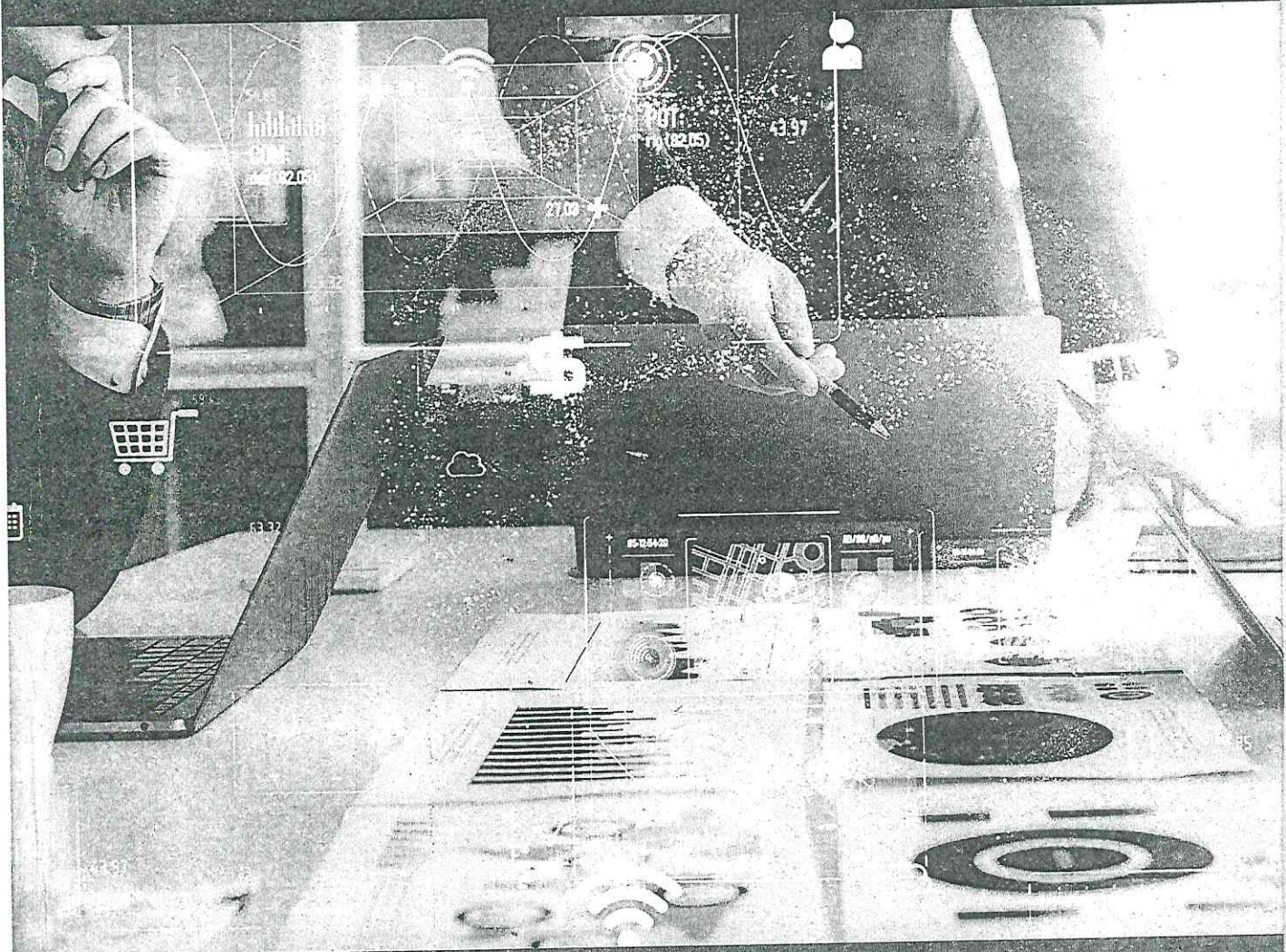


ICT AND ENTREPRENEURSHIP IN INFORMATION

Perspectives From Developing Digital Economies



Edited by
Adeyinka Tella

ICT AND ENTREPRENEURSHIP IN INFORMATION Perspectives From Developing Digital Economies

Edited by

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The University of South Africa*



Ess Ess Publications

New Delhi

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ISBN : 978-81-947398-3-8

Price : Rs. 2500/-

First Published 2021

Published by:

Ess Ess Publications

4831/24, Ansari Road,

Darya Ganj,

New Delhi-110 002, INDIA

Phones: 23260807, 41563444

Fax: 41563334

E-mail: info@essessreference.com

www.essessreference.com

Cover Design by *Patch Creative*

Printed and bound in India

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Preface

Entrepreneurship has been considered a fundamental catalyst for enhancing economic development. The rapid advances taking place in information and communication technologies in the developed countries are seen as a potential vehicle for enabling the participation of poorer countries in the global information revolution. No doubt the drive for entrepreneurship in the most developing digital economy or the so-called developing countries that are embracing technologies is very high.

Information and communication technologies offer the potential to solve the pressing problems of human and economic development in areas of health, education, poverty alleviation, rural development, and care of the environment. In the developed countries, emerging technologies are having a dramatic impact on the growth and development of the enterprise sector, and particularly within small and medium enterprises. Enterprises are adapting rapidly to new forms of communication, organisation and new methods of doing business, and a wide range of new information-based industries have been established. Now with various entrepreneurship activities; when you add technology to the mix, a whole new facet of possibility is birthed.

The increase in mobile phone access and the introduction of smartphones have also increased access to the Internet. This development has changed our vocabulary by introducing us to new phrases like "Disruptive Technology" which is a term that describes new ways of doing things thereby overturn traditional methods and results to practices using technology e.g. mobile phones, have replaced the old table-top telephones disrupting the Telecommunication sector. The presence of mobile phones, big data, Artificial Intelligence, robotics, and the Internet of things and the Internet has created new sectors, given rise to new enterprises and small scale businesses and provided jobs for many while also impacting entrepreneurship and business models.

This book, therefore, involves discussions on how information and communication technology has enabled entrepreneurship in information and expand the small scale information businesses. The book explains how information professionals, through ICT, can be self-employed and besides, create employment. It provides several case studies from the developing digital economies (developing countries) point of view. The book contains twenty-six chapters covering different perspectives on entrepreneurship in information based on various authors' experiences. The authors were drawn from eight

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Entrepreneurship and Digital Transformation: Leveraging on Technological Advantages in Nigeria

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ABSTRACT

The entrance of technology into our day to day lives has grown exponentially over the past decade and the digitisation process has redefined the possibilities of entrepreneurship. This technological advancement powered by information and communications technologies (ICTs) tools led to digital transformation (DT) of business operations in organisations and ushered in the digital economy. This chapter examines the meaning of entrepreneurship, types, an overview of entrepreneurship development in Nigeria, role of entrepreneurship to economic development in Nigeria, concept of DT, advantages, technologies driving DT in organisations, barriers to DT in organisations, benefits of ICTs on entrepreneurship, the impact of DT on entrepreneurship, benefits of DT on entrepreneurship, entrepreneurial development: leveraging on cutting edge technology in Nigeria, barriers to the digital transformation of entrepreneurship in Nigeria and implication for the information profession/practitioners. It concludes that leveraging on cutting edge technology for entrepreneurial activities by entrepreneurs in Nigeria will transform the sector, improve operational efficiency, herald new business opportunities; and launch in the digital economy fully.

Keywords : Digital transformation, Entrepreneurship, Information and Communication Technology, Nigeria

INTRODUCTION

The world as we know it, is continually changing, and one of the fundamental drivers is digital transformation (DT). Also, the global economy is undergoing DT, and this is happening at breakneck speed (Deloitte, 2020). Unarguably, these technological developments, advance infrastructure, the advent of the Internet and deployment of ICTs tools created opportunities and a wide variety of tasks in all fields of human endeavours; revolutionised the entire operational process of organisations; changed how initiatives

and activities are conducted in the business environment and connect with customers (Mwangi, 2016; Giones & Brem, 2017; and Kraus, et al., 2018). Consequently, the entrance of technology into our day to day lives grew exponentially over the past decade and the digitisation process re-defined the possibilities of entrepreneurship (Organisation for Economic Co-operation and Development / European Union (OECD/EU), 2019).

DT is a foundational change, a phenomenon transcending the globe, influencing the business activities of companies, and delivering value to their customers (Grab et al., 2019). It is the changes that digital technology causes/ influences in all aspects of human life; brings advantages, opportunities, and creating new challenges (Stolterman & Fors, 2004; and Jurgielewicz, 2019). Equally, DT is a technology-induced change on many levels in the organisation that includes both the exploitation of digital technologies to improve existing processes and the exploration of digital innovation, which can potentially transform the business model (Barann et al., 2019). This implies that the DT of business operations and activities in organisations signalled a new dawn for entrepreneurship, entrepreneurial activities, and heralded new business opportunities.

Without a doubt, this boundless cornucopia of technologies is producing too many choices for business, government, industry, and consumers. Thus, DT is not just about Internet 'unicorns'. It is all about using the latest technology to do what you already do but better (Deloitte, 2020). DT is the complete networking of all sectors of the economy and society, the ability to collect relevant information, analyse, and translate that information into actions (Jurgielewicz, 2019). Antonizzi and Smuts (2020) suggested that organisations were able to gain competitive advantages through DT by simultaneously lowering their expenses, innovating, and becoming more organised and competent. This rapid transformation occasioned by digitisation of operations did not only affect information handling procedures in organisations, re-shaped approach to the work environment, but has equally witnessed a permanent shift in the way businesses market their products and services (Mwangi, 2016).

Furthermore, technology has changed the way companies operate. For example, OECD/EU (2019) reported that virtually every organisation/business concerns has had its operations digitally transformed as a result of the availability of portable Internet-enabled smart devices like laptops, smartphones, iPhones and cell phones, thus, making it easy to get connected with the world around us; act as a portal to vast amounts of information and knowledge which can be accessed with ease. Jurgielewicz (2019) stated that DT launched the digital economy, impacting greatly on the society and different segments of the economy - manufacturing, IT, healthcare and medical services, pharmaceuticals, education, retail, agriculture and entrepreneurship. Undoubtedly, the computerisation of operational processes in business organisations, mobility, cloud computing, Internet of Things (IoT), augmented reality, social media, health pandemic and decentralised public ledgers of transactions like blockchain drew enterprises/entrepreneurship to digital customer engagement and ICTs enabled processes (Giones & Brem, 2017).

implies that the digital transformation of business operation in companies did not only focus on the exploitation of technology to improve operational efficiency but also on its exploration for further innovation potentials.

Entrepreneurship is the cornerstone of the free enterprise system and entrepreneurs are vitally important to the economic health of a nation (Global Entrepreneurship Institute (GEI), 2020). It is the totality of activities that leads to taking a risk in mobilising factors of production vis-a-vis land, capital, labour, enterprise, and information in precise combinations towards the production of goods and services for consumers; the process of discovering new ways of combining resources (Afolayan et al., 2020; Sobel, 2019). According to Yusuf and Albanawi (2016), entrepreneurship is described as the ability of an individual or a group of individuals to create/discover an opportunity and utilise it to the benefit of the society, which, in turn, will bring success to the innovators and their organisations. Hussain et al (2011) bolstered this point by inferring that entrepreneurship is a process of actions of an entrepreneur - a person always in search of something new and exploits such ideas into gainful opportunities by accepting the risk and uncertainty with the enterprise.

Entrepreneurship begins with an idea and opportunity analysis. Accordingly, it plays a major and vital role in the economic development of the society such that new businesses help bring innovations to the market, create the bulk of new net jobs and act as an engine of productivity and growth (OECD/EU, 2019). Vineela (2018) defined entrepreneurship as an activity that consists of identifying ideas, utilising opportunities, converting these ideas and opportunities into useful goods and services; in the long run, adding value to them, taking a risk, and obtaining rewards. Similarly, Patankar and Mehta (2014) stated that entrepreneurship is a consistent process of being inspired, adventurous and prepared; it plays a vital role in economic development and brings significant changes in the economies of the market.

Unarguably, technological advancements brought diverse innovations into entrepreneurship. For instance, the Internet and ICTs made many tools available to traditional entrepreneurs and also opened up an entirely new place to do business (Samuel & Joarprasatha, 2015). Similarly, Swaramarinda (2018) observed that DT is changing the traditional entrepreneurship models. As a result, it brings the society new challenges related to reducing production and management costs using digital economy platforms, with a radical increase in the efficiency of companies, industries, and educational institutions to withstand global technological, economic, and social challenges (Afonasova, 2018). Thus, implying that technology has changed the face and process of entrepreneurial practice and it is creating employment opportunities. Also, studies have shown that technology has changed the way organisations operate. For instance, Jurgielewicz (2019) stated that smart devices and social platforms are strongly influencing business to consumer (B2C) communication methods. Similarly, Jagongo and Kinyua (2013) claimed that technologies are opening new communication channels with

customers. Samuel and Joarprasatha (2015) affirmed that technological adoption is gradually transforming entrepreneurship from a transactional relationship to a social relationship. Equally, in Nigeria, the Internet, coupled with the emergence of different social networking sites like Twitter, Facebook, LinkedIn, Skype, Instagram, Whatsapp, YouTube, and discussion forums, are re-shaping the approach of entrepreneurs to entrepreneurial activities. This implies that entrepreneurs now exploit fully the tech-benefits of the digital transformation of business operations.

Additionally, the debut of the 5th generation mobile *network*, a new global wireless standard after 1G, 2G, 3G, and 4G networks designed to serve consumers and digitalisation of industries is connecting virtually everyone and everything including machines, objects, and devices. This new communication technology brings new capabilities that will create opportunities for people, businesses, and society. Consequently, in order not to be left behind in the scheme of things, there is a need for the Nigerian government to create favourable environmental conditions and incentives that will ensure the seamless transition of notable high-tech businesses, which are a key source of economic growth and a driver of DT. Without mincing words, leveraging on technological advancement for entrepreneurship development portends a diverse range of strategic business opportunities for Nigerian entrepreneurs. However, preliminary investigations showed that the majority of entrepreneurs in Nigeria are not exploiting technology to improve their operational efficiency, and neither are they exploring technology for digital innovation potentials which can potentially transform their business model and herald new business opportunities. It is against this background that this chapter will focus on examining entrepreneurship and digital transformation: leveraging on technological advantages in Nigeria.

In this chapter, the focus will be on:

- Meaning of entrepreneurship.
- Types of entrepreneurship.
- Entrepreneurship development in Nigeria: An overview.
- Role of entrepreneurship in economic development in Nigeria.
- Concept of digital transformation.
- Advantages of digital transformation on Organisations.
- Benefits of digital transformation on Organisations.
- Technologies driving the digital transformation in Organisations.
- Barriers to digital transformation in Organisations.
- Benefits of ICTs on Entrepreneurship.
- Impact of digital transformation on Entrepreneurship.
- Barriers to the digital transformation of Entrepreneurship in Nigeria.
- Entrepreneurial development: Leveraging on cutting edge technology in Nigeria.

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- Digital transformation: Implication for the information profession.
- Conclusion.

MEANING OF ENTREPRENEURSHIP

The concept of entrepreneurship has been in our modern society for thousands of years and in the history of economic study, the word has been overused and in some cases underused (GEI, 2020). *Entrepreneurship involves such a range of activities and levels of analysis that no single definition is definitive* (Lichtenstein, 2011 as cited in Swanson, 2017). Thus, entrepreneurship, as a concept, was first established in the 1700s, and the meaning has evolved ever since. However, many simply equate it with starting one's own business, while most economists believe it is more than that (U.S. Department of State, 2007). Entrepreneurship is a human activity and an instrument through which an entrepreneur converts valuable and technological information into products and services (Hussain et al., 2011). According to Brooks (2009), as cited in Swanson (2017), entrepreneurship is the process of pursuing opportunities without limitation by resources currently in hand. Amiri and Marimaei (2012) remarked that entrepreneurship involves innovation, development, recognition, seizing, and converting opportunities to marketable ideas and values while bearing the risk of competition. Equally, Jarillo (1990) stated that entrepreneurship is a process by which individuals (either on their own or within organisations) pursue opportunities. This implies that entrepreneurship ranges in scale from solo, part-time projects to large-scale undertakings that involve a team and which may create many jobs.

Entrepreneurship is not bound to economics and business but instead, display divergent meanings depending on the context. It is the art or science of innovation and risk-taking for profit in business, the quality of being an entrepreneur (OECD/EU, 2019). To Hoppe (2016), entrepreneurship is a tool for organisations and governments to implement changes in different societal systems such as education. Also, Pahuja and Sanjeev (2015) claimed that entrepreneurship referred to the process of creating something new with value by devoting the necessary time and effort; bearing the associated financial, psychological and social risks; and receiving the resultant rewards of monetary nature, personal satisfaction, and independence of decision making. Similarly, Cuervo et al (2007) remarked that entrepreneurship can be conceptualised as the discovery of opportunities and the subsequent creation of new economic activity, often via the creation of a new organisation. Swanson (2017) averred that entrepreneurship is a field of business that seeks to understand how opportunities to create something new (products, services, markets, production processes, raw materials) and new ways of organising existing technologies arise, and are discovered by specific persons, who then use various means to exploit or develop them, thus producing a wide range of effects.

Entrepreneurship is a key driver of today's economy while an entrepreneur is an agent of change; someone who organises, manages, and assumes the risks of a business

or enterprise (Sobel, 2019). Anyadike et al (2012) stated that entrepreneurship is one the most powerful economic forces to humankind; it is empowering individuals to seek opportunities where others find intractable problems. According to Subrahmanyam (2019), it is the mere act of being an entrepreneur, undertaking innovations, investments, and business insights in an attempt to transfer resources into economic goods and services (tangible or intangible). In their opinion, Glancey and McQuaid (2000) stated that entrepreneurship is the symbol of business tenacity and achievement; a vital source of change in all facets of society. Hussain et al (2011) affirmed that entrepreneurship plays an influential role in the economic growth and standard of living of any nation and offers some potential routes out of unemployment. Thus, entrepreneurship encompasses various activities which are carried out to ensure the survival and growth of the business (UK Essays, 2018).

Mostly, entrepreneurship is often associated with true uncertainty, particularly when it involves the creation of a novel good or service, for a market that did not previously exist, rather than when a venture creates an incremental improvement to an existing product or service. Consequently, Hussain et al (2011) established that entrepreneurship is made of innovation, technology, and economic growth. Ranjan (2019) remarked that entrepreneurship involves a fusion of capital, technology, and human talent. Equally, Yusuf and Albanawi (2016) submitted that entrepreneurship has been considered as the engine of economic growth and it has come to be perceived as a catalytic agent for expansion and promotion of productive activities in every sphere of economic life all over the world. Ugoani and Ibeonwo (2015) stated that it is the process of creating value by pulling together a unique package of resources to exploit an opportunity. This implies that entrepreneurship consists of the process of creating something new and assuming the risks and rewards. However, all these activities associated with entrepreneurship bring forth economic and social development.

Furthermore, entrepreneurship entails the ability to identify the resources, perceive their economic potential, willingness to utilise these resources, and to invest in their development deferring immediate rewards in favour of future investments. Thus, it is a process through which individuals identify opportunities, allocate resources, and create value (Anyadike et al., 2012). Equally, Stevenson and Subrahmanyam (2019) described entrepreneurship as a process where individuals use organised efforts and means to pursue opportunities, create value and grow by fulfilling wants and needs through innovation and uniqueness, regardless of available resources. Also, Mokaya et al (2012) explained that entrepreneurship is the dynamic process of creating incremental wealth by individuals who assume major risks in terms of equity, time, and/or career commitment of providing value for some products or services. This implies that entrepreneurship is about the execution of ideas and entrepreneurial activities differ substantially depending on the type of organisation and creativity involved.

Undoubtedly, entrepreneurship has emerged as the most potent economic force the

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Entrepreneurship is one of the most important factors for individuals to seek economic growth. In many countries, investments, funds and services (OECD, 2000) stated that entrepreneurship is a vital source of innovation and offers a wide range of opportunities that encompasses all aspects of the business.

Entrepreneurship, particularly in the digital age, is not previously understood as an existing form of entrepreneurship. It is remarked that entrepreneurship is a talent. Equally, entrepreneurship is considered as the primary agent for economic life all over the world, creating value by taking the risks and bringing forth new opportunities.

Entrepreneurs perceive and invest in their ideas. Thus, it is a process, and create (Thomas et al., 2019) described entrepreneurship as a process and means to create needs through innovation. Kaya et al (2012) stated that entrepreneurship is a mental wealth and/or career. It implies that entrepreneurship activities differ from other economic activities. The economic force the

world has ever experienced over the years. Consequently, Swanson (2017) concluded that entrepreneurship typically operates within an entrepreneurship ecosystem which often includes government programmes and services that promote entrepreneurship; support entrepreneurs and start-ups; non-governmental organisations such as small business associations and organisations that offer advice and mentoring to entrepreneurs (through entrepreneurship centres or websites); small business advocacy organisations that lobby the government for increased support for entrepreneurship programmes and more small business-friendly laws and regulations; entrepreneurship resources and facilities (business incubators and seed accelerators).

TYPES OF ENTREPRENEURSHIP

Having alluded to the varied definitions given by scholars on entrepreneurship, it would be important to note some of the several types of entrepreneurship. These include:

(a) **Digital entrepreneurship** : This refers to the creation of digital businesses and the adoption of digital technologies by existing entrepreneurs. It involves creating new ventures and transforming existing businesses by developing novel digital technologies and/or usage of such technologies (Thomas et al., 2019). Digital entrepreneurship holds the potential of helping to make entrepreneurship more inclusive (OECD/EU, 2019). It can facilitate business creation for many individuals because it often has lower barriers to entry than traditional entrepreneurship.

Besides, DE includes the digitalisation of entrepreneurs and small-medium enterprises (SMEs) that is the adoption of mobile and cloud computing technologies, social media, and big data by entrepreneurs and SMEs, as well as the share of firms' revenue derived from e-commerce. It creates jobs and growth opportunities for the future. Examples of digital entrepreneurship include Google, Facebook, Microsoft, and Apple. These organisations not only revolutionised the entire business world but also shaped the way we communicate with each other in everyday life (Kraus et al., 2018).

(b) **Social entrepreneurship** : This refers to recognising social problems and achieving a social change by employing entrepreneurial principles, processes, and operations. It is all about making research to completely define a particular social problem and then organising, creating, and managing a social venture to attain the desired change. The change may or may not include a thorough elimination of a social problem. Social entrepreneurship focuses mainly on creating social capital without measuring the performance in profit or return in monetary terms. It may be a lifetime process focusing on the improvement of the existing circumstances. The entrepreneurs in social entrepreneurship are associated with non-profit sectors and non-government organisations that raise funds through community events and activities. But this does not eliminate the need of making a profit. After all, entrepreneurs need capital to carry on with the process and bring a positive change in society. Examples of social entrepreneurship ventures are environmental problems (plants for the treatment of waste products), Child

Rights, and women empowerment foundations.

(c) **Business entrepreneurship**: This refers to taking a lead to open up a new business or diversifying the existing business. Examples include Confectionary business, Block-making industry, Food vending, and Agro-allied.

(d) **Serial entrepreneurship**: This refers to an individual who often comes up with an idea, gets things started, but then gives responsibility to someone else and move on to a new idea and a new venture (<http://www.businessdictionary>). A serial entrepreneur is one who continuously comes up with new ideas and starts new businesses. The serial entrepreneur is represented as possessing a higher propensity for risk, innovation, and achievement (Balachandran & Sakthivelan, 2013).

(e) **Lifestyle entrepreneurship**: This refers to an individual creating a business around the kind of lifestyle you want. It is not that you work in your business and then come home and live. Your business supports your life and allows you to create freedom while making an impact on people's lives. A lifestyle business usually allows flexibility in your schedule and location. It's a type of business that can be operated from anywhere in the world.

(f) **Ethnic entrepreneurship**: The term "ethnic entrepreneurship" refers to self-employed, business owners who belong to racial or ethnic minority groups in a country.

ENTREPRENEURSHIP DEVELOPMENT IN NIGERIA: AN OVERVIEW

The National Directorate of Employment (NDE), the lead federal government agency charged with creating decent employment opportunities for the nation's teeming unemployed persons was established in November 1986. It began operations fully in January 1987 with a visible presence in all the states of the federation. The birth of the Directorate was predicated on the effects of the economic recession of the '80s which led to a drastic reduction in capacity utilisation and consequent outright closure of industries in Nigeria. Equally, other macro-economic policies of the government of the day such as structural adjustment programme (SAP), devaluation of the Naira, privatisation, and commercialisation of the economy, amongst others, resulted to massive job losses in both the public and private sectors of the economy.

According to the Annual Report of the NDE (2013), the unemployment rate had risen from 4.3% in 1985 to 7.0% at the beginning of 1987 because of the situation earlier stated (National Directorate of Employment (NDE), 2020). Thus, as a direct response to the rising trend of unemployment, the then military government headed by General Ibrahim Babangida, set up a committee headed by Mr. Stephen O. Chukwumah which was later to be popularly referred to as the Chukwumah Committee. The Committee was charged with the task of proffering a sustainable interventionist solution to mitigate the rising levels of unemployment in Nigeria. The Committee established that the informal sector of the national economy constituted about 90.0% of the total workforce and it was populated by operators and employees who were mainly low, semi, and unskilled. This unique situation

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thus placed skills acquisition and training on the front burner of employment creation.

Consequently, following the report of the Chukwumah Committee, the Federal Government established the NDE under decree No. 29 of 1989. This was replaced with ACT, CAP 250 of the Laws of the Federal Republic of Nigeria, 1999 (NDE, 2020). To fulfil her statutory mandate, the NDE introduced four (4) major areas of intervention for mass job creation for the unemployed as vocational skills development; entrepreneurship development; agricultural skills training; and public works programme.

However, currently in Nigeria, entrepreneurship activities span through diverse sectors of the economy all culminating into small and medium scale enterprises in areas such as:

- Agricultural/agro-allied activities (foodstuffs, restaurants, fast food vending).
- Solid minerals (quarrying, gemstone cutting/ polishing, and crushing engineering).
- Power (power generation and transmission).
- Haulage business (cargo and passengers).
- Information and Telecom business (mobile/ smartphone repairs, printing, and selling of recharge cards, selling of mobile phone accessories).
- Hospitality and Tourism business (hotels, accommodation, resorts centres).
- Film and Home video production.
- Oil and Gas sector (construction and maintenance of pipelines, drilling, refining by products).
- Pure water production sector (production of nylon, printing).
- Confectionaries (Bakery, cake making).
- Environmental and waste management business (refuse collection and disposal, recycling, drainage/ sewage construction).
- Events management.
- Financial banking services (banking, insurance, and stock trading).
- Engineering (machine and tools fabrication).
- Building and construction (plan and design services and material sourcing).
- Fashion designing and tailoring business.

Nevertheless, the advent of technology brought unprecedented expansion into entrepreneurship practice in Nigeria to cover new areas such as cyberpreneurship, infopreneurship, computer repairs, and mechatronics, amongst others (NDE, 2020; Ugoani & Ibeenwo, 2015; and Anyadike et al., 2012).

ROLE OF ENTREPRENEURSHIP IN ECONOMIC DEVELOPMENT OF NIGERIA

The role of entrepreneurship in the economic development of any nation is indispensable. Thus, increasingly, it is attaining a central phenomenon in contemporary

society; permeating all institutions; the most important aspect of the market economy and has an important role to play in the development of a country (OECD/EU, 2019). Some of the ways entrepreneurship can contribute to the economic development of Nigeria include:

1. Job creation: Entrepreneurship creates job opportunities for entrepreneurs and other job seekers thereby reducing the unemployment rate in a country. This singular act of job creation by new and existing businesses is one of the basic goals of economic development. In Nigeria, President Muhammadu Buhari since 8 June 2016, launched public sector initiatives such as the N-Power and N-Business schemes set up by the federal government to address the issues of youth unemployment and help increase social development. Also, lately, the special public works (SPW) programme which was designed to create 774,000 jobs across the nation to further tackle youth unemployment was launched by the Minister of State for Labour. In the private sector, the Tony Elumelu Foundation, a leading champion of entrepreneurship development in Africa with the objective of empowering women and men in Nigeria and Africa, is catalysing economic growth, driving poverty eradication, and ensuring job creation. Consequently, all of these programmes and many more are at the forefront of generating lots of job opportunities and job creation of job opportunities. Thereby, helping in augmenting the standards of entrepreneurial activities to what obtains globally.

2. Creativity and innovation: The desire to produce new products and create new services are always the driving force behind entrepreneurship and one of its major advantages is that it promotes creativity (the act of conceiving something original/unique) and innovation (implementation of something new). Also, the identification of a market niche and the creation of new markets is the product of innovation and creativity, a role played by entrepreneurs towards economic development. Accordingly, an increase in innovation leads to improved technologies, which are deployed in the production of large quantities of quality goods and services.

3. Improvement of the standard of living: The standard of living of a country is usually determined by the per capita income (the amount of wealth, goods, and services available to people, especially of the lower socio-economic class). At the forefront of improving the standard of living is entrepreneurship which is one of the most important inputs in economic development. Thus, entrepreneurship, through SMEs, facilitates job creation, income, and more employment generation for individuals. Thereby, increasing the average per capita income and improving the standard of living of Nigerians.

4. Increase in the gross domestic product (GDP) and per capita income: GDP is the aggregate value of the final goods and services produced in a country within one year. It reflects the economic status of a country since it shows how rich or poor a country is at a given time (Yusuf & Albanawi, 2016). Through entrepreneurship development, the GDP growth rate in Nigeria has improved, leaving no doubt that the country's productivity is constantly on the rise. On the other hand, the per capita income (average income earned

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per citizen/resident of a geographical region in one year) is calculated by dividing the total income of a geographical area by the population. Through employment generation and the use of available resources to produce more goods and services by entrepreneurs and the SMEs, values are added and the per capita income increases. All these in turn contribute towards increasing the GDP of the country. Consequently, growth in the GDP and a high per capita income are strong indices of economic development of a country.

5. Wealth creation and sharing : Through the creation of new business entities, wealth is mobilised and distributed by entrepreneurs. As businesses grow and expand, it allows for more investors to come into the market with ideas to improve on the quality of goods and services and make them available at an affordable rate. Consequently, the more the capital and resources available to entrepreneurs for the production of diverse goods and services, the more the employment generation wand, the more entrepreneurs, employees, the general public, and the country as a whole will benefit economically.

6. Promotion of balanced regional development : The provision of incentives and other necessary amenities by the local, state and federal governments will help in regional development, infrastructural improvements (of roads, rail links, airports, stable electricity), water supply, schools, hospitals, and shopping malls through the location of new businesses and industrial units in less developed areas by entrepreneurs and SMEs. This development will equally help in direct and indirect job creation which otherwise, would not have been possible. In the long run, such area will witness unprecedented economic development and the combined spending of all the employees of the new businesses and the supporting jobs in other businesses will add to the local and regional economic output and the overall economic development of the country.

7. Development of small and medium-sized enterprises : Entrepreneurship in a country promotes and gives strength to SMEs. Hence, the more the SMEs and the level of entrepreneurial development in a country, the more likely such a country will attain progress and development.

8. Revenue : Increase in entrepreneurial activities will lead to an increase in the scale of production and employment generation. As a result of this, accruable revenue to the government from taxes (personal and company) and import duties will increase. In the long run, the benefits of all these are usually reflected in the country's economic growth and development due to the increase in revenue accruable.

9. Exports : Export is an important ingredient of economic development. It provides access to bigger markets, leads to currency inflows, access to the latest cutting-edge technologies and processes being used in more developed foreign markets. It is expected that any growing business will eventually want to get started with exports to expand its business to foreign markets. Another key benefit is that this expansion leads to more stable business revenue during economic downturns in the local economy.

10. Facilitates overall development : Entrepreneurs act as catalytic agents for

change which results in a chain reaction. Once an enterprise is established, the process of industrialisation is set in motion. This will lead to springing up of other units, an increase in the supply of input and output of the unit. In this way, entrepreneurial activities will multiply, thus creating an environment of enthusiasm and conveying an impetus for the overall development of a particular area.

Certainly, entrepreneurship is one of the most important inputs of economic development. Thus, the role of entrepreneurship in the economic development of a nation and especially Nigeria is crucial and cannot be ignored. It varies from economy to economy, depending upon its material resources, industrial climate, and the responsiveness of the political system to the entrepreneurial function.

CONCEPT OF DIGITAL TRANSFORMATION

The concept of digital transformation currently lacks a clear definition, but to researchers, it is a major organisational change powered by digital technology and altering how businesses are conducted. Consequently, it is important to note that these definitions are only some of the many approaches proposed by both academic and business communities. Fundamentally, digital transformation is all about using digital technologies to improve, connect and radically change processes, enhance customer experiences, focus on the area where business and customer value meet seeing new and better possibilities while using different and digital-intensive ways to realise them (*www.i-scoop.com*, 2020). It is a game-changer and a worldwide phenomenon driven by the advance of digital technologies (OECD/EU, 2019). To Antonizzi and Smuts (2020), it encompasses the re-designing of business practices to incorporate digital technology within all facets of the business. While Barann et al (2019) referred to it as the continuous digitalisation process of a company, use of digital and data-driven innovation to improve existing processes and change/reinvent distinct business model elements entirely. Reis et al (2018) defined DT as the use of new digital technologies that enable major business improvements and influence all aspects of customers' life. This implies that DT is the change agent of operational activities in organisations.

Arguably, DT is the modification/adaptation of business models occasioned by the dynamic pace of technological progress and innovation that trigger changes in consumer and social behaviours; a deliberate and on-going digital evolution of a company, business model, idea process/methodology, both strategically and tactically (Kotarba, 2018; and Mazzone, 2014). Stolterman and Fors (2004) remarked that DT is the use of technology to radically improve performance or reach of enterprises. To Westerman et al (2011), DT refers to the deployment of ICT when not trivial automation is performed and fundamentally, new capabilities are created in people's lives, businesses, public government and society. It is the integration of digital technology into all areas of business, essentially changing how businesses operate and deliver value to customers (ITU, 2018). Assuredly, DT covers a huge number of processes, interactions, transactions, technological

evolutions, changes, internal and external factors, industries and stakeholders (*www.i-scoop.com*, 2020) and has the power to shift the balance between firms competing in the same market environment (Woltering, 2019). Thus, DT is well underway, impacting many facets of daily life and changing the way firms organise and manage the production (OECD/EU, 2019).

DT is a way to alter and build new business models, using digital technologies. It is driven by the advance of new digital technologies such as the IoT, Blockchain, Artificial Intelligence (AI), Big data, cloud computing, next-generation, and wireless networks enabled by dramatic increases in computing power (OECD/EU, 2019). Similarly, Foerster-Metz et al (2018) pointed out that DT of business operation is a result of new technologies, algorithms, inter-connectedness, and big data storage. Ziyadin et al (2019) posited that DT is a mind-boggling kind of technology enabling business transformation, which needs to address the vital jobs of new digital advances and capacities for effective digital development in the digital world. More so, companies across all industries around the world are discovering the importance of digital transformation to the sustainability of their profits, continued existence, and prosperity (Antonizzi & Smuts, 2020). According to Reis et al (2018), DT focuses on the end-to-end digitisation of all physical assets and integration into digital ecosystems with value chain partners. This implies that DT impacts different organisations, industries, and firms differently.

Furthermore, DT is a cultural change that requires organisations to continually challenge the status quo, experiment, and get comfortable with failure (ITU, 2018). Similarly, Jurgielewicz (2019) stressed that the hallmark of DT was changed in organisational processes, ideas, value creation, business models, and extended supply chain; social networking, communication channels, customer models of demands, thereby creating a new experience and mind-set among customers. Equally, DT is about responding to the changes that digital technologies have caused (and will continue to cause) in our daily lives, individual businesses and organisations, industries, and various segments of society. Conclusively, these changes are not brought upon us by the technologies themselves, it is the result of economic and societal effects of digitisation (the conversion of analogue data and process into machine-readable format) and digitalisation (the use of digital technologies and data), as well as interconnections that result in new or modified activities (*www.i-scoop.com*, 2020; and OECD/EU, 2019).

ADVANTAGES OF DIGITAL TRANSFORMATION ON ORGANISATIONS

Digital technology essentially affects known tectonic business structures by setting a new playing field and changing the way firms compete on various levels (Woltering, 2019). It holds the promise of improving productivity performance by enabling innovation and reducing the costs of a range of business processes on organisations. However, how it affects productivity varies since adoption rates of digital technologies vary greatly across sectors, and also across firms within sectors (Grab et al., 2019). Accordingly, some of the

identified advantages of DT on organisations are as follows:

- (i) Digital transformation of operations reduce, to the barest minimum, manufacturing costs and the use of fewer storage facilities for manufactured goods.
- (ii) Digital transformation promotes quick and cheap distribution of goods and services through digital space all over the world.
- (iii) With DT, the evolving digital market place has the capability of handling the high demands of customers.
- (iv) Digital transformations led to the creation of a digital workplace through which prospective and talented employees can be identified, hired, and maintain cultural diversity.
- (v) It enhances utilisation of available resources, increases flexibility, and responsiveness through global virtual teams.
- (vi) DT brought about innovative changes which led to the creation of digital products and services that can be adapted easily without interrupting the process of manufacturing and marketing of goods.
- (vii) DT led to the debut of interrelated digital trends such as e-commerce, big data, machine learning, AI, and the IoT in the world of business which could result in large productivity gains for the economy in the long run.
- (viii) Creation of digital platforms, a mutual set of services, and architecture helps to offer complementary products and services worldwide.

BENEFITS OF DIGITAL TRANSFORMATION TO ORGANISATIONS

The benefits of DT to organisations, businesses, a country, and its people are enormous (ITU, 2018). Thus, with the rise of new digital technologies (social networks, mobile, and big data among others), firms in virtually all industries domains are conducting multiple initiatives to explore and exploit their benefits (Reis et al., 2018). Therefore, some of such benefits include but not limited to the following:

- DT facilitated the creation of the collaborative/platform economy (economic and social activities that are facilitated by online platforms) which holds the potential for providing a level playing field for all.
- DT removes obstacles by allowing customers to experience the full range of products and services on offer which has previously been limited by dominant market competitors.
- It promotes the ease of sharing of ideas and simplified global reach.
- It lowers the cost of internal operational functions and the establishment of creation of value.
- The digital era helps to unleash firms' potential by allowing them to tap upon segments that have been previously deemed uneconomical.

- Improved customer relations and engagement through social media.
- Improved access to existing sales channels and the creation of new ones.
- Greater ability to locate, contact, and develop a reputation with investors.
- Creation of economies of scale.
- It facilitates new types of work and self-employment.
- Transformation of existing platforms and the development of new ones.
- It provides organisations with the necessary infrastructure to build a digital business on; and those technologies made it possible for users and businesses to come together virtually and build a digital ecosystem of interactions.
- With DT, the role of the information system (IS) function in the organisation tends to become increasingly strategic as the traditional expectations of the IS function are challenged.
- Wider reach and lower cost of client-facing operational functions, e.g. advertising, communications, and distribution.
- Significantly increased productivity, economic growth, and greater employment opportunities.

TECHNOLOGIES DRIVING DIGITAL TRANSFORMATION IN ORGANISATIONS

Digital transformation is no longer only about a marketing strategy to influence consumers, company branding to retain employees or to identify ways to improve processes or automate the manufacturing but total transformation of business operations. Thus, as a result of these new technologies, algorithms, interconnectedness and big data storage, the world is becoming more and more digitalised and transparent for all stakeholders (Foerster-Metz et al., 2018). Consequently, technologies driving DT in organisations include:

(a) **Internet of Things (IoT)**: This refers to the connection from on and off switchable devices and objects to the Internet allowing them to be remotely monitored and controlled. It enables new business models, applications, and services based on data collected from devices and objects.

(b) **Next-generation wireless networks (5G and beyond)**: This refers to a new generation of intelligent, highly scalable security products and platforms. It includes physical and cybersecurity with a more proactive and adaptive approach. It will improve connectivity between devices and objects, and is critical for applications such as self-driving vehicles. Improvements in wireless networks include higher speeds (i.e. 200 times faster than 4G) and networks that better support diverse applications through the virtualisation of the physical layers (such as 'network slicing').

(c) **Cloud computing**: This refers to a service that offers flexible, on-demand access to a range of IT infrastructure/online computing resources (e.g. software applications,

storage capacity, networking, and computing power). These resources can be used (and priced) in an adaptable manner to enable customers to better meet their needs, as well as transform fixed costs into lower marginal costs.

(d) Big data analytics : This refers to data that is characterised by high volume, velocity, and variety, often sourced from IoT. 'Big data' can be used to develop new products and services, processes, organisational methods, and markets, and enables data-driven innovations. On the other hand, Analytics is the process of examining big data to uncover patterns, correlations, market trends, customer preferences, and other useful information.

(e) Artificial Intelligence (AI) : This refers to the ability of machines and systems to acquire and apply knowledge, including performing a variety of cognitive tasks such as sensing, processing language, pattern recognition, learning, and making decisions and predictions. AI is already part of our daily life, for example, recommendations from streaming entertainment services and will increasingly drive new kinds of software and autonomous robots (they can make and execute decisions without human input).

(f) Blockchain : This refers to a ledger or spreadsheet that is maintained and stored across a network of computers. The network regularly updates the database in all locations so that all copies are always identical. It allows records to be visible and verifiable by everyone and makes it impossible for someone to change information stored in the block; else, the 'chain' will be broken and all nodes in the network would be aware of it. Examples of applications of blockchain technology include smart contracts, cryptocurrencies, and supply chain management.

(g) Computing power : This refers to the aggregation of processing power to deliver far greater performance than a single computer. It includes:

- **High-performance computing (HPC) :** This most generally refers to the practice of aggregating computing power in a way that delivers much higher performance than one could get out of a typical desktop computer or workstation to solve large problems in science, engineering or business.
- **Quantum computing (QC) :** This refers to the use of 'qubits' that are organised in 'states' and they represent a combination of 0 and 1, rather than the traditional processing of binary data, 0 or 1. It is still an emerging field with substantial obstacles. QC potentially offers an enormous leap in processing power that could be applied to AI and cloud computing.

BARRIERS TO DIGITAL TRANSFORMATION IN ORGANISATIONS

Digital transformation is having a wide-ranging impact on the business environment, creating both opportunities and challenges and a catalyst whereby the ways digital technologies are used and seen can generate unexpected consequences, regardless of whether they concern consumer behaviour or the innovative capacity of disruptive companies (Foerster-Metz et al., 2018). Accordingly, some of the identified barriers to the

digital transformation of operations in organisations include but not limited to the following:

- Disruption to existing business and social models, as well as established markets.
- There is the risk that inequalities between people, firms and places will increase since the diffusion of digital technologies and benefits of digitalisation are uneven.
- The paradoxical situation of technological diffusion not leading to productivity gains.
- Uncertain roles/engagement of stakeholders in developing their innovation ecosystem.
- Disruption to the lives of millions of citizens due to a lack of basic digital skills which may significantly hinder an individual's ability to be successful in creating digital businesses, or adopting digital technologies.
- Missing innovation capabilities, especially soft infrastructure.
- Lack of / sub-optimal integration of innovation ecosystems into key sectors of the economy and the impact of the fast-changing ICT/telecommunication environment.
- Digital businesses are typically characterised by a relatively high risk with a lack of tangible assets that can be used as collateral to obtain bank loans.
- High levels of administrative bureaucracy and regulatory bodies' burden on embracing technological transformation of business operation.
- Discrimination from consumers that is based on misperceptions about innovativeness or digital skills.
- Poor leadership may result in a disconnection between IT and the business, lagging employee engagement and substandard operations.
- Lack of / inadequate technological infrastructure and poor legal framework.
- Lack of adequate power generation to seamlessly power digital business operations.
- Lack of finance on the part of the organisations to go digital due to high capital requirements.

IMPACT OF DIGITAL TRANSFORMATION ON ENTREPRENEURSHIP

Technology has changed drastically the business operating environment / entrepreneurial process and digital transformation are radically altering the way businesses function and organise production. Consequently, the availability of mobile and smartphones, other digital devices, and the Internet created new sectors, impacting entrepreneurship, and business models (OECD/EU, 2019). Thus, some of the noticeable impacts of digital transformation/ digitisation on entrepreneurship include:

- The creation of numerous opportunities for an entrepreneurial activity such as social media, mobile computing, data analytics, 3D printing, cloud computing and cyber

solutions which led to a remodelling of productive patterns, originating new market opportunities, higher revenue streams, faster time-to-market, enhanced service provision, and increased productivity (Thomas et al., 2019).

- The digital transformation of entrepreneurial processes enabled interactive and enhanced communication between entrepreneurs and information providers.
- Through digital innovations, ICTs are providing opportunities for many entrepreneurs to create new ventures in different business areas (ITU, 2018).
- With DT, the ease of establishing a digital business venture is easy when compared to a traditional entrepreneurial business.
- Through the creation of digital services platforms, entrepreneurs are available with the opportunity of knowing and understanding worldwide demand and can obtain more customers.
- Creation of digital platforms that provide collaboration and computing abilities to upkeep innovation and entrepreneurship (Vinella, 2018).
- DT ensures the application of innovation in resolving problems through the use of ICTs/telecommunication technology for entrepreneurial activities (Lee et al., 2017).
- With the help of technology, entrepreneurial individuals can combine many personality traits - innovativeness, risk-taking, proactiveness in the sense of doing what is necessary to realise their ideas combined with shouldering responsibility for the success or failure effortlessly (Saeid, 2011).
- Encourages the true mastery of an organisation's supply-chain activities, improved access to market research, business data, and networks; optimise their internal operations and innovate their way to a sustainable future (Antonizzi & Smuts, 2020).
- Creation of digital platforms through which advanced technologies can be utilised to maximise opportunities for innovation, new business models and processes, and smart products and services which entrepreneurship is all about (OECD/EU, 2019).
- Digitalisation heralded the digital economy in which entrepreneurial activities revolve around the use of electronic commerce by exploiting the Internet and electronic networks for business opportunities (Dinh et al., 2018).
- Digital technologies also deeply modify the boundaries of products and processes and in doing so, transforming the nature of uncertainty inherent entrepreneurial processes and outcomes, as well as the ways of dealing with such uncertainty (Thomas et al., 2019).
- Through technological adoption, entrepreneurs successfully engage their prospects and consumers before, during and after their purchase cycle of products and services; thereby, serving as the foundation base for relevant information and high-quality products and service (which is now more critical than ever, such that successful entrepreneurship uses the effective engagement of marketing principles

to plan and improve their customer services (Samuel & Joarprasatha, 2015).

DT is undermining conventional notions about how businesses are structured; firms interact; and how consumers obtain services, information, and goods. For example, the business operations of Amazon, Google, and Uber amongst others are being transformed in all parts of the world.

Arguably, DT will bring about important changes and lasting implications for business dynamism. It will create new entrepreneurial activities and may lower the barrier to entry for some. However, it may also have negative impacts, such as opening a gap between those firms who can gain market share and those who cannot (OECD, 2018). Therefore, successful DT requires an organisation to develop a wide range of capabilities, which will vary in importance depending on the business context and the specific organisation's needs (Reis et al., 2018). Thus, novel as the idea sound, while borders do not bring the power of change to a full stop, it needs to be noted that the effects of DT on entrepreneurship are not evenly distributed across countries and regions of the world.

BENEFITS OF INFORMATION COMMUNICATIONS TECHNOLOGIES ON ENTREPRENEURSHIP

Across the world, technology has been recognised as the bedrock of any thriving economy. Consequently, ICTs are considered as a principal engine of growth in the knowledge economy. For that reason, ICTs, as a determinant of technological change, have led to a digital revolution in developed countries and have quickly spread to other emerging countries (Cuevas-Vargasa, 2016). Thus, through digital innovations, ICTs are providing opportunities for many entrepreneurs to create new ventures in different business areas (ITU, 2018). ICTs have undergone a very quick development and have been introduced into all segments of people's lives (Jagodić & Dermol, 2015). Thus, ICTs and telecommunication technology are evolving incredibly fast, from 3D printing to the IoT, mobile everything (money, services, etc.), social networks, and more. According to Swaramarinda, (2018), ICT is made up of information technology (all things related to the process, use as a tool, manipulation, and management of information) and communications technology (anything related to the use of tools to process and transfer data from one device to another).

Indisputably, the vital role of ICTs as a catalyst for development cannot be overstated. For example, Tavakoli (2013) noted that ICTs created dramatic developments in all social activities including entrepreneurship, and are regarded as the most important tool of modern entrepreneurship. Equally, ICTs facilitate innovation through diffusion processes, usage practices, and commercial success as well as have a direct impact on growth and competitiveness. Also, they are a valuable source of business innovation; they influence the growth of economies and businesses' efficiency (Cuevas-Vargasa et al., 2016). More so, the spread of ICTs and global interconnectedness has great potential to accelerate human progress, bridge the digital divide, and develop knowledge societies (ITU, 2018).

Unarguably, ICTs have contributed to the development of entrepreneurship in different ways such that companies are presently experiencing many new unanticipated events and developments. Therefore, areas in which ICTs have benefitted entrepreneurship are:

- ICTs have enabled a new generation of entrepreneurs, using the latest digital technology to disrupt old ways of doing business, while streamlining business operations and processes in more established enterprises (Jagongo & Kinyua (2013).
- The use of technology has reduced some of the burdens on the entrepreneurs who struggle with many rules and regulations (Kaya, 2016).
- ICTs offered/presented learning opportunities, business planning solutions, database tools as well as business training opportunities with the help of business plan simulators.
- ICTs help to develop and enhance communication and social networks as well (Mwangi, 2016).
- ICTs facilitate job access greatly, provide the unique opportunity for workplace information easily, and increase the employment rate dramatically through virtual workplace particularly electronic marketing.

Without a doubt, technology makes the business world go round. Through the advent of the Internet with ICTs, entrepreneurs, marketers, and consumers are witnessing the appearance of virtual social media. Thus, there are little or no barriers to the use of social networking technologies by small businesses in the same ways that large corporate organisations can do without the need for extensive resources (Jagongo and Kinyua, 2013).

ENTREPRENEURIAL DEVELOPMENT: LEVERAGING ON CUTTING EDGE TECHNOLOGY IN NIGERIA

Entrepreneurship is the most important aspect of the market economy. It permeates all its institutions. It is a risky economic activity aimed at a systematic receipt of profits from the production and sale of goods, services, or jobs and entrepreneurial development is the most important input in the economic development of any country (Yusuf & Albanawi, 2016). However, digitalisation has rapidly introduced different ways wherein organisations can accelerate their businesses. Thus, as technology continuously disrupts business models and strategies, more and more organisations are changing into a digital workplace (Woltering, 2019). Accordingly, areas in which entrepreneurs in Nigeria could leverage cutting edge technology for entrepreneurship and entrepreneurial development include but not limited to the following:

(a) Communication : Businesses cannot function without communication and connection. With this new wave of faster, better, and stronger Internet connections will come faster, better, and stronger human connections. Thus, entrepreneurs can adopt social media; a digital platform where businesses and entrepreneurs can communicate rapidly

and economically with clients as well as build a database that can be used to generate business leads which, in the long run, may translate into enhanced sales and growth of the business. Entrepreneurs can equally use the medium to share their views and encounters regarding the products and services on offer. It promotes creativity, innovative ideas, open communication, and sharing of knowledge among users as well.

The social network can bring stability to entrepreneurs in many ways, such as assisting in getting access to information, finances, knowledge and market insights. Besides, the adoption of technology through the usage of new digital media for collaboration and communication provides multiple channels for businesses to communicate both internally and externally either through the setting up of virtual workspaces where employees can interact and develop ideas, or connecting to international businesses through the use of video conferencing. Equally, technology can be used as an outlet for businesses to collect feedback from their customers. Such information can be used to improve or alter a product to suit the needs of the customers better.

Some of the readily available social networking media digital tools that can be leveraged upon for communications in entrepreneurial practices include:

- **Whatsapp** : It allows users to send text messages and voice messages, make voice and video calls, and share images, documents, user locations, and other media).
- **Telegram** : It is a cloud-based instant messaging and voice over IP service through which users can send messages and exchange photos, videos, stickers, audio, and files of any type).
- **Skype** : It also provides instant messaging services. Users may transmit text, video, audio, and images.
- **Facebook** : It (builds technologies that give people the power to connect with friends and family, find communities, and grow businesses.
- **Instagram** : It is the leading social networking traffic generator (a photo and video-sharing social networking service).

Leveraging on digital transformation for entrepreneurship has been vital in dissemination and communication of information to both entrepreneurs and customers and the integration of the social media in the business line, the entrepreneurs can gain access to resources more than earlier times.

(b) **Training** : Training and re-training programmes for entrepreneurial development and engagements can be conducted through the emerging digital platform of Web conferencing (an umbrella term used for various types of online conferencing and collaborative services including webinars, webcasts, and web meetings). Deploying the latest technology for training activities through webinar's web-based seminar: This can be leveraged on by entrepreneurs for training programmes for customers/colleagues. In the long run, the business will be able to save costs. Entrepreneurial training can be done via:

Technology is impacting every economy and industry. As a result, cutting-edge technology can create high benefits for businesses that are willing to be early adopters. Also, businesses, large or small, can choose to lead this transformation and gain competitive advantage, or be left behind. This strategy, however, requires businesses to abandon technologies that never fully mature or that are themselves dropped by their parent companies. Conversely, nimble implementation strategies will help entrepreneurs to realise the benefits of new technologies while avoiding business workflow issues when technology cannot survive in the marketplace. Therefore, leveraging on cutting edge technology for entrepreneurial activities by entrepreneurs in Nigeria will transform the sector, improve operational efficiency, herald new business opportunities and usher in the digital economy.

BARRIERS TO THE DIGITAL TRANSFORMATION OF ENTREPRENEURSHIP IN NIGERIA

Technology has facilitated cross-industry linkages, efficiency, and productivity, making the banking and finance, oil and gas, and manufacturing industries in the country to be so heavily reliant on ICT for growth. Consequently, DT is having a massive impact on the economy through digitised, flexible, agile, smart networked and intelligent ICTs-enabled modern economic activities and transformations are being observed in every area of the economy vis-à-vis banking, education, healthcare, businesses, governance, Oil and Gas and Judiciary, amongst others. Arguably, Nigeria has witnessed a dramatic rise in the adoption of Information Communications Technologies (ICTs) by individuals, businesses, and governments in the past few years, with a tremendous positive impact. However, as the nation confronts a new reality of lower oil prices, with cyclical and structural forces undermining the traditional growth paradigm, experts say technology is a veritable platform to aid the diversification of the economy. But challenges remain. Some of them include:

- Poor infrastructural development.
- Inoperable policy framework.
- Obsolete and unenforceable law.
- Lack of entrepreneur education.
- Potential risks and threats to total digitalisation.
- Corruption across all levels of governance.
- Lack of political will.
- Lack of coordination of mechanisms to develop contextual and relevant policies supporting digital innovation and entrepreneurship.
- Inadequate financial capability or the need for personal capital is more likely to be difficult for potential entrepreneurs to digitise their operations.

DIGITAL TRANSFORMATION: IMPLICATION FOR THE INFORMATION PRACTITIONERS

Information is extricably intertwined with any society's developments. Information management is critical to digital transformation. Hence, organisations are structured by information and knowledge, and employees' ability to utilise information is what drives the business forward (Roe, 2019). Arguably, organisations can gain a competitive edge based on their individual ability to collect, select, process, and utilise large amounts of available data/information (Grab, et al. 2019). For example, in the context of big data analytics, organisations may filter data from various sources to utilise information for the benefit of providing bespoke products and services to different customer groups. Thus, information professionals, deploying the most appropriate technology platform, can make available to patrons, specific, and customised information. This will go a long way to cater to the information needs of patrons in the organisation.

Process automation cannot happen without digital information and knowledge workers cannot do their jobs without access to the right information at the time they need it (Smith, 2016). Consequently, digital transformation improved access to scientific publications and information through new tools and platforms, enhanced access to research data, and strengthens engagement with a wider range of stakeholders (Antonizzi & Smuts, 2020). Therefore, information professionals can organise training and development programmes in alignment with their work schedules and tailored towards the specific information needs of employees and management deploying digital learning platforms to improve the information literacy skill of patrons and different cutting edge technologies for information dissemination.

The cornerstone of the digital transformation era is information management. As a result, massive amounts of data being generated between people across each line of business and their respective processes represent a potential treasure trove of information, insights, and a key source of innovation (Roe, 2019). Accordingly, information professionals should learn how to deploy the new technologies and solutions for effective information management, take initiatives, be ready to learn and adapt fast to changes because the digital technologies and solutions are not just stimulating the need for change they also enable and support the change itself. Furthermore, every organisation is now a digital business and its information is an asset. Hence, information professionals responsible for managing enterprise information are expected to focus on the information life cycle. This is extremely critical for the success of the business because there is a relationship between people, processes, technology, and the information flow which feeds every business process. Also, they can't impact the customer's digital experience and process automation cannot happen without digital information (Roe, 2019).

DT acts as a portal to vast amounts of information and knowledge which can be accessed with ease. Thus, the versatility, portability, and usefulness of portable Internet-enabled ICTs smart devices like laptops, smartphones, iPhones, and cell phones available

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for use in business operations permeate compactly with the information professionals especially those attached to business organisations. Consequently, through the appropriate digital platform/solution, information professionals could offer specialised information services to patrons, employees, and the management team members since they are expected to interact with a wide and varied community of members, filtering the results of their conversation and making informed recommendations on sources and materials to be consulted by these users to enable them to render better and efficient services to their organisations.

Also, information is the digital currency of every organisation; thus, it is tied to people - the lifeblood of every organisation. Therefore, informational professionals should realise that the biggest opportunity for every organisation lies in becoming the trusted guardian of their customer's information. Consequently, taking care of an organisation's information management landscape is best executed when specialists take charge, as it relies on knowledge, experience, and focuses more and more on compliance. Also, the opportunity of the information policy arena entirely diminishes the threat of losing some paper storage business as the result of less paper in our customer's business process. Accordingly, information practitioners should strive to be the guardians of our customers' information using the appropriate digital platform(s).

DT OFFERS TREMENDOUS OPPORTUNITIES FOR BUSINESSES AND INFORMATION PROFESSIONALS

Information management helps organisations break down the massive amounts of data into a manageable form that is easy to understand. However, the effective management of information is a delicate chance of collecting, sharing, and monetising that information where it makes sense and requires a strategic approach that will put people and processes at the centre. Hence, as custodians of information in organisations, information practitioners are to archive and ensure proper storage and management of information in the organisations to ensure accessibility and proper governance using an appropriate digital solution.

Information is an asset. Thus information management involves every area of the business. It calls for effective strategies to foster better business alignment. For example, business units such as information technology and marketing will need alignment as all business strategies are based. One of the key aspects of digital disruption and the ensuing digital transformation taking place is the underlying fact that information is an asset. Information is, in fact, the greatest asset from a business perspective. Information enables every part of the business enterprises to scale digitally (Roe, 2019). Consequently, the information professionals are expected to be dynamic in the discharge of their professional duties and ensure to undergo training regularly. This will help them to be relevant in the scheme of things as it unfolds.

Information management is by far one of the most critical things organisations have

to get right otherwise face negative consequences to the business. It is what can be derived from crucial information. Arguably, there are transformative insights hidden in enterprise data, but organisations have to know where their data are to glean insights from it. So enterprises need visibility into their data access, and the ability to take action. These are key concerns that have to be addressed. The imperative to manage information like the asset lies solely with the information professionals in such enterprises. This leads to the technology component from a strategy perspective. Thus, enterprise planners have to evaluate solutions and services that support information management, including the full information life cycle.

Furthermore, as information practitioners, understanding how digitalisation is affecting and changing the information environment landscape in organisations is crucial because today, digitisation is taking place in almost all sectors of the economy, at a very fast pace and in a very deep manner. For example, from manufacturing, financial services, customer service, health, agriculture, education, retail and logistics, all of these sectors are using big data, new technologies and solutions to drive their business forward and to survive in the highly competitive market. This implies changes in information management, thinking, and acting. Thus, to support DT, information practitioners need to change from the traditional ways of managing information to a flexible, modern, and dynamic approach backed-up with cut-edge technologies. This will go a long way to assist organisations to keep pace with the complex and fast-changing environment (digital-centric business) and the increasing customer requirements (customer-led market).

Arguably, information is an organisation's most important asset. Thus, as technology advances and competition becomes even fiercer, non-productive organisations with ineffective information management will fall behind the rest (Roe, 2019). Therefore, information professionals are expected to be very proactive in the discharge of their duties; endeavour to see that the right information is made available to the right user(s) promptly using the right digital platform; deploy cutting-edge technologies in providing access to information, bear in mind that when it is difficult for an employee to access information promptly, their time is wasted unnecessarily, serving the customer takes longer and that ultimately leads to bad online reviews. Consequently, in order to understand digital transformation and its impact on entrepreneurship, we must bear in mind that the human dimension is not just an important focus of digital transformation. It's a catalyst whereby the ways we use and see digital technologies can have very unexpected consequences, regardless of whether it concerns consumer behaviour or the innovative capacity of disruptive companies (nearly always a mix), on the people. Therefore, as we shift towards information-based organisations and information is becoming part of the capital and business assets of the enterprise, an intelligent information management approach are required (Roe, 2019). Accordingly, information professionals are expected to deploy cutting-edge technologies in providing access to information, thus, it is key to put people and processes above

technology, even if the technology is a change agent or at least the ways we use it to evolve, innovate, adapt and 'pro-dapt'.

CONCLUSION

Digital transformation is the profound transformation of business and organisational activities, processes, competencies, and models to fully leverage the changes and opportunities of a mix of digital technologies and their accelerating impact across society in a strategic and prioritised way, with present and future shifts in mind. However, despite the vast opportunities presented by the digital economy, Nigeria has not yet fully realised the potential of harnessing digital technology for entrepreneurial development as a result of poor ICT infrastructure, inadequate skills development, lack of requisite education, socio-economic barriers, poor communications skills and lack of knowledge of the virtual worlds, among others, which is preventing much of Nigeria's population from engaging in the digital economy.

Besides, the digital era is not only driving innovation in the enterprise sector, it seems to influence developments in the public sector as well. Thus, any businesses looking to thrive in the digital age are advised to have digitally literate employees. This will include having skills in data analytics, coding, cloud computing, software development, and programming. However, as with any technology-enabled change, it is not just enough to bring in cutting edge technology into the organisation. The success of digital transformation depends on process and operations management changes and to accomplish such management, people must be trained in a change process that takes into account the unique challenges presented by technology adoption.

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THE BOOK

Entrepreneurship has been considered a fundamental catalyst for enhancing economic development. The rapid advances taking place in information and communication technologies in the developed countries are seen as a potential vehicle for enabling the participation of poorer countries in the global information revolution. No doubt the drive for entrepreneurship in the most developing digital economy or the so-called developing countries that are embracing technologies is very high.

Information and communication technologies offer the potential to solve pressing problems of human and economic development in areas of health, education, poverty alleviation, rural development, and care of the environment. In the developed countries, emerging technologies are having a dramatic impact on the growth and development of the enterprise sector, and particularly within small and medium enterprises. Enterprises are adapting rapidly to new forms of communication, organisation, and new methods of doing business, and a wide range of new information-based industries have been established. Now with various entrepreneurship activities and the addition of technology to the mix, a whole new facet of possibility is birthed.

The increase in mobile phone access and the introduction of smartphones have also increased access to the internet. This development has changed our vocabulary by introducing us to new phrases like "Disruptive Technology" which is a term that describes new ways of doing things thereby overturn traditional methods and result in practices using technology. For instance, mobile phones have replaced the old table-top telephones disrupting the Telecommunication sector. The presence of mobile phones and the internet has created new sectors, given rise to new companies, and provided jobs for many while also impacting entrepreneurship and business models.

This book, therefore, involves discussion on how information and communication technology has enabled entrepreneurship in information and expand the small-scale information businesses. The book explains how information professionals through ICT can be self-employed and also create employment. It provides several case studies from the developing digital economies (developing countries) point of view; and also features contents on how advanced technologies, particularly those brought by the Fourth Industrial Revolution are paving the way for, and impacting entrepreneurship development.

This comprehensive, timely, and seasoned publication aims to be an essential reference source that drives information students with skills that would enable them to be self-employed and create employment for graduates of library and information science. The book builds on available literature on ICT and entrepreneurship in information drawing on various perspectives from developing digital economies.

THE EDITOR



Tella Adeyinka is an Assistant Professor in the Department of Library and Information Science, Faculty of Communication and Information Sciences, University of Ilorin, Nigeria and a Visiting Professor at the Department of Information Science, University of South Africa.

Tella attended St. Andrews College of Education, Oyo, in Oyo State, Nigeria from 1989-92, where he obtained National Certificate in Education (NCE) which qualifies him as a professional teacher. He later gained direct entry admission to the most prestigious university in Nigeria i.e. The University of Ibadan where He obtained his Bachelors' Degree in Guidance and Counselling/Political Science and graduated with Second Class Honours, Upper Division.

After his Youth Core in the year 2000, Tella enrolled for a Master's Degree programme in Counselling Psychology at the same University of Ibadan and finished in 2001. Immediately thereafter, Tella enrolled for another Masters' Degree programme in Library and Information Studies at the same university and finished in 2004.

Tella returned to Counselling Psychology to commence a Ph.D. degree in Test, Measurement, and Evaluation. He was about to present his proposal for the Ph.D. when the result of the Commonwealth Scholarship which he earlier applied for was released. Tella eventually won the Commonwealth Scholarship to study library and information science at the University of Botswana in Gaborone in Oct 2005 and finished on Sept. 29th, 2009.

Tella is an editorial member of many highly-rated reputable journals including *Library Philosophy and Practice*, The University of Nebraska, Lincoln, USA, *Journal of University Research*, Maltepe University, Istanbul, Turkey, *African Regional Journal of Knowledge Management*, Technical University, Kenya and *Zambian Journal of Library and Information Science*, University of Zambia. Currently, Tella is the Editor-in-Chief, *Ilorin Varsity International Journal of Library and Information Science*, and a former Editor-in-Chief of *International Journal of Information Processing and Communication* (IJIPC), a journal of the Faculty of Communication and Information Sciences, University of Ilorin, Nigeria. Tella is a reviewer of many Web of Science LIS journals and is an external examiner for LIS Ph.D. candidates in the following Universities such as Babcock University, Nigeria, University of Calabar, Nigeria, University of Ibadan, Nigeria, Bayero University, Kano in Nigeria, University of Fort Hare, South Africa, University of Zululand, South Africa, University of South-Africa, Pretoria, South Africa, University of KwaZulu-Natal, Pietermaritzburg, South Africa, The University of Zambia in Lusaka, Zambia, Annamalai University, Tamil-Nadu, India, Alagappa University, India and Bharathiar University, India.

Tella has many awards to his credit and has successfully supervised 15 Masters Dissertations (6 in computer Science & 9 in LIS) and 5 of Ph.D. candidates are now lecturers in Nigerian Universities. As traveling is part of education, Tella has visited Countries such as United State of America, Italy, Portugal, United Arab Emirate-Abu Dhabi, Qatar, South Africa, Botswana, Zimbabwe, Zambia, Kenya, Cote D'Ivoire, Togo, and The Republic of Benin.

Tella has published 210 academic papers mostly in Web of Science/Scimago ranked journals, edited conference proceedings, and chapters in books. Besides, Tella has edited six information Science reference texts. Tella is available for any research assistant by the research students either at masters or doctoral levels. He is also available for any local or international research collaboration.

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ISBN: 978-81-947398-3-8



Rs. 2500/-