms, just like other SMEs in Nigeria are suffering from EI deficit (Baraya, Sani, & Joshua, 2020). They are experiencing limited access to financial support services, inadequate training facilities for manpower development, exploitation by tax officials, irregular supply of electricity, bad roads, poor water supply and unfavourable government policies (Abdullahi et al., (2015), Ajayi, (2016), Battistella, Cagnina, Cicero, & Preghenella, (2018), Ormazabal, Prieto-Sandoval, Puga-Leal, & Jaca, (2018). These challenges have led to the firms' reduced profitability, reduced efficiency and productivity, weaker competitiveness and relatively poor quality of products and services. It has also made some firms to incur heavy losses or even business closure (Akinyemi, Alarape, & Erinfolami, 2018). However, despite these overwhelming challenges, the sachet water firms in Minna (the capital city of Niger State, Nigeria) are managing to survive. A sustained growth of the industry is crucial for the economic development of Niger State (Anunobi & Zubairu, 2015). In view of the industry's strategic contributions to the economic development of the State despite the myriad of challenges, it is deemed necessary to investigate and understand how the existing SWFs in Minna are dealing with the challenges of EI deficit and how it is influencing their growth.

The objective of this study was to analyse the influence of Entrepreneurial Infrastructure on the growth of sachet water firms in Minna, using profitability as the growth indicator. Central Research Question (CRQ) is: How does EI influence profitability of sachet water firms? The scope of this study is limited to analysing the influence of EI on profitability of sachet water firms located in Minna. Minna is selected because the existing literatures reviewed have not focused enough on how EI influences profitability of SWF in Minna. This study hopes to address this sample gap. Furthermore, the scope of this study covers only those SWF that are profit oriented. The period under review is three years (i.e. 2016 - 2019), therefore, the firms included in this study have operated for not less than three years.

II. LITERATURE REVIEW

A. Entrepreneurial Infrastructure

Entrepreneurial Infrastructure is defined as the facilities and services, existing within a geographical area, which facilitates new venture creation and the growth of existing SMEs (Galkina & Kock (2011), Kanamugire & Ndayishimiye (2015), Medaković & Vasković (2017). The role of context is key in conceptualising EI because, what constitute EI in one industry or geographical location might not constitute the same in another. According to (Bliemel, Flores, De Klerk, & Miles, 2019), EI is made up of three components, namely: 1) proprietary functions; 2) public resource endowments and; 3) institutional arrangements that regulate entrepreneurship (Bliemel et al., 2019). Additionally, Stam & Ven, (2018) agreed with the three components of EI as conceptualized by Bliemel et al. (2019)b, they however added a fourth component to it which they referred to as, market demand for products and services offered by entrepreneurs (Stam & Ven, 2018). Lastly, according to Kanamugire & Ndayishimiye (2015), EI is made up of 14 components, namely: financial support, training, education, network connectivity, assistance with tasks, market, access to physical infrastructure, cultural and social norms, entrepreneurship policy, physical resources (industrial parks, business incubators including roads and water infrastructure), additional knowledge, information and communications technology, R&D centres, high-technology (Kanamugire & Ndayishimiye, 2015)k. Over the last two decades, there has not been consensus on the number of services

and facilities that constitute EI (Cole, Elliott, Occhiali, & Strobl, 2018). In view of the fact that EI takes into account both physical and non-physical infrastructures (Sánchez Bazán, (2015) this study has broadly categorized the components of EI into two, namely: physical and non-physical infrastructure (Kanamugire & Ndayishimiye (2015), Islam & Hyland (2019), Bagheri, Shojaei, & Tayebi Khorami (2018), Skorobogatova & Kuzmina-Merlino (2017).

B. Firm Growth.

Firm growth is the increase in size of a firm over a period of time (Rajapathirana & Hui (2018), Angel, Jenkins, & Stephens (2018). The contention amongst scholars is exactly how this 'increase in size' is measured. For example, a year-by-year comparison of a firm's annual sales turnover, annual profit, market share, productivity, number of employees and number of customers have all been used as indicators of firm growth (Megaravalli & Sampagnaro (2019) Andersén & Samuelsson (2016), Prasetijo, Zhang, Zainal, Musa, & Guntor (2018). Chappell & Jaffe (2018) argued that even increased customer satisfaction as well as increased skills and knowledge gained by an employee are considered as indicators of firm growth.

A review of extant firm growth scholarship revealed that these studies can be categorized into two main groups based on the *source* utilized to obtain the firm growth information: the Objective Approach (OA) group and the Subjective Approach (SA) group. The OA group is made up of studies that obtained firm growth information from audited financial statements and other verifiable sources of information (Fowowe (2017), Torkkeli, Nummela, & Saarenketo (2018), Robichaud, Cachon, & McGraw (2018), Guerrero-Villegas, Sierra-García, & Palacios-Florencio (2018), Prasetijo et al. (2018), while the SA group obtained firm growth information by asking the owners and other key firm stakeholders to give their perception regarding the past growth or future growth potential of the firm (Fadda, (2018), Matta, Appleton, & Bleaney, 2018), . Based on the papers reviewed, the three most widely used indicators of firm growth by the OA group include profit growth, sales growth and number of employees (Nasip et al., (2017), Fowowe, (2017), Prasetijo et al., (2018) . However, most of the studies used a combination of these indicators to measure firm growth (Angel et al., 2018). In obtaining data on these indicators, especially of large firms, financial statements like balance sheets, income statements, records of cash flows and other verifiable documents like annual reports have been used by various scholars (Guerrero-Villegas, Sierra-García, & Palacios-Florencio, (2018), Prasetijo et al., (2018) . As for the SA group, they focused on surveying or interviewing key decision makers (owners, top level managers and middle managers) in the firm regarding their perception of the firm's growth (Chan, Ngai, & Moon, 2017). Typically, these studies asked these key stakeholders about the firm's past growth (Rostamkalaei & Freel, 2016) or about future firm projections (Ho & Mauro, 2014). Profitability was adopted as the growth indicator for investigation in this study.

Due to this study's focus on SMEs, the subjective approach of measuring firm growth was adopted, as opposed to the objective approach. This is because of the following reasons: there is poor record keeping culture among most SMEs which makes it difficult for researchers to access data on the financial and non-financial activities of the firms (EZEAGBA, (2017), Ajibade & Khayundi, (2017); owner/managers of SMEs are reluctant to release sensitive information to outsiders for fear of it being used against them by competitors or the government for the purpose of personal or corporate tax (Fadda, 2018) owners/managers of SMEs are generally more willing to provide subjective evaluation of their firms' performance because it allows them to provide a more holistic measure of their firms' growth indicators and not all growth indicators can be measured using objective approach, examples include customer satisfaction, skills or knowledge gained by an employee and owners/managers' level of satisfaction in terms of their firm's success (Eveleens, van Rijnsoever, & Niesten, (2017), Chappell & Jaffe, (2018). Furthermore, the objective approach is characterised with some weaknesses which include the fact that there is the likelihood of misinterpreting some objective data, for example, a firm's growth may be considered as "poor" if the financial records revealed losses or low profit, but such firm may have deployed resources in long term capital investments for future growth (Robichaud et al., 2018); financial records do not exactly reflect the variety of an entrepreneur's goals (Torkkeli et al., 2018); and lastly, records only show past activities, they do not explain future growth potential of the firm (Rajapathirana & Hui, 2018)

This study adopted the Exogenous Growth Theory which emphasises that, firms' competitive advantage roots in the external environment (Li & Pang, 2010). The theory assumed that, external environmental factors have a great influence in determining firm growth (Chauvet, Chollet, Soda, & Huault, (2011), Adegbite, (2012), McBride, (2014), Mansour, (2017), Olarinde & Yahaya, (2018).

III. METHODOLOGY

A qualitative means of data collection and analysis was adopted for this study. This method allowed for the extraction of a more detailed response from the respondents, multiple perspectives on the same issue and the creation of a solid foundation for drawing conclusions (Sigurðardóttir, 2018)(Oteng-Ababio, Owusu, & Asafo, 2019). The population of this study included all the 165 sachet water firms in Minna, registered with the Association of Table Water Producers of Nigeria, Minna branch. Sample size of 10 interviewees was determined by the interview saturation point. This is because there is a consensus among scholars that, data saturation is achieved when input from further interviews do not continue to generate new information (Aguboshim & Miles, 2018) (Basuki Dwisusanto, Lianto, & Sigit Arifin, 2019). Most scholars suggest between 10-15 interviews to reach saturation point (Nascimento et al., 2018)(Siddiquee, Xavier, & Mohamed, 2019). Saturation point for this study was reached after the tenth randomly selected respondent was interviewed. This study used primary source of data collection which involved the use of personal interviews (face-to-face conversation between the researcher and the respondents) where semi-structured questions were asked in order to collect data from the interviewees. Pilot interviews were conducted using five randomly selected firms. The interview sessions which lasted for an average of eight minutes each, were audio recorded with the permission of the interviewees on the condition of anonymity. The audio recording of each of the interviews were transcribed and thematic analysis was carried out on the transcripts to ensure validity and reliability of the instrument. Thematic analysis of the pilot study revealed findings which necessitated modification of the initial questions developed for the study.

Thematic analysis was used in analysing the transcribed audio recordings of the interviews conducted involving ten randomly selected sachet water firms. The interview sessions which lasted for an average of eight minutes each, were audio recorded with the permission of the interviewees on the condition of anonymity. This study followed “Braun and Clarke's six phase process of thematic analysis” (Saylor et al., 2018). The process began with producing a verbatim transcript from the audio recordings and, reading the transcript from a non-critical standpoint just to become familiar with the data. In the second phase, the transcript was re-read after which codes were assigned to the data. Phase three involved the search for patterns, commonalities and identification of themes. The fourth phase involved reviewing and refining of the identified themes. The fifth phase of the analysis involved defining and naming the themes identified. In the last phase of the thematic analysis, a presentation of the thematic findings was done. Finally, in order to ascertain reliability of the instrument for data collection, the first and second responses of the interviews conducted within an interval of one month were collated and analyzed. Findings of the thematic analysis of the interviews revealed that the instrument is consistent, predictable, and therefore reliable.

IV. RESULTS AND DISCUSSION

A. Demographic Characteristics of the Interviewees.

Beginning with gender distribution of the owners/managers of the sachet water firms investigated. It was found that 80 percent of them were male and 20 percent were female. On the age of the firms, 45 percent of the firms have operated for between 8-11 years, while 35 percent of them have operated for between 4 to 7 years. However, 10 percent of the firms appear highly experienced in the business as they have operated for more than eleven years and, the last 10 percent of the firms are relatively new, for they have only operated for 3 years. As for the number of employees of the firms, 50 percent of them have employee range of 10 to 19, followed by 35 percent of the firms whose number of employees range between 20 to 29. The relatively smaller of the firms investigated constitute 15 percent of the firms having between 1 to 9 numbers of employees. In analyzing the geographical location of the firms by LGAs, findings revealed a higher concentration of the firms in Chanchaga LGA with 75 percent of them being located in Chanchaga LGA, while the remaining 25 percent are located in Bosso LGA. The next demographic characteristic for discussion is the firms' location, this revealed that majority of the firms investigated, exactly 70 percent of them operate from their headquarters, while 20 percent of them have between 1 to 3 branches and only 10 percent of the firms have between 4 to 6 branches nationwide. The Position occupied by the interviewees was the last demographic characteristic investigated, 85 percent of them were managers of the firms while the remaining 15 percent were owner/managers of the firms.

B. Influence of Physical Infrastructure on Profitability of SWFs

In investigating how physical infrastructure influenced the profitability of SWFs in Minna, the two components of physical infrastructure adopted for this study (water supply and road infrastructure) were used as the sub-themes for analysis, beginning with water supply then road infrastructure. Ten owners/managers of

SWFs were interviewed to know how public water supply by Niger State Water Board (NSWB) has influenced profitability of their firms. It was found that water, apart from being the key raw material for the production of sachet water, the one supplied by NSWB was cheaper, easier to process, more hygienic, more appealing to the customers and guaranteed higher profitability for the SWFs. Fortunately for two of the participants in the study, P1 and P2, due to the location of their firms and a special arrangement for connection to an industrial line, they enjoy relatively constant water supply to their firm. P1 said, *"Most times when public electricity is stable, we get uninterrupted water supply and our production goes smoothly"*. P2 also concurred by saying that *"NSWB has helped to increase our profit, if we don't have supply from them we don't have any alternative"*. However, four of the participants, P5, P8, P9 and P10 were not connected to NSWB at all. In the words of P5, *"the number one factor that is affecting us is the issues of cost of water, because we buy water from NSWB tanker drivers, put it in our tanks after which filtration process take place"*. He continued, *"here, we don't have connection to water board, we only buy from them in tanks"*. The remaining four participants that were connected to NSWB, P3, P4, P6 and P7 had a few hours supply at least once or twice a week. According to P4, *"the supply is not regular"*, P6 referred to the supply as *"very very poor"*. In order to cope with this challenge of inadequate water supply, P1, P3, P5, P9 and P10 all rely on the use of motorised boreholes as alternative source of water. P2 and P8 buy from NSWB water tankers, while P4 and P6 use their company's water tankers to buy water from NSWB. Lastly, P3, P7, and P10 patronise the commercial water tankers as alternative to the supply from NSWB. In the words of P7 *"we buy water from commercial water tankers but very costly, we are just using that one to keep our loyal customers"*. According to P3 *"All these alternative sources are extra costs for the business as they increase operational cost of the business and reduce profitability"*.

As for how road infrastructure has influenced the profitability of SWFs in Minna, it was found that, the cost of product distribution to customers constituted a great concern to the owners/managers. Most of the roads are in a deplorable condition making it difficult for them to reach out to some of their customers, especially those in the remote areas. According to P1 *"some areas are not accessible for our big vehicles, that is why we acquired these smaller vehicles (HIJET) to be able to penetrate the interior parts of Minna where our customers are located"*. He continued *"unfortunately, smaller vehicles would have to make multiple trips to cover what big vehicles can deliver in one trip, this involves extra cost for the firm and reduces our profit"*. As for P2, *"where the roads are not accessible we use motorcycles"*. P9 also commented that *"the roads in Minna have affected our profitability in a negative way in the sense that the profit we are supposed to make have always been spent on fuel and vehicle maintenance"*. P2 further said that *"we use to have a lot of leakages or damage of water in transit due to bad road."* 9 of the interviewees expressed concern on how the state of the roads has negatively affected their profitability except P3 who does not see it as a problem, he is of the opinion that, *"the roads are fairly good, i don't think road is a factor that affect our profitability because no matter how you want it you must maintain your vehicle"*.

C. Influence of non-physical Infrastructure on Profitability of SWFs

In order to analyse how non-physical infrastructure influenced the profitability of SWFs in Minna, the two components of non-physical infrastructure (electricity supply and financial support services) were used as the subthemes for analysis, beginning with electricity supply then followed by financial support services. Results of the interviews conducted revealed a general dissatisfaction among the interviewees on how the public electricity supply by Abuja Electricity Distribution Company (AEDC) has negatively influenced the profitability of their business. Majority of the interviewees (9 out of 10) felt that the impact is very poor. It has not really helped to facilitate the desired increased profitability of their businesses in the last three years. However, P1 held a contrary view; he said *"well, so far so good, we use 33kva here to power our operations"*. That special line gives the firm a relatively constant power supply from AEDC. As for those that have expressed negative impact, according to P5 *"The biggest of our problem in this factory is light"*. P3 also said *"when there is power failure, we run on generator which is an extra expenditure for us"*. Unfortunately, P7 added, *"using generator increases our cost of operation"*. He continued, *"the voltage of electricity they supply to this area is not enough to power my machines"*. Low voltage is a huge problem for some of the interviewees hence the compelling need to use private power generators which comes with its own challenges. P3 could not agree any less, he said, *"when using generator, the voltage is not always stable, it is fluctuating which easily damage our machines our electrical appliances and lead to expenses for maintenance and replacement"*. All these are ways through which operational cost of the SWFs have been increased over the last three years leading to reduced profitability of their business. As for the alternative sources of power to the SWFs, all the interviewees have different sizes of generators used to generate power. In addition to the use of generators, P8 uses solar power to support the generator.

Interviews conducted to assess how financial support services influenced the profitability of SWFs in Minna revealed that, 7 of the interviewees have never benefited from any form of financial support from the

government or any other institution, so, no impact has been felt on profitability of their businesses. In the words of P2 *“since we started many years ago, we have never benefitted from any loan or grant by either government or private organization, so, no impact”*. 2 of the interviewees declined to make any comment on the finances of their business and, the last interviewee (P1) had once benefited from a loan facility, he said, *“we got loan from Bank of Industry on a single digit interest and it has really helped because it was a long term loan*. On how the SWFs have been raising funds to finance the operations of their businesses. It was found that all of them raised their funds largely through ploughed-back profits. In addition to this however, P3 relied on friends and income from other investments and P1 also additionally got funding through loans and personal savings.

D. Influence of EI on Profitability of SWFs

This sub-section summarises the findings of how physical and non-physical infrastructures influence profitability of SWFs in Minna. Availability of EI has been found to be a veritable tool for increased profitability and sustainable growth of SWFs. Its shortage in supply however has led to increased expenses on provision of alternative sources of EI and has increased the firms' operational costs thereby reducing their profits. For example, only a very few of the SWFs surveyed have relatively constant water supply, majority of them either do not have connection to the public water source or are suffering serious shortage of supply. Most of them also find it difficult to reach out to their customers especially those in remote areas owing to poor state of the roads which has increased their cost of fuelling, vehicle maintenance and repairs. Electricity is another challenge, only one of the firms enjoys relatively constant electricity supply, the remaining nine are battling with low voltage and irregular supply. Finally, all the interviewees have never benefited from any financial support in form of loan or grant either from government or any institution except one. Conclusively, the perceived impact of EI on the profitability of SWFs is generally poor.

E. Discussion of Findings

This study examined the influence of EI on the growth of SWFs in Minna, using profitability as the firm growth indicator. The study's Central Research Question (CRQ) was: how does EI influence the profitability of sachet water firms in Minna? Findings revealed the perception of the interviewees on the critical role of EI availability in guaranteeing cost minimisation and increased profitability of their business. Findings suggest a general EI deficit which has not only increased cost of production and distribution of products, but has also reduced profitability and slowed down the growth rate of the SWFs in Minna. Conclusively, the perceived impact of EI on the profitability of SWFs is generally poor.

V. CONCLUSION AND RECOMMENDATIONS

A. Managerial implications

This study's finding has shown that the concept of entrepreneurial infrastructure varies from context to context, particularly when a developed country context is compared with a developing country context. In developed countries, basic infrastructure like good roads, steady electricity and constant water supply are things that have been taken for granted for over a century and thus would not constitute infrastructure that would determine the quality of entrepreneurship in a region. However in this study's context of Minna, Niger state which is a classic example of a developing country context, these basic infrastructure are not present and as such, it is vital for firms to provide them by themselves, and are thus integral parts of entrepreneurial infrastructure.

Findings have also shown that owners and managers of SWFs in Minna are facing critical EI deficit which is having a negative consequence on their profitability and, of greater concern is the non-physical infrastructure. This implies more expenses on non-physical infrastructure than on physical infrastructure. It also implies general increased operational expenses which reduces profitability and slows down growth rate. By implications also, the findings of this study makes the owners and managers of SWFs not only to be aware of the extent of EI deficit in Minna but also the strategies and alternative means to overcome the deficit. What owners and managers of SWFs outside Minna metropolis can learn from this is that while endogenous factors (like managerial competence, customers, creditors and some other factors) have their roles in facilitating firm growth, improved availability of EI is also a critical factor that facilitates firm growth. They can also learn from the strategies being adopted by those in Minna to cope with the challenges of EI deficit.

B. Limitations and Suggestion for Further Research

This study is not without its peculiar limitations. Firstly, with thirty-six states in Nigeria, findings of this study, covering the Capital of only one of the States (Niger) cannot be generalised for the entire country, rather it must be taken within the context of the region covered. Secondly, only one industry out of many that make up the Nigeria economy is selected for investigation. Thirdly, the researcher was faced with the negative attitude of some respondents who were not willing to participate in the research or provide the needed data for analysis. Lastly, not all the SWFs in Minna were included in the study, only those that have operated for up to three years were included. Future studies can bridge this research gaps by carrying out research in other parts of Nigeria on the same subject matter. Further studies could also explore other industries not covered by this study or, the endogenous factors that influence the profitability of SMEs since this study has explored some of the exogenous factors. Despite these limitations, this study contributes to the body of knowledge on the nexus between EI and general performance of SMEs.

C. Conclusion and recommendations.

Until and unless the Nigerian government ensures that basic infrastructure becomes completely reliable and available for all business, the dream of a thriving entrepreneurial culture that will serve as the engine of sustainable economic and social growth will remain just a dream. History has shown that all economies that have successful entrepreneurial cultures have taken these basic infrastructure for granted and have begin to focus on more advanced entrepreneurial infrastructure that truly gives businesses sustainable competitive advantages. Nigeria is far away from achieving the level of advancement. First things first, get the basic infrastructure right first and then true entrepreneurial progress can begin.

Based on the findings of this study, the following recommendations have been suggested to help in facilitating increased profitability and general firm growth. Firstly, it is recommended that Niger State Government should ensure connection of reticulation pipes to all parts of Minna and ensure constant water supply to all parts of the town. Secondly, existing roads (especially the ones leading to interior parts of the town) that are in a deplorable condition should be repaired and new ones should be constructed to facilitate products distribution and accessibility to business premises. Thirdly, public power supply should be completely privatised and properly regulated by the government to guarantee uninterrupted power supply. Lastly, government should increase SMEs' access to funding by supporting them through provision of grants and interest free loans.

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