

Digital Technologies for Business Sustainability in Nigeria: An Empirical Analysis

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Abstract

Advances in Information and Communication Technology (ICT) are rapidly transforming the way most things (Social, Economic, Political etc) are done. Business growth and sustainability now greatly depend on the deployment of digital technologies. Adapting digital technologies to businesses in Nigeria is imperative at a time like this. Digital technologies are electronic tools, systems, devices and resources that generate, store or process data. Digitalization, digital transformation, and digital technologies have a lot of potential for organizations' environmental, administrative, economic, and social sustainability, and they can be applied to a variety of enterprises. This paper is aimed at investigating theoretically and empirically how Micro, Small and medium enterprises (MSMEs) in Nigeria have fared over the period 1990 to 2020 using Ordinary Least Squares (OLS) technique. The results showed that access to electricity and cellular subscription had a positive and statistically significant impact on SME contribution to Gross Domestic Product (GDP). The SME output however had a negative and insignificant impact on SME contribution to GDP against apriori expectation. The paper concludes with recommendations to businesses to access digitization and well as to government to improve access to electricity in a bid to improve SMEs in Nigeria.

Keywords: Digital Technologies, Digitization, Digitalization, OLS, MSMEs.

Introduction

Technology is about innovation and innovation in business is all about doing things differently in order to provide better products, solutions and improved services to customers. Technology is not just useful for day-to-day operations; when used effectively, it can also help businesses develop and succeed. Successful businesses do not view technology simply as a way to automate processes, but instead use it to open up new ways of doing business (Grant, 2017). Micro, Small and Medium scale Enterprises (MSMEs) must adapt to changing conditions, develop and implement plans for incorporating or integrating digital technologies into their business processes in order to preserve their current level of competitiveness in the world today, if they must meet the demands of their customers.

Digital technology includes all electronic tools, automatic systems, technological devices and resources that generate, process or store information (HPC, 2021). A business transformation is therefore digital when it is built on a foundation of digital technologies (Wade, 2015). Digital technologies have advanced faster than any other breakthrough in history, reaching nearly half of the world's population in barely two decades and revolutionizing industry and society as a whole (United Nation, 2020).

Following the important role played by MSMEs in Nigeria's process of industrialization and sustainable growth they are accorded serious recognition. (Obokoh, 2008; Oladimeji & Muhammed, 2017). MSMEs make up the largest proportion of businesses all over the world and are significantly important in generating employment and improving living standards while also reducing the menace of imported inflation via imported goods (Ojeka and Mukoro, 2011). MSMEs are generally referred to as enterprises with up to 250 employees. MSMEs are responsible for driving innovation and competition. To reposition MSMEs in Nigeria, the Central Bank of Nigeria (CBN) launched the MSME Development Fund in 2013. All of these and more are done to improve the output capacity of MSMEs as well as the employment figures in Nigeria. have these statistics improved significantly? What can be done to improve them using digital technology? All these and more will be answered in this work.

Statement of the problem

As a business owner, preparing for the unexpected is crucial and there are so many variables and risks that one should take into consideration if your business must survive. Good infrastructure like electricity and access to cellular subscription must be available to improve MSME contribution to Nigeria's growth. Covid-19 was (and still is) a good example of pandemic that created an immense amount of challenges for business owners, especially those that have businesses within the tourism, hospitality, and entertainment industries. Business owners who employed business survival techniques were considerably more likely to cope with the pandemic and keep their firms running. Business survival strategies are a wide range of different strategies and tactics that business owners make use of to give their businesses the best chance of survival when challenges arise. The techniques that are offered will vary based on whatever business professional you speak with and the dynamics of your company. There are a plethora of business survival techniques to choose from. The key is to figure out what works best for you.

In Nigeria, SMEs contribute 48% of national GDP, account for 96% of businesses and 84% of employment. Despite the significant contribution of SMEs to the Nigerian economy, challenges still persist that hinder the growth and development of the sector. This paper shall present an econometric analysis using OLS on how effectively MSMEs has contributed to economic growth considering the use of some digital technologies like cellular phones and access to electricity.

Research Questions

This research is guided by the following questions

- a. How has MSMEs contributed to employment generation in Nigeria?
- b. How has the introduction of digital technologies in businesses helped to improve their contribution to national economic growth?
- c. What hindrances are making some MSMEs in Nigeria unable to access digital technologies?

Research Objectives

Literature Review

Conceptual Issues

Digitization

Digitization is the process of converting information from analogue format to digital format. Examples of digitization practice are scanning a paper document, Convert music to mp3, Convert wet signature to electronic and Converting a paper map into digital form. Digitization is of crucial importance to data processing, storage and transmission, because it "allows information of all kinds in all formats to be carried with the same efficiency and also intermingled" (McQuails, 2005). Though analog data is typically more stable, digital data, has the potential to be more easily shared and accessed and, in theory, can be propagated indefinitely, without generation loss, provided it is migrated to new and stable format. Digitizing or digitization entails representing an object, document, image or an analogue signal by a discrete set of its sets (Dinesh, 2021). Memos written and photos of charts and items sold in a business can all be represented digitally. Such as we have digitized forms or scanned items in an e-commerce website.

Digitalization

The process of digitalization, which represents a full revolution of society and economy, as well as a fundamental precondition for enterprises to survive on domestic and international markets, is one of the recent global economic trends according to Ernad & Atif (2021). It is the process of using digital technologies to change the way people live and do business. Digital transformation (Digitalization) is more than just adopting new software, technologies, and procedures that are more efficient and automated than traditional business practices and processes; it's also a completely new and inventive method of doing something that is important to your company's operations.

The term "digitalization" refers to the process of using digitized data and technologies to enable, enhance, and alter corporate operations in order to change how firms conduct business and boost productivity. Even if these processes and interactions do not totally rely on digital technologies, but they do rely on digital technologies more heavily than they did previously. We are surrounded by digitalization. whether it's through social media, street advertising, or smartphone apps. Digital data has become an essential component of our daily life.

Theoretical Framework

The endogenous growth theory by Romer posits that improvement in productivity can be tied directly to faster innovation and improved investment in human capital, maintaining that economic growth is primarily a result of internal rather than external forces. A country's economic growth can be hastened if she engages in research and development funding as well as intellectual property rights and education. The endogenous growth theory reveals

that the spillover effects from investment in technology in a knowledge-based economy generates high returns and play an important role. Telecommunication and software development are particularly revealed as very important. (Liberto, 2020). The Endogenous growth theory holds that investment in human capital, innovation and knowledge are significant contributors to growth. (Wikipedia, 2022) The theory therefore calls for policies that support openness, change, competition and innovation.

Empirical review

The literature on the impact of technological advancement on SME growth is quite scanty, especially literature on econometric analysis. Slightly abounding are literature of SME contribution to economic growth of Nigeria.

However, Akinwale, Adepoju and Olumu (2017) studied the impact of Research and Development (R7D) expenditure, product and process innovation on SME performance in the manufacturing industry in Nigeria using least squares on a survey of 1000 SMEs. Their study revealed that R&D expenditure has significant impact on firms performance and spending will increase profitability and generate employment.

Durowoju (2017) studied the impact of technological change on SME performance in Lagos state. The study was done with a view to study the ability of SMEs to accept new innovation methods that will increase productivity and revealed that technological change had a positive and significant impact on SME performance in Lagos state using descriptive survey and Analysis of variance (ANOVA).

Otugo, Edoko and Ezeanolue (2018) in the work on the effect of SMEs on economic growth declared a dreath in literature on SME impact on economic growth. Their study revealed a positive impact on SMEs on economic growth using Ordinary Least Squares (OLS) technique.

Following the scanty nature of literature on the impact of harnessing digital technologies on SMEs sustainability, it is expected that this study will be more of a foundation in that aspect.

Harnessing Digital Technologies for Business Sustainability

Technology is not only required for day-to-day business operations; when harnessed correctly, it can also help businesses achieve growth, survival and great success. In developing countries, like Nigeria, Small and Medium Enterprises (SMEs) have lower ICT adoption rates and face different challenges compared to their counterparts in developed countries. According to highlights of Grant (2017), technological support for business growth and success can amongst others be seen utilizing:

- a. digital technologies for effective marketing
- b. productivity software to reduce costs & improve customer service
- c. mobile technologies

Some current or modern digital technologies that can be harnessed by several businesses in Nigeria as listed by Honest Prons & Cons (2021) are:

- i. Online Buying and Selling
- ii. Smartphones
- iii. Blockchain technology
- iv. Banking and Finances
- v. Social media
- vi. Digital gadgets like laptops, tablets and so on
- vii. Clouding computing
- viii. Voice Interfaces or Chat-Bots
- ix. Video streaming
- x. Drones and Missiles

When businesses in Nigeria or even the world at large does not harness any of the DTs, over a period of time the business will begin to die away. It will not be able to survive the competition against the companies that are harnessing one or more DTs. The need to adopt DTs for the survival of any business in Nigeria cannot be overemphasized.

Challenges to Harnessing Digital Technologies

The application of digitization, digitalization, the use of ICTs (Information and Communication Technologies) and the interaction of digital technologies in business: processes, activities, models leads to the digital transformation of any business and may ultimately become completely digital (Diana & Radka, 2021). Digital transformation is more than just adopting new software, technologies, that means that when embarking on a digital transformation project, businesses must evaluate everything, including employees reaction to the change, effect on customer relations, the cost, and its' connection with corporate objectives. Digital transformations enable companies to take their businesses into the future, positioning them to compete and expand into new markets. However according to Nguyen (2021) and Bucy et al (2016), 70% of all digital transformation programs fail due to employee resistance and lack of support from management and only 16% of employees said that their company's digital transformation efforts improve their performance or are sustainable. However, there are some factors that stand as challenges to harnessing digital technologies for businesses in Nigeria and thereby affecting their sustainability.

a) Employee Reluctance to Change During Digital Transformation: Humans, by nature, prefer routines because they make us feel safe. That is the reason it is called the "comfort zone". When our habits are disrupted and uncertainty enters our lives, things may quickly become bleak. Employees may feel endangered as a result of undergoing a digital transformation, which is the essence of discomfort. It is vital to remember, though, that change is sometimes necessary to keep up with the times, because staying the same is riskier. Digital transformation is vital to your company (Jabil, 2022).

b) Complex Software & Technology: Enterprise software is inherently complex. New technologies can be intimidating. This is a large challenge for organizations undergoing digital transformation – both from an implementation and data integration perspective, as well as from an end-user experience perspective. Business owners should consider this when in the early stages of a transformation project, and seek out the most intuitive, integrated systems.

c) Digital Transformation Strategy: Why are you opting for new digital solutions over legacy systems and manual processes? Do you have a plan (or a need) to develop advanced and complex systems in your company? Are you prepared to move your present systems to new ones properly? All of these questions should be addressed before embarking on a digital transformation project. Without a predetermined strategy, there is no such thing as a successful transformation project. Do not be duped by buzzwords and incorrect assumptions. Know where your company can improve, what areas need to be upgraded, and where you should start.

d) Scarcity of Appropriate IT Skills: You'll need a skilled, high-performing IT workforce to succeed in your transformation initiatives. And putting that together is difficult, especially given the present tech worker shortage. According to a business survey (CIO Survey, 2020), 54 percent of companies are unable to achieve their digital transformation targets due to a lack of technically trained staff. Organizations face issues such as a lack of cybersecurity, application architecture, software integrations, data analytics, and data transfer skills. Outsourcing this work to outside consultants and digital transformation experts might help organizations that lack IT personnel overcome the implementation and migration gap.

e) Budgetary Restrictions: Digital transformation is not a low-cost endeavor. Scope creep can cause firms with a poor transformation strategy to push back deadlines and add on new work, all of which adds to the project's cost. When you factor in any consulting work, changes in your customer's expectations, or IT failures, the cost of digital transformation keeps rising. Understand your long-term objectives and the return on investment you expect from your change. This can assist you determine what expenditure is excessive and where you have room to increase your budget.

f) Mindset of Culture: Business organizations with legacy systems and manual procedures are prone to adopting an antiquated mindset. Things move slowly, automation is frowned upon, and at adopting new technologies is tough. One of the most difficult aspects of digital transformation is cultural change. Everyone, from the top down to new hires, must be on the same page. Everyone should be prepared to make significant adjustments in their daily life and should not be scared to master new skills.

Methodology, Presentation and Analysis of Results

Methodology

The model for this study is given by

$$\text{SMEC} = f(\text{SMEO}, \text{AEL}, \text{CELS}) \quad \dots 3.1$$

Where

SMEC = SME contribution to GDP as a percentage

SMEO = SME output

AEL = Access to electricity

CELS = cellular subscription

In mathematical form equation 3.1 becomes

$$SMEC = \theta_0 + \theta_1 SMEO + \theta_2 AEL + \theta_3 CELS + \varepsilon \quad \dots 3.2$$

The Error correction model is given by

$$\Delta SMEC_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta SMEO_{t-1} + \sum_{i=1}^p \beta_{2i} \Delta AEL_{t-1} + \sum_{i=1}^p \beta_{3i} \Delta CELS_{t-1} + \varepsilon_{t-1}$$

where ε_{t-1} is the error correction term of the long run model and P is optimal lag length for each series.

Using the augmented Dickey-Fuller (ADF) unit root test, the stationarity of each series was determined. Secondly, the variables are tested for co-integration using the Johansen co-integration procedure to determine the long run relationship among the variables of interest. The least square technique was used to estimate a long run and short run model and its long run error correction model to determine the speed of adjustment after a shock.

Presentation of Results

The data was analyzed using Eviews 9. First the ADF unit roots tests produced results summarized below.

Table 3.1: Augmented Dickey-Fuller Unit root tests

Variables	ADF computed value at level	5% Critical value	ADF computed value at 1 st difference	5% Critical value	Conclusion
SMEC	-0.083104	-2.963972	-5.25570	-2.967767	I(1)
SMEO	3.154669	-2.967767			I(0)
AEL	-2.691433	-2.981038	-4.736806	-2.981038	I(1)
CELS	3.132583	-2.963972			I(0)

Source: Author's computation on Eviews

SMEC and AEL are found to be stationary after first difference while SMEO and CELS are stationary at level. The Johansen cointegration test was done and revealed the existence of long run relationship among the variables. The optimum lag length was also ascertained to be 2.

Table 3.2: Summary of Johansen co-integration result

Hypothesized no. of CE(s)	Eigen value	Trace statistic	5% Critical value	Prob	Max-Eigen statistics	5% critical value	Prob

None *	0.85662 2	91.1274 2	47.85613	0.000 0	56.3257 9	27.58434	0.0000
At most 1 *	0.48997 4	34.8016 5	29.79707	0.0122 4	19.5255 4	21.13162	0.0826
At most 2	0.40645 3	15.2761 1	15.4947 1	0.053 9	15.1275 2	14.2646 0	0.036 4

Note: * indicates presence of at most one co-integrating equations at 5% level

Source: Author's computation on Eviews

Since integration has been established both the short and long run model analysis will be done. First is the long run regression result in table 3.3 below.

Table 3.3 Long run regression result

Dependent Variable: SMEC				
Method: Least Squares				
Sample: 1990 2020				
Included observations: 31				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
SMEO	-2.33E-06	1.17E-05	-0.199215	0.8436
AEL	0.972762	0.108303	8.981897	0.0000
CELS	1.22E-07	1.35E-08	9.031214	0.0000
C	-30.17044	4.518696	-6.676802	0.0000
R-squared	0.972520	Durbin-Watson stat		1.601121
Adjusted R-squared	0.969466			

Source: Authors extraction from E-views

The long run result above revealed that access to electricity and cellular subscriptions have positive and significant impact on SME contribution to GDP. For 1% change in access to electricity, SME contribution to GDP increased by 0.97%. Similarly for every 1% change in cellular suscription, SME contribution to GDP increased by a very tiny amount. These tiny values reveals the need for increased access to electricity as well as cellular subscription by SMEs. This will contribute to growing SME contribution to GDP positively as revealed by the analysis.

SME output is revealed as negative and not statistically significant in its impact on SME contribution to GDP. This is against apriori expectation. The values are also quite low. The constant term is significant and has a relatively huge negative impact on SMEC. This tells that more variables can actually be added to the analysis. The output of SMEs in Nigeria needs to be increased very seriously for the impact to be felt more.

The model used explained about 98% of causes of variations in SME contribution to GDP.

Table 3.4 Short run regression result

Dependent Variable: D(SMEC)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D((SMEO)-1)	3.49E-06	4.34E-06	0.803526	0.4292
D((AEL)-1)	0.166553	0.119000	1.399612	0.1739
D((CELS)-1)	7.01E-08	3.84E-08	1.827662	0.0796
C	0.846884	0.415551	2.037976	0.0523
ECM(-1)	-0.154654	0.164151	-0.942144	0.3551
R-squared	0.149382	Mean dependent var		1.465896
Adjusted R-squared	0.013283	S.D. dependent var		1.520688

Table 3.4 is the parsimonious ECM of the model. It reveals that the model returns to equilibrium after a disturbance at a rate of 15%. This is however not statistically significant.

Conclusion

The impact of harnessing digital technologies is significant for any business growth and sustainability. The empirical analysis has shown the need to improve accessibility to digitalization through increased cellular subscription. Electricity is also a major factor in the digitalization process as without adequate electricity the process will be hindered.

All of the advantages of a digital transformation are within reach with a philosophy of continual development and innovation. Digitalization is all around us; whether it be via social media, outdoor advertising, or mobile applications. Businesses must simply face the issues when they arise and do their best to prepare ahead of time. Business organisations in Nigeria need to be agile in harnessing digital tools to enhance their digital transformation and thereby boost their sustainability.

Recommendation

Based on the findings and analysis on this paper, the following are recommendations:

- Invest in a Platform for Digital Adoption. Sufficient on-boarding, training and support should be provided for staff.
- Government need to engage mobile service providers to provide better services to her populace to increase access to cellular connectivity which will help SMEs put their businesses on digital platforms.
- Engage the services of a digital transformation consultant to give business owners and staff peace of mind
- Government must be seen doing all it can to improve access to electricity for her citizens. Equipment need to be upgraded so as to meet adequate provision of electric power in Nigeria.

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