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Conceptualizing User Preference and Trust in Western Designed Banking Software Systems in Developing Countries

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Abstract

Organizations in developing countries have over the last decade been investing heavily in information and communication technologies to drive efficiency and effectiveness of their operations. Recent advancements in the development of 21st century banking systems and competition in the banking industry has forced many banks in developing countries to import and use systems designed for the western banking markets and operations. This study investigated the contextual factors impacting adoption, implementation and usage of these western designed software packages in developing countries through a case study of the implementation of Oracle FLEXCUBE at a bank in Cameroon. A mixed-method design approach and triangulation of two technology adoption theories underpinned the research design. Findings revealed significant impact of contextual factors on the implementation process and unexpected trust for western designed software packages compared to local alternatives. Results also show that preference and trust in western designed banking systems cannot be solely explained by constructs from technology adoption theories. Implications and recommendations for future implementations of western designed software packages in similar contexts are discussed.

Keywords: **Technology adoption; Developing countries; Cultural and environmental challenges; User resistance; Banking; Cameroon**

INTRODUCTION

Over the last two decades, economic globalization and technological advancements in information and communication technology (ICT) have resulted in software systems and other Information Technology (IT) packages being developed, mostly in western industrialised countries and deployed for usage in developing countries (DC). The rise in packaged IT applications has facilitated the “build here and deploy anywhere” phenomenon. With ICTs increasingly being used in multicultural contexts and across national boundaries, users with different national, cultural and professional backgrounds have been shown to exhibit different attitudes towards technology [1].

Research into the adoption and implementation of new technology has revealed that there is always resistance to new ICT implementations by users in organisations both in western developed countries and developing countries [2,3]. Such resistance has been attributed either to organisational culture or simply unwillingness of users to learn new systems. Organisations in developing countries expect imported technologies to seamlessly fit within their operational framework but this has often not been the case leading to non-adoption and failed implementations [4-6]. Participatory design paradigm in developing countries is usually bounded by cultural and traditional practices [7]. Cultural perception of information system (IS) participatory design in developing countries entail involving not only system users but also individuals indirectly impacted by the system [8]. Research into cultural factors affecting implementation and use of a new IT system has been covered in various studies [9-11]. Developing countries also face environmental impediments such as economic, technological, legal, financial and infrastructural issues that impact adoption and usage of western designed software packages [12,13]. Given the cultural and environmental differences that exist between western developed countries and developing countries; adoption, implementation and usage of these western designed software packages can pose problems with their acceptance and eventual usage.

Many organisations in developing countries rely on western designed IT solutions to realise their ambitions of adopting and implementing advanced technologies within their operations. However, only a few are successful while others continue to use ineffective and outdated technologies. Despite the benefits of these advanced technologies, organisations in developing countries face varying forms of impediments to their adoption and usage such as cost, institutional, labour, information, culture and environment related impediments [14]. Mlay et al. [6] cited the example of the failed implementation of Oracle FLEXCUBE at the East African Development Bank in Uganda due to users' resistance. They identified that lack of users' involvement, poor communication, lack of organizational culture and low employees' ability to use IT as factors that can breed resistance to technological implementations. Given that this implementation for the same western designed software package failed in Uganda, we undertook a study to explore the recent implementation of Oracle FLEXCUBE in the context of Cameroon to assess the organisational, cultural and environmental factors that impacted the implementation.

The purpose of this study was to investigate how users in developing countries perceive and adopt western-designed software systems implemented within local business operations. We focused on implementation of Oracle FLEXCUBE banking software package at National Financial Credit (NFC) Bank Cameroon. Our main objective was to look at central phenomenon of user adoption and perception of western-designed software systems in the context of Cameroon in order to answer the following questions:

What factors influence acceptance and usage of western designed software systems in developing countries?
How does context influence acceptance and usage of western designed software packages in developing countries?

The next section gives a brief literature review focusing on cultural and environmental factors in the adoption and usage of technology. This is followed by a case study of the adoption and implementation of Oracle FLEXCUBE at NFC bank Cameroon and the analysis of the results. The paper concludes with a discussion of the findings, some recommendations and suggestions for future studies.

LITERATURE REVIEW

Many studies have been carried out to investigate the causes of user resistance to the implementation of new IT systems [2,3] and found out that perceived value and organisational support for change can mitigate user resistance. Lapointe and Rivard [15] carried out a multilevel model analysis of resistance of new IT implementation in hospitals and concluded that users are more inclined to resistance if after initial system trials and projections about long term usage reveal threats to the status quo. Many IS implementations have failed due to lack of user engagement and consultation in the design and development phase [16]. Despite customers in developed industrialized nations being proinnovation, there is still a degree of resistance to these innovations [17].

Culture can be conceptualized as shared symbols, norms and values within a social collectivity such as an organisation or a country [11]. Meanwhile Environment can be conceptualized as the geographical location, socio-economic, political and infrastructural conditions under which a system operates [12,13]. Knowledge of local operational context plays an important role in enhancing the innovative performance of software within firms in developing countries [18]. Very few studies have investigated the role played by culture and environment on the acceptance and use of advanced technology [19,20]. Cultural constraints in technology transfer across nations and differences in organisational cultures are a major factor in the resistance to technological changes and hence impact successful technology transfer [20]. Cultural affinity has a significant and positive influence on the adoption of new technology by users [21]. Meanwhile local knowledge and understanding of cultural and environmental context are crucial for successful adoption and usage of technology [18]. It is therefore apparent that cultural and environmental conditions coupled with other contextual factors can influence the adoption and usage of new technology. We will focus our study on the implication of these factors on an organisation in a developing country of the sub- Sahara African region.

THEORETICAL AND CONCEPTUAL MODEL

Two of the most widely used IS adoption theories are Davis's [22] Technology Acceptance Model (TAM) and Roger's [23] Diffusion of Innovation (DOI) theory. TAM [22] posits that individual system usage is determined by behavioural intention to use the system which is influenced by two beliefs: Perceived Usefulness and Perceived Ease of Use of the system. Perceived usefulness entails the extent to which the person beliefs using the system will improve their job performance. Perceived ease of use entails the extent to which a person believes system usage will be free of effort. Meanwhile DOI [23] views innovation as being communicated through certain channels over time and within a particular social system. DOI states that the rate of adoption of an innovation is partially determined by the characteristics of the innovation such as relative advantage, compatibility, trialability, observability, and complexity.

Little research has been done by integrating constructs from TAM and DOI theories to explain user adoption and usage of new technology in developing countries. Our research is focused on developing a holistic understanding of acceptance and usage of western designed technology in developing countries by integrating the key constructs of TAM and DOI theory as shown in the conceptual model in Figure 1. Using a triangulation of the two theories provided a new perspective and offered more insights into the effectiveness of western designed software packages used in the context of developing countries.

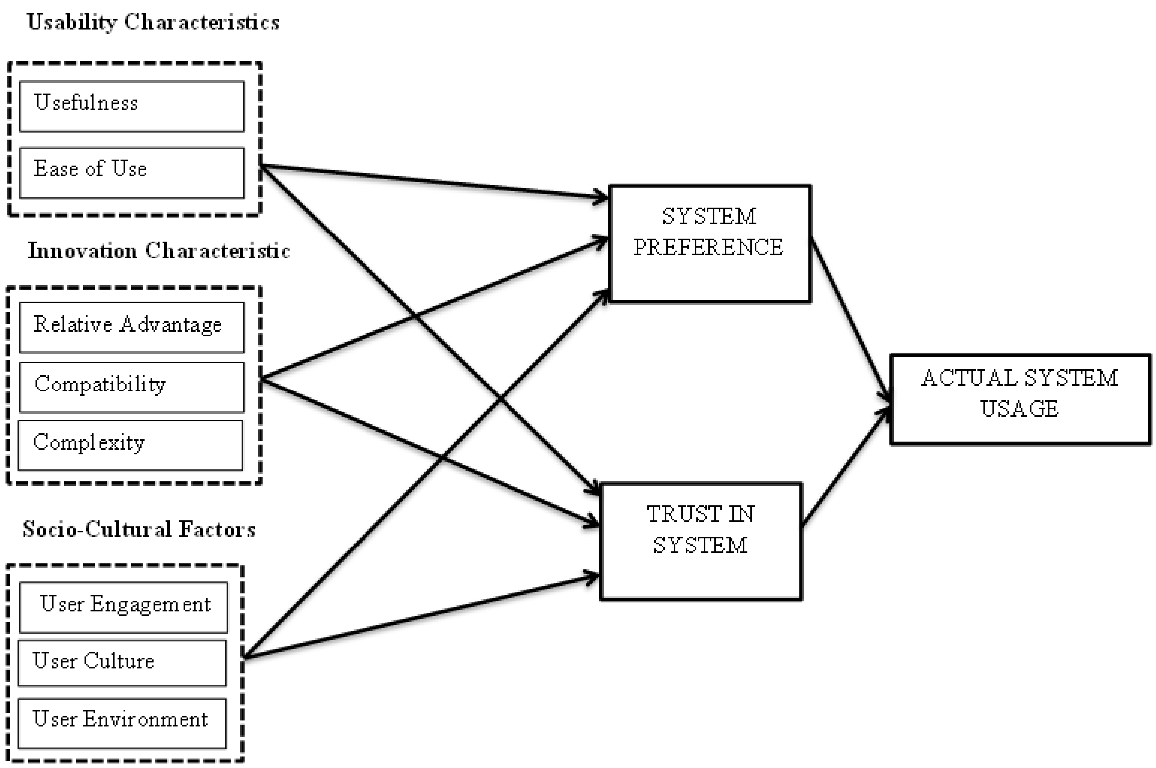

Figure 1: Conceptual Model

Based on the theoretical and conceptual model proposed above, the following hypotheses have been propounded for this study:

H1: Usefulness of the western designed software systems will influence user system preference and trust hence impacting actual system usage
H2: Ease of use of western designed software systems will influence user system preference and trust hence impacting actual system usage

H3: Relative advantage gained from western designed software systems will influence user system preference and trust hence impacting actual system usage
H4: Compatibility of western designed software systems will influence user system preference and trust hence impacting actual system usage
H5: Complexity of western designed software systems will influence user system preference and trust hence impacting actual system usage
H6: User engagement by top management in the selection and implementation of western designed software systems will influence user system preference and trust hence impacting actual system usage
H7: Users' cultural and environmental context will influence user system preference and trust hence impacting actual system usage

METHODOLOGY

Our research adopts a single case study approach to investigate the adoption and usage of western designed software packages in the context of a bank in a developing country. Case studies are widely used for understanding interactions between ICT based infrastructure, ICT users and organizational [24]. Case study research allows researchers to use varying forms of data collection and analysis thereby exploiting all available data and subsequently leads to 'thick descriptions' of the phenomenon being studied [25]. We explored the impact of local context on the adoption and implementation of Oracle FLEXCUBE (OFC) banking software at NFC bank in Cameroon. Using a real life case study allowed us to gain valid insights, make context-based conclusion and provide guidelines to other organisations in developing countries for future implementations [26].

Case study site

National Financial Credit Bank S.A (NFC) was created as a Financial Institution called National Financial Credit Company (NFCC) and was registered at the National Credit Council (NCC) Cameroon on December 20th, 1989 with its legal headquarters in Bamenda- Cameroon; and administrative headquarters in Yaoundé – Cameroon. It officially started business operations as a Financial Institution on the 15th of June 1990 and became a licensed Commercial Bank, NFC Bank S.A. on the 9th of August 2006 after accreditation by the Banking Commission of Central Africa popularly known by its French acronym as COBAC (Commission Bancaire de l'Afrique Centrale). The vision of the bank was to be the dominant player in the retail banking sector in the central African sub-region and a reliable partner to small and medium sized enterprises (SME) as well as corporate bodies. Their mission was to be a role model for African banks through addition of value to stakeholders by ensuring sustained growth, innovation, product development, control, compliance and customer care.

At the time of this research study, the bank has grown from a small start-up credit provider to a major player in the Cameroonian banking industry with over 41,000 customers and 69,000 accounts. The bank has 13 branches across the country linked to a central control system by the Oracle FLEXCUBE banking software, with plans underway to create more branches.

Oracle FLEXCUBE is a multi-channel offering that allows banks to handle customer queries, empower their staff and provide the much needed agility to their IT departments. Oracle FLEXCUBE uses service oriented architectures (SOA) and business process management capabilities to transform the way banks create, deliver, sell and service new and existing financial products [27].

Research design

Our study uses a mixed method research (MMR) design approach. MMR is a research approach that combines and integrates the philosophical foundations, methodological assumptions and research methods of quantitative and qualitative research approaches [28]. The methodological pluralism of MMR is grounded in ontological and epistemological assumptions of critical realism that helps to preserve the link between theory and methods in research [29].

The data was collected through two self-designed and administered questionnaires one quantitative survey for OFC system users and the other a qualitative survey for bank managers. Qualitative surveys are surveys that do not focus on counting frequencies but aim to search for empirical diversity in the study population and is often reported under the labels of grounded theory or unspecified qualitative research [30]. Part 1 of each questionnaires captured respondent's demographic profile. Part 2 of users' questionnaire consisted of questions with a five point Likert scale measurement ranging from "1=Strongly Disagree" to "5=Strongly Agree". Part 2 of manager's questionnaires consisted of a mixture of Likert scale questions and open-ended questions.

Non-probability purposive sampling was used by targeting respondents based on accessibility and location of the users of the OFC system within the branches of NFC bank across the country. Due to the type of questions and quality of information solicited, the researcher worked with bank management to achieve diversity by identifying those using the system and those who participated in the implementation phase.

To ensure validity and reliability of the data collected, a two stage validation process was used. First we ensured that most of the constructs used for the questions came from validated prior studies and secondly we did a pilot test of the questionnaire with a selected group of respondents to ensure clarity and remove any ambiguities identified before the data collection phase. Statistical package for social sciences (SPSS) was used to measure the reliability of our instrument using Cronbach's Alpha coefficient. A Cronbach Alpha coefficient value of 0.6 was obtained from the final data collected which is considered acceptable [31] and shows that our instrument was reliable with no issues of internal consistency.

DATA ANALYSIS AND PRESENTATION OF FINDINGS

Due to the mixed-method approach used for this study, a mixed method approach was also used for the data analysis and presentation of the findings. We collated and coded the qualitative data collected from responses to the open-ended qualitative management survey to come up with themes based on the responses. SPSS was used for the statistical analysis of the quantitative survey data. Out of 75 user questionnaires that were sent out to bank staff, 32 usable responses were received giving a response rate of 42.7%. Out of 20 management qualitative survey questionnaires that were sent out to managers, 9 usable responses were received giving a response rate of 45%.

Demographic profile analysis

Analysis of the managers' demographic profiles indicated that 89% were male, 11% were female. 67% of the managers were above the age of 30 thereby buttressing their experience in the industry. 89% have a university qualification and 67% of them indicated proficiency in 3 or more commonly used computer packages. Educational level and computer self-efficacy indicated the ability of managers to offer valid assessment of the suitability of OFC for adoption and meaningful insights into the implementation process.
Analysis of user demographic profiles revealed an almost equal split where 53% of the respondents were female and 47% male. There were no respondents below 20 years of age with the majority (84.4%) of respondents in the 30-50 years age range which is consistent with the prime working age in Cameroon. Educational level of the respondents revealed that 65.6% had at least a first degree, 18.8% high school diploma and 15.6% secondary school certificates. This indicates that respondents were well educated and able to offer their opinions about the system. In terms of position held, 37.5% were cashiers, 18.8% were Accounts managers, 18.8% were Accountants, 6.3% were support staff and 18.8% held other roles. Furthermore, all respondents have worked at the bank for over 3 years with 34.4% having over ten years' continuous service. Hence all respondents were users of the old system prior to its replacement by OFC and therefore had valid opinions about the change process and comparative knowledge of the old system vis-àvis the new OFC system.

Qualitative survey analysis

Change process assessment: There was general agreement amongst managers on 'why the bank decided to replace the old system'. They indicated that the old system was outdated and the bank needed a robust modern IT

system to meet modern banking standards. According to a senior business unit manager;
"The old system was 75% manual and unable to deliver daily reports timely" while another operations manager said;
"The old system was obsolete. The software was machine dependent. Hardware could no longer be found in the market".

The managers portrayed more trust and believe in western designed systems compared to local alternatives. They pointed out the lack of local designers and skills to accomplish the type of system required for complex banking needs. They expressed reservations about local developers having inside knowledge of their banking system as one of them puts it;

"Considering how delicate banking operations are, developing a system locally will give room to the developers to have proper mastery of the codes which in turn could have a negative security impact".

The managers stated that OFC was chosen due to its universality, capabilities and usage by competitors within the Cameroonian banking industry. Most of the managers felt that the working culture and environment of staff at the bank influenced the decision of top management to select OFC. Intriguingly, most of the managers indicated that they were not consulted or involved in the decision making process to select OFC or actual implementation of OFC. This finding suggests that top management at the bank were solely responsible for the decision making process without the involvement of branch and operational managers.

Implementation assessment: Managers lamented the training issues that resulted in some users not being trained prior to system rollout and even those that were trained; the level of training was inadequate. One manager said "cost constraints from hiring foreign experts meant not everyone was fully trained on the new system before it went live".

There were also challenges with product creation, adaptability of local products to fit within the new system, data cleansing and migration issues. A senior operations manager said;
"It was not easy translating data from old to new system. The old system was in French and the new one was English".

More time was used translating data and products from the old system to the new leading to delays and failed initial attempts at implementation. High cost of expatriate labour meant user acceptance testing was rushed and training curtailed. Cost pressures also led to poor implementation planning as one senior manager puts it;

"There was a first attempt that failed due to poor planning; a second and finally a third. There was incomprehension of what was expected at each stage. This dragged on but the final migration was a big bang and was successful".

Top management engagement: Statistics from the general question on top management engagement with users and line/branch managers in the selection process indicates that 87.5% of users and 88.9% of managers were not consulted at any stage of the selection process. An independent sample T-test analysis between users and managers on the question of user engagement by top management at the 0.05 significance level shows that there is no significant difference between the two groups in their response to the management engagement question (T_{39}=-0.110, $p>0.05$ (p=0.913), Tcritical=2.021). This result can be attributed to the fact that an almost equal percentage of managers and system users were not involved in the selection and implementation process. Quantitative data analysis: We used descriptive statistics to measure user perceptions towards western designed software systems for all the variables in our model. The output from the statistics are shown in Table 1 and the results indicate high to moderate mean scores on a 5-point Likert scale for questions pertaining to the adoption of the OFC system.

Table 1: Variable Descriptive Statistics

Variables	**Mean**	**Std.**
The FLEXCUBE system is very easy to use	4.09	.73438
It was easy for me to learn the new FLEXCUBE system	3.94	.75935
The training for the FLEXCUBE system was adequate	3.84	.80760
FLEXCUBE system makes it easier to handle customer requests than old system	3.78	.75067
The FLEXCUBE system makes my job easier	4.16	.62782
The FLEXCUBE system makes it quicker to serve	3.72	.92403
The FLEXCUBE system allows me to do things I couldn't do in the old system	4.16	.72332
The FLEXCUBE system meets all the requirements for	3.13	.97551
The FLEXCUBE system is a good match for our local banking environment	3.72	.92403
FLEXCUBE system is more stable than the old system	3.75	.67202
Problem with the FLEXCUBE system are easier to	3.38	.87067

We have expert in-house support for the FLEXCUBE system than the old one	3.19	1.06066
I have enough technical support with the FLEXCUBE system than the old system	3.53	.94985
Management consulted us before selecting the new	1.94	.98169
Our requirements were solicited before implementation of the FLEXCUBE system	2.81	.89578
I was involved in the project to implement the new	2.94	1.10534
I can't do some of the transactions that were possible in old system on FLEXCUBE	2.91	1.08834
FLEXCUBE has functions that are not required for our	2.94	.98169
There are some functions that we will like to have in FLEXCUBE which are lacking	3.78	.83219
I prefer the new FLEXCUBE system to the old system	4.25	.95038
Old system was more suited to our working culture and environment than FLEXCUBE	2.09	1.02735
I prefer a system designed and built locally than the imported FLEXCUBE system	2.47	1.19094
I didn’t want to use the FLEXCUBE system but had no	1.56	.71561
If I were given the choice, I will happily go back to the	1.72	1.02342
I trust western designed applications than those designed and built locally	3.16	.62782

The highest means with scores over 4 for agree or strongly agree were for preference of the new system over the old (4.25), improved job performance (4.16), relative advantage over old system (4.16) and ease of use of the new system (4.09). Meanwhile, the lowest mean scores with means below 2 for disagree or strongly disagree were compulsory requirement for users to use the system (1.56), user’s willingness to revert to the old system (1.72) and early engagement in the change process by top management (1.94).

Evidence from Table 1 indicates that many respondents viewed the new Oracle FLEXCUBE system positively. It also shows from the mean of two lowest scores obtained from the negatively framed questions that respondents preferred the OFC system to the old system. A very low mean score on top management engagement indicates that users were not engaged in the change process at an early stage.

Correlation analysis: The relationship between the variables was established through a correlation analysis of the key variables in our model. The relationship between the attributes of western designed banking software and user preference of locally designed and built software was investigated. We also investigated the relationship between the attributes of these western designed banking software systems and the trust in them compared to locally design and built software systems.

Table 2: Correlation Analysis

	PEOU	**PU**	**RELADV**	**COMPLX**	**COMPAT**	**USERENG**	**CULTENV**	**TRUSTIMP**	**LOCVsIMP**
PEOU	1								
PU	.317	1							
RELADV	.518**	.371*	1						
COMPLX	.011	.224	.195	1					
COMPAT	.040	.134	-.125	.066	1				
USERENG	-.215	-.088	-.213	.124	.264	1			
CULTENV	-.354*	-.073	-.237	-.240	-.345	-.058	1		
TRUSTIMP	.037	.100	-.127	-.385*	.412*	-.141	-.173	1	
LOCVsIMP	.133	.071	-.163	-.288	-.287	-.333	.437*	-.144	1

**. Correlation is significant at the 0.01 level (2-tailed) *. Correlation is significant at the 0.05 level (2-tailed). N=32

(PEOU=Perceived ease of use, PU=Perceived usefulness, RELADV=Relative Advantage, COMPLX=Complexity, COMPAT=Compatibility, USERENG=User Engagement, CULTENV=Cultural and Environmental Factors, TRUSTIMP=Trust in Imported Software, LOCVsIMP= Preference of Local over Imported Software)

Table 2 shows the results of the Pearson product-moment correlation coefficients for all the variables investigated. There was a medium positive correlation between the cultural and environmental context of the users of the western designed software system and their preference for local over imported banking software systems [$r=.44$, $n=32$, $p<.05$]. This means that the more users place emphasis on their cultural and environmental factors, the more they are inclined to prefer locally designed and built software systems than imported western designed software systems. There was also a medium negative correlation between user engagement by top management and preference of locally designed software systems [$r=-.33$, $n=32$, $p>.05$], however this was not significant at the .05 level.

Table 3: Model Summary for Preference of Local Systems

Variable	B	Std. Error	β	t	Sig.
PEOU	.602	.313	.371	1.924	.066
COMPLX	-.185	.259	-.118	-.714	.482
RELADV	-.595	.318	-.362	-1.874	.073
COMPAT	-.204	.225	-.158	-.908	.373
USERENG	-.288	.199	-.238	-1.449	.160
CULTENV	.460	.212	.397	2.175	.040
PU	.272	.329	.144	.827	.416
R2 = .450	F = 2.809	α = .028	B0 = 2.43		

Investigating the propensity of users of western designed banking software systems to trust these systems, we found a medium positive correlation between compatibility and trust for these systems [$r=.41$, $n=32$, $p<.05$], as well as a medium negative correlation between complexity and trust for western designed banking software systems [$r=-.39$, $n=32$, $p<.05$]. This suggests that users are more inclined to trust western designed banking software systems if they are compatible with their existing operations and are not cumbersome to learn and use**.**

Regression analysis: Two multiple regression analysis were performed to evaluate the impact of the independent variables on the each of the dependent variable. The first regression analysis was to investigate the contribution of each independent variable to the variance of preference between western designed banking software systems and locally designed software systems by users of OFC at NFC Bank Cameroon. Collinearity diagnostics were performed on SPSS for all the variables to ensure there were no cases of multicollinearity. The tolerance value for each of the independent variables was above 0.6 threshold value while the variance inflation factor (VIF) for all the independent variables in the regression were below 1.7 hence below the threshold value of 2.59 and indicating that there was no violation of multicollinearity in the analysis. Table 3 shows the model summary and based on the R2 value of 0.450; this means that the model explains 45% of the variance in the preference for locally designed and built banking software systems compared to imported western designed systems. Due to our sample size, the adjusted R Square value of 0.290 (29% of variance) provides a more realistic value for estimation to the population [32,33].
The standardized coefficient for each of the independent variables shows the contribution of that variable in explaining the variation in the dependent variable (preference of locally designed and built system). The values shown in Table 3 mean that cultural and environmental factors with a beta coefficient of 0.397 makes a stronger contribution in the model to determine if users will prefer locally designed banking software systems to imported western designed systems. Though the model is significant at the 0.05 level based on the ANOVA analysis (p=0.028), only cultural and environmental variable in the coefficients analysis is significant at the 0.05 level. The resulting predictor equation modelling user preference of locally designed systems relative to western designed system based on the unstandardized beta coefficients is shown below:

$$Y_{pref} = 2.43 + 0.60X_{ou} + 0.27X_{pu} - 0.19Xc_{px} - 0.60X_{ra} - 0.20X_{cpt} - 0.29X_{ue} + 0.46X_{culenv}$$

Where Y_{pref} is the dependent variable representing preference of locally designed systems over imported western designed systems, X represent the independent variables (X_{ou}=PEOU, X_{pu}=PU, X_{cpx}=COMPLX, X_{ra}=RELADV, X_{cpt}=COMPAT, X_{ue}=USERENG and X_{culenv}=CULTENV).

The above equation shows that perceived ease of use, perceived usefulness and cultural and environmental factors are positively correlated to user preference of locally designed systems over imported western designed systems. Meanwhile complexity, relative advantage and compatibility are negatively correlated to user preference of locally designed systems over imported western designed systems.

The second regression analysis was to investigate the contribution of each independent variable to the variance of trust in western designed banking software systems compared to locally designed software systems by users of OFC at NFC Bank Cameroon. Table 4 shows the model summary and based on the R2 value of 0.433; this means that the model explains 43.3% of the variance in trust for western designed software systems compared to locally designed systems. Due to our sample size, the adjusted R Square value of 0.268 (26.8% of variance) provides a more realistic value for estimation to the population [32,33].

Table 4: Model Summary for Trust in Western Designed Systems

Variable	B	Std. Error	β	t	Sig.
PEOU	-.086	.168	-.101	-.514	.612
COMPLX	-.373	.139	-.452	-2.690	.013
RELADV	-.088	.170	-.101	-.516	.611
COMPAT	.271	.120	.399	2.249	.034
USERENG	-.146	.106	-.229	-1.375	.182
CULTENV	-.125	.113	-.204	-1.101	.282
PU	.182	.176	.182	1.031	.313
R2 = .433	F = 2.617	α= .037	B0 = 4.13		

The values shown in Table 4 mean that complexity with a beta coefficient of -0.452 makes a stronger contribution in the model to determine if users will trust western designed software systems compared to locally designed systems. The model is significant at the 0.05 level based on the ANOVA analysis (p=0.037). The coefficients analysis shows that only complexity and compatibility are significant at the 0.05 level. The resulting predictor equation modelling user trust of western designed systems compared to locally designed systems based on the unstandardized beta coefficients is shown below:

$$Y_{trstou} + 0.18X_{pu} – 0.37X_{cpx} – 0.09X_{ra} + 0.27X_{cpt} – 0.15X_{ue} – 0.13X_{culenv}$$

Where Y_{trst} is the dependent variable representing trust of imported western designed systems over locally designed systems, X represent the independent variables (X_{ou}=PEOU, X_{pu}=PU, X_{cpx}=COMPLX, X_{ra}=RELADV, X_{cpt}=COMPAT, X_{ue}=USERENG and X_{culenv}=CULTENV)

The above equation suggests that perceived ease of use, complexity, relative advantage, lack of user engagement and cultural and environmental factors are negatively correlated to trust in western designed systems. On the other hand, perceived usefulness and compatibility are positively correlated to trust in western designed systems.

Hypothesis testing: We set out to test our hypotheses at the 95% confidence level using the results from the two regression analysis performed above. The results from the regression analysis show that

when all the factors investigated in this study are considered together, the model is significant at the .05 level in predicting user preference for locally designed systems ($p<.05$) and user trust for western designed systems compared to locally designed systems ($p<.05$). We will use the regression results to tests the hypothesis propounded for this study.

H1 (Usefulness of the western designed software systems will influence user system preference and trust hence impacting actual system usage) was not supported for both system preference ($p>.05$, $t=0.827$, $\beta=0.144$) and trust in western designed system ($p>.05$, $t=1.031$, $\beta=0.182$). This means perceived usefulness doesn't significantly predict user preference for locally designed banking software systems and doesn't predict their trust for western designed systems.

H2 (Ease of use of the western designed software systems will influence user system preference and trust hence impacting actual system usage) was not supported for both system preference ($p>.05$, $t=1.924$, $\beta=0.371$) and trust in western designed system ($p>.05$, $t=0.514$, $\beta=0.101$). This means perceived ease of use doesn't significantly predict user preference for locally designed banking software systems and doesn't predict their trust for western designed systems.

H3 (Relative advantage gained from western designed software systems will influence user system preference and trust hence impacting actual system usage) was not supported for both system preference ($p>.05$, $t=1.874$, $\beta=0.362$) and trust in western designed system ($p>.05$, $t=0.516$, $\beta=0.101$). This means relative advantage doesn't significantly predict user preference for locally designed banking software systems and doesn't predict their trust for western designed systems.

H4 (Compatibility of western designed software systems will influence user system preference and trust hence impacting actual system usage) was partially supported. Compatibility was not significant in predicting user system preference ($p>.05$, $t=0.908$, $\beta=0.158$) but was significant in predicting user trust in western designed system ($p<.05$, $t=2.249$, $\beta=0.399$). This means users will trust western designed systems if they are compatible with their current system requirements and needs.

H5 (Complexity of western designed software systems will influence user system preference and trust hence impacting actual system usage) was partially supported. Complexity was not significant in predicting user system preference ($p>.05$, $t=0.714$, $\beta=0.118$) but was significant in predicting user trust in western designed system ($p<.05$, $t=2.690$, $\beta=0.452$). This means that users will trust western designed banking software systems if they are less complex and easier to learn.

H6 (User engagement by top management in the selection and implementation of western designed software systems will influence user system preference and trust hence impacting actual system usage) was not supported for both system preference ($p>.05$, $t=1.449$, $\beta=0.238$) and trust in western designed system ($p>.05$, $t=1.375$, $\beta=0.229$). This means that user engagement by top management in selecting a new software system doesn't significantly predict user preference for locally designed banking software systems and doesn't predict their trust for western designed systems.

H7 (Users' cultural and environmental context will influence user system preference and trust hence impacting actual system usage) was partially supported. Cultural and environmental context was significant in predicting user system preference ($p<.05$, $t=2.175$, $\beta=0.397$) but was not significant in predicting user trust in western designed system ($p>.05$, $t=1.101$, $\beta=0.204$). This means contextual factors do impact user preference of a software system but are not shown to predict trust in western designed banking software systems.

DISCUSSION

We undertook the current study to investigate factors that influence user system preference and trust in western designed systems and how this impacts actual system usage in the context of developing countries. We used a case study of a Cameroonian bank for our study and our research model was guided by two key technology adoption theories – DOI and TAM. The conceptual model developed proposed that acceptance and usage of western designed software packages in developing countries can be influenced by both system variables as well as usability variables. The acceptance and usage of such systems can be viewed from two user perspectives: managers' perspective and daily system users' perspective.

On the managers' perspective, results indicate that early user engagement in the selection and implementation process of a new software system is crucial for the eventual system acceptance and usage. Results also suggest that many managers at the operational and bank branch levels were not involved in the selection and implementation process despite their positions as eventual leaders and drivers of the actual system usage post system implementation. Sustained user engagement in system implementation has been viewed as a prerequisite for user acceptance and can contribute to eventual success [34,35]. However the results from the user survey indicated that despite this lack of early engagement in the change process, this was not a significant factor in determining user preference of locally designed systems over western designed systems or indeed their trust in western designed systems. This can be attributed to the other control factors in system acceptance and usage. Also the outdated nature of the old system as stipulated by some of the managers could have influenced user's decision to accept the new system in the hope that it is better than the old system.

On the competitive advantage gained through the implementation of OFC system, results indicate that managers perceive the system as a driver for effective competition within the industry and enhancement customer service quality. The relative advantage gained through system usage by OFC users in handling customer queries and processing reports faster than in the old system also justified the choice of OFC system. This served as a compelling factor in their adoption and usage of the system and reinforces the views of Tan et al. [36] who found that relative advantage significantly influence decision by businesses and users to adopt new technology. However relative advantage was not significant in the statistical analysis of user preference of locally designed software systems and trust in western design software systems. This can be attributed to the fact that users say a new system as being better in handling their daily activities than the old system and the origin of the system became unimportant. Also since this study was conducted postimplementation of the system, usability of the system might have influenced user's perception and responses to the survey questions.

The results from the management qualitative survey indicated weak support by managers to trialability of the software before adoption. This is consistent with previous studies on the role of trialability in adopting new technology which concluded that it is not a significant factor but can help in guiding the decision making process to adopt the software [36,37]. System users were not involved in the selection process of the new software system hence their responses to questions on trialability were dropped from the statistical analysis.

On the construct of perceived usefulness, results indicated that managers of the OFC system perceive the system to be very useful and enhances job performance of the users. This finding is consistent with previous studies that have found that perceived usefulness is a mediating factor in user adoption and usage of new systems [38,39]. However the statistical analysis of user preference for locally designed software systems and trust for western designed software systems was not significant at the 95% confidence level. This can be explained by the fact that more compelling factors such as the poor usability of the old system and the need for change had overriding influence on user preference than the usability attribute.

The respondents to the quantitative survey scored highly on the ease of use constructs with average mean of 4.09 while some of the managers said the system made generation of reports easier. This support for perceived ease of use buttresses the views of previous researchers who have found that perceive ease of use influences users' adoption and usage of new technology [38-40]. Despite this positive view of systems based on their perceived ease of use, this attribute was not significant in influencing user preference for locally designed software systems or their trust in the western designed banking system that was implemented for their use.

The results further support the cultural and environmental context as significant factors in the transfer and adoption of western designed software in developing countries. Many of the managers agreed that their operational context was an important factor in adopting and using the new technology. Many western designed systems have failed when implemented in developing countries due to lack of local knowledge and differences in operational conditions [4,5]. Hence the consideration of these contextual factors ensured a successful adoption and implementation of the OFC system. The statistical analysis of the influence of cultural and environmental factors showed that user preference of locally designed software systems over western designed systems was significant. However trust in western designed systems was not significantly influenced by the cultural and environmental factors.

CONCLUSION

The findings from this study have demonstrated that user engagement at an early stage in the implementation of a western designed software package in developing countries will greatly enhance user acceptance and usage of the system. However this lack of engagement didn't affect the acceptance of OFC by users and managers due to other overriding adoption factors. It did not also influence user preference of local systems or trust for imported western designed software systems. The study used a mixed method approach to allow the researchers to investigate the perspective of users and managers in the adoption process and revealed a unified view with regards to usability, ease of use and user engagement. Integrating antecedents from DOI and TAM theories provided a new perspective towards a comprehensive theoretical framework and contribution to technology adoption models that very few studies have used to

investigate acceptance and usage of western designed technologies in developing countries. The results however revealed that system preference and trust in western designed systems are not entirely influenced by the usability and system attributes modelled by TAM and DOI. Other factors such as users' cultural and environment factors play an important role in system preference and trust in western designed banking software systems. A key strength of this study was the use of two popular theoretical approaches to design a new conceptual model using constructs from the theories and contextual factors to explain user preference and trust in western designed banking software systems in developing countries. Using mix-method approach allowed us to highlight the competing views of managers and users in their preference and trust in western designed banking systems and how this conceptually impact acceptance and usage of western designed banking software systems in developing countries.
The findings will have important implications for top management within the bank and other organisations in developing countries when implementing new imported western designed software systems in the future. It will also be useful for other organisations intending to implement a similar western designed banking software package within their operations in developing countries. Based on the findings, it can be concluded that the users in developing countries conceptually don't have any problems with adopting and using western designed software packages. They even trust these western designed software packages and believe that they are more reliable, stable and trustworthy than locally designed software packages. However they also affirmed that the lack of qualified and trusted local designers is a factor that influences their decisions to use these western designed software packages.

It is clearly evident from the study results that though contextbased cultural and environmental factors play a role in the selection of a software package; usability, ease of use and relative advantage are also important factors to take into consideration. Results suggest the need to invest more time in planning and training of users before system rollout. This finding is in line with the proposals by Heeks [4] that better planning, understanding of the local operational dynamics and end user engagement are paramount to successful implementation of western designed software packages in developing countries.

We recommend that firms in developing countries implementing western designed banking software systems should allocate more resources towards early user engagement, extensive quality assurance testing, training and implementation. They must take into consideration the cultural and environmental context of their organisations and end users when selecting such systems.

A limitation of this study is that it was focused on a single case study with a small sample size, hence findings cannot be generalised. Future studies should be conducted using multiple cases in different banks or other similar organisations adopting western designed software systems to validate these results. Moreover, this study was focused on the implementation of western designed banking software package for the banking industry hence the results might not be applicable to other industries. It will be relevant for future researchers to look at validating these results with implementations of western designed software packages in other industries such as retail, construction, hospitality, tourism and governmental operations. The results however give us enough information to make context-based conclusion on the relevance of cultural and environmental factors in the acceptance and usage of western designed banking software systems at a bank in developing countries.

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