

Antecedent Factors to End-Users' Symbolic Acceptance of Enterprise Systems: An Analysis in Nigerian Organizations

Samson Arekete
Department of Computer Science,
Redeemer's University,
Ede, Nigeria
areketes@run.edu.ng

Boluwaji Ade Akinnuwesi
Department of Computer Science,
Lagos State University,
Ojo, Nigeria
akinboluade@yahoo.com

Princely Ifinedo
Department of Financial and Information Management,
Cape Breton University,
Sydney, Canada
princely_ifinedo@cbru.ca; pifinedo@gmail.com

Abstract— End-user acceptance of information systems (IS), including enterprise systems (ES) is critically important for the success or effectiveness of such technologies for adopting organizations. While prior research has focused on such issues in the developed West, very little is known about workers' perceptions of ES acceptance or adoption in the developing world. This study was designed to add to the growing body of work in the area by using empirical data collected in Nigeria. We employed symbolic acceptance to enrich insight instead of usage adoption, which is commonly used in the literature. We drew from relevant theoretical frameworks in developing the research model, which was tested with data collected from a survey. Using the partial least square technique (PLS) for data analysis, support was found for the five hypotheses formulated herein. Namely, performance and effort expectancies, social influence, facilitating conditions, and attitude toward ES were found to have significant, positive impacts on ES symbolic acceptance. The implications of the study findings for both research and practice are discussed, and conclusions are drawn.

Keywords—end-user; enterprise systems; symbolic acceptance; IS adoption; survey; PLS; Nigeria

I. INTRODUCTION

Enterprise systems (ES) are large-scale software used by organizations to facilitate information exchanges and support complex business processes. ES can be purchased off-the-shelf; they can also be bespoke, that is, custom developed to support a specific organization's requirements and needs. Examples of ES include enterprise resource planning (ERP) systems, customer relationship management (CRM), and so forth [1-4]. Both public and private organizations have adopted and continue to acquire various ES (e.g., CRM, ERP) in large number [2]. For example, Forbes-Tech [3] reported that "the worldwide ERP software market grew 3.8% from \$24.4 [billion] in 2012 to \$25.4 [billion] in 2013." Similarly, "The CRM worldwide market grew from \$16B [billion] to

\$18B [billion] attaining a 12.5% growth rate from 2011 to 2012" [4].

Despite the popularity of ES among practitioners worldwide, industry reports and academic studies have shown that investments in ES, in some instances, are have proved unsuccessful [5]. The vast majority of ES acquisition failures are due employee resistance, low levels of adoption by organizational actors, costs related concerns, inadequate communication, and the inability of organizations to address end-users' needs [5-9]. Past research suggests that ES adoption fails where the foregoing concerns are not adequately understood and addressed [5-8,10]. Indeed, a lack of users' acceptance of ES has been noted as one of main reasons the implementations of such packages fail in adopting organizations [10].

Empirical studies are therefore required to deepen understanding of the factors that can improve organizational actors' (e.g., end-users) acceptance or adoption of ES. This study is motivated by the need to contribute to such a discourse. Traditionally, the information systems (IS) literature has approached users' acceptance of IS, ES in particular, from a variety of ways including actual systems usage, use behavior, and so forth both in mandatory and voluntary settings [11-17]. In this study, emphasis will be placed on ES symbolic acceptance (SA) in the workplace, which is comparable to symbolic adoption in the extant literature [11,15]. We decided to focus on SA as several previous researchers [13,14] have already investigated ES acceptance from the point of actual usage, notably self-reported usage of such technologies.

Following Nah et al.'s [11] definition, we describe symbolic acceptance as end-users' mental or cognitive acceptance of new IS in mandatory settings. It is important to stress that SA is different from actual usage of IS. We concur with [15] who noted that in mandatory settings, symbolic

adoption or acceptance is needed for infusion, that is, the use of innovation in a complete and sophisticated way [11]. People accept or reject technologies for a variety of reasons [18]. However, researchers such as [11] in citing [15] implied that end-users in mandatory settings are likely to display a wide range of symbolic or emblematic imperatives (e.g., incomparable business culture, attachment with legacy systems, and cost-benefit problems) when making a choice to either accept or reject new IS in their contexts. In other words, the symbolic acceptance of IS by an individual hinges upon their cognitive evaluation of the IS in question.

This study is motivated, in part, by the paucity of empirical studies on the factors that influence ES acceptance in developing countries [19]. Few researchers have paid attention to issues in Africa [16,20] even when symbols and undertones of national culture have been noted to be critical for technology diffusion on the continent [21], not many researchers have investigated issues from the perspectives of users of technologies in Africa. In that regard, our current study complements prior research and seeks to provide empirical evidence of end users' acceptance of ES in a developing country: Nigeria.

While information about ES acceptance from the developed world and other emerging societies are well represented [13,14,17], perspectives from Africa are rare [16,20]. We argue that it is important not to conflate insights and observations from differing regional contexts of the world given that socio-economic and cultural factors may impinge upon how technologies are used or assessed by different peoples [20]. Moreover, prior research has shown that end users' acceptance of IS differ by regional contexts [22]. Thus, we hope that our study will enrich the literature accordingly.

Specifically, our study is designed to provide an answer to the question: What are the antecedent factors to end users' symbolic acceptance of ES? It is hoped that the information provided by this study would advance the knowledge of both practitioners and academicians on the subject of ES acceptance.

To guide this research, we will draw from the Unified Theory of Acceptance and Use of Technology (UTAUT) framework [12], which a recent study found to have international appeal [23]. It is worth mentioning that the UTAUT model has relevant constructs that have subsumed factors such as perceived fit and compatibility and so forth that were used in [11], which studied symbolic adoption of ES. To some extent, the study of ES symbolic adoption by [16] that utilized the UTUAT framework was based on a similar understanding as ours.

II. BACKGROUND INFORMATION AND REVIEW

A. The Use of IS in Nigerian Organizations

Nigeria is a developing country in Africa; as such, the use of IS by its population and businesses is generally low [24]. Recently, public and private organizations' use of IS, in general, and business packages, in particular, is improving [25,26]. That said, Nigeria was chosen as a location for our study as the country is recognized as one the better performers in Africa with respect to IS usage indicators [27]. We contend

that the literature generally benefits when attention is paid to IS acceptance issues in a developing context such as Nigeria. Importantly, theory development and knowledge accumulation in the literature are positively enhanced by such considerations.

B. Information System and Prior Acceptance Models

Researchers investigating end-users' acceptance or adoption of IS have often used such theories and models as the diffusion of innovations (DOI) theory, theory of planned behavior (TPB), theory of research action (TRA), technology acceptance model (TAM), and so forth. Among the various models and theoretical frameworks, the TAM is considered most popular and widely used for assessing end-user acceptance of IS [13,14,28]; it has been used in ERP research as well [13,14,19,29,30]. However, several researchers have highlighted the limitations of the TAM in explicating end-users' acceptance of IS in mandatory settings [11,12,15]. Paramount among TAM's limitations is its unsuitability to provide deep and comprehensive insights into end-users' acceptance of IS under voluntary conditions.

Venkatesh et al. [12] combined several IS acceptance models and theoretical frameworks, including TAM to propose the Unified Theory of Acceptance and Use of Technology (UTAUT), which its proponents asserted is more applicable to IS usage in mandatory settings, i.e., the workplace. Research that used the framework found it to be parsimonious and relevant for IS adoption considerations in mandatory settings [23]; hence its selection for our study.

It is very likely that an organization that invests enormous amounts on an ES would expect its stakeholders (e.g., employees) to utilize and accept the system for work-related purposes. Contrastingly, an individual that procures technology like a computer may rely on factors such as ease of use (i.e., effort expectancy) or usefulness (i.e., performance expectancy), which are the core components of the TAM to determine whether to accept that technology. The UTAUT is more comprehensive in its composition given that it recognizes factors such as social influence at work and relevant facilitating conditions alongside performance and effort expectancies as critical influences to individuals' acceptance of technology [12].

With respect to the UTAUT framework, the preceding determinant (i.e., behavioral intention) of the dependent variable (i.e., use behavior) is framed in the context of intention-behavior relationship, which may be more applicable when behavior is under personal volition [11]. Nah et al. reviewed past literature that discussed ways to deal with the intention-behavior relationship for end-user IS acceptance in mandatory settings. As previously noted, SA was suggested as a suitable option that may be more appropriate in predicting initial lack of acceptance of IS by end-users. In that respect, our study employs SA as its dependent variable.

Consistent with Nah et al.'s [11] research model of ES acceptance and for the fact that researchers such as [28] found that the acceptance or adoption of IS depends largely on users' attitudes toward IS, we designed the construct or factor of attitude toward ES to act as moderator in the relationships

between selected antecedent factors in this study and the dependent variable. All the factors or constructs used in our study are described Table I. The research model and hypotheses are presented next.

TABLE I. VARIABLES' DEFINITIONS

Variable	Description
Performance expectancy (PERF)	This refers to the flexibility and usefulness of ES to work functions.
Effort expectancy (EEFT)	This refers to the degree of ease associated with the use of ES.
Social influence (SOCI)	This refers to the extent to which an end-user's opinions are affected by others.
Facilitating conditions (FACC)	This refers to degree to which an end-user believes that his or her organization provides support for ES use.
Attitude toward ES (ATTI)	This refers to an end-user's positive or negative feelings toward ES.
ES symbolic acceptance (ESSA)	This refers to an end-users' mental or cognitive acceptance of new IS in mandatory settings.

III. RESEARCH MODEL AND HYPOTHESES

Figure 1 illustrates the research model and hypothesized paths. The research model suggests that selected antecedent factors positively impact attitude toward ES, which in turn impacts ES symbolic acceptance. Consistent with our rational, the broken lines in Figure 1 indicate the path to the actual adoption of ES was not considered in this study. As previously noted, all thing being equal, end-users who, for whatever reasons, have cognitively or mentally accepted their organizations' ES will eventually adopt their ES. This relationship is not tested in this study; future research, we hope, will enlighten in this aspect.

Control variables such as gender, age, and so on, which are considered vitally important in the UTAUT model [12] are not included in our exploratory research. We excluded these factors to enable us focus on the influences of selected antecedent factors in this initial endeavor. We intend to include such variables in subsequent works.

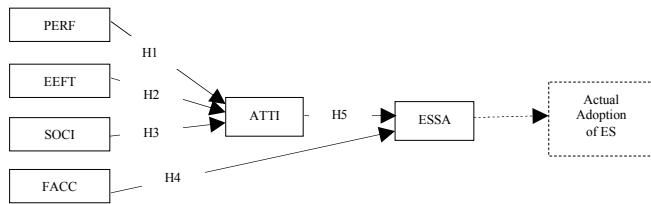


Fig. 1. The research model.

Overall, attitudes of users toward IS tend to be favorable when they are able to sufficiently appreciate the usefulness and advantages of technologies [12,28]. Nah et al.'s [11] study of ES acceptance in a developed country, USA and Govindaraju and Indriany's [17] in a developing country, Indonesia found attitude toward ES to be positively influenced by perceptions of usefulness and advantages of IS, that is, performance expectancy. It is therefore predicted that:

H1: Performance expectancy will have positive impacts on attitude toward ES.

Effort expectancy in the UTAUT is composed of constructs such as perceived ease of use and complexity. To that end, users who do not perceive IS to be difficult to use tend to develop positive attitudes toward technology [12,18-20,28]. While [11] found support for the relationship in the context of ES acceptance, [17] did not. In general, the literature supports the existence of a positive link between effort expectancy and attitude toward IS [11,12,28]. It is therefore predicted that:

H2: Effort expectancy will have positive impacts on attitude toward ES.

Oftentimes, the decision of an individual to use IS is influenced by the opinions and views of significant others in his or her immediate environment, i.e. workplace [12]. This is because compliance, identification and socialization imperatives can cause individuals to alter their attitudes to mirror those of influential personalities in their environments [12,13,20,21]. Past ERP studies found the existence of a positive relationship between social influence and attitude toward ES implementations in organizations [13,31]. It is therefore predicted that:

H3: Social influence will have positive impacts on attitude toward ES.

Consistent with the conceptualization in the UTAUT framework, the construct of facilitating conditions is modeled to influence the dependent variable [12]. Like in [12], facilitating conditions in this study encompass the availability of essential resources needed to enhance IS usage, i.e. ES usage. The study carried out in South Africa by [16] found that facilitating conditions was significantly related to users' symbolic adoption of ES. Others have also signified the importance of facilitating conditions for IS adoption [12,23,31]. It is therefore predicted that:

H4: Facilitating conditions will have positive impacts on ES symbolic acceptance.

It is reasonable to expect that an end-user's mental acceptance of IS would benefit from favorable individual's attitudes toward IS. Conversely, unfavorable attitude toward IS would elicit negative mental perception or judgment with respect to IS acceptance. There is evidence in support of the view suggesting that attitudes toward IS significantly predicted IS symbolic adoption [15]. Moreover, ES research affirmed that there is a positive association between attitude toward ES use and symbolic adoption [11,17]. It is therefore predicted that:

H5: Attitude toward ES will have positive impacts on ES symbolic acceptance.

IV. RESEARCH METHODOLOGY

A. Data Collection

We used a field survey to collect data from selected Nigerian organizations. The developed questionnaire, which included validated items from the literature, was pre-tested by eight knowledgeable professionals. Comments from the pilot test helped to improve the quality of the final instrument

distributed. Participants in the main survey were asked to indicate an appropriate choice on selected statements.

The research data was collected in Lagos, which is largest commercial city in Nigeria [32]. The targeted population came from a list of business contacts held by a local university in the city. This approach is akin to judgmental sampling [33] given that the researcher selects respondents based on his or her knowledge of the suitability of participants. Past studies in Nigeria have used a similar method for data collection [34]. The identified participants were mainly middle-level managers. The unit of analysis of this study was at the level of the individual; as such, knowledgeable informants were duly targeted.

In all, two hundred and thirty questionnaires were distributed to participants from diverse industry and sectors such as banking, insurance, legal, mining, and government parastatals (agencies). One hundred and sixty five responses were deemed acceptable for subsequent data analysis; thus the effective response rate of the study is 71.7%, which is considered appropriate for an initial study such as ours [33,35].

TABLE II. DEMOGRAPHIC PROFILES

Characteristics	Content	Number	Percentage
Type of Organization	Communication	30	18.20%
	Hospitality	14	8.50%
	Insurance	25	15.20%
	Legal	10	6.00%
	Mining	3	1.80%
	Manufacturing	12	7.30%
	Government Parastatal (Agency)	10	6.00%
Participants' Job Functions	Banking	58	35.20%
	Healthcare	3	1.80%
	Accounting & Finance	63	38.20%
	Human Resources Management	24	14.50%
	Sales & Marketing	12	7.30%
	Information Technology	60	36.40%
	Other	6	3.60%
What ES System is used for	Customer Relationship Management	30	18.20%
	Human Resources	31	18.80%
	Supply Chain Management	27	16.3%
	Business Intelligence	9	5.50%
	Finance	68	41.20%
	Baan	2	1.20%
	Oracle	50	30.30%
Type of ERP System in Use	SAP	29	17.60%
	Tiny ERP	3	1.80%
	Apache OFBiz	2	1.20%
	PostBooks	5	3.00%
	WebERP	29	17.60%
	GNU Enterprise	12	7.30%
	ADAPAQ	3	1.80%
	NAVISION	2	1.20%
	SAGE/PASTEL	5	3.00%
	MANTAS	2	1.20%
	SAP and Oracle	3	1.80%
	Other	18	11.00%

The majority (42.4%) of the respondents have ES usage experience of between 5years and 10years. A wide range of ES (e.g., packaged ERP, CRM, and bespoke applications) is in use at the participants' organizations. Males (63.6%) and females (36.4%) respondents participated in the survey. Many of the respondents (67.9%) were aged between 26 and 40 years. Other relevant demographic details are provided in Table II.

We conducted a test for non-response bias by assessing whether non-response bias was a problem for the data. Namely, the data was divided into two parts i.e. early and late

respondents; afterwards, a comparison was made between the two sub-samples [36]. Using the Chi-square (χ^2) test, we compared the two sub-samples using organization type and other key variables. The tests (significant at $p < 0.05$) did not reveal any statistical differences between the survey's non-participants (late respondents) and participants (early respondents) on the measures used.

Common method bias (CMB) cannot be ruled out in our study as the views of only an individual in the sampled organizations was used [37]. CMB refers to a bias in the dataset due to external factors to the measures used in the study. We made an attempt to contain such biases by soliciting participation from diverse industries and sectors. With such heterogeneity in our data sample, the potential for biases arising from concerns diminishes.

Furthermore, the procedural remedies for controlling CMB, as recommended by Podsakoff et al. [37], were followed; namely, clear and concise questions were used in the questionnaire to reduce participants' apprehension. Additionally, a statistical procedure—that is, the Harman's single factor test—was used to assess whether CMB was problematic for the data sample. The test result showed that first factor accounted for 35.14% to indicate that CMB was not a problem for the collected data.

B. Operationalization of the Constructs

The scales used to operationalize performance and effort expectancies, facilitating conditions, and social influence were adapted from [12]. For attitude toward to ES, three measures were adapted from [11]. We obtained relevant items from discussions in [6-10,38,39] to operationalize ERP symbolic acceptance. Our study's scope of ES symbolic acceptance though comparable to Nah et al.'s [9] is somewhat different as it included a range of items considered pertinent for users' acceptance of complex technologies such as ES [please see, 5-8,10]. Having said that, all the measuring items were anchored on a 5-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). The research variables and their items' descriptive statistics are shown in Table III.

TABLE III. VARIABLES AND ITEMS' DESCRIPTIVE STATISTICS (CONTD.)

Variable	Reference No.	Item
Performance expectancy Mean = 4.19 SD = 0.94	A1	Using ES is flexible as I can use it anywhere in my organization.
	A2	In my opinion, ES software is very useful for my job.
	A3	I save time by using ES instead of other non-integrated software.
	A4	ES offers me flexibility with working at my pace.
Effort expectancy Mean = 3.98 SD = 0.95	A5	It is easy for me to use our ES software.
	A6	ES software is adequate for my needs.
Social influence Mean = 2.98 SD = 1.21	A12	People who influence my behavior think I should use ES for my job.
	A13	I am expected to use ES at all times by colleagues and superiors.
		I use ES because colleagues from other departments in my organization use it.
Facilitating conditions Mean = SD =	A16	My organization provides me knowledge/skills to use ES.
	A16	I have been trained to use our ES.
	A18	A specific person (or group) is available to assist me when I encounter problems with the use of our ES.
Attitude toward ES Mean = 4.04 SD = 1.12	A10	Using ES is a good idea.
	A11	ES makes my job more interesting.
	A9	I like working with ES software [omitted].
ERP symbolic acceptance	A30 A33	My organization's old system(s) do not hinder my use of our ES.

Mean = 3.87 SD = 1.03	A36	Our ES is appropriate for our business functions.
	A37	My organization has the various resources to maintain our ES software.
	A38	The initial costs of acquiring our ES do not inhibit its usage.
	A39	The internal costs associated with using ES in my organization do not discourage me from using it.

Note: SD – Standard deviation

V. DATA ANALYSIS

We used the partial least squares (PLS) technique of structural equation modeling (SEM), which utilizes a principle component-base for estimation [35,40,41]. PLS is similar to regression analysis; however, it allows the use of latent constructs [40-42]. Suitable for exploratory models and theory development, PLS places minimal demands on sample size and residual distributions [40,41]. The software used in this research is SmartPLS 2.0 (M3) beta [43]. The literature of PLS suggests that information about two related models, i.e., the measurement and structural models, be provided

A. Measurement Model

The psychometric quality of the research constructs was assessed with internal reliability, convergent, and discriminant validities. The internal consistency measures as indicated by the Cronbach's alphas and composite reliabilities for each of the scale, which are shown in Table VI exceeded the recommended threshold value of 0.7 [35,44].

Convergent validity captures the extent to which a measure correlates with the other measures with which it is theoretically predicted to correlate. It is assessed by two criteria. First, a strong convergent validity result is assured when an item loading greater than 0.707 are obtained [45]. Second, the square root of the average variance extracted (AVE) for a construct is observed to determine whether it is able to explain at least half (50%) of the measures' variance [40,45]. The results in Table IV meet these criteria as well.

TABLE IV. AVE, INTERNAL RELIABILITY, INTER-CONSTRUCT CORRELATIONS

	CRA	CRO	AVE	ATTI	EEFT	ESSA	FACC	PERF	SOCI
ATTI	0.58	0.83	0.70	0.84					
EEFT	0.61	0.83	0.71	0.51	0.84				
ESSA	0.88	0.91	0.63	0.61	0.43	0.79			
FACC	0.75	0.85	0.66	0.41	0.24	0.59	0.81		
PERF	0.71	0.82	0.54	0.62	0.55	0.51	0.31	0.73	
SOCI	0.69	0.83	0.62	0.42	0.31	0.47	0.40	0.41	0.79

^a AVE = Average variance extracted; CRA = Cronbach's alpha; CRO = Composite reliability

TABLE V. CROSS LOADINGS OF CONSTRUCTS

Ref. #	ATTI	EEFT	ESSA	FACC	PERF	SOCI
A1	0.448	0.518	0.534	0.335	0.761	0.272
A10	0.841	0.525	0.462	0.319	0.568	0.300
A11	0.835	0.331	0.555	0.376	0.467	0.405
A12	0.330	0.272	0.359	0.354	0.340	0.767
A13	0.325	0.235	0.428	0.290	0.286	0.789
A14	0.332	0.217	0.320	0.289	0.337	0.797
A16	0.195	0.159	0.345	0.721	0.151	0.239
A17	0.315	0.154	0.446	0.828	0.312	0.274
A18	0.446	0.257	0.596	0.879	0.281	0.416
A2	0.520	0.435	0.376	0.308	0.822	0.334
A3	0.367	0.317	0.203	0.105	0.763	0.309
A30	0.381	0.254	0.724	0.415	0.360	0.326
A33	0.422	0.408	0.716	0.483	0.353	0.396
A36	0.637	0.480	0.850	0.581	0.507	0.457
A37	0.429	0.260	0.801	0.463	0.315	0.279
A38	0.480	0.244	0.823	0.398	0.432	0.421
A39	0.473	0.353	0.829	0.423	0.399	0.330
A4	0.465	0.331	0.351	0.149	0.712	0.294
A5	0.338	0.778	0.275	0.113	0.382	0.160
A6	0.504	0.907	0.433	0.270	0.526	0.332

Discriminant validity measures the degree to which constructs are distinct or diverge from one another. The discriminant validity of the constructs used in this study is gauged in three ways. First, a minimum value of 0.5 for a construct's AVE is recommended by [45]. All the AVE values in Table VI were above 0.50, which suggests that the principal constructs capture a much higher construct-related variance than error variance.

Second, the cross-loadings of the constructs should be checked [40]. Table V shows that all measuring items or indicators exhibited high loadings on their own respective constructs and no indicators loaded higher on other constructs that were not theoretically designed to represent them.

Third, the square root of the AVE is larger than all other cross-correlations. Table VI shows that the AVE ranged from 0.62 to 0.71 and in no case was any correlation between the constructs greater than the squared root of the AVE (the principal diagonal element). Overall, the assessment of the measurement model showed the research constructs possessed adequate psychometric qualities.

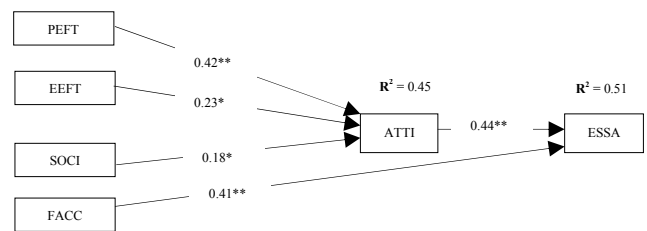
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SOCI	0.69	0.83	0.62	0.42	0.31	0.47	0.40	0.41	0.79

^b AVE = Average variance extracted; CRA = Cronbach's alpha; CRO = Composite reliability

B. Structural Model

Information about the path significance of hypothesized relationships using the path coefficients i.e. beta (β) and the squared R (R^2) is presented in the structural model. Figure 2 highlights the SmartPLS 2.0 results for the β s and the R^2 . Chin [40] indicated that R^2 values of 0.67, 0.33, and 0.19 for the percentage of variance in a model are substantial, moderate and weak, respectively. Path significance levels (t-values) were determined using a bootstrapping procedure with 1000 samples. All the five hypotheses formulated were supported by the data.



* significant at $p < 0.05$ level; ** significant at $p < 0.001$ level

Fig. 2. The SmartPLS 2.0 results

H1 was confirmed to indicate that performance expectancy had positive impacts on attitude toward ES ($\beta = 0.42$). The data supported H2 that suggested that effort expectancy would have positive impacts on attitude toward ES ($\beta = 0.23$). Supporting H3, the data showed that social influence positively impacted attitude toward ES ($\beta = 0.18$). Facilitating conditions positively impacted ES symbolic acceptance to

support H4 ($\beta = 0.41$). The result established substantial, statistical support for H5, which predicted that users' attitude toward ES would be positively related to ES symbolic acceptance ($\beta = 0.44$). The summary of the results and their statistical significance results are presented in Table VII.

Performance expectancy, effort expectancy, and social influence explained 45% of the variance in the attitude toward ES construct. Facilitating conditions and attitude toward ES accounted for 51% of the variation in ES symbolic acceptance. The amounts variance explained by the research constructs shows that our research model has between moderate to substantial relevance, and therefore considered useful for knowledge enhancement [40].

TABLE VII. THE SUMMARY OF THE RESULTS

<i>Hypothesized path</i>	<i>β</i>	<i>t-value</i>	<i>Result</i>
Performance expectancy $\rightarrow$ Attitude toward ES	0.42	4.068	H1: Supported
Effort expectancy $\rightarrow$ Attitude toward ES	0.23	2.420	H2: Supported
Social influence $\rightarrow$ Attitude toward ES	0.18	1.986	H3: Supported
Facilitating conditions $\rightarrow$ ES symbolic acceptance	0.41	3.831	H4: Supported
Attitude toward ES $\rightarrow$ ES symbolic acceptance	0.42	4.854	H5: Supported

VI. DISCUSSIONS AND CONTRIBUTIONS

This research was designed to empirically assess the influence of antecedent factors on end-users' symbolic acceptance of ES with insights obtained from organizations located in a developing country: Nigeria. We believe our effort adds to the body of knowledge with its contributions. We employed the UTUAT model and the symbolic adoption literature as theoretical underpinnings for our research effort. The theoretical contributions and practical implications of the study are highlighted next.

A. Theoretical Contributions

Our research offers the following contributions to research:

- This study is among the first of its kind to investigate end-users' ES symbolic acceptance in Africa (specifically Nigeria). Given that IS adoption issues vary by regions, information provided herein serves to enrich knowledge of users' symbolic acceptance of such technologies with perspectives of workers in organizations from a developing country. Our study adds to the body of research dealing with the diffusion and use of technologies for development in African countries including Nigeria [20,21,24-27,32,34,46-52].
- Our study complements the efforts of [16] and [20] who examined ES acceptance on the African continent. In that regard, our research has diversified insights on the theme with its inclusion of varied organizations and ES packages. The generalizability of the findings in [16,20] is not assured as these researchers only considered issues in single organizations. In contrast, we explored and presented information about views from differing organizational setups where various ES are in use. Hence, the generalizability of our findings is accordingly enhanced by such an approach.
- We found that the effects of the antecedent factors considered in this study were relevant for ES symbolic

acceptance, which is congruent with findings reported in other regions of the world. The exception was that [17] did not confirm the positive relationship between effort expectancy and attitude to ES. Based on the findings in our study and those in [11], we suggest that ES are global IS that may be impacted by comparable stimuli regardless of contexts. The same reality may not be true for other types of IS [22]. As a consequence, our study together with those obtained in developed West make a strong case for the proposal and development of a global contingency theory for end-user acceptance of ES in work settings. Such a framework would be useful for guiding future research inquiries in this area of study.

- Our approach that operationalized ES symbolic acceptance with issues such as incomparable business culture, attachment with legacy systems, and cost-benefit problems is welcoming and enriches the relevant literature. The symbolic acceptance is accordingly bolstered by our approach and research conceptualization. Other researchers' attention may be kindled by our approach.
- To some degree, our study shows that the perspectives of symbolic acceptance or adoption and the UTUAT framework can be fused together to enrich knowledge. Researchers could expand on our work to engender knowledge accumulation.
- Our research results lend credence to observations and findings elsewhere in the literature that suggest the following: Performance and effort expectancies, in the context of ES, augur well for end-users' attitude toward such technologies [11,17]. Social influence of workers mattered in shaping peoples' attitudes toward ES [13,20,31]. Appropriate facilitating conditions positively impact end-users' attitudes towards ES [16,23,31]. Positive attitude toward ES boded well for end-users' ES symbolic acceptance or adoption [11,17].

B. Practical Implications

The following implications for practice are offered by our effort:

- First, practitioners with desires to improve their workers' attitude toward implemented or acquired ES need to consider providing training sessions and programs aimed at improving their workers grasp of the overall benefits and usefulness of their ES. With the availability of such, it is to be expected that workers' attitude toward their ES will increase.
- Second, this study alerts managers and ES developers to the fact that end-users' attitude toward their ES are favorably enhanced when such systems are perceived to be easy to use and are seen not to be too complex by end-users. Accordingly, the design and procurement of ES systems that are relatively easy to use by end-users should be given utmost attention.

- Third, influential people at work capable of motivating or shaping the opinions of others could be tasked to “champion” the cause of implementing and using ES in their contexts. This may be useful during the early stages in the system’s lifecycle as the views of such important, influential personnel may influence the decisions of others about the new system.
- Fourth, management should ensure that required infrastructural support and necessary resources are in place when introducing new ES. Such support should be readily available to end-users in the organization as such would positively impact their cognitive or mental appreciation of the ES.
- Managers should proactively seek various means to positively influence their workers’ attitudes toward acquired or implemented ES. Intrinsic and extrinsic sources of motivation such as cash reward and recognitions could be considered in order to help cultivate favorable perceptions and attitudes toward ES in adopting organizations. Favorable end-users’ attitudes are essential ingredients to the cognitive appraisal of IS, in general [28].

C. Study’s Limitations and Future Research Areas

Our study clearly has its limitations. As our research focused on the individual, we cannot completely ruled out the possibility that some participants might have provided “socially desirable responses” [37] to some of the issues being investigated. This might have negatively impacted our results.

Although our research offers an advantage with regard to generalizability, it still presents some setbacks as well. For example, we did not account for differing ES used in the participants’ workplaces. It is possible that the varying degrees of complexity associated with diverse ES might have negatively affected our data. In other words, while some may be easy to use, others may not.

We used a cross-sectional field survey for our study; more useful insight may be facilitated with the use of longitudinal data. Our use of convenience sampling, which is appropriate for this initial research effort may be limiting in other respects. The use of random sampling may be more rewarding. Even though PLS permits the use of small sample sizes for research such as ours, the use of a large sample size (i.e., 1000) may produce more insightful information and results.

Future research should aspire to tackle the highlighted limitations in our study. Comparative studies in comparable regions and countries should be considered. For example, studies similar to ours could be undertaken in other parts of Africa. The literature is enriched by such efforts. Furthermore, comparisons with realities in other parts of the world, i.e. the developed West, which is readily available in the literature, should be made. Ultimately, such comparative analyses will further strengthen the argument for a contingency theory for end-user symbolic acceptance of ES in adopting organizations.

Other theoretical frameworks such as DOI and resource-based view perspective could be integrated into our research model to further augment insight. Future inquiries could

examine the impact of antecedent factors on specific ES (i.e., ERP, CRM). A comparison of the impacts of the antecedent factors on ES and non-ES could be investigated.

VII. CONCLUSION

Prior research has suggested that one of the main reasons why investments by organizations in ES fail is because of end-users’ inability to completely accept such technologies in their setups. In other words, when end-users do not cognitively or mentally accept their ES, the actual adoption of such technologies is doomed. Research in this area is emerging. There is also a need for perspectives from differing regions of the world to be represented in the literature. Our research is motivated, in part, by the need to make a contribution in that regard.

Drawing from relevant theoretical frameworks in the extant literature, we developed a research model, which was tested with data collected in Nigerian organizations. Consistent with findings in the literature, our research showed that antecedent factors such as performance and effort expectancies, facilitating conditions, and attitudes toward ES significantly impacted ES symbolic acceptance. We have added to topic of ES adoption or acceptance in mandatory settings, i.e., the workplace. Practitioners’ attention is alerted to antecedent factors that may enhance end-users’ acceptance of ES at work. We would like to assert that our research conclusions do not represent the final word in this area of study. More work is needed.

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