

Expanded Technological Acceptance Model for the Sub-Saharan African Environment (ETAM-4SAE)

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I. INTRODUCTION

Abstract — This research aimed at investigating the relationships between the Technological Adoption constructs (Perceived Usefulness, Perceived Ease of Use, Perceived Performance and Perceived Benefit) and variables in the Sub-Saharan African context and consequently develop an expanded TAM for the Sub-Saharan African environment, this study examined technology acceptance models, theories and framework to establish the concepts in them that apply in the environment. Applying a quantitative approach, the study collected data from 308 students (chosen at random) in five public universities (that were using e-learning systems) in five countries in the five regions of Sub-Sahara Africa. Performing multiple regression analysis, the probability (P) values (significance level) and standardized coefficients (prediction values, β) were computed. Based on the multiple regression correlation analysis, this study tested the technological adoption concepts in the Sub-Sahara African context and developed an expanded TAM for the Sub-Saharan African environment. Out of the four constructs of the developed expanded TAM, three (perceived ease of use, perceived usefulness and perceived performance) directly affect behavior intention which in turn directly affects technology adoption. Caution needs to be taken when applying this study's findings beyond the technology and population it considered as the technology and population it considered is not entire technologies used in Sub-Sahara Africa and entire population that use technologies in Sub-Sahara Africa. Further research on Technological Adoption may compare the developed TAM for the Sub-Saharan African environment to existing TAM by examining the variance of their constructs across defined periods and across cultures to determine their performance and hence explain different Technology Adoption behaviors in the Information Technology field. Applying the developed expanded TAM for technology adoption in the Sub-Saharan Africa environment is more likely to give accurate results than applying the existing TAM versions. The research developed an expanded TAM for technology adoption in the Sub-Saharan African environment. The developed model is useful as it came up with two new constructs (perceived performance and perceived benefit that is missing the original TAM).

Keywords—Technology Acceptance, Sub-Sahara Africa, Extended Technology Acceptance Model, Culture, E-learning

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The Technological Acceptance Model (TAM) is very relevant when examining and predicting technology acceptance. Recent studies that have used TAM include the study on “factors influencing consumer acceptance of Internet of Things (IOT) technology” [1], TAM - understanding academics' behavioral for learning management systems [2], “testing technology acceptance model 3 with the inclusion of change fatigue and overload” [3], “e-learning acceptance and assimilation” [4], “acceptance of human resource information system” [5] and “perceived interactivity, perceived ease of use and perceived usefulness of online hotel booking Intention” [6].

Applying TAM3 to investigate e-learning acceptance and assimilation, [4] concluded that TAM3 holds well in the Arabian culture. In consonance with [4] study, [5] study found that usage influenced the constructs Perceived Ease of Use (PEOU) & Perceived Usefulness (PU) and the variables, information quality & social influence respectively.

In their study on the constructs that influence consumer acceptance of Internet of Things (IoT), [1] applied the TAM to propose an IoT acceptance model. Apart from [1] integrated model providing more explanation on user Behavioral Intention (BI) toward IoT usage, they also found that trust (a third construct in their integrated model: social/cultural influence) played an insignificant role in predicting intention to accept. In their attempt to assist universities to predict the BI to use Learning Management Systems (LMS), [2] and [7] modified the TAM and UTAUT (Unified Theory of Acceptance and Use of Technology) models respectively using the core constructs PEOU, PU, and Attitude toward Usage (ATU). [2] [7] modification of TAM included external factors (LMS unavailability, prior LMS experience and job relevance).

Examining the dynamisms of variables that predict usage of LMS, [3] found substantial differences from links in the TAM3 model as the construct Subjective Norm and the variables, image, computer self-efficacy, computer anxiety, computer playfulness, perceived enjoyment, objective usability, and experience do not significantly impact the model. Using the findings of his work that, some variables fade in importance (as a result of greater fluency, more extensive use of computers, and effect of digital wisdom), [3] constructed a more parsimonious revised model of constructs and variables that reflected the said changes. Seemingly, to solve the complexity of using too many website interactive features as a way to improve the usefulness of websites, [8] reviewed past literature and based on TAM, proposed a conceptual framework with nine propositions to understand the role of Perceived Interactivity

