

DIGITAL TRANSFORMATION IN AFRICAN SMEs: EMERGING ISSUES AND TRENDS

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***Digital Transformation in African
SMEs: Emerging Issues and
Trends***

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FOREWORD

Africa is a new destination for businesses. Small and medium enterprises (SMEs) constitute the largest forms of businesses globally. Technology creates and facilitates businesses, a source of competitive advantage, and is now accepted by all societies globally. Therefore, to own this book is like having a global treasure, a society weapon, and a business enabler. This book is particularly necessary when the contributors and editors have decided to focus on electronic commerce for SMEs' success in developing countries; digital transformation and SMEs performance in Africa; SMEs adoption of Big Data in Africa; and factors influencing the adoption of big data amongst SMEs in Africa. SMEs are crucial to national economic growth since they are widely acknowledged as a primary driver of both expansion and new job creation. ICT is no longer a luxury for small enterprises because of its propagation. It has become increasingly important for the day-to-day functioning of businesses. As the number of networked devices grows, so do the well-motivated hackers. Advantages in innovation, marketing, efficiency gains, quality, and responsiveness to customers can be gained by small and medium-sized enterprises (SMEs) through the use of information and communication technologies. Organizations fundamentally employ digital technology to upgrade the previous value-creation paths they have traveled to be competitive in the market. For companies struggling against the odds of success, DT like big data, and social media marketing could be a lifesaver.

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PREFACE

The conduct of business has been distorted by globalization and the rise of technological innovation. Several organizations are now using information technology when it comes to providing services to their clients. To that end, studies regarding consumers of online products in Africa were necessary to learn more about the variables that drive the uptake of online shopping and how that affects customers' willingness to do so. Digital transformation (DT) is the most trending in both society and business, whilst SMEs/MSMEs are the largest forms of business globally. Hence electronic commerce for SMEs' success in developing countries with a focus on Africa is necessary. We added the challenges faced by SMEs in the adoption of digital transformation in Africa by exploring big data, email marketing factors influencing the adoption of technology, and the effect of DT on Small and Medium Enterprises. The book also discusses digital transformation tools like Big Data, AI, ML, IoT, and Social media (Facebook, Telegram, Instagram, Twitter, and Google in Africa), *etc.* for SMEs.

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CHAPTER 1**Electronic Commerce For SME's Success In Developing Countries. A Focus On Africa****Mohammed Abdul-Basit Fuseini^{1,*} and Mohammed Majeed¹**¹ *Department of Marketing, Tamale Technical University, Tamale-Ghana*

Abstract: The scope of e-commerce is continuously growing, touching more and more platforms, gadgets, sectors, and marketplaces. The aim of this chapter is to identify electronic commerce areas for SMEs' success in developing countries like Africa. E-commerce can be primarily business-to-business or business-to-customers. The success of SMEs' e-commerce adoption is based on virtual reality, augmented reality, social media, and analytics. One important piece of advice for small and medium-sized business owners is to start using social media and build websites to market their goods. SMEs' owners in Ghana have the opportunity to foster economic growth and social progress through providing jobs, social services, and welfare to local communities.

Keywords: Africa, Digital, Electronic commerce, SME, Technology.

INTRODUCTION

The contributions of small and medium-sized businesses (SMEs) to economic growth and development have been crucial (Obi *et al.*, 2018). According to a research conducted by Abor and Quartey [1], SMEs make up over 92% of all enterprises in Ghana, 85% of manufacturing jobs, and contribute to roughly 70% of Ghana's gross domestic product (GDP). Thus, the importance of small and medium-sized enterprises (SMEs) to Ghana's development is very evident. Since ICT is so important to the growth of SMEs, it could be argued that technology also facilitates broader economic growth and provides crucial backing for efficient political administration. However, a lack of e-commerce strategies and solutions means that SMEs in developing countries like Ghana cannot buy goods and services from abroad [2]. Even more so, new e-commerce ventures are more likely to fail due to a dearth of scholarly work that discusses the topic of operational sustainability in the e-commerce sector [3]. Nevertheless, annual growth rates of 20–25 percent for online purchases point to a significant change in consumer behavior (Jamsheer, 2019).

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Small and medium-sized enterprises (SMEs) can now rely on technology to help them succeed. There has been a lot of attention paid to the adoption of new technologies in the context of small and medium-sized firms within the ontological dimensions of e-commerce (Pease & Rowe, 2005). The expansion of technological progress, automation, and digitalization into all spheres of life is accelerating. In recent years, a large number of B2B e-Commerce firms have emerged and are expanding rapidly around the clock. According to forecasts, global business-to-business (B2B) online sales would rise to over \$6.6 trillion by 2020. (Rainy, 2022). Innovation and information, especially digital technologies, are critical for the efficient operation of businesses and sectors in the current stage of economic development [4]. Business and political institutions, the social and cultural fabric, and the overall progress of society are all directly influenced by the rise of digital technologies [5]. The convenience of doing business online has made e-commerce increasingly attractive to both consumers and entrepreneurs in countries like Nigeria, Ghana, and Kenya, where internet access has expanded rapidly in recent years. Nonetheless, a very small percentage of African Internet users have actually bought goods and services online [6]. Delivery infrastructure and safe payment methods are cited as the two key obstacles to the growth of e-commerce in Africa [6]. One of the four major sectors in Africa to leverage ICTs to best advance social and economic development is e-commerce, as highlighted by the Economic Commission for Africa through its African Information Society Initiative (AISII) [7].

For many low- and middle-income countries, increased e-commerce sales mean more money in their pockets [8] (Kwadwo, Martinson, Evans, & Esther, 2016). There's a chance that e-commerce can ease the way for SMEs to break into international markets. Electronic data interchange and electronic fund transfer are two examples of e-commerce technologies with the potential to boost customer service, trading partner connections, cost reduction, supply chain management, and ultimately, a company's bottom line [8, 9]. There are certain micro, small, and medium-sized enterprise (MSE) owners in the e-commerce sector who actively seek out client feedback and use it to inform and direct business strategy [10]. Therefore, it is important for small and medium-sized business owners to be familiar with the tactics of e-commerce product promotion for maximizing both client happiness and financial gain [9]. Businesses, cooperatives, and SMEs of all sizes can compete on an equal playing field in the global marketplace thanks to the accessibility and low entry barrier posed by the Internet. Likewise, local businesses and communities can interact with one another across national boundaries to form global social, economic, and cultural networks (Nyako *et al.*, 2022). E-commerce, or electronic commerce, is the practice of using the Internet and other forms of electronic communication to facilitate the conduct of business, the dissemination of related information, and the maintenance of existing business

connections [11]. Therefore, e-commerce can boost developing countries' competitiveness and help alleviate poverty [12]. Despite this, there have been conflicting studies that find that e-commerce is bad for developing countries and widens the digital divide (Awiaga *et al.*, 2015). These claims are based on the many difficulties that these nations already face, such as infrastructure setbacks and a lack of access to technological tools and information.

These improvements notwithstanding, Ghana's e-commerce performance continues to trace countries like South Africa [13, 14]. Furthermore, the Ghanaian SME sector seems oblivious to the advantages of e-commerce, providing support to the claim of Fillis *et al.* [15] that SMEs already using e-marketing technologies show little evidence of engaging in their long-term strategic development, particularly among less developed countries. Some business owners launch startup operations without first developing sound IT plans for long-term viability, which is a common issue in the business world at large. This issue manifested itself in the form of a lack of effective plans among certain e-commerce businesses for achieving and maintaining sustainability beyond the first five years of business [16]. Even more, the slow pace of adoption of e-commerce technologies in developing nations might be attributed to a general misunderstanding of the advantages of this kind of business [17]. For some small and medium-sized business owners, the costs associated with online trading are simply not worth it [6]. The aim of this chapter is to identify electronic commerce areas for SMEs' success in developing countries like Africa.

Contributions of the Chapter

Because of their agility and ability to reach more expensive, more established markets, managers of small and medium-sized enterprises (SMEs) could benefit from incorporating internet commerce into their marketing plans. Managers of small and medium-sized enterprises (SMEs) could use the results of this research to (a) boost retail e-commerce sales, (b) improve response times with customers, (c) expand into new markets, and (d) lower the financial barriers to entry into existing markets. The chapter also includes suggestions for where attention should be directed in terms of the feasibility of involving all relevant parties and agencies in bringing about the widespread adoption of E-commerce in the agrochemical business. Lastly, it is important to gain insight into the impact of the deployment of ecommerce on SMEs across industries because it is a developing new trend that is anticipated to be a significant alternative to the utilization of market place based on geographical location and further help in sales performance.

The Nexus Between Digital Transformation and SME Performance: The Perspective of Developing Economies

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Abstract: M-commerce, or mobile commerce, is transforming how business is done online in the modern era of business. Unfortunately, Ghana's "small and medium-sized enterprises (SMEs)" do not use mobile commerce very much. This study aims to assess the body of knowledge on the issues, preventing SMEs from adopting m-commerce and to further the investigation into those issues. The results illustrate how unstable variables are when seen in terms of how they affect one another, their connections, and themselves. The components of the proposed framework are discussed, and the way they interact with one another emphasizes how difficult it is to prevent m-commerce adoption. This outcome emphasizes the importance of thorough data analysis as opposed to problem isolation. The results also showed that "perceived risk" was a significant barrier, highlighting the possibility that different perspectives on the adoption concept may have a significant impact on the result and the existence of additional factors.

Keywords: Digitalization, Ghana, Mobile-Commerce, SMEs, Technology.

INTRODUCTION

Digital transformation frequently results in extreme changes, from fundamental reorganizations in industry-level business models to the alteration of organizational business practices, quickly altering corporate operations across a wide range of industries [1]. It refers to the novel use of digital tools and symbols in and around organizations [2]. Digital transformation is one of the primary forces behind "sustainable development and economic growth" in the modern business environment [3]. Therefore, it should come as no surprise that "digital

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technologies” have started to have a big impact on SMEs. In this sector, digital advances have begun to produce noticeable improvements, according to Hanga and Kovalchuk [4]. E-commerce and Internet technologies have several benefits for businesses, which are well-known. By developing an economy based on an ICT-enabled and networked SME sector, developing nations will be assisted in making swift and enduring economic and social progress. The developing world struggles to keep up with emerging technology as the developed world pushes forward with the e-transformation of businesses. For SMEs, especially “small and medium-sized enterprises,” to succeed in today's complicated global world, the effective use of IT is crucial. SMEs are crucial to the economy of any nation and are frequently acknowledged as an engine of economic growth. The SME sector makes a substantial contribution to the national economy in terms of wealth and jobs created. This occurs as a result of the growth of ICT and the transition to a knowledge-based economy.

Despite IT developments and the widespread usage of these technologies by big businesses, it is unclear if SMEs have embraced them to the same degree. This shows that SMEs encounter important and particular difficulties while using ICT and e-commerce. Enterprises are hampered by this low adoption rate, particularly in developing nations. M-commerce, also known as mobile commerce, has gained popularity among businesses over the past ten years [5]. M-commerce uses cellular networks and the Internet to make it easier for people to make purchases and conduct other business operations. These clients also enjoy the convenience of purchasing whenever and wherever they desire using a mobile device. M-commerce is becoming more and more significant for businesses since it improves the relationship between customers and companies. Businesses can take advantage of this tendency to gain more market share and new sources of income. However, adoption for SMEs is rarely a straightforward or successful process, and there are several obstacles that could prevent adoption [10 - 12]. Although there is a wealth of literature on e-commerce [8, 9], researchers and academics have not given mobile commerce the same kind of attention. As a result, smaller businesses have limited access to information and literature [10 - 12]. The evidence that is currently accessible shows how important mobile commerce could become for businesses. Managers aren't given guidance on using the technology or its challenges. The study will clarify the benefits of mobile commerce and its adoption barriers, especially for SME managers. The issue that this research project will try to solve is the dearth of research on SME m-commerce adoption and the connection between digital transformation and SME performance. The demands and expectations placed on managers as SMEs attempt to meet consumer needs can leave them feeling disheartened [13]. The challenges that managers regularly face include high expenses, perceived risk, and external pressure, and it is still difficult for them to comprehend how they might be able to

overcome these challenges. This research will aid SMEs in better comprehending m-commerce, its effects on enterprises, and the opportunities it may present. Its traits, development, and acceptability barriers are all covered in the literature, in addition to its accessibility. It will also provide the knowledge needed to benefit from the structure created. This research will aid SMEs in better comprehending m-commerce, its effects on enterprises, and the opportunities it may present. Its traits, development, and acceptability barriers are all covered in the literature, in addition to its accessibility. It will also provide the knowledge needed to benefit from the structure created.

DIGITALIZATION

Digitalization is “the process of transitioning to a digital business; it is the use of digital technologies to modify a business model and give new revenue and value-producing opportunities” [14]. In other words, machine learning techniques for organizational decision-making and the availability of enormous volumes of data are what lead to digitalization [15]. According to this definition, digital transformation is a technology-driven process of change that was prompted by connection, a plethora of data, and an unorthodox decision [16]. How organizations adjust to technological advancements is now included in the definition of digital transformation [17]. In order to compete in the market, firms employ digital technology mostly to enhance the value-creation processes they have already adopted. The term “digital transformation” describes the intense use of digital technologies to enhance organizational performance and operational effectiveness [18]. To do this, they must advantageously alter their operating systems and business practices. Businesses must therefore discover new methods to innovate with these technologies using plans and policies that embrace a successful digital transformation in order to improve operational performance [19]. Because technology has the capacity to profoundly change every element of a company, a successful digital transformation could improve sociotechnical and digital capabilities in SMEs [17]. But for a digital transition to be effective, firms' potential for value creation must evolve [1]. “Big data analytics (BDA), cloud computing, mobile computing, artificial intelligence (AI), and the Internet of Things” were among the technologies that the World Economic Forum named as the most innovative (IoT). The pace of change has been greatly accelerated by these technologies. Mobile technology enables businesses to reach out to customers quickly, directly, and economically. For instance, Wamba-Taguimdje *et al.* [20] found that using blockchain to increase trust can improve supply chain performance. It will be twice as effective at advancing complete supply-chain traceability when combined with IoT applications. All economic sectors, including those in the resource and energy industries, stand to benefit significantly from digital technology. The demand for digital technology is also being driven

Challenges of SMEs Adoption of Big Data in Africa

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Abstract: Many small and medium-sized enterprises (SMEs) today exploit big data despite having insufficient resources to do so. The literature is clear that huge corporations throughout the world are increasingly adopting Big Data Analytics as a means of gaining a strategic edge. However, the literature shows that SMEs are not using this technology to its full potential due to factors including a lack of experience and the associated costs. The goal of this article is to examine the difficulties SMEs have when utilizing big data in Africa. The study's findings pointed to a lack of funding, clear information, complicated data, advanced big data analytics tools, reliable infrastructure, compelling business propositions, clear data privacy and culture norms. Big data analytics by SMEs help them face and overcome obstacles and reap the benefits of BD to boost their competitive edge and, ultimately, the economy of their country and Africa as a whole.

Keywords: Challenges, SMEs, Adoption, Big Data, Africa.

INTRODUCTION

Industry 4.0, often known as digital transformation, is a relatively recent phenomenon that has influenced several sectors. Artificial intelligence and machine learning, neuro-technologies, mobile and cloud computing, sensing, and other “exponential technologies” are all contributing to this shift in the manufacturing and engineering industries [1]. Big data is introduced as an innovative IT miracle or a method based different technologies [2]. There is a lack of research on BD in Sub-Saharan Africa, with the majority of the available material focusing on ICT use (Shereni & Chambwe, 2019).

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Another problem is that businesses, especially in Africa, have been slow to use big data platforms as part of their operational decision-making processes [3]. African companies acquire both structured and unstructured data (variety BD), with the great bulk consisting of transactional data (customer sales). Since this is the case, South African businesses have a slim pickings of data to work with. Also, it appears that retailers are more focused on extracting value from their structured BD, where they can see tangible economic advantage, than from their unstructured data (Ridge *et al.*, 2015). African companies are using big data analytic platforms to improve the efficiency with which they analyze and disseminate massive amounts of structured data. Statistically, most cyber-attacks target organizations with fewer than 250 employees (Battersby, 2014). (Battersby, 2014).

Overall, big data and its analytical tools represent newly discovered opportunities for businesses to examine accessible data to learn more about the state of their firm in the market and make effective decisions to maintain competitiveness and expand market share. While e-commerce, e-government, and healthcare have all made use of big data analytics, more industries and enterprises could reap the benefits of this technique if they adopted it [4]. While many studies have been undertaken on various techniques of data analysis and storage, especially in the sphere of industry, less focus has been placed on small and medium-sized businesses (SMEs) despite BD's recent surge in importance. Some C-suite executives may also wonder if big data analytics is really different from business intelligence and data mining, or if it represents a truly revolutionary capability that necessitates substantial investment. It is a largely unknown issue for these SMEs' management [1]. A widespread issue was that small enterprises were hesitant to adopt new technologies, leaving them vulnerable to sophisticated, persistent threats from malevolent sources and stunting their economic development and social benefits [5]. Small organizations have a hard time detecting and preventing advanced, persistent threats from hostile sources because of a lack of information about the poor adoption of big data security analytics. Despite being a key priority, only 29% of executives said their company was leveraging big data for predictive analytics [6].

CONTRIBUTION

This research has the potential to contribute to the field of information technology by illuminating the effective data governance techniques employed by small and medium-sized enterprises (SMEs). As small and medium-sized enterprises (SMEs) struggle to make sense of the mountain of data at their disposal, one area in which they may be able to contribute to the field of information technology is by sharing the best practices they have developed and implemented to manage

this information overload. Customers may profit from small businesses' usage of big data if the businesses are able to better anticipate and respond to their unique demands. All things considered, the capacity of data scientists to make good use of big data in SMEs might be a leveling force that benefits customers, employees, and owners of all SMEs. The spread of new technologies is influenced by interpersonal channels of communication. Learning more about this technology (big data) could assist in preventing data breaches and advanced persistent attacks at companies. To prevent the loss of intellectual rights and the interruption of IT-enabled businesses, protection from advanced, persistent threats is becoming a need. The benefits of this method extend far beyond the realm of information technology. This research has the potential to advance the state of the art in the field of data science by enhancing the understanding of big data technologies among IT professionals, in particular data managers.

LITERATURE

Big Data

Information is called the “raw material for responsibility” and “the lifeblood of decision-making.” Designing, monitoring, and assessing effective policies becomes nearly impossible without high-quality data giving the correct information on the right things at the right time. The concept of “big data” was first proposed in 2005. It was meant to characterize the consolidation of vital data from several sources into a single repository for analysis. The term had the air of being the newest meaningless jargon that we could safely disregard. Many fields, including data science and statistics, business intelligence, and quantitative modeling, are brought together in BD as an analytic method [7], a technology, a collection of skills and talents, and a business strategy [8]. Processes needed to take advantage of big data were used by some to define it [9]. The many definitions of “big data” have been sorted by Wang *et al.* [10] according to whether they focus on “product,” “process,” “cognitive,” or “social” dimensions [11, 12]. For instance, Sivarajah *et al.* [13] defined big data as having the 7 V's of high volume, high variety, low veracity, high velocity, high variability, effective visualization, and high value, while Wamba *et al.* [14] stated that big data is actionable and delivers a sustained value, measured performance, and provides a competitive advantage. Complexity and decay, two additional characteristics of big data cited by Lee [15], entail that many data components in big data must be processed immediately if they are to be of any use. Single data sets in BD can be anything from a few dozen terabytes to many petabytes, zetta-bytes, or yottabytes in size, and this number is only expected to grow [3]. More than half (58%) of all data breaches were reported by small firms in 2018 by Verizon Enterprise, and approximately 68% of those breaches were not discovered for a period of months.

Exploring Email Marketing Among Small and Medium Enterprises

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Abstract: The use of digital channels by Small and Medium Enterprises (SMEs) for consumer engagement is changing as a result of advancements in information and communication technologies and subsequent adoptions, notably by customers. According to market research, marketers continue to trust email marketing more than conventional digital marketing. Few studies have been done on email marketing and how SMEs may use it to succeed as a business, and those that have been done, have all been in developed nations with well-established telecommunications infrastructures. This book chapter aims to investigate email marketing among SMEs in attaining business success in order to fill the knowledge gap and expand the body of information already existing in this field. By synchronizing the use of particular marketing tools and resources, such as email marketing, SMEs can maintain the competitive edge of an existing product(s). By sending emails to current or future clients, email marketing aids in the promotion of any business online. However, SMEs must be aware of the numerous challenges and complexity around General Data Protection Regulation (GDPR) compliance in order to help SMEs adhere to email and data compliance required for business relationships built on trust and data protection and privacy.

Keywords: Digital marketing, Email marketing, Email strategies, General data protection regulation.

INTRODUCTION

Now more than ever, advances in information and communication technologies and subsequent adoptions, particularly by customers, are transforming the way Small and Medium Enterprises (SMEs) use digital channels for consumer engagement. Customers and businesses have become more connected, informed, empowered, and active as a result of how they have responded to the digital revolution [1, 2].

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Market data indicates that customers are transferring their interactions to businesses with digital touchpoints due to new search, email, and social media technologies, according to Lamberton and Stephen [3] and Kannan and Li [4].

In 2021, it was projected that there will be 332.99 million SMEs globally [5]. A recent research by the Knight Foundation found that 60% of SMEs now view the internet as a crucial tool for their marketing and sales activities [6]. The expected global ad revenue for media owners in 2022 increased from 759 billion dollars in 2021 to 808 billion dollars. This demonstrates how SMEs are increasingly using online tools to grow their businesses.

Search engine optimization, social networking, and email marketing are some of the most well-liked digital marketing tactics utilized by SMEs in consumer engagement [6]. Because email marketing is a quick, easy, and affordable communication method, it is relevant for SMEs, particularly marketers. Email marketing is the practice of directly promoting a commercial message to a group of individuals by electronic mail (email) in order to send advertisements, collect donations or purchases, ask for business, or increase brand awareness or consumer loyalty [7].

Recent market research has revealed that email marketing continues to enjoy greater marketer trust than conventional digital marketing [8, 9]. Email has turned into a crucial digital marketing medium for companies all over the world as the number of email users increases yearly. Revenue from e-mail marketing was \$7.5 billion in 2020, and by 2023, it is expected to surpass \$10 billion. There are few if any, marketing channels that can match e-average email's return on investment (ROI), and given that businesses may expect up to \$45 for every dollar spent on advertising, it is clear why e-mail has retained its reputation for decades [10].

SMEs are crucial to most economies, particularly those in emerging nations. Formal SMEs in poor nations can contribute up to 40% of the GDP [11]. Quaye and Mensah [12] assert that SMEs can maintain the competitive edge of an existing product(s) by simultaneously utilizing particular marketing tools and resources, such as email marketing. By sending emails to current or potential clients, email marketing aids in the promotion of any firm online (Rosario, 2021). Email is frequently used to promote events, offers, and other information on a company's website. Organizations can keep their present consumers by using email marketing campaigns to encourage people to finish their shopping baskets. It might also persuade the intended audience to make a purchase by producing, for instance, a tailored offer based on that person's requirements and preferences [13].

There is not a lot of literature on email marketing [14]. Most studies examine email marketing from the standpoint of the individual recipients, *i.e.*, investigating the reasons why people open or read the messages [15]. Additionally, research on email marketing and how SMEs might use it to succeed in business has been sparse, and studies in this area have only been carried out in industrialised nations with advanced telecommunications infrastructures [16]. This book chapter aims to investigate email marketing among SMEs in attaining commercial success to fill the knowledge gap and expand the body of information already existing in this field. The goal of this chapter is to explain the idea of digital marketing, email marketing, its importance, email marketing strategy, and its application to SMEs. The final section of the book will provide advice on how SMEs might succeed in business.

LITERATURE

Digital Marketing

Academics and industry experts have given digital marketing several titles, including internet marketing, e-marketing, and web marketing, as a result of the usage of the Internet and other digital media and technology to assist “modern marketing.” But these names are frequently used in the same context. Using digital technologies and media to accomplish marketing goals is the essence of digital marketing, according to Chaffey and Ellis-Chadwick [7]. However, Reedy *et al.* [17] defined it as the method for facilitating and carrying out business transactions and communication across networks.

This concise explanation serves as a helpful reminder for SMEs that investment in digital marketing should be based on outcomes or financial success given by technology, not on acceptance of the technology. Desktop, mobile, tablet, and other digital platforms are examples of these digital technologies. All marketing initiatives that make use of technology or the internet fall under the category of digital marketing. SMEs use digital platforms to engage with present and potential consumers, including search engines, social media, email, and their websites [13]. Today, digital marketing includes non-Internet platforms that offer digital media, like mobile phones (SMS and MMS), callback services, and on-hold ringtones.

Email Marketing

Email is crucial to digital marketing since it facilitates the transition of customers from one stage of the buying process to another, resulting in a high return on investment. Email continues to be a key component in the mix of digital media [7, 18]. It is “the most prevalent communication instrument utilized throughout the day by practically everyone” [18]. According to Labanauskait *et al.* (2020), email

CHAPTER 5

Factors Influencing the Adoption of Big Data amongst SMEs in Africa

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Abstract: Characteristics of big data include its ability to be both diverse and quick, as well as trustworthy. The vast amounts of existing medical information about patients can be analyzed using BDA methods, yielding insights that can be used to strengthen the SME industry. The purpose of this chapter is to identify and explain factors influencing the adoption of big data amongst SMEs in Africa. This chapter evaluates the factors from theories and models of technology acceptance (TAM, UTAUT, TTF, and TEO). All these models and theories are discussed along their sub-factors for scholars and practitioners to understand big data adoption and utilization issues.

Keywords: Africa, Big Data, TAM, UTAUT, TTF, TEO.

INTRODUCTION

Small and medium-sized enterprises (SMEs) are defined as companies with less than 250 or 1500 employees, respectively, across all industries [1]. In this study, “small businesses” were considered to be those with fewer than 250 employees. Small and medium-sized enterprises (SMEs) can especially profit from this technology's widespread availability because it increases their potential customer base to include billions of individuals. The availability and accessibility of large amounts of data have led to significant changes in marketing analytics and the marketing industry as a whole. It has helped us gain an edge in the market by introducing novel ideas and approaches (Watson, 2019). Strategic value may be created for businesses through service innovation, which is made possible by business design thinking [2]. There are a number of challenges that must be overcome by businesses before they can successfully use BDA (Yaqoob *et al.*, 2016). However, BDA helps them make better choices by making use of open-source tools and methods.

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Big data is defined by its large volume and variety of sources, its decentralized management, and its complicated and ever-changing data. There are five main characteristics of big data, or “big Vs,” and they are volume, velocity, variety, veracity, and value [3]. Big data analytics is the process of analyzing massive amounts of data by applying sophisticated methods, primarily data mining and statistical models (Wang, Gunasekaran, Ngai, & Papadopoulos, 2016).

Information and communication technologies are no longer a luxury for small enterprises because of the proliferation of IT. It has become increasingly important to the day-to-day functioning of businesses. As the number of networked devices grows, so does the attack surface for sophisticated, well-motivated hackers (Stewart, 2014). Advantages in innovation, marketing, efficiency gains, quality, and responsiveness to customers can be gained by small and medium-sized enterprises (SMEs) through the use of information and communication technologies (Wedel & Kannan, 2016). The majority of research into the prevalence of e-business among small and medium-sized enterprises (SMEs) reveals that these businesses struggle to make strategic use of e-commerce.

Despite widespread recognition and enthusiasm for the benefits of using online platforms for things like marketing and sales, Awa *et al.* (2010) found that relatively few SMEs are actually taking advantage of this trend. Hence, the purpose of this chapter is to identify and explain factors influencing the adoption of big data amongst SMEs in Africa.

CONTRIBUTION

By giving the perspectives of aspiring managers on crucial issues of adoption in African SMEs, this chapter addresses a large void in the literature on the topic of BD's widespread uptake. The chapter also used many theories (UTAUT, TAM, and TEO) with additional variables to address a timely and important topic that will be of interest to future researchers. The discussions in this chapter are unique in that it integrates the UTAUT, TAM, and TEO, making it the first of its kind. Results from this review could have far-reaching positive social effects by improving small business owners' knowledge of advanced persistent threats and big data security analytics and understanding factors for SMEs that can be used to adopt BD.

LITERATURE

Big Data and Africa

Big Data was first discussed by Bryson, Kenwright, Cox, Ellsworth, and Haimes, who were talking about visualization strategies for dealing with unique scenarios using enormous datasets. According to African Business [4], the prospects presented by the expanding capabilities of data science are too good for African enterprises to pass up. Africa often lags behind the rest of the globe when it comes to adopting innovations. Nonetheless, there is a lot of interest in using big data to combat poverty on the continent. The business world has taken the lead in getting things rolling. Actually, data collection is ongoing across Africa, both by private companies and government agencies. Big data refers to data sets that are too large and/or unstructured to be processed by conventional relational database techniques (such as daily data creation of 2.5 quintillion bytes) [5]. Three dimensions of Big Data were established by Johnson, Friend, and Lee [6]: volume (the amount of data acquired and generated), velocity (the rate at which data is generated and processed), and diversity (the number of data types). In order to give actionable insights for long-term value delivery, performance assessment, and competitive advantage, BD is a holistic strategy for managing, processing, and analyzing the five Vs (volume, variety, velocity, veracity, and value) [6, 7].

FACTORS INFLUENCING THE ADOPTION OF BIG DATA AMONGST SMEs

These factors are discussed based on theories of BD. Such theories include: TAM, DOT, and TEO which can facilitate or impede BD adoption.

TAM

Two dimensions, perceived ease of use and perceived usefulness make up Davis's [8] TAM, which seeks to explain why people choose to adopt certain technologies [8, 9]. A study claims that a person's purpose to use a target system is based on their estimation of its value and simplicity of use. The conceptual framework for this research is [10] an expansion of the TAM model to incorporate four constructs (outcome expectancy, TTF [task-fit or task-technology fit], social influence, and personal factors). The first two components of the original TAM were integrated by [11] into one construct called outcomes expectancies, which is widely recognized as the best predictor of technology acceptance [12]. The independent factors (perceived usefulness, perceived ease of use, and attitude toward use) and dependent variables (big data usage) are identified in [13] research on big data utilization by means of the original TAM components (behavioral intention to use, and actual use). The TAM components (*i.e.* PEOU

SMEs' Use of Technology and Its Effect on the Firm

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Abstract: Globally, digitalization is changing economies and influencing how businesses create and sell their products. It has the potential to increase creativity, productivity, and economic growth. This chapter set out to ascertain what technological resources are required by small business executives in order to effectively leverage IT to boost company performance. IT has multiple benefits for SMEs/MSMEs including essential for the development of a company, for looking into emerging markets, for merchandise demand, for productivity and income, for staff development, and for the use of remote techniques of labor. It is concluded that the technology has an influence on SMEs' performance.

Keywords: IT, SMEs, Africa, digitalization, technology.

INTRODUCTION

Africa is the second largest continent, at 30 million square kilometers. It has more than 1.4 billion inhabitants and an area larger than Europe, the United States, and China combined. Over 1.2 billion people call the area sub-Saharan Africa (SSA), home (UN, 2017). SME ICT adoption is crucial for economic growth, especially in less developed nations [1]. SME CEOs employ ICT-based electronic commerce incrementally to build a worldwide competitive advantage [2]. While small and medium-sized enterprises (SMEs) in affluent nations have rapidly embraced ICT-based electronic commerce, SMEs in developing countries have adopted ICT at a much slower rate [3, 4]. The "Digital Transformation Strategy for Africa 2020-2030" put forth by the African Union [5] posits that digital transformation is a key factor in achieving sustainable, inclusive, and creative economic development. African nations with fewer legacy difficulties may be able to implement digital solutions more quickly, which is why the current time is seen as a leapfrog opportunity in this strategic vision [5].

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The elimination of poverty and the reduction of disparities in Africa by 2030 is a major goal of the continent's National Development Plan, and the continent's countries have made digital transformation a central part of this effort. Entrepreneurs all throughout the United States are always looking for fresh approaches to increasing their bottom line and keeping up with the competition. Small and medium-sized enterprises (SMEs) that embrace digital transformation have the opportunity to rapidly expand their customer and supplier bases, as well as gain access to innovative business models designed to enhance their operations, products, and services in order to generate greater value for their customers and more revenue [6]. Military conflicts, political unpredictability, high unemployment (and consequent food shortages), gender inequality (and related issues like low wages and low educational attainment), and widespread digital illiteracy are all realities for most countries in Sub-Saharan Africa (SSA). To counteract these setbacks and usher in fresh prospects for regional growth, however, new business models and methods are being developed and put into practice. These creative responses, as pointed out by Madichie (2016), are dispersed. In addition, the discussion surrounding technology adoption by SMEs suggests that doing so is more likely to facilitate travel, international business, and stronger ties between individual businesses. With the implementation of the African Continental Free Trade Area (AfCFTA), which promises to open Africa's markets and promote chances for digitally enabled economic growth, this is of fundamental importance for SMEs in the SSA area [7]. These shifts may help small and medium-sized enterprises (SMEs) become more competitive and promote digitally enabled resilience (Fatoki, 2018). Decentralized technology (DT) can have a long-term impact on several industries, as stated by Vogelsang *et al.* [8]. Companies across industries are under increasing pressure to go digital, yet this means doing business in fundamentally new ways.

Despite the availability of several information technology and digital possibilities, these resources are underutilized by small and medium-sized enterprises (SMEs) in Africa. African culture and civilization are vastly different from their Western equivalents. The status quo cannot continue as-is if these areas are ever going to achieve the same economic or social levels as the rest of the country. Conversely, it facilitates linkage to elsewhere-advanced techniques and experiences. However, research on digital SMEs in Africa is either inadequate or exhibits poor awareness of the potential contribution of SMEs usage of digital transformation tools on economic growth and societal gain, as pointed out by Dana *et al.* (2018). Can Africa make advantage of cutting-edge tech without having to catch up to where developed nations were 20 years ago?

IT improves a company's ability to compete, increase productivity, and expand itself (Molinillo & Japutra, 2017). Enterprise executives throughout the world are

increasingly prioritizing the incorporation of IT in order to construct flexible capabilities (Doucek *et al.*, 2014). As Parida *et al.* (2016) noted, in today's ever-evolving business climate, only companies with dynamic skills can successfully adapt by adjusting their processes and procedures to suit new demands. However, many SMBs in developing nations fail because of a lack of information on effective methods of integrating IT into their operations (Cant, Wiid, & Hung, 2015). According to TobOgu, Kumarb, and Cullen (2018), small firms may see gains in productivity if they adopt and use IT. The chapter's goal was to establish what kinds of technological resources are essential for CEOs/managers/owners of small businesses to effectively leverage IT to boost their companies' bottom lines. Hence, this chapter provides an understanding of how SMEs' use information technology and how it affects their performance.

Contributions of the Chapter

In this study, we examine the rapid growth of small and medium-sized enterprise (SME) ICT use in Africa. This chapter adds to the existing body of information on the factors that influence the adoption of ICT by SME leaders as a business strategy to boost profitability and compete worldwide, with a focus on SMEs in Africa. Other issues, such as cultural influences on ICT adoption, operational costs, accessible ICT skills, infrastructure, and the ICT knowledge gap, were also addressed, filling a need in the current literature. With the ongoing comprehensive digitalization of SMEs, this research introduces ICTs as a novel strategic dimension. This chapter also argues for the benefits of technology implementation in SMEs and provides confirmation of these gains.

LITERATURE

SMEs

When the government of a developing country provides the proper infrastructure and strategic policies, business owners in those countries are able to invest and build profitability strategies that greatly contribute to national economic and social progress (Nuwagaba, 2015). "Businesses that maintain sales, assets, or a particular number of employees below a specified threshold," as defined by Liberto [9]. However, defining a small or medium-sized enterprise (SME) varies from country to country. SMEs, as defined by Pradhan *et al.* (2018) and echoed by Ayong and Naidoo [10], are defined as "compact, non-subsidized, independent enterprises employing a specific number of employees in accordance with the regulations in a country" (2019). Small and medium-sized enterprises (SMEs) have both family-owned and nonfamily-owned (owner manager) components (Hassan & Mohamed, 2015). Small and medium-sized enterprises can mean many different things (Lampadarios, 2017). The general characteristics of SMEs were

Adoption of Social Media by Small and Medium Enterprises: Key Factors and Impact

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Abstract: Adopting and utilizing social media for conveying information to stakeholders can be made possible by SMEs at little cost. There is little research on the correlation between the use of social media and the success of SMEs, despite the fact that access to and sharing of information is a key factor in the success of SMEs. The purpose of this chapter is to identify and explain the motivating factors behind SMEs' adoption and use of social media. The factors that were identified in the literature were based on theories applied in SMEs perspective in Africa. We employed the TOE and TAM models for the chapter. These factors included environmental, cost, comparability, ease of use, usefulness, and relative advantage. It was concluded that social media technology is good for SMEs to make an impact in the world of business, hence, needs to be adopted by SMEs' managers or owners.

Keywords: Adoption, Africa, SMEs, Social media, Technology.

INTRODUCTION

Many firms (large or small) focus on technology to effect change and to compete favourably. To be competitive, small businesses need the ability to create new services and products and the adaptability to use emerging technologies [1]. Creating and maintaining a company's fan page, handling promotions, keeping up public relations, and performing market research are some of the most prevalent social media marketing strategies among SMEs today. Helping customers and getting feedback from them are two more things people do (Newman, 2013).

Small firms have made major contributions to both the domestic and foreign economies, and their continued success is expected to continue into the foreseeable future [2].

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In spite of this, it has been estimated that half of all SMEs will fail during the first five years of operation [3]. Results from these research suggest that small and medium-sized enterprises (SMEs) that take use of network marketing methods made possible by technological advancements have greater success than their counterparts that do not [4]. Marketing is something in which even the smallest of firms must actively participate. There's a pressing need to teach entrepreneurs the value of advertising their wares [5]. According to Calli and Clark [6], this is due to a lack of sales growth, a lack of marketing knowledge, and a lack of understanding of the marketing strategy. When seeking direction on how to best approach marketing, a small business may look to a larger company for guidance through a strategic alliance. However, Calli and Clark [6] argued that even little enterprises needed a marketing strategy to expand their customer bases and revenue streams. The obstacles that stop small business entrepreneurs from expanding and thriving are many [6]. Owners of small businesses should use the Internet and social media to improve their relationship with clients and distribute the greatest possible value to those customers. Communicating with clients and raising brand awareness can be accomplished through the use of social media by small businesses [6, 7]. An accessible and low-cost alternative, social media offers a dynamic, participatory platform for the creation and implementation of marketing plans, hence boosting the success of small enterprises. Marketing tactics like this may do wonders for a company's reputation and bottom line [8, 9].

For businesses of all sizes, but especially for startups and SMEs, social media has emerged as a crucial tool. Businesses can improve their client relationships, earnings, expenses, and adaptability thanks to its various features. At present, there are 4.2 billion people using social media [1]. There are now nearly twice as many as there were just five years ago in 2011. Social media consumes an average of 2.25 hours each day from these consumers [1, 5]. Given the importance and rapid growth of the social media communities globally, it becomes necessary to study it in the perspective of SMEs in Africa. Therefore, the purpose of this chapter is to investigate the motivating factors behind SMEs' adoption and the use of social media.

Contribution of the Chapter

The implications of this work for practitioners and researchers examining the use of social media by SMEs are discussed. It constructs a multi-factor, taking into account a wide range of factors that may affect SMEs and people's openness to using social media. Using a validated measuring technique that integrates TEO and TAM theories, this literature review contributes significantly to knowledge by giving empirical evidence of the factors affecting social media deployment from a variety of perspectives, not just technological. Our knowledge of the elements that

influence SME decision-makers' use of social media is expanded by the information presented in this chapter. Lastly, the chapter provides helpful insight to practitioners by recognizing the major reasons that favor or prohibit SMEs from using social media. This chapter adds to the literature on how small-business owners can effectively use social media for marketing purposes. Many books and articles have been written about social media advertising. In contrast, this study looked at how the CEOs of small businesses have used social media marketing to boost company output. Including their stories in the canon of literature helps to broaden our understanding of the world in many ways.

LITERATURE REVIEW

SMEs

According to a report published by the U.S. Small Business Administration (SBA) in 2018, small businesses accounted for 99.9% of all U.S. businesses, 97.6% of all exporting companies, generated 8.4 million net new jobs (almost twice as many as large firms), were responsible for 32.9% of known export value, and employed 47.8% of individuals working in the private sector. In most economies, especially in developing nations, SMEs play a crucial role [2]. The majority of businesses are SMEs, which play a crucial role in the creation of jobs and expansion of economies around the world. They account for more than half of all workers and 90% of all enterprises. With 40 percent of GDP, formal SMEs are a driving force in emerging economies. When you include the unofficial SMEs, you get a much bigger picture. Many governments around the world have made supporting and encouraging SMEs a top priority in light of The World Bank's [10] projection that 600 million new jobs will be needed by 2030 to accommodate the world's expanding labor force. In emerging countries, small and medium-sized enterprises (SMEs) are the primary source of formal employment, accounting for seven out of every ten new jobs. A major barrier to SMEs expansion is the lack of access to capital, which ranks as the number two challenge for SMEs in developing economies. Limited access to capital is a major obstacle. Without easy access to capital, starting and expanding businesses in Africa is hampered. There is a financing deficit of about US \$136 billion per year in the continent's formal SME sector, according to the Regional Director for Sub-Saharan Africa at the International Finance Corporation [11]. What he said about SMEs making up 90% of all African enterprises is really noteworthy.

Social Media

The rich social structure of today's world is in large part due to the prevalence of social media, which consists of Internet-based applications and websites that promote the sharing of user-generated content and connection development

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