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Abstract

The adoption and use of digital technologies have been a growing area of research focus in recent years. Despite the popularity in developed countries, digital technology adoption amongst SMEs in developing countries, e.g. Nigeria, is still relatively low. Such low adoption hinders the digital transformation of SMEs in the developing countries, and the low level of adoption is often the result of the low level of digital business readiness. Therefore, this paper proposes the digital business readiness assessment framework (DBRAF) based on Socio-Technical Systems (STS), Unified Theory of Acceptance and Use of Technology (UTAUT2), Organisational Semiotics (OS) and Enterprise Architecture (EA). The DBRAF is designed to understand and examine the enablers and barriers of digital business adoption for SMEs in developing countries. A pilot study, based on a pilot study in fashion retail SMEs in Lagos, was conducted to test the validity of the proposed framework. The DBRAF aims to assist fashion retail SMEs to identify the specific areas that they need to be address in order to reach the desired level of digital business readiness.

Keywords: Digital Business, SMEs, Digital Business Readiness, Retail, Nigeria

1.0 Introduction

Digital technologies have transformed business operations significantly by streamlining the purchasing and logistics processes as well as by providing an opportunity for businesses to reach a broader market (O'Connell et al., 2015; Karltorp, 2017). However, research indicates that many SMEs still lag in business-digital technology alignment (Ghobakhloo *et al.*, 2012). Furthermore, when it comes to digital business, some of the small and medium enterprises (SMEs) face turbulent times. There are numerous barriers to SMEs digitising their businesses, including financial constraints (Unnikrishnan *et al.*, 2015), weak infrastructural facilities (Kiveu and Ofafa, 2013), and digital literacy (Howe, 2015).

There are adverse effects for businesses not adopting digital technologies. Especially for SMEs, the impact can be severe and consequently lead to the close-down of businesses. Digital technologies could support business sustainability, especially for businesses in competitive markets, e.g. fashion retail. Fashion retailers are the link

between the suppliers and fashion shoppers. Due to the prominence of the fashion industry, the competition level can be fierce. Digital technologies could offer innovative ways of providing quality customer service and targeting new fashion shoppers. Therefore, adopting digital technologies and appropriate digital business strategies that support the organisational goals should be one of the focal points for fashion retail SMEs. Nevertheless, the continuously increasing dependency on foreign goods in most developing countries present new challenges in the global economy. Over-dependence on import has a crucial impact on technology adoption by SMEs in Nigeria (United Nations, 2013).

According to Ala-Mutka (2011), digital business readiness can be defined as the competencies, skills, attitudes and knowledge that support the purposeful and practical application of digital technologies. In connection to the subject of this study, digital business readiness is characterised by the possibility of fashion retail SMEs to overcome unforeseen business threats and their ability to use technologies in leading change (Barske et al., 2010). Many SMEs expect the government to provide practical support, e.g. policies and financial support, for technology adoption (Apulu and Latham, 2009). Despite the financial challenges faced by SMEs, some SMEs owners-manager are found to use business grants for personal purposes, e.g. marrying more wives, acquiring titles, and purchasing properties abroad (Ihyembe, 2000, as cited in Agwu, 2014). Consequently, such attitude undermines the values of lending policy.

This research aims to develop the digital business readiness assessment framework (DBRAF) in the context of fashion retail SMEs in Lagos, Nigeria. This paper will explore the context of the fashion retail industry in Lagos, Nigeria, and then present the theoretical foundation for the framework development. The proposed DBRAF will be introduced and explained, followed by the results of the pilot study.

2.0 Fashion Retail Industry in Nigeria

The Nigerian fashion retail industry is one of the most expansive in Africa for two main reasons. Firstly, with approximately 200 million people, the fashion industry serves the largest population in Africa. Secondly, two record-breaking recognitions at Paris fashion week in 2000 (Legendary Gold) and Nigeria fashion project (Ndani) at Selfridges in 2012 (African Fashion Guide 2018), created doors of international partnership and global opportunities. Economically, the fashion industry is one of the

major contributors to the retail sector, generating $4.8 billion with the womenswear (Nigerian Retail Report, 2014). Nigerian apparel market was worth approximately $10 billion in 2014 (FADAN, 2014).

Whilst Nigerian economy is fast developing, many Nigerian retailers are still lagging in the adoption of industry 4.0 (Ustundag and Cevikcan, 2018; Adepoju et al., 2017). Previous studies by Gholami *et al.*, (2010), Ladokun et al., (2013) and Yahaya et al. (2015) identified several reasons for poor business-digital technology alignment, including IT infrastructure and business structure issues, digital illiteracy, financial issues, OMs attitude, lack of electricity, etc. Furthermore, previous studies (Ghobakhloo et al., 2012; Breu, 2008; Abubakar and Ahmad, 2014) have identified a number of digital business readiness factors, including technology complexity, competency, technology anxiety, behavioural intentions, prohibitive costs, enterprise social network practices, etc.

3.0 Theoretical Foundation

In order to further investigate the digital business readiness factors in the context of fashion retail SEMs in Lagos, Nigeria, this paper has identified four underpinning theoretical foundations for the understanding of digital business readiness, namely Socio-Technical Systems (STS), Unified Theory of Acceptance and Use of Technology (UTAUT2), Organisational Semiotics (OS) and Enterprise Architecture (EA). The four foundations will be briefly introduced, following by the development of the proposed framework.

3.1 Socio-Technical Systems (STS)

Socio-Technical Systems (STS) considers the social and technical environment of an organisation as an interconnected entity (Davidson & Lamb 2000; Shin, 2010; Bentley et al., 2016). The social system entails the patterns of individual behaviours, e.g. norms, in a business, whereas the technical system refers to the interconnected entities that support business goals and business interests (Dreyfus and Iyer, 2006). STS offers a method to study the role of technology; its blend with social factors and how they align effectively to support organisational objectives (Mumford, 2006). Mumford's (2006) STS design includes participatory design principles, an approach that identifies the relationship of people, technology, and the work systems. STS also addresses good

practices, a classified art appropriating the relevance of the system design process (Chern, 1987). STS can be used to assess the extent to which businesses are ready to adopt advanced technologies for business purposes (Aizstrauta & Ginters, 2017).

3.2 Unified Theory of Acceptance and Use of Technology (UTAUT2)

Unified Theory of Acceptance and Use of Technology (UTAUT2) explains the factors of technology acceptance and use (Harsono & Suryana, 2014). According to Amponsah et al (2016), awareness and behavioural intentional are the significant classifications of UTAUT2 and play a vital role in influencing acceptance and use. The key elements in UTAUT2 include performance expectancy, effort expectancy, social influence, facilitating condition, behavioural intention and the extended constructs of hedonic motivation, price value and habit (Anderson and Schwager, 2013; Ain et al., 2016; Herrero et al., 2017). Given that UTAUT2 is the revised model with added moderating effects of price value, hedonic motivation and habit, it is a widely applied model that articulates essential relatable elements of technology acceptance (Tak and Panwar, 2017).

3.3 Organisational Semiotics (OS)

Organisational Semiotics (OS) is a study of signs where it is concerned with the interrelationships between individuals and groups, as well as between humans and technology functions in organisations and societies (Liu & Li, 2014; Jardim-Goncalves et al., 2010). According to Jappy (2013), semiotics is the doctrine of signs where doctrine indicates the system of principles. Fundamentally a sign is any physical form that has been imagined or made externally through some physical medium. Furthermore, sign can also be a stand for an object, event, feeling, happening. Liu & Li (2014) discussed the concept of organisations as information systems, where individuals act in a coordinated manner where social norms are in place. OS based requirement specification techniques, e.g. Method for Eliciting, Analysing and Specifying User's Requirements (MEASUR), could provide an appropriate approach to the identification of digital business readiness factors (Liu, 2000; Du et al., 2011).

3.4 Enterprise Architecture (EA)

Enterprise architecture (EA) is a methodological function of modelling, designing and actualising changes in the business information systems (IS) and infrastructural

environment in an organisation (Jonkers et al., 2006). EA provides systematic organisational design principles that allow a holistic view of the retail businesses and designates a clearer understanding of the relationship between products, processes, business organisations, information, and technology services in the retail enterprises (after Tamm et al., 2011). Furthermore, EA principles could facilitate change management (Legner *et al.*, 2012). Well-defined EA can characterise and provide the systematic organisational design and structuring of business and IT elements (Nardello et al., 2015). Some of the widely used EA frameworks include TOGAF (The Open Group, 2007) and ArchiMate (Aldea *et al.*, 2015).

4.0 Framework Development Approach

A fashion retail SMEs can be considered as a socio-technical system, which operates in an interdependent open system where many other entities exist. Therefore, it is essential that this paper adopt principles and theories that consider the complexity of multiple perspectives of organisations in order to develop the business readiness assessment framework.

STS encapsulates two interdependent systems, social and technical system, and therefore it supports the design of the framework. And STS principles suggested by Mumford (2006) will be adopted as a methodological approach to the development. Additionally, Chern's (1987) principles will be applied to examine the context of the fashion retail SMEs in Lagos.

UTAUT2 could facilitate the extraction of robust elements suitable to assess factors for low technology adoption amongst fashion retail SMEs in Nigeria. Therefore, this paper will employ UTAUT2 to actualise the social influence when acted upon by other independent variables. Due to the strength of OS as an approach to organisational factors, some of the OS methods and techniques will be incorporated in the framework. Furthermore, EA will be adopted for organising the extracted components from the theories of STS, UTAU2 and OS in the business layer, technical layer, and social layer. Literature from supply chain (Frazelle, 2002; Prajogo and Olhager, 2012), Hofstede's cultural dimension (Hofstede, 1980) and PEST analysis (Carruthers, 2009) will also be employed to support the framework development. The following section will introduce the proposed framework.

5.0 Digital Business Readiness Assessment Framework (DBRAF)

The Digital Business Readiness Assessment Framework (DBRAF) aims to assess the level of digital business readiness in various perspectives (see Figure 1). Such understanding can help the fashion retail SMEs identify the areas to invest and develop in order to bring themselves closer to digital transformation. Figure 2 explains the key elements from STS, UTAUT2 and OS, which are applied to devise components of DBRAF. EA is employed for organising the core components of the fashion retail SMEs in four layers, i.e. internal social aspects, internal business aspects, internal technological aspects, and external digital environment. The overall readiness level is considered as an index created based on the variables from all the components.

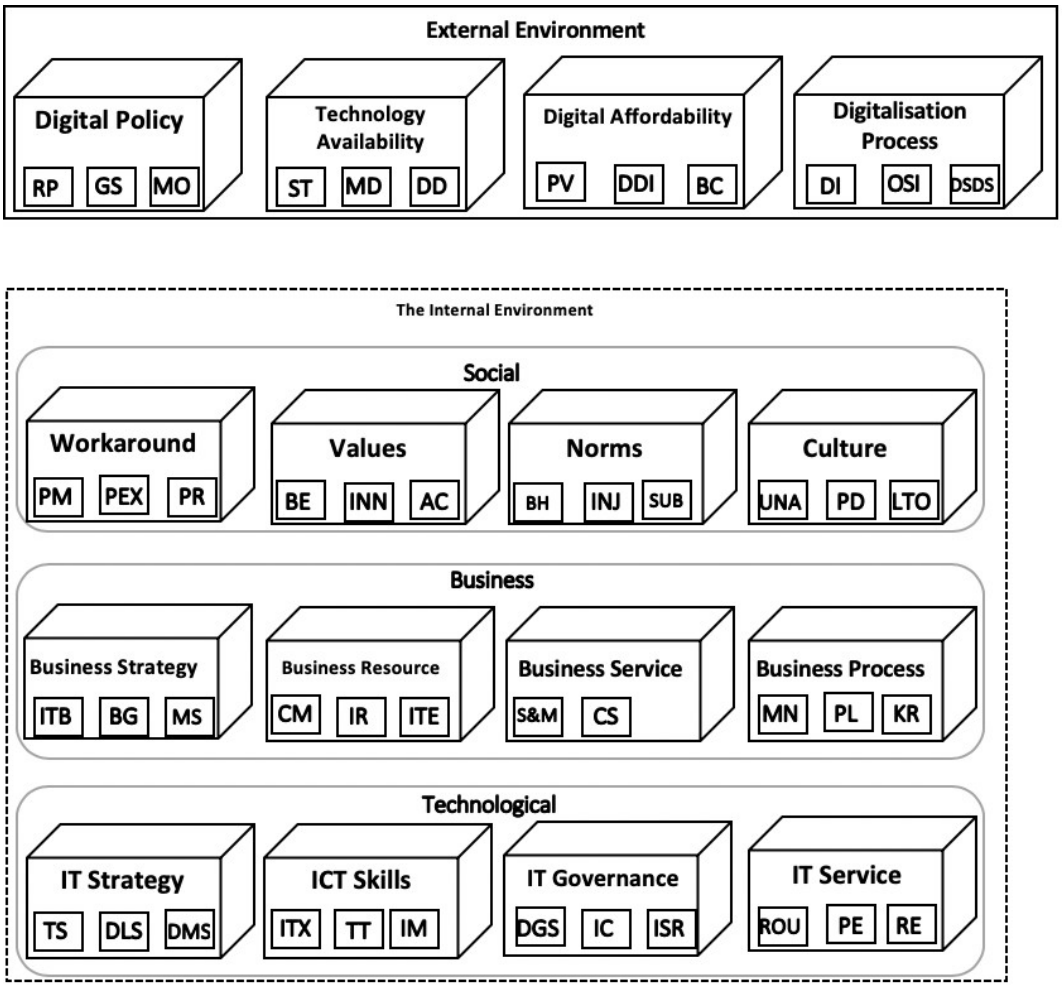

Figure 1. Digital Business Readiness Assessment Framework (DBRAF)

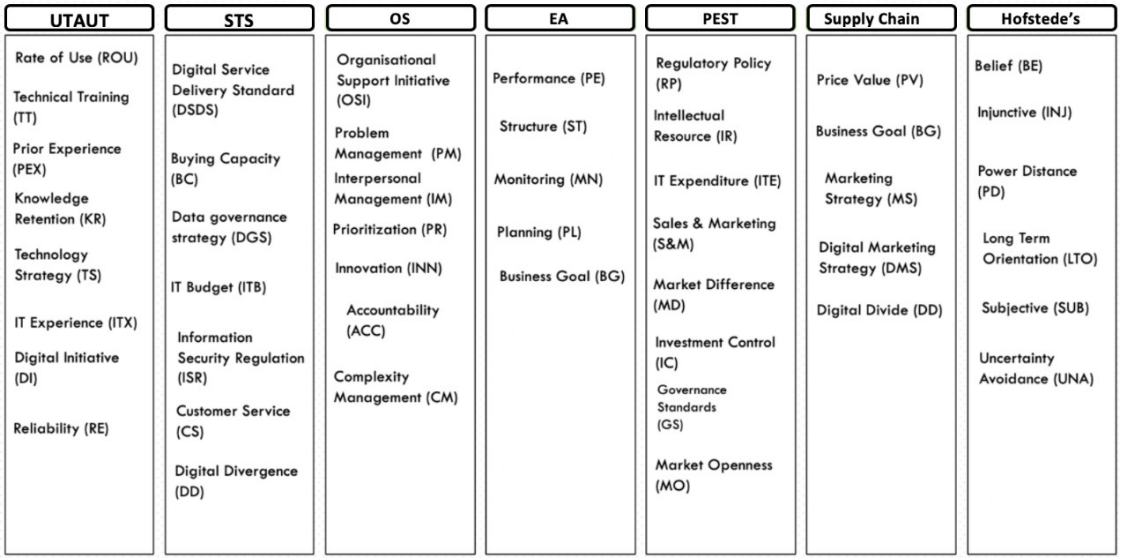

Figure 2. The theoretical foundations of DBRAF

DBRAF includes two constructs of the internal and external environments comprising of 47 components overall. The internal environment consists of 35 components structured in 12 dimensions (see Table 1). The internal environment components investigate factors affecting technology acceptance and use and examine the SME's position based on the data collected from the three layers (social, business, and technology). Main considerations within the internal business environment include digital advertisement, digital skills acquisition programme, and business process automation for productivity. DBRAF will allow SEMs to review their current level of business-digital technology alignment by measuring collaborative patterns, engagement strategy, behavioural intention, rate of technology use, etc. and consequently indicate their current level of internal digital business readiness.

The Internal Environment of DBRAF		
Layers	**Dimensions**	**Characterisation**
Social	Workaround	Alternative thoughts of work process created by the fashion retailers to achieve the benefit of an informal/voluntary practices or system (Nadhrah & Michell, 2013; Vogelsmeier et al., 2008).
	Values	The principles guiding the retail SMEs internal conduct as well as its relationship with technology to improve on the relationship with key factors such as the customers, partners, and shareholders (Grusenmeyer - 2009).
	Norms	The construct of the retail SMEs beliefs about what others do, and the belief about what others think they should do (Mackie et al., 2015).
	Culture	The collective programming of the mind that distinguishes the members of one group or category of people from others. (Hofstede, 1980 as cited in Fougère and Moulettes, 2004).

Business	Business Strategy	The approach for categorising, selecting, managing and governing daily business activities and support business change, differentiative and innovation (Gartner, 2010) in (Medini and Bourey, 2012).
	Business Resources	The product factors such as human, knowledge, and finance the retail SMEs has to undertake and function in the digital economy (Eriksson and Penker, 2000).
	Business Services	The works, advisory units that support the retail SMEs to create, manage, perform, and optimise business activities and functions (Miles, 1995).
	Business Processes	Combination of a set of activities within the retail SMEs to produce desired results (Shirtladze, 2014, p. 5)
Technological	IT Strategy	How IT will be used to help retail businesses achieve their business goal (Gartner Group, 2016).
	Technical Skills	Abilities and knowledge required to perform specific tasks in the context of digital business. (Miranda, 1999)
	IT Governance	The approach for establishing accountability and ensures the effective and efficient use of IT in enabling the retailers to achieve its goals. (Webb, 2006)
	IT Services	Advisory services that strategically support the retail businesses in assessing different ICT and technology approaches. (Gibson, 1993)

Table 1. Dimensions and Definition of the Internal Environment of DBRAF

On the other hand, the external environment covers 12 components within 4 dimensions (see Table 2). The external environment components address the availability and maturity of the enabling dimensions in the environment, including digital policy, technology availability, digital affordability, and digitalisation process.

The External Environment of DBRAF		
Dimension	**Definition**	**Components**
Digital Policy	Government policies related to business technology use, e.g. tax and import duty. (Zahra and Covin, 1993).	Regulatory Policy
		Governance Standards
		Market Openness
Technology Availability	The availability of technology for immediate business use. (Zahra and Covin, 1993).	Structure
		Market Difference
		Digital Divergence
Digital Affordability	The dynamic interplay between people's (retailers) lives, money, service, and systems (Fong, 2009).	Price Value
		Digital Divide
		Buying Capacity
Digitalisation Process	The process of modernising business processes and activities to benefit from digital technology (Brown et al., 2012).	Digital Initiative
		Organisational Support Initiative
		Digital Service Delivery Standard

Table 2. Dimensions and Definition of the External Environment of DBRAF

6.0 Pilot Study and Initial Findings

A pilot study was conducted to test the reliability of DBRAF. The target participants were the owner-managers of fashion retail SMEs in Lagos, Nigeria, who had decision making power in the business. An online questionnaire consisting 50 questions representing all components was used. 20 randomly selected participants were invited to participate, and 56% of the invited participants responded. For the pilot study, validity testing was performed by contacting seven randomly selected sample and asked them questions about the questionnaire in general. In terms of the usability of the framework, feedback on the length questions as well as the meaning of the questions was collected in order to further develop the framework.

The pilot study confirms that there is digital business awareness amongst the fashion retail SMEs in Nigeria, despite the low adoption of digital technologies for business purposes. However, there is no universal reason for the low use of technology for business purposes. The pilot study also reveals that many participating businesses still engage in cash-only transactions. In addition to the popularity of cash as a means of transactions in Nigeria, the high cost of technologies required for digital financial transactions is cited as a major barrier to adopting digital financial transactions. The pilot study found no evidence suggesting English language being a barrier to digital business transformation.

Furthermore, the pilot study shows technology anxiety, the unwillingness to use technology due to digital security apprehension, amongst the owner-managers of fashion retail SMEs has a potential impact on the acceptance, adoption and use of technology for business purposes. Whilst the fashion retail SMEs are aware of the benefits of technology adoption, many are anxious due to the security concerns, e.g. cyberwarfare, identity theft, internet fraud, business email compromise, software attacks, and trespass. Some participating SMEs state that they will not engage in digital technologies until they feel that their security concerns are addressed. The pilot study also reveals that more than half of the participating SMEs state they cannot afford a business website. However, it is also found that none of the participating SMEs consider a business website as an efficient means for customers to provide feedback.

7.0 Conclusion

Based on Socio-Technical Systems (STS), Unified Theory of Acceptance and Use of Technology (UTAUT2), Organisational Semiotics (OS) and Enterprise Architecture (EA), this paper proposes DBRAF for assessing the digital readiness of fashion SMEs in Lagos, Nigeria. The proposed framework addresses the internal social, business, and technological aspects as well as external digital environment readiness. The framework allows SMEs in developing countries to assess their current level of digital business readiness. The identification of various readiness levels in different aspects can enable SME owner-managers to make informed decision on how to allocate resources to increase their digital business readiness. Consequently, SMEs in the developing countries can benefit from transforming into digital businesses.

There are some research limitations. Firstly, the framework development focuses on Socio-Technical Systems (STS), Unified Theory of Acceptance and Use of Technology (UTAUT2), Organisational Semiotics (OS) and Enterprise Architecture (EA). There are other theoretical lenses into technology adoption and readiness, which are not within the scope of this paper but could still provide useful insights. Furthermore, benefit realisation of digital transformation requires careful change management. Whilst EA addresses change management to a certain degree, change management literature is not fully explored by this paper and remains outside of the scope. The inclusion of change management, particularly benefit realisation, could also compliment the developed DBRAF. Based on the initial findings form the pilot study, further development of DBRAF will be continued with the aim of a large scale of digital business readiness assessment in Nigeria.

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