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VALUE-ANALYSES IN DEVELOPING ECONOMIES

Social Media, Mobile and Cloud Technology Use in Accounting

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Social Media, Mobile and Cloud Technology Use in Accounting: Value-Analyses in Developing Economies

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List of Selected Abbreviations/Acronyms

AAA	American Accounting Association
ACCA	Association of Chartered Certified Accountants
AI	Artificial Intelligence
ANAN	Association of National Accountants of Nigeria
B.Sc.	Bachelor of Science
BMAS	Benchmark Minimum Academic Standard
CAC	Corporate Affairs Commission
CBN	Central Bank of Nigeria
CC	Cognitive Computing
CITN	Chartered Institute of Taxation of Nigeria
CPD	Continuing Professional Development
DIT	Diffusion of Innovation Theory
FRCN	Financial Reporting Council of Nigeria
HND	Higher National Diploma
IAESB	International Accounting Education Standards Board
ICAN	Institute of Chartered Accountants of Nigeria
IES	International Education Standards
IFAC	International Federation of Accountants
IMA	Institute of Management Accountants
IPD	Initial Professional Development
IR	Integrated Reporting
IT	Information Technology
NAA	Nigerian Accounting Association
NASB	Nigerian Accounting Standards Board
NBTE	National Board for Technical Education
NDIC	Nigeria Deposit Insurance Corporation

NUC	National Universities Commission
PAOs	Professional Accounting Organisations
PEOU	Perceived Ease of Use
PLESUT	Perceive, Learn, Setting, and Use Theory
PU	Perceived Usefulness
SAICA	South African Institute of Chartered Accountants
SEC	Securities and Exchange Commission
SEM	Structural Equation Modelling
SME	Subject Matter Expert
SoMoClo	Social Media, Mobile and Cloud
TAM	Technology Acceptance Model
TTF	Technology Task Force
UTAUT	Unified Theory of Acceptance and Use of Technology
WRA	Willingness, Readiness and 'Ableness'

Definitions of Selected Terms

Ableness: This term is constructed to blend 'ability' with willingness and readiness. The study studied 'use' as a variable using a perfect combination of the three concepts (WRA). This implies that a professional accountant is said to be able to use a specific technology if she/he is willing, ready and able to use it.

Accountant: We adopt the definition of an accountant as a professional accountant only; that is, someone who is a member of a PAO, that is, a member or associate of IFAC. In addition, the accountant in this study was deemed to be a member of a Nigerian PAO, that is, ANAN and/or ICAN.

Accountants' training framework: This framework is a pool of academic and professional accounting training opportunities that are open to candidates willing to become and remain professional accountants. The academic training pool is, however, limited to university and polytechnic degrees and awards, while professional training includes both IPD and CPD.

Accounting education: This is used interchangeably with accountants' training framework. It entails all forms of education open to a person, leading to becoming and remaining a professional accountant. In the popular sense, it usually denotes academic accounting education.

Accounting profession: The accounting profession is held as tripartite, such as comprising accounting practice, policy and research.

Demographic variables: Three variables, that is, age, experience and gender, were considered. They are collectively referred to as demographic variables for convenience sake but were measured separately.

Determined factors: These are factors conceptualised based on literature and used as established proxies for certain factors. For perception, PEOU and PU, which are validated constructs, were used. Accountants' training framework relates to two categories of academic and professional training, while accounting profession is held as tripartite including practice, policy and research. These factors were held as significant for the measurement of the target variables.

New technology: Though SoMoClo technologies have been in existence for a long time, they were considered new in the study, especially amongst professional accountants in Nigeria as official technologies. The concept of new technology is

derived from the inclination of technologies that were non-existent at the time of receiving training but has become imperative.

Professional accountant: Professional accountants are held as people who are members of a recognised PAO and functioning as practitioners, policymakers or researchers.

SoMoClo technologies: Social media, mobile and cloud technologies are elements of technology. Social media technologies include applications that foster communication, interactions and networking amongst users such as Facebook, WhatsApp etc. Mobile technology encompasses devices such as Phones, Tablets and in some cases Laptops. It also includes operating systems such as Android, iOS, BlackBerry etc. and finally diverse applications built on both the operating system and the device.

Subject matter expert (SME): This is used to refer to experts in a field with sufficient knowledge of the field to be called experts.

Technology: Technology is a pervasive term to define; it is a conglomerate of ideas, objects, systems etc., whose aim is to enhance operational efficiency. Technology and SoMoClo technologies are sometimes used interchangeably in this work, albeit the latter is an element or subset of the former.

Value-analysis: This is used as the measurable, attributable value of a variable/concept from and/or against another variable/concept. In this study, two types of analyses are used, that is, predictive and interpretive. Predictive value-analysis gives insight into the use of existing training framework to predict professional accountants' use of technology, while the interpretive value-analysis allows an indication of the quality of training a professional accountant has received by viewing and/or assessing her/his use of technology.

Chapter 1

Introduction

Background

A significant basis for the accounting profession is responsibility and reporting; basically between an agent and a principal. This relationship typifies the transfer of resources from owners to other economic entities (individuals, other entities and government) as managers, which in turn bestows a responsibility for accountability. The need for financial accountability inspired by a relationship of stewardship and strengthened by agency became compelling as a result of the emergence of economic activities (Eisenhardt, 1989). However, around early twentieth century, according to Wood (1972), it was discovered that laymen could no longer handle the sophistication of ensuring accountability with the growing economic activities, hence the need for the appointment of *professionals*. These professionals were trained under the apprenticeship method before more formal methods in schools (Chu & Man, 2012). Professional accountants have since devoted their time to activities, operations and functions to provide information to users for decision-making. However, with the enormous responsibility occasioned by the advent of emerging technologies, the need for professional accountants to use technologies became evident.

In response to the need to ensure technology competency and proficiency amongst professional accountants *inter alia*, the Pathways Commission, which birthed in 2012 through a collaboration of the American Accounting Association (AAA) and the American Institute of Certified Public Accountants (AICPA) in the United States (Samkin & Stainbank, 2016), responded by instituting a Technology Task Force (TTF) amongst others. The aim was to explore 'the different accounting technologies used in practice today and what will be expected in the future and the technologies currently being taught in accounting programs as well as how current and emerging educational technologies can improve accounting education' (Pathways Commission, 2014b, p. 13).

Following the achievements of the Pathways Commission, Ellington (2017) decried the non-formalisation and institutionalisation of reforms to higher accounting education in the United Kingdom and recommended the duplication and/or adoption of the work of the Pathways Commission. Earlier in South Africa, a study (Wessels, 2004) was carried on to investigate the future work of

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professional accountants with respect to the triggers of information technology (IT) and to spur research into aligning the future with current education of accountants and the research continued (Wessels, 2005) with intent to identify technology skills that are required for professional accountants to fit into the future of work.

In Egypt, a study (Nokhal & Ismail, 2014) was carried out to determine the (mis)alignment of IT knowledge/skills importance and integration into the accounting curriculum and the results found a significant gap between what is expected in business and what is taught in the accounting programme. In Nigeria, Okolie and Izedonmi (2014) questioned if Nigerian professional accountants are being trained to meet international minimum acceptable competence level, albeit without specific reference to technology. These studies are indicative of the changing dynamics in the business world and the need for professional accountants to understand and prepare for the effect of the wave of change.

The minimum level of technology proficiency expected of professional accountants is specified in the International Education Standards (IES), the global accounting education benchmark, issued by the International Accounting Education Standards Board (IAESB) (2017). The IES is published by the International Federation of Accountants (IFAC), which is the global association of professional accountants. The IES, as a global standard for the education of aspiring professional accountants and professional accountants, stipulates authoritative pronouncements to be used by members and associates of IFAC, that is, PAOs in all jurisdictions of the world in the education (training) of their members. The level of proficiency should be the ability to demonstrate necessary general IT and IT control knowledge as well as competencies, knowledge and understanding of at least one of the three roles of managing, designing and evaluating information systems (IAESB, 2007). This proficiency requirement exceeds general computer appreciation and front-end use of technology.

The need to ensure and sustain an acceptable level of competence, adoption and use of technological applications for accounting operations, functions and activities amongst professional accountants is valid, yet it is becoming increasingly evident that there is shortage of IT competencies amongst professional accountants (Lubbe, 2016). This therefore raises concern on the ability to grasp the value of the accountants' training framework on technology use amongst professional accountants for their varied responsibilities. The crux of the matter lies with the future relevance of professional accountants (Okolie & Izedonmi, 2014), given also that bookkeeping activity is no longer the exclusive preserve of accounting professionals; this, now being taken over by traditional accounting software packages (Oladele, 2014) and cloud-enhanced applications (Meall, 2016a). This poses a challenge to the ability of professional accountants faring in this fast-evolving technological world with an apparent shortage of an acceptable level of technology skills, given significant agreement in literature that technology will continue to shape accounting practice in the decade to come (Meall, 2016b) and make some accounting functions obsolete (Birt, Wells, Kavanagh, Robb, & Bir, 2018; IFRS Foundation, 2010b).

Technology leverages its ability to substantially increase process operational efficiency beyond the outcomes of human dexterity such as is seen with expert systems (Damasiotis, Trivellas, Santouridis, Nikolopoulos, & Tsifora, 2015; IAESB, 2007; Shaoul, 1988; Sutton, Holt, & Arnold, 2016), grid computing (Sultan, 2011), artificial intelligence, cognitive computing, machine learning (Hong et al., 2016; Sutton et al., 2016) and big data analytics (He, Wang, & Akula, 2017; Sledgianowski, Gomaa, & Tan, 2017). However, accountants may increasingly bask in the assurance that technology may not be able to quickly replace professional scepticism (ACCA, 2016; Berg, Buffie, & Zanna, 2016; Meall, 2016b), a distinguishing attribute amongst professionals, despite developments in revolutionary technologies.

In addition, technology may be used to enhance (not replace) the need for accountants' professional judgement as required by the provisions of the principles-based reporting standards now globally adopted/adapted. Notwithstanding, it is true that the human race is being threatened by its own creation, albeit this is not news as God was threatened by His creation (Genesis 11). While this is true, professional accountants are not willing to be thrown to the trash can of irrelevance because of technological advancements (Meall, 2016b). This brings two suggestions; one from an idiom, that '…the danger of creating a monster is that one day, it will turn to harm its creator'. This raises two concerns: (1) the ability of identifying and avoiding the creation of a monster and (2) determining how monstrous technology is or will be (Worrell, Bush, & Di Gangi, 2014). Secondly, God did not allow the plans of mankind to disrupt His divine plans, so he took action (Meyers, 2012, n. Genesis 11: 6–8). In the same vein, professional accountants may not sit idly and observe (Guthrie & Parker, 2016) else the circumference moves (Oladele, 2015c) leaving them behind (ACCA & IMA, 2015).

As technology continues to evolve, professional accountants will as well need to continue to evolve means of staying relevant by not only using technology for their operations and activities, but significantly influencing and being part of the development of technological applications, tools and systems as managers, designers and evaluators (IAESB, 2007). Consequently, this has significant implications for the training of professional accountants, which raises fundamental matters on how much accountants' technology competence and use tell about the quality of training they receive. In addition, the issue of how the environment (in which professional accountants learn and eventually work) influences accountants' technology adoption practices borders on predictive and interpretive value measurements. It is important to stress that the term technology is omnibus, and this study has limited its scope to social media, mobile and cloud technologies, abbreviated as SoMoClo technologies. SoMoClo technologies are relevant to the work of professional accountants in diverse ways and forms. Social media has always been available for personal communication and networking, yet it has been reinvented to fit into corporate livelihood in organisations. Mobile and cloud technologies have a combined capacity to surpass present organisational challenges, hence their importance to the work of professional accountants.

The value-analyses referred to on the use of SoMoClo technologies border on understanding how the use of SoMoClo technologies can be adopted to interpret the quality of training that professional accountants have obtained, and how the training framework of accountants can be used to predict professional accountants' use of SoMoClo technologies. However, concerns come to mind on the possibility of, and how determined factors of accountants' training can be used to predict the use of SoMoClo technologies. How the use of SoMoClo technologies can interpret accountants' training framework within the specialty-context of the accounting profession is likewise significant.

In justifying the use of value-analyses, the researchers are of the opinion that due to the exigencies of data and information, bordering on incompleteness and inaccuracy, forecasting future outcomes are occasionally guesswork. Causal relationships, for example, help in prediction for planning (Sun & Zhang, 2006), hence justifying the use of interpretive and predictive measures. This suggests the use of predictions and estimations, leaving room for error, which has led to calls for confidence accounting in the financial accounting domain (Harris, Mainelli, & Onstwedder, 2012). Another case in point is medical science, which – as close to life as it is – still employs the use of prediction in cases such as the expected date of delivery (EDD). Most of the works of professional accountants that are measurement related are based mainly on estimates and predictions as well, and as posited by Reinstein (2000), there are evidences of claims and counter claims on the predictive abilities of financial statements prepared by professional accountants. To further substantiate the point, there is a financial accounting standard (IAS 8: Accounting Policies, Changes in Accounting Estimates and Errors) that takes care of issues around estimates and prediction in financial reporting.

The adoption of predictive and interpretive value-analyses on the use of SoMoClo technologies is broadly speculative but hinged also on certain assumptions as espoused in technology use theories. One of such assumptions is the use of 'intention to use' or 'behavioural intention' to predict or measure 'actual use' (Watty, McKay, & Ngo, 2016) when it is in fact not possible to measure 'use'. There is substantial literature evidence to suggest the support of the use and adoption of predictive and interpretive analyses in achieving research objectives (Belfo & Trigo, 2013; Buckless & Krawczyk, 2016; Fair, 1978; Geiger & Cooper, 1996; Hardré, 2016; Jamaluddin, Ahmad, Alias, & Simun, 2015; Khan, Kend, & Robertson, 2016; Sun & Zhang, 2006; Sutton et al., 2016; Wang & Shih, 2009; Wessels, 2004). In addition, a study (van Beest, Braam, & Boelens, 2009) that sought to measure quality of financial reporting using the qualitative characteristics was anchored on the predictive value of the financial statement for future outcomes. The use of prediction is therefore a sound mechanism for research, especially when combined with interpretivism, which is also recognised as a suitable method for research (Bhattacherjee, 2012; Hamilton, 2013; Lindsay, 2013).

The determined factors are taken from literature, such that accountants' training framework includes academic education and professional education (Gammie, Cargill, & Hamilton, 2010; IAESB, 2015b). It is instructive to state that within the context of academic education, tertiary training for professional

accountants is optional in some climes because there are routes to becoming a professional accountant without a tertiary academic degree or award, albeit a tertiary award is desirable and has become basic amongst accounting professionals. The professional education component is made up of initial professional development (IPD) and continuing professional development (CPD). The IPD is made up of training to instil (1) technical competence, (2) professional skills and (3) professional values, ethics and attitude, and to acquire practical experience.

Determined factors used to qualify perception are as popularly used by the theories of technology use with two broad categories: that is, perceived ease of use (PEOU) and perceived usefulness (PU) (Sabi, Uzoka, Langmia, & Njeh, 2016; Watty et al., 2016; Zhang, 2017). It is instructive to highlight that there are other validated constructs for the measurement of perception, such as perceived enjoyment (Sun & Zhang, 2006), perceived benefit (Richardson, Dellaportas, Perera, & Richardson, 2013), perceived resources, perceived expenditure and perceived cost (Zhang, 2017). Specialty is held as tripartite, comprising accounting practice, policy and research (Laughlin, 2011; Oladele, 2015b). The demographic factors that are considered are age, experience and gender, seeing that they have significant moderating effects on factors that influence technology use based on literature.

It is noteworthy that economies that produce scientific knowledge (Dabalen, Oni, & Adekola, 2001) and maximise their knowledge workers develop rapidly and enjoy increased income (Mendivil, 2002), thereby contributing significantly to national social and economic growth and development (Dumbili, 2014). This implies that determining the value, type and dynamics of accountants' training framework that influences technology competence and use amongst professional accountants as a precursor for effective and efficient policy directions and implementation strategies by stakeholders is key to significantly developing the economy. Given that it is the responsibility of accountants' training framework to determine the level of competence to be attained to become and remain qualified as professional accountants (IAESB, 2015b; Wessels, 2006), if there are concerns about the quality of professional accountants' technology competence and ultimately the use of technology, it becomes overarchingly necessary to rethink the training framework, its environment, providers and vanguards.

Research Motivation

The rapidly evolving nature of IT continues to influence organisational operations, activities and functions including competence requirements (Damasiotis et al., 2015; Willis, 2016). Therefore with growing demands for professional accountants to deliver efficiently, and sustainably productively, the need for improved and constantly improving technology competence cannot be overemphasised. ACCA and IMA (2015) highlighted SoMoClo technologies as relevant to the work of professional accountants, yet it seems there is literature silence on the use of SoMoClo technologies, collectively in the professional accounting

domain, especially in developing economies. This may be predicated on the fact that they are somewhat new technologies. It must be noted that SoMoClo technologies challenge traditional technologies, and threaten to lead to attrition, making its study significant in the professional accounting circles where there has been growing demand for increasing the number of professional accountants. The adoption of these technologies has significant impact on employee-to-employee, employer-to-employee, business-to-customer (B2C), business-to-business (B2B) and business-to-government (B2G) relationships, yet it seems literature has not fully reviewed those intricacies amongst professional accountants, especially in developing economies.

Issues surrounding technology awareness and recognition precede issues that border on technology competence amongst professional accountants; hence, questions that review current practices and education of professional accountants need to be asked. Accounting, like other professions, needs to stay current and this requires constant training, such that professional accountants already in 'practice' can be familiar with new technologies to remain relevant. This is important given the fact that technology is not only transformative and disruptive; it is constantly evolving (receiving updates and upgrades) to counter existing challenges and enhance efficiency in service delivery. A research problem, however, is the literature silence on professional accountants as social actors in the framework of the use of SoMoClo technologies. This raised the need for a study to identify whether professional accountants in developing economies are aware of emerging SoMoClo technologies useful in their professional capacity and whether they recognise and use these technologies. Furthermore, questions that border on the awareness of the capabilities of these technologies for professional engagements as well as responsibilities of professional accountants towards their use are of significant scholarly enquiry.

Significantly as well, given the fact that the world is a global village, the need for research that compares the technology competence of professional accountants in emerging economies, side-by-side with the international competence standard – the IES – cannot be overemphasised. This readily becomes imperative given that corporate entities now cross national borders, in search of professionals with requisite skill and competence to reduce cost of hiring high-priced labour (Guthrie & Parker, 2016). This is predicated on the fact that when low-priced competent labour abounds, it creates incentives for investment flow. The ascertainment of the technology competence of professional accountants in developing economies compared with international competence requirement is significant to assist to assess her contribution to the global labour market.

A concern that resonates significantly is how willing multinational corporations are, to engage professional accountants from developing economies, based on their level of competence. It is significant to highlight that the provisions of the IES constitute minimum standard. However, it appears that reviews of studies that compared IT inclusion and integration in accounting curriculum found significant variances (Nokhal & Ismail, 2014); this raises significant red flags.

The ATF, which incorporates all the education and training received by professional accountants, may not have received significant scholarly enquiry as

required given its prominence of place as a key factor in shaping especially technology capacity and competence. First, it appears there is a silence in literature on the relationship between the ATF and the technology competence of professional accountants in developing economies and secondly, it appears the ATF has not been used as a predictor variable on the use of SoMoClo technologies. Many studies have limited education and training to a demographic variable or at best, a moderating variable, creating a significant research gap.

Conclusively, studies have been done to analyse the influences of age, gender, level of education, experience, ethnicity and other variables but a significant shortcoming is that it appears that studies that analysed the influences of pickets of accountants' training framework in developing economies are limited in scope. It also appears that studies within specialty-context on technology (or more specifically, SoMoClo technologies) competence and use amongst professional accountants are non-existent.

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