

Performance of the Expanded Technology Acceptance Model in the Sub-Saharan African Context

Martin Mabeifam Ujakpa and Delene Heukelman

Abstract — The Technological Acceptance Model (TAM) and its extensions propounded by Fred Davis and other authors respectively, has broadly been applied on various technological novelties worldwide and has been very fruitful in predicting various technological acceptance behaviors in so many settings. On the basis that TAM may not hold true for some cultures including Sub-Sahara Africa, the expanded TAM for the Sub-Saharan African environment was developed. To ascertain expert opinion on it and assess its performance, this study examined the expert opinion and performance of the developed expanded TAM in the Sub-Saharan African context. Conducting telephone interview with six information systems and human computer interaction experts and administering questionnaire to 308 students in five public universities (using e-learning systems) in five Sub-Sahara Africa countries in the five Sub-Saharan Africa regions, data was collected and multiple regression analysis applied to compute variance (R²) of the independent and dependent constructs (PU, PEOU, PP, PB and BI respectively) in the developed expanded TAM model in the Sub-Saharan African context. Based on the validation of the model by the six experts, its constructs resulting variance were compared to the existing TAMs constructs variance. Results of the comparison showed that, the developed expanded TAM in the African context, outperformed the existing TAMs. Though this research was able to reach findings, it had a limitation of not being able to collect primary data on existing TAM models to compute their variance: future research in this area should work at overcoming this.

Keywords— Technology Acceptance, Expanded Technology Acceptance Model, Culture, Sub-Saharan Africa, Performance

I. INTRODUCTION

While some studies on technology acceptance concepts have applied the technology acceptance theories, models and frameworks, others have extended them. Among the studies that extended TAM in the African context include the study of [1], [2] and [3]. As discussed below, the said studies only considered data from isolated countries in Africa.

In [2] study on “service quality practices and customer satisfaction in taxi companies in Nairobi”, [2] used the

expectancy disconfirmation theory and applied a descriptive and inferential statistics to examine data in the study. Upon analyses of the service quality data and customer satisfaction data that the researcher collected from 40 managers and 120 customers in the Kenyan taxi industry, [2] concluded that customers are satisfied with taxi companies and thus loyal to taxi service providers.

In their work to identify “commonly used external constructs of TAM in e-learning adoption”, [1] proposed a General Extended Technology Acceptance Model for E-Learning (GETAMEL)”. In its proposition, GETAMEL did not consider cultural factors, system quality, information quality and service quality; rather, it focused on the most commonly used external constructs of TAM.

In order to investigate the advantages and disadvantages of e-learning in higher educational institutions, using TAM as an underpinning theory, [3], reviewed e-learning literature and found benefits of e-learning to its flexibility irrespective of time and place, its enhancement of knowledge, its ability to enable easy access to large amount of information, offer opportunity for improved interaction and its cost effectiveness.

Though TAM has broadly been applied on various technological novelties worldwide and has been fruitful in predicting acceptance behaviors in many settings, it might not hold true for all cultures [4]. On this basis, [5] unearthed technological acceptance concepts and subsequently developed an expanded TAM in the Sub-Saharan African context [6]. To assess the effectiveness of the developed model in the African context, this study examined the performance of the developed expanded TAM in Sub-Saharan African context. Unlike the earlier studies, that collected data from individual countries, [6] expanded TAM, based on data gathered from five universities in five Sub-Saharan African countries across the five Sub-Saharan African regions. To validate the model and ascertain its performance, this study subjected the model to experts’ review and variance measurements.

II. LITERATURE REVIEW

According to [7], “the Cognitive Dissonance Theory (CDT) and Expectancy Disconfirmation Theory (EDT) have proved relevant to technology acceptance through a few studies” like that of [8] and [9]. However, CDT and EDT do not address technology acceptance adequately and hence has not received the same consideration as Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM, TAM2 and TAM3). TRA, TAM, TAM2 and TAM3 are more popular technology

Manuscript received June10, 2020. M. M. Ujakpa is with Durban University of Technology, South Africa as a PhD Candidate and the International University of Management, Namibia as a Senior Lecturer and Faculty Dean. Previously he was with Ghana Technology University College, Accra Institute of Technology and Valley View University. D. Heukelman is Research Coordinator for Faculty of Accountancy and Informatics at the Durban University of Technology, South Africa..

