DIGITAL TRANSFORMATION IN AFRICAN SMES:

EMERGING ISSUES AND TRENDS

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CONTENTS

FOREWORD

Respected reader, you have a treasure in your hands in the name of "*Digital Transformation in African SMEs: Emerging Issues and Trends*". While technological advancements play a role in digital transformation, more technological tools may be even more crucial. Some SMEs are able to complete a digital transformation faster and at much less expense to the firm than others because they have the capacity to build trust in their systems. This book is written for and about digital transformation in Africa. The editors' expertise qualifies them for this good project. They have extensive experience in the field and have spent many years researching the challenges and successes of digital transformation for businesses. Furthermore, they have an intimate understanding of the motivations of these top brass. I agree with the writers that the emphasis should be on technology, people, and performance as the means by which an organization deals with digital disruption. According to my studies, effective digital transformation necessitates adjusting the dynamics of a business and the way its employees perform their duties. There is no sign of a halt to digital disruption any time soon, and it is likely that the typical worker will face multiple waves of disruption over the course of their lifetime. The authors considered digital tools such as social media, Artificial Intelligence, Big Data, IoT, AI, and ML for SMEs. When it comes to relevance, factors influencing the adoption of online shopping and its influence on consumers' intention to shop online are key. The gap between industry leaders and laggards may be rising if these businesses are increasingly reporting and investing time, money, and energy on initiatives to develop these components of their culture. For most SMEs in Africa, I simply believe that changing an organization's leadership, talent, culture, and organization strategy all at once can be a disruptive and inefficient process and that focusing solely on the technological parts of digital transformation is missing out.

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PREFACE

In all of Africa's urban centers and rural villages alike, a new breed of digital natives is emerging and poised to stimulate economic development and drive the acceptance of novel digital technologies and services designed to impact all facets of African society and businesses. As a result, the shift to digital is a key factor in the growth and development of resourceful and long-lasting small and medium-sized enterprises. In line with the African Continental Free Trade Area (AfCFTA), the African Union (AU) plans to create a safe and thriving online marketplace in Africa by the year 2030, where people and companies are free to move around and transact online without restriction. Therefore, SMEs in Africa should make use of this unique AU effort to become more tech-savvy, since SNEs' activities, procedures, competencies, and models can all be modernized through digital transformation. Despite this, many African SMEs have not yet fully adopted the digital change in their entire lives. Taking advantage of the digital revolution calls for a shift in perspective, as well as new forms of collaboration between small and medium-sized enterprises (SMEs) and their stakeholders, as well as between different industries. This book is written for business owners and managers of small and medium-sized enterprises (SMEs), with the goal of helping them take advantage of digital technologies and innovation to drive business transformation in Africa and to build and enhance digital networks and services with the end goal of bolstering trade, investment, and capital flows among SMEs. This book will help managers of SMEs discover and enable the digital infrastructure they need to close the digital gap and inequality between themselves and multinational enterprises (MNEs) and to boost distribution and logistics activities that support e-commerce. This book aims to help SMEs in the African market harmonize their environments in order to guarantee cheaper customer service, expand their reach, and secure more funding to help them close the digital infrastructure gap and achieve a universally accessible market, affordable prices, and secure e-commerce. Last but not least, African SMEs need to learn to embrace the adaptability of their business models, identify their greatest threats, and devise strategies to turn those threats into chances for growth. SMEs in Africa stand to gain valuable insights that will enable them to better locate and exploit new business possibilities presented by digital transformation. The book is compiled based on African SMEs, with contributors from around the globe (*e.g.* India, Australia, and Ghana). The book covers digital transformation tools such as e-commerce, social media, Big Data, the Internet of Things, Artificial Intelligence, Machine learning, online shopping and digitization initiatives.

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CHAPTER 1

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Digital Tools (Big Data, IoT, AI, ML, *etc*.) for SMEs

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Abstract: This article discusses the significance of artificial intelligence (AI) and machine learning (ML) for small and medium-sized enterprises (SMEs) and the challenges that hinder their adoption in Africa and other developing countries. Despite the success of AI and ML in improving performance and productivity in large organizations, many SMEs are reluctant to adopt these digital tools due to a lack of awareness and education. The article highlights the benefits of AI and ML for SMEs, including better decision-making, increased productivity, revenue generation, and innovation. It also discusses how AI and ML can be used for customer service, marketing, and sales automation, and emphasizes the need for SMEs to embrace these technologies to improve their competitiveness in the market.

Keywords: Adoption, Artificial intelligence, Challenges, Machine learning, SMEs.

INTRODUCTION

The advent of digital technologies has impacted the novelty and efficiency of businesses immensely [1 - 3]. This trend has become a revolution that has taken global interactions, businesses, and transactions by storm as it influences connectivity, introduces new procedures, and enhances performance [2, 4]. Digitalization and its associated applications are disrupting several sectors and industries and threaten to make existing models and ways of doing things obsolete by introducing new trends [3, 5]. The influx and expeditious adoption of digitalization have transformed organizational and inter-organizational practices, value chains, and industrial competitiveness [3, 6]. The digitalization process involves digital tools such as the *Internet of Things* (IoT), *artificial intelligence* (AI), *machine learning* (ML), *the Internet of People* (IoP), *the Internet of Energy*

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(IoE), and several others that are adopted by firms to manage their operations, carry out strategies, and to gain competitive advantage [7 - 9]. Research hasexamined the nexus between these digital tools and business performance and varied outcomes report strong and positive effects, negative effects, and others contend that these tools undermine performance [4, 7, 10, 11]. Although the adoption of these digital tools propels SMEs to be competitive both locally and globally, the majority of these SMEs are lagging in terms of digital evolution.

Small and medium-scale enterprises are motivated to adopt digitalization to achieve internal efficiencies, collaborate effectively with partners, reduce costs, introduce new offerings to satisfy needs, gather intelligence, and create employment opportunities [12, 13]. Rahayu and Day [14] posit that these tools help SMEs to become more effective, efficient, innovative, and expansive to rub shoulders with their larger competitors in the global market [7,15–17]. Thus, SMEs that use these digital tools are more likely to outwit their competitors because they expedite future research, strategic planning, and business forecasting, resulting in organizational flexibility [18, 19]. Tarutėa and Gatautisa [15] in their study observed that the adoption of these tools impacts profitability, growth, satisfaction, social and environmental performance, and value. In this light, the effect of these digital tools on the activities of SMEs in Africa can never be overemphasized.

Small and Medium-scale Enterprises (SMEs)

The contribution of small and medium enterprises (SMEs) cannot be overemphasized as they impact economic growth, global market competitiveness, national development, poverty alleviation, employment generation, and innovation commercialization [14, 15, 18, 20]. Largely, they contribute immensely to the increasing gross domestic product, new business creation, and income generation [14, 21]. Regarding employment in developed economies such as the United Kingdom, Germany, and the United States, SMEs employ nearly 99 per cent of the workforce and contribute roughly 70 per cent of the national GDP is mostly around 70 per cent [22, 23]. However, in developing nations such as Ghana, Togo, and Nigeria, their contribution to GDP hovers around 50 percent, and are private businesses dominant [14, 21]. It can therefore be interpreted that SMEs form the backbone of the global economy.

Contexts cannot be overlooked in the definition of SMEs because of the variations in economies, and the sectors that constitute the economies. As a result, the definition and classification of SMEs differ among continents, regions, and countries. Thus, no generally accepted definition and classification exist for SMEs. The parameters for classifying SMEs involve the number of employees,

sales turnover, customer base, available plant and machinery, annual turnover, and several others. In developed economies like the UK, USA, and Germany, small and medium-scale enterprises are classified based on the number of employees and turnover, in that the EU sets the limit at 250 employees and an annual turnover of around Euro, and other bodies consider institutions with 50 million Euro revenue and less than 500 employees. In developing economies such as the African regions, businesses with employees from 1 to 200 or 300 are all considered SMEs [24, 25].

Small and Medium-scale Enterprises in Africa

Small and medium-scale enterprises SMEs in Africa constitute about ninety [90] per cent of private businesses, employ more than fifty [50] per cent of the working class, and contribute grossly to the gross domestic product (GDP) of the nations [14, 26, 27]. Specifically in Nigeria, SMEs are the primary source of employment and comprise more than 90 per cent of businesses in the country [17]. Similarly, in other developing countries like Ghana, SMEs are pivotal to innovation, job creation national development, and growth as they contribute approximately 70 to GDP and constitute over 90 per cent of businesses [15, 28]. In as much as these SMEs remain the driving force of the economies of these developing countries in Africa, their rate of adoption for digitalization is very low compared to their counterparts in the developed economies [14]. This in turn stifles their global competitiveness and slows down their rate of growth considering that digitalization is at the heart of efficiency and productivity that leads to achieving competitive advantage and improving overall performance [14, 26, 28 - 30]. Leaders of SMEs in these nations are gradually prioritizing the adoption of these digital tools through information technology to achieve efficiency, enhance product innovation, make effective decisions, explore opportunities, mitigate threats, and gain competitive advantage [26, 28, 29].

DIGITAL TOOLS FOR SMES

Small and medium-scale enterprises (SMEs) adopt several digital tools for diverse reasons in their activities. Some of these digital tools are discussed below.

Big Data

Big data is ubiquitous to this generation as its tenets keep spreading like wildfire in a dry season. It is a pivotal digital tool adopted by SMEs in this era of data ubiquity. This age is data-driven, as both structured and unstructured facts are sourced from diverse spheres to help individuals and entities make informed decisions. Research predicts that the global big data market will rise from $193.14 billion to about $420.98 billion by 2027 and the emergence of big data will

Factors Influencing the Adoption of Online Shopping and Its Influence on Consumers' Intention to Shop Online: A Study of SMEs in Ghana

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Abstract: The commercial landscape has been transformed by globalization and the rise of technological innovation. Many firms are now using information technology when it comes to providing services to their clients. To that end, a survey of consumers of online products in Ghana was conducted to learn more about the variables that drive the uptake of online shopping and how that affects customers' willingness to do so. This study employed a quantitative approach to investigate the association between characteristics that encourage online purchasing and online shopping intentions. The independent variables employed in the research were simplicity of use, usefulness, risk, and convenience. Research indicated that describing online purchasing as easy, beneficial, risk-free, and convenient had a substantial positive impact on consumer online purchase intention. That is why internet purchasing and its determinants were shown to be directly linked and of substantial importance.

Keywords: Adoption, Consumer behaviour, Online, Shopping, SMEs.

INTRODUCTION

Human requirements can no longer be met without innovation. Thus, innovation is imperative in order to reach long-term objectives due to globalization, fast technology improvement, and a rise in online customer expectations [1]. E-com-

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merce enables customers to acquire access rapidly and easily to data as well as information, skills, and knowledge [2]. E-commerce has the potential to improve the competitiveness of emerging nations while also alleviating poverty [2].

According to Isohella *et al*. [3], the arrival of internet technology in our daily lives and routines has had a positive influence on our lives and companies throughout the globe [4]. As a result of the Internet, companies and people alike have been able to interact and receive information in a variety of new ways that were previously unavailable [5]. One of the most crucial components of modern-day information technology is e-commerce, or the buying and selling of goods and services through the Internet [6, 7]. It seems, on the surface, that internet commerce is fast becoming a successful technique of doing business in almost every corner of the globe [8]. This has encouraged consumers to shift their purchasing habits in favor of the Internet shopping. The result is an increase in the number of e-commerce websites offering great deals and discounts to entice customers to buy their needs, particularly in the retail sector [9].

It has been observed that the reaction to online shopping has expanded swiftly in many regions of the globe, regardless of the many factors that determine its adoption in every place [10]. Compared to other African nations, the internet penetration of Ghanaian consumers is quite high. When it comes to their marketing efforts, more and more Ghanaians are turning to internet shopping as a whole new kind of trade [7]. Ghana has the second-fastest smartphone market penetration in Africa, according to a prior survey [11]. Though it is still in its infancy in lower-middle-income nations, the online buying system should be taken into account due to its complexity.

This phenomenon of online shopping can only be fully appreciated if one has a thorough understanding of the elements that influence consumers' online purchasing decisions [12]. There are still places in Ghana where internet shopping does not exist, despite the country's growing use of the internet and acceptance of new technologies. Customers' desire to use the Internet as a means of acquiring goods and services is a major concern in this respect. Online purchasing has been extensively studied in wealthy countries, but little research has been done in underdeveloped countries [13]. Studies on information technology (IT) are few in poor nations, resulting in a lack of effective IT adoption [14]. Research demonstrating the acceptability and expansion of online shopping in developing nations is also weak, with the majority of the data relying on personal experience [15]. There is an urgent need to better understand the issue of consumers' opinions and attitudes in market research in order to fill in the information gaps.

We want to obtain a better understanding of the special needs of developing countries like Ghana and how to promote online shopping adoption in these countries, *via* this study.

This we believe will aid SMEs to better forecast and assess online purchase intentions and future advancements in the research field by better-knowing customers' online purchasing behaviour [16]. This article's focus is on Ghanaian customers. We looked at the factors that impact their decision-making process while making an online purchase. As a result, the TAM framework for the present research incorporates participants' perceptions of risk and convenience.

When consumers do not acquire enough information from a website, they tend to hunt for perceived danger. Increasing the likelihood of online shopping may be achieved by lowering shoppers' perceptions of risk [17] and increasing their willingness to take that risk [18]. Return policies are becoming a key instrument for increasing sales and customer loyalty as more and more people begin to use e-commerce for their purchases [19]. Only a small number of academics have looked at how return policies at online stores affect customer behavior [20, 21].

MAIN OBJECTIVE

The main objective of this quantitative correlation research was to investigate the factors responsible for consumers' willingness to adopt online shopping amongst SMEs in Ghana.

Specific Objectives

1. To establish whether online perceived ease of use has a significant positive influence on online shopping intention amongst consumers of SMEs in Ghana.

2. To find out whether online perceived usefulness has a significant positive influence on online shopping intention amongst the consumers of SMEs in Ghana.

3. To determine whether online perceived convenience has a significant positive influence on online shopping intention amongst consumers of SMEs in Ghana.

4. To find out whether the online perceived risk has a significant positive influence on online shopping intention amongst consumers of SMEs in Ghana.

SIGNIFICANCE OF THE STUDY

For small and medium-sized enterprises (SMEs) operating in Ghana, knowledge, and skills in successful e-commerce, adoption methods are critical. In order to boost competitiveness, customer base, and market share, the study's results would

Digital Transformation of African SMEs: Understanding Digital Transformation

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Abstract: While the current literature has enhanced our understanding of specific aspects of digital transformation, we lack a comprehensive representation of the nature of this transition and the effects it has on SMEs in Africa. Small and medium businesses (SMEs) in Africa are largely responsible for the region's economic growth and development. Digital transformation (DT) of organisations improves resilience; nevertheless, SMEs in Africa have been hesitant to adopt DT due to a number of obstacles. The findings reveal the importance of mobile phones and social media of DT in boosting SMEs in Africa. It has also established digital technology and user experience as the main dimensions of DT.

Keywords: Culture, Challenges, Digital transformation, Digitalisation, Enterprises, Innovation, Information system, Market.

INTRODUCTION

It is widely accepted that Africa's small and medium-sized enterprises (SMEs) play a crucial part in the expansion and development of Africa's economy by, for example, generating new jobs and fostering healthy competition through innovation and the launch of new businesses [1]. SMEs are crucial to the ongoing economic success of both industrialised and developing nations [2, 3]. The Organization for Economic Cooperation and Development (2017) found that a number of nations are struggling due to slow economic development, high unemployment rates, increasing income inequality, and widespread poverty. SMEs contribute significantly to the development of the economy, but they also

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face growing pressure to address sustainability challenges across economic, environmental, and social aspects [4]. Zambian [5], Nigerian [6], South African [1], Egyptian [7], and Ghanaian scholars have all looked at the impact of the digital revolution on SMEs in Africa [1]. In order to stay competitive, businesses must undertake the challenge and opportunity of digital transformation by digitising current business operations [8]. The competitiveness of businesses and their ability to take advantage of chances for innovation-driven development may be influenced by a number of variables, including those related to the market, to learning, and to the entrepreneurial spirit of the company's leadership [9]. For SMEs to keep their competitive edge over the long term, they need to adopt new technologies and processes of digital manufacturing [10]. Industry as a whole is adopting a variety of distributed data management technologies as part of the cyber-physical system (CPS), and these technologies are being used to allow shifts in the performance of firms' technological and production development, which in turn improves business outcomes [11]. Additionally, digital transformation can be seen as both a driver and a precursor of sustainability, with the latter requiring the former in that industrial firms need to build up enabling digital capabilities to achieve a balanced set of impacts across economic, environmental, and social dimensions [12]. As a result, SMEs may use digital manufacturing techniques to their advantage and pave the route to sustainability in Africa [12 - 14].

New studies have helped us better grasp several facets of the DT phenomena. According to the findings of recent studies, which are in line with the findings of past research on IT-enabled innovation acknowledges that technology is just one part of the intricate complex problem that has to be addressed if companies are to thrive in the digital age. Adjustments to strategy and organization, such as those made to the company's structure, processes, and culture, are required in order to give the opportunity for the establishment of new avenues for the production of value [10]. Despite these advances, a full grasp of this phenomena and its ramifications across all levels of study remains elusive [15, 16].

An increasingly prominent topic in strategic Information System (IS) studies [17], and of interest to practitioners, is digital transformation (DT) [18]. The term "digital transformation" (DT) is used to describe the dramatic changes in society and the economy that have resulted from the advent and proliferation of digital technologies [19 - 21]. According to Fletcher and Griffiths [22], businesses could use the potential of these tools for innovation by creating "strategies that embrace the implications of digital transformation and drive better operational performance".

LITERATURE REVIEW

Small and Medium Enterprises (SMEs)

To be expected, given the diversity of SMEs, the existing literature does not agree on a single, overarching definition. The lack of consensus on a single definition may be traced back to the many different viewpoints on SMEs held by different actors, such as governments, business executives, academics, and politicians. Keskn *et al.* contend, for instance, that different nations define SMEs in different ways, depending on factors like the size of the economy, the number of workers, the amount of sales income, the value of assets, the degree of growth of SMEs, and so on. Many academics argue that SMEs are defined by statute. It is clear from these considerations that a unified definition of SMEs is lacking since all of their facets are difficult to represent in a single formulation. The World Bank lists 32 of the world's 42 poorest nations as being in Africa. Therefore, the World Bank's definition of SMEs is used throughout this article. SMEs are defined as having less than 300 workers, less than US $15.00 million in annual sales or assets, and a loan amount of less than US $1m.

Microbusinesses conducted by a single entrepreneur up to medium-sized companies with dozens of employees are characteristic among Africa's SMEs. In contrast to the medium and large firms, which tend to operate inside the official economy, the vast majority of small businesses are run on the sly. It is estimated that in Africa, 80% of all economic and labour activity takes place in the official and informal sectors. Therefore, SMEs have a considerable impact on the GDP of the area (GDP). In the sub-Saharan African area, SMEs have made important contributions such as those listed below. SMEs account for between 50 and 60 percent of all employment in South Africa and generate 34 percent of the country's gross domestic product (GDP). In Nigeria, SMEs account for an estimated 3 million jobs every year. SMEs contribute between 38% and 60% to the economies of Kenya, Ghana, Cameroon, Rwanda, and Zambia, respectively. According to these numbers, SMEs are crucial to Africa's economic and social progress.

SMEs cover a wide spectrum, from micro-firms maintained by only one or two people with little or no growth to large corporations with hundreds of workers [6]. There is a wide range of enterprises, from those that need little capital to launch to those that need millions [23, 24]. Various industries and regions of the globe use various metrics, such as staff count, total assets, yearly revenue, and capital investments, to define SMEs [25]. Various studies have shown how difficult it is to agree on a single definition of SMEs. Research conducted by Auciello (1975) in 75 different nations revealed that the target countries really employed more

An Insight into the Consequences of Digitalization and Digital Technologies for Small and Medium Enterprises (SMEs) in Africa

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Abstract: IMF (2020) estimates that 20 million jobs must be created annually in SSA and Africa at large to accommodate the region's expanding labor force. However, digital technologies like email, the internet, and mobile money have a huge potential to generate wealth and jobs that African businesses still need to realize. Even though mobile phone technology has helped spread Internet-based innovations throughout the region, this process is slowed down by a vast Internet divide; businesses and people use these technologies less than they could. In 2015, Internet penetration rates in African nations were below 60% of the total population, with penetration rates as low as 5% in some nations including Niger, Sierra Leone, and Guinea-Bissau. Again in 2015, small African firms employed almost 80% of the labor force on the continent. But surveys by the World Bank between 2013 and 2018 show that less than 60% of SMEs used email for business, and less than 30% used websites for the same thing. In contrast, 90% of major businesses polled within the same time period acknowledged utilizing email and/or a website for conducting business. Since SMEs are currently the largest employers and wealth creators in the region, the poor dissemination and adoption of digital technology severely limit their ability to advance. More specifically, and unlike previous research-based analyses of the digitalization of African firms, the research article combines quantitative analysis and qualitative data to give readers a bird's-eye view of how digital technologies affect the performance of small and medium-sized enterprises (SMEs) in Africa and the opportunities for private sector growth that come with the ongoing digitalization of the economy.

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INTRODUCTION

The use and spread of digital technology will likely determine Africa's prosperity in the future. Where people and businesses are severely constrained in their daily interactions by high levels of uncertainty, a lack of infrastructure, high transaction costs, and informational asymmetries, digital technologies play a critical role. The COVID-19 issue has highlighted these market imperfections, which are frequently structural in Africa. According to the Union (2020), Africa needs to add over 20 million jobs annually to accommodate the continent's growing labor force. However, digital technologies like email, the internet, and mobile money have a huge potential to generate wealth and jobs that African businesses still need to fully realize. Despite the fact that mobile phone technology has aided in the spread of Internet-based innovations throughout the region, this dynamic requires improvement due to a wide Internet divide and low adoption of these technologies among businesses and individuals. In 2015, Internet penetration rates in African nations were below 60% of the total population, with penetration rates as low as 5% in some nations including Niger, Sierra Leone, and Guinea-Bissau. Again in 2015, small African firms employed almost 80% of the labor force on the continent [1]. Yet, according to World Bank Enterprise Surveys conducted between 2013 and 2018, less than 60% of SMEs utilized email for business activities, and less than 30% utilized websites for similar purposes. In contrast, 90% of major businesses polled within the same time period acknowledged utilizing email and/or a website for conducting business. Since SMEs are currently the largest employers and wealth creators in the region, the poor dissemination and adoption of digital technology severely limits their ability to advance. Expanding digital technologies like mobile money are frequently referred to as "leapfrogging technologies" in Africa. According to the leapfrogging theory [2], technical advancements have a direct impact on how nations' fortunes change on a global scale. According to this idea, in the event of significant technical advancement, an "advanced" nation's reliance on legacy systems may render newer technologies less desirable in the short term due to their lower profitability, delaying their adoption. Compared to countries that are behind in old technology, are less wealthy, and pay their workers less, they are much more likely to want to give up on the old technology and switch to the new, which is much more profitable from their point of view. Lagging nations that adopt new technologies see increases in productivity, employment, and production in the industries that use those technologies. In industries with a high technological content, the nations that had previously lagged now lead. Could Sub-Saharan Africa (SSA) experience a "reversal of fortune" as a result of digital technologies? It seems relevant to consider mobile-based technologies as having significant leapfrogging potential in Africa's imperfect markets and underdeveloped infrastructure. However, it is still too early to declare a digital-

induced growth miracle in the continent [3]. Many obstacles must be overcome if African countries are to break free from the under-industrialization trap, they have found themselves in and promote job creation and economic transformations through digitally enhanced connections and depth. Despite these problems, the leapfrogging theory gives some ideas about how the growth of the digital economy could help Africa move forward. On the one hand, the continent's connection to the world's high-speed Internet through the installation of high-capacity submarine telecommunication cables [4] has made the mobile phone a standard tool for making cheaper communications, including Internet communications [5, 6]. A group of mobile phone companies called the GSMA says that by 2020, more than 700 million smartphone connections will be in Africa. This figure is more than double that expected in North America and very close to that in Europe. Digital technologies can first help a corporation's internal processes. The penetration of digital technologies, such as computer and mobile technologies applications, such as email, websites, spreadsheet software, social networks, and digital platforms, has altered the organization's organizational structure, production processes, communication protocols, and other aspects. This has also helped the firm create its own digital knowledge. This results in improved input usage and innovation processes, fluidized communication and coordination between company employees, easier access to crucial information for decision-making, and operations expansion into new markets [5, 7, 8]. This is especially true for Internet-related technology, which not only increases a company's input use and innovation efficiency but also makes it much easier to gather data on administrative procedures (like business licenses), market and political risks, the structure of the tax system, tariffs and non-tariff measures, customer and competitor profiles, and other topics. It is interesting to note that these benefits are probably crucial for the Small and Medium Enterprises (SMEs) that are the subject of this report because they might be better able to adopt these technologies because of more adaptable organizational and management practices [9, 10]. Various revolutions in the structure of organizations, industries, and socioeconomic interactions have resulted from the diffusion of digital technologies within and among firms [11]. Fundamental digital tools like email, websites, and mobile money, as well as more advanced tools like blockchain technology, cloud computing, and artificial intelligence, can unleash the growth potential of African businesses primarily because of their ability to enhance internal operations and address market and governmental failures. Adopting digital technology provides benefits for enterprises as a whole, and there are also potential indirect consequences on business performance as a result of various spillovers anticipated from its deployment. The private sector's adoption of these technologies may further polarize the labor market and exacerbate economic inequality because the individual and spillover effects of the adoption and

Effect of Big Data on SMEs Performance

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Abstract: Due to the rapid increase in the amount and velocity of data transmission, the concept of "Big Data" has been on the minds of managers and decision-makers as a means to boost industrial productivity. As a result of the explosion in data volume and complexity brought on by new forms of advanced technology and a wide variety of market opportunities, a data-driven approach to business operations is now essential. This is becoming an increasingly important problem for small and medium-sized enterprises (SMEs), especially in Africa with inadequate infrastructure and resources. Notably, the majority of reports to date that explain how performance gain can be achieved have come from large, well-established firms, especially in developed countries, and there have been few attempts to study the main factors that affect SMEs' intention to adopt BD in developing countries like Africa. Therefore, the purpose of this research was to detect and explain the influence of BD on the performance of SMEs. Three categories of big data were identified in this chapter (structured, unstructured and semistructured). Big data's influence is that it helps SMEs better understand their clientele and respond to their needs through data-driven management and marketing strategies. On the other hand, BD is essential for SMEs to do market research and anticipate consumer actions. SMEs can benefit from BD since it improves their adaptability, efficiency, responsiveness, and the capacity to anticipate and meet client needs.

Keywords: Big Data, Structured, Semistructured, SMEs, Technology, Unstructured.

INTRODUCTION

The significant impact that SMEs have in both developed and developing nations is widely recognized. They have been lauded for their positive effects on economies and employment rates in developing nations. When it comes to creating jobs, fostering innovation, and advancing economic growth on a global scale, it's small and medium-sized businesses (SMEs) that are leading the way. Many organizations throughout the world are undergoing a digital transition, which is placing significant strain on both large and small companies to evaluate

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their current methods of doing business and come up with novel approaches. The rate at which new data is being created has skyrocketed in recent years [1], and it shows no indications of slowing down. The Government Accountability Office [2] predicted that by 2025, between 25 and 50 billion devices would be linked to the Internet and generate data, and Bello-Orgaz *et al*. [3] projected that 2.5 exabytes of fresh data were being generated globally every day. Though they have access to a plethora of data, most businesses only make good use of only 5% of it [4]. A better understanding of how big data security analytics are being adopted could shed light on how best to employ this technology to efficiently detect security threats and thwart APTs. Additionally, small firms that implement this new technology may see an increase in data privacy, security, and accessibility [5].

When small and medium-sized enterprises (SMEs) generate and utilize big data, they can reap many benefits (Wand & Wang, 2020). Because of their proximity to their clientele, SMEs are well positioned to understand where their data comes from, what it's used for, and how much it's worth. But there are downsides for small and medium-sized enterprises (SMEs) when it comes to managing large data. Small and medium-sized businesses often struggle with insufficient funding [6]. Small and medium-sized businesses typically lack the necessary IT resources to properly collect and analyze data. Therefore, management is essential for SMEs to benefit from big data. SME may find "thinking big but starting small" to be a useful approach to big data. Some speculative research examines how BD affects the performance of large companies by enhancing the dynamic capability [7], supply chain management (Wamba *et al*., 2020), or knowledge management [8]. These studies, however, have largely overlooked the widespread use of BD by SMEs. In fact, SMEs account for over 90% of businesses and 60%-70% of employment in OECD nations [5, 13], and BDAC has been recognized as a crucial tool for boosting SMEs' competitiveness [9].

Yet, there has been scant investigation into the factors that really matter to whether or not a company will decide to use this technology [10]. A company's bottom line can benefit from adopting big data practices, which are influenced by a number of external and internal factors [6]. However, by prioritizing the adoption determinants, stakeholders and policymakers can allocate resources more wisely during the adoption process [11]. The benefits of this new IT transformative tool have not gone unnoticed, and small and medium-sized enterprises (SMEs) across Africa have begun adopting BD in their operations [12]. However, limited study has been undertaken in this field as well as low adoption of BD by African firms [12]. Hence the goal of this chapter is to understand the effect of big data adoption on SMEs' performance.

CONTRIBUTIONS OF THE CHAPTER

This study may be of benefit to the practice of business since the findings may be of value to executives for establishing and implementing BD-based marketing strategies for improving sales revenues. As digital technology and metrics continue to evolve, firms aim to leverage BD technology and traditional marketing analytics to improve marketing efforts, decision-making, and financial outcomes. Applied knowledge may benefit from this research if it reveals actionable strategies that help marketing managers boost sales and accomplish other company goals.

LITERATURE

Big Data

"Big data is a novel technology that can digitally store a big amount of data," write Haleem *et al*. [3]. This method of computational analysis is useful for elucidating relationships, similarities, and differences. Marketing analytics, decisions, and strategies have all been affected by the advent of big data due to the amount, pace, and variety of this type of behavioral data [13]. The term "big data" (BD) was originally used to describe a broad analytical field that included all the many types of data that could be mined for insight and were distinguished by three characteristics: volume, velocity, and variety [14]. The phrase "big data" is used to refer to the vast volume of digital information (2.5 quintillion bytes of data created every day) generated from a wide range of sources, yet too unstructured to be examined by traditional relational database methods [10]. Big data is characterized by a combination of data volume, velocity, variety, and variety. By analyzing large amounts of data, businesses can learn more about their markets, consumers, and competitors [15]. Though the phrase "big data for small business" may sound contradictory, little firms are as in need of big data as their larger counterparts. Small and medium-sized enterprises (SMEs) can gain a competitive advantage by using big data to their advantage.

Types of Big Data

The types of big data as seen Fig. (**1**) include structured, unstructured and semi-structured.

Semistructured Data

This is the data type that has some type of structure or organization but does not reside in a standard database system like structured query language (Yan, Meng, Lu, & Li, 2017). Both types of information can exist in a semi-structured data set.

Digitization Initiative and Digital Transformation for African Telecom Service Providers

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Abstract: Technology breakthroughs brought unforeseen competition among telecom operators in Africa. Digitization and digital transformation were the results of the revolution in technology. The study uses a literature review to discuss the digital initiative and digital transformation of African telecom operators' changes and challenges. Although Africa is still stepping ahead to effectively engage itself in digitization and technology, especially in the telecommunications industry, the outcome of digitization is to bring out the company's profit, gain more customers through experience, and increase efficiency and effectiveness. The results show that customization, sales optimization networks, single-run access networks, and power machine learning are positive trends that African telecom operators must focus on to bring about changes in the telecommunications industry. The managerial implication of the study is that telecom operators must invest in technology and infrastructure that facilitate digitization and digital transformation to operate accordingly.

Keywords: African telecom operators, Digitization, Digital transformation.

INTRODUCTION

The telecommunications industry is now one of the main sectors responsible for life support. This fact gives impetus to the formation of completely new needs, that did not exist before telemetry services based on machine-to-machine technology, virtual data warehousing, *etc* [1]. Hence, digitization is not just a threat, it also offers telecom companies an opportunity to rebuild their market positions, reimagine their business systems, and create innovative offerings for customers [2]. This has made resources more accessible online for distance research, providing better access, ease of use for the community and beyond, and easier access to information through digitization and facilitating fragile resources that are difficult to access [3-6]. All these are the needs of the digitization of the

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telecom sector. Telecommunication service providers invest in transforming the telecommunication service lifecycle journey into digital, digitizing, searching for a service or product, purchase, using a service or product, after-sales support, and feedback [7].

However, customer expectations create an additional load on the telecommunication sector to change their system to open more digital platforms and windows for telecommunication service providers to invest in the core infrastructure to meet customer expectations from a performance perspective [4]. Therefore, digitization prompts digital transformation, while digital transformation in the telecommunications industry is based on creating innovation and being customer-centric [8].

Additionally, infrastructure access to telecommunication and services is essential for the digitalization of the economy [9]. Transforming capability and digital transformation are based on artificial intelligence, big data analytics, and business intelligence [10, 11]. The big challenge telecommunication companies have is: i) how to take advantage of the opportunity in digital disruption through innovation management and ii) how to accelerate internal digital transformation led by the digital leadership capability [12].

So, this study will prompt discussion regarding the digitization initiative and its positive contribution to the sector. At the same time, the study looks ahead to understand digital transformation and its processes in the telecom sector. Also, telecom operators must adjust to the technological revolution (digitization and digital transformation). Furthermore, they may employ digital development to deliver high-quality service, meet consumer expectations, and foster a great customer experience.

LITERATURE REVIEW

The Context of the African Telecom Industry

In the context of Africa, in the last five years, there has been the fastest telecom growth worldwide, which has transformed fundamental aspects of social and business life. Mobile subscriber growth remains the fastest in the African region, and the penetration of services is reaching a larger number of customers. Similarly, based on the GSMA (2020) report, by the year 2019, more than 477 million people, equivalent to 45 percent of the entire population had subscribed to mobile services, and this number is projected to reach 50 percent by the year 2025. Thus, to capitalize on the positive telecom market growth, telecommunication companies are tasked with creating marketing strategies that appeal to many potential consumers and solve a variety of challenges.

Major Telecom Operators in Africa

Orange Egypt is the largest telecommunication company on the continent. It generates $11 billion annual revenue. The company has taken the lead in constructing telecommunications infrastructure, having installed underground coverage stations throughout Cairo and other major Egyptian population centers.

Based in South Africa, the MTN Group offers telecommunication services not only in Africa but also in many European and Asian countries. The firm has been particularly successful in Nigeria, where it provides 35% of all telecommunication services. Combined with earnings in 19 other countries, this has allowed the MTN Group to generate $10.92 billion in revenue, the second-highest figure for any telecom firm on the continent.

With more than 55 million customers, Vodacom has one of the largest subscriber networks on the continent. It provides telecommunication services in 40 different countries, including Mozambique, Nigeria, Zambia, Angola, the Democratic Republic of the Congo, and Cameroon. It is particularly successful in the country where it is headquartered, South Africa - where it has 23 million subscribers and a market share of 58%. With such a large and widespread network of operations, Vodacom earns $5.4 billion in revenue each year. The company's success is due largely to its valuable promotions and flexible, affordable pricing structure.

A subsidiary of the Bharti Airtel company, Airtel Africa has 78 million subscribers on the African continent. It has been particularly successful in Nigeria and Ghana, which together account for 60 million of its customers. It has become popular among business professionals and others who have to travel from country to country. This is a consequence of no small part of its One Network plan, which allows subscribers to buy a service plan in one country and use it at the same price in other countries.

Concept of Digital Transformation

Digital transformation is a combination of both procedures of digitization and digital innovation with the intention of improving existing products with advanced abilities [13]. Adaptation and innovation processes are shaped by the interplay between collective identity and the nature of digital work and innovation [14]. Innovative approach to business transformation is driven by the digital economy [15] along with new entrants and new business models which threaten the survival of both incumbents and deeply established ideals and practices, that lead to new business models, new users, and innovative experiments [14]. In order to plan and execute digital transformation, organisations must have a clear strategy and place "digital" at the heart of their business strategies [16]. The

CHAPTER 7

The Role of Social Media as a Promotional Tool for SMEs in Ghana

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Abstract: This study aims to investigate how social media functions as a marketing tool for SMEs in Ghana. An unstructured and semi-structured interview guide was employed, and a qualitative research methodology was applied. The responses from twenty respondents from a few chosen SMEs in the Greater Accra area formed the basis of the analysis. Ghanaian SMEs have the chance to invest in their social media marketing and create more targeted campaigns. They can also utilize the platform to promote direct sales, acquire an understanding of how customers view and value a brand, and achieve lifetime value targets like client acquisition and retention. The study revealed that SMEs in Ghana mostly use Facebook, Instagram, YouTube, Twitter, and LinkedIn as their social media platforms. The report also suggests that media organizations create a content roadmap to ensure that their material is designed with social media interaction in mind, such as the usage of extremely brief videos and ephemeral content, to maximize their desired earned media engagement.

Keywords: Blogging, Entrepreneur, Ghana, Social Media, SMEs.

INTRODUCTION

Many people have been able to pursue self-employment because of the growth of social media, thanks to the numerous options and low barriers to entry. The growth of social media has enabled many to pursue self-employment due to its multiple options and easy entry. The majority of business owners have largely relied on social media sites like YouTube, Instagram, Twitter, Facebook, *etc* [1]. to share content and market their products [2]. Women are the majority of social media influencers worldwide, making up around 77 percent of all influencers.

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They take advantage of this by starting their own businesses. Similar to this, both men and women use the rise of social media to launch their own enterprises. Entrepreneurs are using social media platforms more and more to advertise their businesses, as well as for marketing and building client relationships [3, 4]. According to Datta *et al*. [1], social media has given business owners more opportunities to interact with people. Thus, entrepreneurs can build ties with customers or other business owners using social media. In addition to increasing visibility, social media has boosted client interactions through advertising, endorsements, and other business-related activities, which has helped businesses increase their sales. Additionally, social media has given business owners the tools they need to track rivals and promote anywhere in the world. One of the best tools for organizations to use for advertising or promotion is social media. Entrepreneurs can monitor and stay informed about their potential clients and/or business opportunities thanks to social media. Furthermore, business owners can use social media to manage and strengthen their offline and online relationships [5]. Ghanaian business people have benefited from the emergence of social media to promote and publicize their goods and/or services. Youth in Ghana make up the majority of the population; they tend to be more business-and tech-savvy. Social media is also extensively used by event management businesses in Accra, including Lionheart events, Ark event management services, Geovision services, Charterhouse event organizers, *etc*.

That said, the emergence of social media has presented a challenge to businesses as they struggle to create an SM community and formulate a strategy. The majority of businesses use social media without realizing its influence, strength, and virility [30]. In spite of the immense advantages that social media (SM) offers to business owners, relatively few do so in sub-Saharan Africa. If small and medium-sized businesses (SMEs) can take advantage of the benefits that SM provides, they stand to benefit and grow exponentially. Regardless of social media's significance and power, the majority of organizations still lack a focused social media strategy. Organizations frequently experience confusion when deploying SM tactics. Due to the fact that users are no longer naive, social media has created bottlenecks and opportunities for brands [6]. The use of social media has become increasingly important in promoting businesses to a target audience. Anecdotal evidence reveals that most organizations overlook this clarion call when implementing SM strategies. This study investigates how small and medium enterprises (SMEs) can capitalize on the benefits that social media presents. "How SMEs may overcome the hurdles of using social media to promote their business" is the focus of the study. The research's primary objective is to: 1. Examine whether event management companies advertise on social media. 2. To examine the difficulties SME's encounter while utilizing social media to market their businesses. 3. Outlining solutions to discovered problems.

Following the research's historical context, this study is organized to provide context for the aforementioned subject. First and foremost, section 2 would include a review of the existing literature that explicitly articulates all relevant concepts and theories underlying the investigation. Moving on, section 3 describes the methods and strategy used by the researcher. In section 4, the research provides its findings and discusses them, followed by a review of the literature and a summary. Section 5 concludes by presenting the findings, drawing further conclusions, and offering suggestions for additional research.

LITERATURE METHODOLOGY

Peer reviewed open access publications from journals included in the "observatory of international research" (OOIR) and the "academy of journal guide list" (CABS list) were chosen. To make the current research agenda obvious, "key topics, arguments, and developments in the literature over time with the concepts, theories, and empirical data advanced were analyzed."

Concept and Definitions of Social Media

Over the years, social media as an idea has experienced numerous transformations. Social media are websites used for social networking and blogging, according to the Merriam-Webster Dictionary. To share information, ideas, personal messages, and other stuff, users establish online communities (such as videos). The internet is necessary for social media to work effectively. According to Kaplan & Haelein [7], the definition should be focused on "user-generated content" and "Web 2.0." Richter and Koch [8] further defined social media as all online tools, media, and platforms that facilitate content exchange and communication on a worldwide scale. Social media applications do not just include Facebook, Instagram, Twitter, Snapchat, Hike, Flickr, "Yahoo, Skype, Imo, Myspace, BBM, Viber, and WhatsApp" [9]. According to studies on users' favourite social networking platforms, WhatsApp continues to be the most widely used social media program.

The five primary categories of social media are "social networking sites (SNS)," media sharing websites, blogs, microblogging, and social news. For instance, social media can be divided into media web applications; microblogs as a platform for sharing media; and blogs as a platform for dissemination of media.

Traditional Media and Digital Media

Digital media are modern forms of communication that encourage user-generated content and active participation. It is communication that takes place over digital platforms, including social media, the web, and mobile phones. It also entails the

SMEs Use Artificial Intelligence in Africa: Benefits and Challenges

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Abstract: Artificial Intelligence is a popular topic in digital transformation. Many books and articles have been written on the subject, although most of them cater to corporations rather than startups. The small and medium-sized businesses (SMEs) in Africa represent the economic backbone of the continent, so it is increasingly crucial that they have access to and can implement these technologies. This chapter provides a literature overview on the prevalence of AI in SMEs, discussing its current limits and its impact on enabling SMEs to reap its benefits. In the first place, we present an overview of the four AI tools and the enablers of AI. A thorough literature review is then performed on the difficulties associated with it . Finally, future trends and implications in research and development are summarized, along with future research topics for making AI an accessible technology to SMEs.

Keywords: AI, Automation, Internet, SMEs, Technology.

INTRODUCTION

When it comes to the Fourth Industrial Revolution (4IR) and the technologies it entails, small and medium-sized enterprises (SMEs) face unique difficulties around the world. This is due to a number of factors, such as difficulties obtaining credit and financing, lack of knowledge, lack of qualified labor, an inadequate digital infrastructure, and uncertainty about how to integrate advanced technology into business operations [1]. Artificial intelligence (AI) is no longer reserved for multinational corporations, and it seeks to inspire businesses of all sizes to take bold, well-considered steps toward integrating AI into their operations [1]. Since the turn of the millennium, gender-inclusive education, poverty reduction, and innovation at the level of individual businesses have all benefited greatly from the widespread use of the internet and other digital technologies [2]. Today's global economy and the fourth industrial revolution (also known as Industry 4.0) are

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indistinguishable from artificial intelligence (AI) [3-7]. Artificial intelligence (AI) is eliminating many enterprises' traditional sources of market advantage and redrawing the competitive borders of industries, thus rendering important resources and knowledge obsolete, and at the same time, a global race is underway [2, 8, 9].

Artificial intelligence (AI) has emerged as the go-to tool for resolving complicated business problems in many of the industries where SMEs are prevalent. Researchers spent a lot of time finding technological solutions to crucial business problems. However, additional facets of management have come to the fore as AI adoption, implementation, and use have increased [4]. Artificial intelligence is gaining traction around the world, which is changing how businesses compete and interact with their customers [10, 11]. However, the majority of the existing research on AI is geared toward large organizations and tends to focus on technical and commercial application rather than investigating the advantages of AI from a small and medium-sized enterprise (SME) viewpoint. This section provides a brief literature review that can be used by small and medium-sized enterprises (SMEs) for strategic AI deployment and for determining AI's actual value. This section's goal is to define the factors that encourage SMEs to adopt AI. This chapter summarizes and draws attention to the prospective research concerns within the scope of our study that could be investigated further.

Literature Review

AI

The term "artificial intelligence" describes the application of computers to do tasks typically associated with living organisms, such as pattern recognition, problem solving, and prediction [12]. Computerized systems using AI do cognitive tasks that humans typically handle [13]. With the help of AI, businesses are expected to be 40% more productive in 2035 than they are today [14]. This seems to be yet another requirement for competing on a worldwide scale [10]. Complementing one another, AI and ERP are viewed as crucial to participating in the 4IR [4]. By 2025, the artificial intelligence (AI) business might be worth $190 billion, and by 2027, that number could rise to $267 billion [15]. The impact of AI advancements on the business world is illustrated by the exponential expansion of this field. The private sector in Africa is no different. The private sector in Africa is innovating at the same rate or faster than the rest of the world [15]. Artificial intelligence (AI) is a group of technologies that allow machines to behave intelligently and mimic human senses, comprehension, and actions. Learning from experience and evolving over time both increase these capacities in humans.

To rephrase, AI allows robots to see their surroundings, form hypotheses about those surroundings, and even learn from experience in order to act in a manner appropriate to those surroundings and their underlying conditions. As AI systems improve in capability, they are being used in an increasing variety of business contexts [16]. According to McKinsey Global Institute [17], the retail, transportation and logistics, travel, automotive and assembly, and consumer packaged goods industries are prime candidates for the application of artificial intelligence to generate substantial value. Recent polls have shown that while the transportation, logistics, automotive, and technology industries have the highest percentage of AI adopters, process industries like chemicals have the lowest [3]. AI's primary functions include the detection of patterns, the acquisition of knowledge *via* experience, and the formulation of sound judgments without the need for a predetermined set of instructions. Several industries, such as transportation, banking, marketing and advertising, and even research, healthcare, security, and the public sector, are presenting rapid adoption of AI technology, as presented in the 2019 OECD report on Artificial Intelligence. AI systems can simulate complex, interdependent systems to enhance decision-making and cost-effectiveness in these industries, according to a study [18].

The rapidly evolving range of AI technologies has the ability to address some of the most critical issues faced by Sub-Saharan Africa and fuel development and expansion in essential industries. (1). Agricultural outputs will increase as a result of improved efficiency and effectiveness. In addition to this (2), people will have easier access to care that is both individualized and of greater quality. Thirdly, the influence of government services will increase as they become more efficient and user-friendly. Four, the accessibility and safety of financial services will increase, allowing more people to use them.

AI and SMEs

Industry is the key to the creation of a thriving AI ecosystem in Africa as the main developers of AI technology. From established players to entrepreneurs, startups, and SMEs, industry creates innovative products; provides invaluable knowledge, insight, and expertise to government for effective policymaking; and contributes to the development of local talent and skills for Africa's growing youthful population.

AI in Africa

Artificial intelligence (AI) systems are machine-based systems with varied degrees of autonomy that may, for a given set of human-defined objectives, generate predictions, suggestions, or judgments using large volumes of alternative data sources and data analytics [7]. As AI grows in popularity around the globe, a

SUBJECT INDEX

A

Adopters, effective technology 78
African 68, 69, 76, 80, 94, 95, 98, 99, 102,
    144, 145
  economies 76, 80
  environment 68
  governments 144, 145
  market 69
  telecom industry 95
  telecom operators 94, 98, 102
  telecom sector 99
Africa's 61, 63, 67, 74
  economy 61
  prosperity 74
  SMEs 63, 67
Agriculture 11, 143
  resource extortion 11
AI 17, 21, 140, 144
  -assisted social media marketing 21
  -based methods 144
  -enabled programs 17
  -powered inventory management system
    140
  -powered system 140
Aid online merchants 51
Air conditioners, smart 13
Algorithm(s) 4, 17, 18, 19, 133, 137, 139
  function 139
  supervised 19
Analysis 7, 8, 9, 84
  computational 84
  effective 7
  social network 8, 9
Analytics 5, 20, 21, 66, 83, 87, 88, 89, 90
  adopted big data security 87
  big data security 83
  techniques 20
Applications, mobile technologies 75
Architecture 12, 13, 17, 18, 85, 91
  cloud-based 91
  generic 17, 18

Ark event management services 107
Artificial intelligence 138, 139, 142
  adoption of 138, 139
  systems 142
Artificial neural network (ANN) 17
Automate business projections 136
Automation 11, 18, 20, 99, 128, 131, 132,
    142, 144
  assets 131
  home 11
  intelligent 131, 132
  revolution 132
Automation technologies 131, 132
  traditional 131
Automotive assembly line 134
Autonomous vehicles 142

B

Backbone, economic 128
Banking, virtual 91
Benchmark efficiency 6
Big data 6, 8, 9, 10, 87, 88, 90
  adoption 10
  analytics management 88
  analytics process 6
  applications 9
  techniques 8, 90
  technologies 87
  tools 90
  transformation 9
Brick-and-mortar stores 43
Business 2, 18, 33, 35, 63, 67, 69, 75, 76, 88,
    95, 96, 107, 109, 122, 124
  climate 67
  executives 33, 63
  forecasting 2
  goals 122
  intelligence 18, 88, 95
  licenses 75, 76
  online 35
  process reengineering 69

T

TAM framework 32
Tasks, automating 138
Techniques 4, 6, 7, 8, 9, 19, 44, 62, 68, 87, 91
  conventional data analysis 87
  data gathering 44
  digital manufacturing 62
Technologies 37, 38, 39, 74, 75, 77
  blockchain 75, 77
  communications 37, 38, 39
  mobile-based 74
Telecom industry 102
Telecommunication(s) 94, 95, 102
  service providers 95
  industry 94, 95, 102
Tracking system 14
Transactions 1, 20, 36, 43, 49, 78
  economic 78
  electronic 20
Transformation, economic 75

V

Visualization technique 9

W

Wireless sensor networks (WSNs) 9, 14

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