

**STUDY ON THE ANTECEDENTS OF INFORMATION TECHNOLOGY
ADOPTION IN THE NIGERIAN SMALL AND MEDIUM SCALE
ENTERPRISES**

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DEDICATION

I dedicate this research work to the love of the entire humanity; for we are all from the same Father and Mother.



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ABSTRACT

This thesis determines the mediating effects of Organizational commitment and the moderating roles of Demographic variables on the relationship between Information Technology (IT) Characteristics and Adoption in the Nigerian SMEs. The objectives of the study are to assess how IT characteristics relate to “Adoption” directly and indirectly through Organizational commitment and also how the relationships between IT characteristics and adoption are moderated by Age, Gender and Experience. This research considers complexity, compatibility, usefulness and ease of use from Diffusion of Innovation theory (DOI) and Technology Acceptance Model (TAM) respectively. It takes Age, Gender and Experience from Unified Theory of Acceptance and Use of Technology (UTAUT2) and, Commitment from Allen and Meyer Theory. For the purpose of, survey two-hundred and fifty (250) questionnaires were distributed and 183 valid ones were analyzed using SPSS software embedded with Hayes PROCESS command. The quantitative outcome from the SPSS/PROCESS command reveals that organizational commitment is a mediator of the relationship between complexity and adoption, as well as compatibility and adoption. However, there was no evidence to show that it mediates usefulness and ease of use. The research also found that age gender and experience only moderate compatibility and ease of use. Among the major contributions of this research are the extension of UTAUT2 to include DOI constructs and the use of a different sample to further the generalizability of UTAUT2 in a different context. The framework(s) proposed in this study could be used by business managers and government when taking some core-decisions relating to IT. This implies that the outcome could be used as a competitive tool to overcome stiff competitions by prioritizing the appropriate areas that have the tendency of yielding fruitful outcome. Considering how the research instrumentation was conducted, likelihood of bias can not be cancelled out completely though, the researcher made efforts to ensure a random distribution of questionnaires.

ABSTRACT

Tesis ini berusaha untuk mengenalpasti kesan perantaraan yang timbul akibat komitmen organisasi dan peranan menyederhana pembolehubah demografi terhadap hubungan antara ciri-ciri Teknologi Maklumat dan penerimagaannya oleh perusahaan kecil dan sederhana (SME) di Nigeria. Objektif kajian ini adalah untuk meneliti bagaimana ciri-ciri IT dihubungkan dengan penerimagaan, secara langsung atau tidak langsung, melalui komitmen organisasi dan bagaimana hubungkait antara ciri-ciri IT dan penerimagaannya ditederhana oleh factor umur, jantina dan pengalaman. Kajian telah mengambil kira kerumitan, keserasian, kebergunaan dan kemudah-gunaan Teori Resapan Inovasi dan Model Penerimaan Teknologi. Faktor jantina dan umur dari Teori Gabungan Penerimaan dan Penggunaan Teknologi (UTAUT2) serta faktor komitmen dari Teori Allen dan Meyer telah diambil kira. Sebagai keperluan kaedah kaji selidik, dua ratus lima puluh (250) set kaji selidik diedarkan dan 183 kaji selidik yang sah telah dianalisis melalui perisian SPSS dilengkapi dengan Hayes PROCESS. Hasil dapatan kuantitatif yang menggunakan perintah 'SPSS PROCESS' menunjukkan bahawa komitmen organisasi adalah pengantara kepada hubungan kerumitan dan penerimagaan, serta keserasian dan penerimagaan tetapi tidak sebagai perantara kepada kebergunaan dan kemudah-gunaan. Penemuan juga menunjukkan bahawa umur, jantina dan pengalaman hanya menyederhana kerumitan dan kemudah-gunaan. Antara sumbangan kajian ini adalah pengembangan UTAUT2 supaya merangkumi konstruk DOI and penggunaan sampel lain untuk memperluaskan generitiviti UTAUT2. Rangka kerja kajian ini boleh digunakan oleh pengurus perniagaan dan pihak kerajaan apabila membuat keputusan berhubung IT. Ini menunjukkan bahawa penemuan boleh menjadi suatu alat kompetitif semasa mengatasi persaingan dengan memberi perhatian kepada aspek-aspek yang menyumbang ke arah positif. Dengan aspek cara instrumen kajian diselenggarakan, ada kemungkinan berlaku bias walaupun pengkaji telah mengambil langkah untuk memastikan pagedaran kaji selidik dijalankan secara rawak.

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LIST OF ABBREVIATIONS

AG	Agriculture
ANOVA	Analysis of variance
BI	Behavioral intention
BNT	Basic needs theory
CAC	Corporate affairs commission,
CBN	Central bank of Nigeria
CMD	Centre for management and development
CEO	Chief executive officer
CET	Cognitive evaluation theory
CFA	Confirmatory factor analysis
COMPLX	Complexity
COMPTB	Compatibility
CT	Construction
D	Standard deviation
DOI	Diffusion of technology
DV	Dependent variable
ECOWAS	Economic community of west African states
EDW	Expanded discount window
EPZ	Export Processing zone
FEAP.	Family economic advancement programme
GDP	gross domestic product
HR	Human resource
HRM	human resource management
HRMPs	human resource management practices
ICT	Information and communication technology
IIFAA	Impact investing fund for African agriculture
IITs	Indian institutes of technology

IT	Information technology
IV	Variables
KMO	Kaiser-Meyer-Olkin
KT	kurtosis
M	Mean
MDG	Millennium development goals
MF	Manufacturing
MIS	Management information systems
OC	organizational commitment
MM	Motivational Model,
MPCU	Model of PC Utilization,
NACB	Nigeria Agricultural and Cooperative Bank
NBTE	National Board for Technical Education
NIDB	National Industrial Development Bank
NYSC	National Youths Service Corps
NBCI	Nigerian Bank of Commerce and Industries
NBS	National Bureau for Statistics
NBTE	National Board for Technical Education
NCST	National Council on Science and Technology
NDE	National Directorate of Employment
NERFUND	National Economic Reconstruction Fund
NIC	Nigeria's National Innovation Capacity
NACB	Nigerian Agricultural and Cooperative Bank
NACRDB	Nigerian Agricultural Cooperative and Rural Development Bank
NINAMB	Nigerian National Mortgage Bank.
NUC	Nigerian University Commission
NITEL	NITEL, Nigerian telecommunication
OCB	Organizational Citizenship Behavior
OCQ	Organizational Commitment Questionnaire
OECD	Organization for Economic Cooperation and Development
ORGCOM	Organizational Commitment

PCA	Principal Components Analysis
PBN	Peoples Bank of Nigeria
PEOUS	perceived Ease of Use
PPP	Public Private Partnership
PSUFN	Perceived Usefulness
QUAN	Quantitative
R	Correlation
RMRDC	Raw Materials and Research Development Council
ROSH	Rurally Orientated Small Holder"
SAP	Structural Adjustment Programme
SCT	Social Cognitive Theory,
SDT	Self-Determination Theory
SK	Skewness
SMIESIS	Small and Medium Industries Equity Investment Scheme
SMC	Systems, Man, and Cybernetics
SMEDAN	Small and Medium Enterprise Development Agency of Nigeria
SMEs	Small and Medium Enterprises
SNSs	Social Network Sites
SPSS	statistical software for social science
SV	Service
TAM	Technology Acceptance Model
ASCON	Administrative Staff College of Nigeria
ITF	Industrial Training Fund
TOE	Technology Organization Environment
TPB	Theory of Plan Behavior
TR	Trade
TRA	Theory of Reason Action
UK	United Kindom,
UNDP	United Nations Development Programme
UAR	United African Company
UTAUT	Unified Theory of Acceptance and Use of Technology

VW	Virtual World
*	Weak Correlation
**	Strong Correlation
-ve	Negative
+ve	Positive



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Appendix Interview Guide

Appendix: Questionnaire

Appendix: Simple mediation PROCESS command outcome

Appendix: Moderation PROCESS command outcome

Appendix. VITA



CHAPTER 1

INTRODUCTION

1.1 Background of the study

Small and Medium Enterprises (SMEs) today form the stronghold of many economies around the globe. SMEs are a fundamental part of the economic fabric in Nigeria, and they play a crucial role in furthering growth, innovation and prosperity (Oyefuga, Siyanbola, Afolabi & Dada, 2008). More than 95% of enterprises in the Organization for Economic Cooperation and Development (OECD, 2005) countries are SMEs. These enterprises account for almost 60% of private sector employment, thereby supporting regional development and social cohesion (Govon, 2010). In low-income countries too, the SME sector makes a critical contribution to GDP and employment because they include a wide range of businesses. This contribution is basically due to their consistent Information Technology (IT) adoption that results in better productivity and multiplier benefits (Dalberg, 2011).

The responses obtained from the participants have enabled the researchers to identify some drivers linked to IT adoption in Nigeria SMEs. IT has changed the manner in which enterprises market and sell their products. In a research (Yusuf, 2010) conducted in Nigeria respondents stated that a major driver for their adoption of IT is to have some sort of competitive advantage. IT can be described as a strategy for keeping at pace with current global developments. ICT is often seen as an enabler that will allow smaller enterprises to upgrade the value of their processes and thus gain higher value for their products and services (Drucker and Payne, 2010). Apulu and Latham (2010) state that appropriate use of ICT can assist SMEs gain competitive advantage by reducing costs and improving core business processes. The case studies show that all the SMEs focused on one major reason for adopting IT which is to have some form of competitive advantage. Therefore, based on the

literature review and the case results, it can be said that a major driver for adopting IT in Nigeria SMEs is to have some form of competitive advantage (Apulu and Latham, 2011) as pointed before.

In a research conducted by Yusuf (2005), the analysis reveals that the policy is inadequate to impact positively on the Nigerian education system, and that the philosophical frame of reference is market driven. The policy places little emphasis on the integration and infusion of ICT in the country's education system. Policy implications and suggestions are offered to ensure maximum use of ICT potentials in the Nigerian school system. Effective technology adoption that results in increased competitiveness in the SMEs requires systematic planning and implementation of some interventions, rather than expecting the organization to progress naturally (Jivani, 2014). Bessant and Tidd (2011), argue that businesses need to enhance what they offer to customers and how they offer it or they are flushed out of the market by co-competitors, who are capable of doing so.

This implies that businesses are forced to transform themselves fundamentally to survive in the midst of challenges. These challenges are technological, economic, cultural and demographic in nature (Kotler and Keller, 2006). According to Kourie and Snyman (2014), transformation connotes changes in the way business is conducted, the way employees perform their contributions and the way organizations perceive and manage their vital assets, which are built around the key assets of intellectual capital and knowledge – both technological and non-technological knowledge.

The business environment in which SMEs in Nigeria operate is not exempted from these challenges. These challenges collectively impact negatively on the costs and productivity (and hence the competitiveness) of the SMEs (Dada, 2014), particularly the ones in manufacturing sector. As a result, Nigerian SMEs have come under more pressures, especially from firms that are positioned within more favourable technological contexts. Although, funding schemes as offered by government are beneficial in reducing the challenges (Siyanbola, Egbetokun, Adebowale and Olamide, 2012), they are definitely not sufficient to stimulate or sustain the competitiveness of small businesses. This is partly because a lot of multinational organizations based in the country are using IT that reduces production cost, thus, suppressing the local ones.

Furthermore, political unpredictability, lack of sufficient infrastructures, inadequate human capital and local technological capacities in developing countries have been a troubling concern to the policy makers in the region (Wamboye and Adekola, 2013). It is agreed that a major way through which a firm acquires and improves competitiveness is by acquiring, adopting and remaining committed to IT that is capable of reducing the business challenges (Egbetokun and Savin, 2014). Understanding the types of IT SMEs currently undertake and their level of organizational commitment in that direction need urgent attention (Brem, and Schuster, 2012) from practioners and academics to ensure stable SMEs.

The exploration of this subject matter to know what hinder information technology usage and how organizational commitments and demography (especially within the purview of the Nigerian SMEs) could play a role is the focus of this research. This focus coincides with the government resolve to make the growth and development of SMEs a key issue of interest that should be given all the commitment it deserves (Onourah, 2015). An instance of this is the strengthening of an agency- Small and Medium Enterprise Development Agency of Nigeria (SMEDAN) established by an act in 2003, which is shouldered with the responsibility of furthering the course of SMEs.

However, contrary to the situation in many economies like the United Kingdom (Grey et,al, 2012) and United States (IMF, 2010), where SMEs' development sufficiently focuses on funding research collaboration and promoting technological innovation efforts; the Nigerian approach focuses largely on the provision of interest-free capital, despite the fact that the operating environment that supports SMEs is still fragile (Oyefuga et al, 2008; Egbetokun et al., 2011).

The fragile nature of the environment results from the inability of the appropriate sectors to address the lingering issues considered to be the barriers to IT adoption in the Nigerian SMEs. As partly mentioned earlier, the barriers include lack of awareness among owner-managers, management flaws, access to finance, infrastructure, government policy inconsistencies and bureaucracy, environmental factors, multiple taxes and levies, lack of access to modern IT, unfair competition, marketing problems and non-availability of raw materials locally. Lack of skills and training, cultural factors, lack of government policies that support IT adoption and integration in SMEs, electricity constraints and the need to extend IT models and theories to reflect Nigerian realities (Venkatesh et al., 2012; Ihua, 2009).

1.2 Statement of the problem

In spite of the long list of the practical and heoretical gaps ascribed to be the challenges faced by Nigerian SMEs, just a fraction would be revisited due to time and other limitations. Researchers undertake studies to make sure that improvements are made over the exiting theories and policies to ensure alignment with existing development, particularly when gaps are imminent in literature or in practice (Lieberson, 1985). The current research relates to the gaps evident both in the literature and in practice. It could be seen from the literature that Technology Acceptance Model (TAM), Diffusion of Innovation Theory (DOI) and Unified Theory of Acceptance and Use of Technology-2 (UTAUT2) that form the basis of this research were found to have limitations that need to be addressed. This is to guarantee better performance (Sun & Zhang, 2006) in developing economies, where IT adoption is more instrumental to business competitiveness. It is important because most models and theories reflect the context of developed economies (IMF, 2010).

One of the gaps evident in the previous studies is that majority of prior research on IT innovation, and indeed on organizational innovation in general, has been done within what Fichman (2004) call the dominant paradigm. This paradigm is typified by the desire to explain innovation using economic-rationalistic models, whereby organizations that have a greater quantity of what might be called “the Right Stuff” (i.e., greater innovation-related needs and abilities) are expected to exhibit a greater quantity of innovation (i.e., greater frequency, earliness, or extent of adoption). A number of SMEs in Kaduna do not fall within this domain, hence, the need to look beyond the domain in this research.

Another gap has to do with esearch sampling techniques and methodology. For example, a number of studies that employed TAM used university students or lecturers as samples and this made generalization unrealistic (Legris et al., 2003). The empirical studies carried out were mostly done with convenient samples; this does not reflect the true representative of the actual workplace (Sun & Zhang, 2003). Random sampling has been employed in this study to bridge this gap in the literature.

According to Sun & Zhang (2006), another shortcoming of TAM relates to weak explanatory power of the model and the inconsistent relationship among constructs. For instance, a review of some articles authored by Sun & Zhang (2003) and Venkatesh et al. (2012; 2003) revealed that correlations (R) among the constructs

of TAM changes from study to study. Besides, organizational commitment that is seen as employees' loyalty to further the course of an organization (Allen and Meyer, 1990) is missing in this model. This calls for the need to know how commitment can play a role in enhancing IT adoption.

With regards to DOI and UTAUT2 used in this research, some extensions need to be made where necessary, to improve the efficiency and warrant domestication of the theories in the Nigerian SMEs. Virtually all the studies that have bearing on users' perceptions of information technology focused on Rogers' perceived attributes of technology (Dash and Tech, 2014) or used demographic variables as determinants of adoption. This has kept IT adoption in Nigerian SMEs at its low level ever since IT became a global competitive tool (CBN, 2005; Apulu and Latham, 2011). Equally, previous studies did not combine DOI and TAM variables to enhance the understanding of the relationship between IT characteristics and adoption. The infusion of organizational commitment as a mediator and demographic variables as moderators between the IT characteristics and adoption in Nigerian SMEs is a new development that would extend the IT theories; and contextualize them to Nigerian situation to boost adoption in SMEs (Dash and Tech, 2014).

From the practical point of view, It is important to state that the hesitation shown by SME owners and employees to adopt mechanized agriculture and/or use IT related gadgets have forced some SMEs to produce at less than 50% capacity (Aremu, 2011) in Nigeria. This is a negative indicator to the achievement of the Millennium Development Goal, that set out to reduce poverty by 2015 (Kanayo, Uyi Kizito and Udefuna, 2013). Apulu and Ige (2011) suggest that marketers of IT infrastructures in Nigeria are encouraged to focus more on individual and group idiosyncrasies of decision makers measured by age, gender and experience in order to accurately predict and timely package programmes. Indeed, this key Millennium Declaration Goal would continue to be a mirage in the present "global village", unless SMEs are made to appreciate the impact of IT on business growth; and how commitment can improve adoption despite the characteristics of the IT employed (Gudi, Rosenbloom and Parkes, 2014). All these are made possible by this research since the focus is to examine the mediation effects of organizational commitment and moderating effects of demographic variables on the relationship between IT characteristics and IT adoption in the Nigerian SMEs.

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