

An Integrative Literature Review on Technology Adoption by African SMEs

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Abstract

This literature review analyzes the drivers and barriers to technology adoption by African small and medium enterprises. To achieve this, previous literature on the subject was examined. The paper critically evaluates prior research on the topic and identifies gaps in the existing literature. The integrative approach was used in this literature review. The adoption factors and barriers to technology by African small and medium enterprises were synthesized by analyzing the different documents. Finally, new research directions were proposed.

Keywords: Technology, Adoption, Barriers, SMEs.

Introduction

Technology adoption is one of the most discussed topics in the information systems literature, especially in developed countries, notably in Europe and North America. But the dynamic around trend has been evident in recent years in developing countries across Asia, Africa, and Latin America [1]. This enthusiasm is largely due to the multiple advantages offered by new technologies [2]. It is acknowledged that technology offers multiple benefits to businesses and, consequently, the whole economy [3].

The potential benefits of technology for developing economies are likely to be even greater. ICTs are recognized as enablers of SME success [4]; and therefore, enablers of economic growth [5]. Besides, as the same source indicates, new technologies increase information availability, provide new communication methods, reshape production processes, and improve the efficiency of numerous business practices. Technologies can be used to empower companies in creating new jobs and thus contribute significantly to the reduction of unemployment [6].

Yet, despite this general interest in new technologies, African businesses still lack knowledge and adoption of new technologies [7]. Several factors make it difficult for African SMEs to use new technologies. These factors include, but are not limited to, poor internet access, intermittent power supply, high cost of technological infrastructure [8], high software costs, the lack of commitment by top management, the poor level of user knowledge in terms of information systems, and the unavailability of high-quality external expertise [4]. The low penetration of technology among African SMEs is of concern and therefore deserves researchers' attention. In addition, few studies seem to have examined the challenges of technology adoption in Africa. This study consists of a literature review on the adoption of new technologies by African SMEs. The purpose of the study is to further develop the existing body of knowledge and the existing literature on ICT adoption by SMEs.

Methods

This study is an integrative literature review that examines issues related to technology

adoption in Africa. It particularly examines the drivers and barriers to technology adoption in Africa. An integrative literature review examines, criticizes, and synthesizes existing literature on a given topic to generate new knowledge [9]. This kind of literature review aims to synthesize the existing literature to generate knowledge [10]. The researcher, therefore, identifies the relevant literature on their research topic [11]. Accordingly, we have identified relevant literature around concepts such as technology adoption, and technology adoption drivers, technology enablers, barriers to technology adoption in Africa.

Literature Review

This literature review focuses on two main themes, namely the drivers of the adoption of new technologies and the barriers to their adoption.

The researcher must examine the relevant literature from databases, journals,[12], and other sources to conduct an integrative literature review. From this perspective, we identified literature in databases and journals specializing in management and information systems. Only relevant journal articles were included in this study.

Technology Adoption and Diffusion

The theory of technology adoption and diffusion has been studied in various studies (e.g. [13-16]). Several models have been developed to examine this. One model has stood out over the years. This is the TAM model developed in 1986 by [17]. The model asserts that actual technology usage is predicted by perceived ease of use, and perceived usefulness [17]. This model has been tested by several empirical studies [18-20]. In addition to perceived usefulness and perceived ease of use, the literature identifies other factors in the adoption of new technologies. These factors include quality of service, quality of the system, satisfaction, safety offered by the system [21], subjective norm, willingness, appropriateness of use, result demonstrability

[22], technological anxiety [23], optimism, innovativeness, discomfort, and technological insecurity [24]. These factors are mainly related to individual technology adoption and are not necessarily the same when it comes to companies.

Previous literature has identified some factors for the adoption of new technologies in SMEs. These are the technological context, the organizational context, the environmental context, and the personal context [24].

Following [25], the technological context describes the internal and external technologies relevant to the company. The same source suggests that the organizational context refers to the characteristics of the organization, such as the size and scope of the business, the management structure, and the internal resources. In addition, the organizational context reflects management's involvement in IS and the level of internal technology knowledge [24]. The environmental context describes the arena in which a company operates: its industry, its competitors, and its relations with the government [26].

The individual/management context consists of the owner/manager's innovative capacity, knowledge of ICT, attitude, innovation, age, gender, and education [24]. Based on the literature, whether at the individual or organizational level, ICT adoption is influenced by a series of factors that are related to the organization's internal or external environment; or related to individuals: managers or employees.

Results

In this section, we present literature on technology drivers and barriers to technology adoption and the most adopted technologies by SMEs in Africa.

ICT Adoption by African SMEs

Despite the important role they can play in the continent's economy, African SMEs suffer from several constraints that contribute to their often-early demise [26]. The same source argues that

African SMEs are often informal due to legalization constraints in addition to suffering from financial constraints. In addition, as reported by the same source, technology can be one of the solutions to the problems of SMEs on the continent.

The use of emerging technologies is proving to be the missing piece in boosting the development of African SMEs. Nevertheless, a poor level of technology adoption is noted on the continent [3].

However, the gradual adoption of technologies is evident on the continent. A survey of companies in french-speaking African countries [27] reveals that companies are progressively adopting technologies mainly for the following reasons: SMEs adopt ICT to facilitate communication with different stakeholders, boost communication with the outside world, and thus limit the isolation of enterprises. Moreover, according to the above-mentioned source, companies have adopted ICT as they consider it to be a crucial tool for the future.

A survey conducted in Ghana [28], identifies perceived ease of use, perceived usefulness of the technology, compatibility, and cost-effectiveness as influencing ICT adoption. A similar survey of South African SMEs [29] states that technology adoption is primarily influenced by the ability of the firm to adopt ICT.

However, the study suggests that this capacity refers to income levels, cognitive skills, technology infrastructure, and other related aspects. Another study with similar results was conducted among companies in African countries [30], the results are that economic development, education/training, and infrastructure play an important role in technology adoption by African companies.

Alongside these factors, the related literature identifies others that influence technology adoption in the African context. These include external pressure, competitive advantage [31], relative advantages [32], ICT support, ICT training [33], human capital [34], organizational

leadership, and organizational characteristics [35] among other factors.

Barriers to Technology Adoption in Africa

The low technology adoption by African SMEs is subject of interest to researchers. Studies on this topic have been carried out all over the continent [4]. This section presents the main barriers to ICT adoption as identified in the literature on information systems.

SMEs face several barriers that complicate their use and adoption of ICT [36]. The barriers to technology adoption by SMEs revolve around four main areas: business awareness and access to infrastructure, security framework confidence, use of ICT by business partners, and business process adaptation [37]. From these factors, it appears that the company's internal characteristics and external environment may hinder its technology adoption.

According to [38], some barriers to technology adoption are uniquely related to SMEs. These include hardware unavailability, the need to ensure immediate returns on investment as opposed to long-term ICT investment, resistance to change, preference for older technologies, lack of IT and technical skills among employees, time constraints, lack of awareness of business benefits of ICT, of ICTs, security problems, and, finally, lack of ICT adoption among employees and business partners.

Our survey in the DRC [4] identifies some constraints to technology adoption by local SMEs. These constraints relate to the characteristics of local SMEs. These are characterized by low financial resources, low internal and external IS expertise, and low management involvement. Besides the above-described business characteristics, the study identifies high infrastructure costs, expensive software and hardware, and poor access to the Internet as barriers to computerization.

Similar results were reported in 2016 from a survey on barriers to internet adoption by South

African SMEs. This survey identified the lack of financial resources and high costs of ICT systems, the lack of skilled workers able to handle or maintain ICT systems, the lack of knowledge to implement ICT systems, and the lack of knowledge and understanding of ICT [39] as the main barriers to ICT adoption.

Other barriers are highlighted when it comes to ICT adoption by African SMEs. These include fear of security threats [31], poor technology perception [40], lack of government support [41], and poor electricity supply [42].

Obviously, African SMEs face several barriers to adopting new technologies. These barriers may include several others in addition to those previously mentioned.

Conclusion

Technology adoption has become essential for businesses regardless of size. The trend towards technology, although slow, is also evident in African SMEs. This literature review examines the drivers of technology adoption by African SMEs. It also examined the main

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constraints to technology adoption mentioned in the literature on technology adoption in Africa.

In terms of adoption determinants, SMEs' internal characteristics, technological context, and external environment influence their technology adoption. Specific characteristics of SMEs such as lack of resources and skills; unavailability of infrastructure may hinder technology adoption.

This review highlights the key factors to be considered in ICT adoption. However, the question related to the adoption of ICT by SMEs has not been fully addressed. A review can be conducted around the most adopted ICT systems in Africa to profile the current state of technology adoption on the continent and possibly propose innovative solutions.

Conflict of Interest

The author declares no conflict of interest.

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