Full Length Research Paper

Factors affecting adoption of social media by women's non-governmental organisations (WNGOs)

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While the adoption of social media gets prominence in the developed world, its widespread adoption has not yet occurred across many organisations in developing countries and very little empirical research focusing on Women's Non-Governmental Organisations (henceforth, WNGOs) has been conducted to date. The aim of this study is to fill this knowledge gap by investigating the factors affecting adoption of social media by WNGOs in North-West of Nigeria. Built around the Diffusion of Innovation Theory (DOI), Technology-Organisation-Environment (TOE) Framework and Information Sharing Behaviour (ISB) factors, the study develops an integrated model consisting of twelve variables to investigate factors that affect WNGOs' social media adoption. The study employed the quantitative approach. To test the research's proposed model, a survey questionnaire was self-administered to a sample of 327 respondents drawn from eighty-seven registered WNGOs. Out of the 327 questionnaires distributed, 250 usable questionnaires were completed and returned, giving a response rate of 76.5%. Data collected were analysed by means of descriptive statistics, correlation analysis and multiple regression techniques. The results of multi-linear regression analysis indicate that the environmental factors are the strongest predictor of WNGOs' social media adoption. Similarly, organisational and information sharing behaviour factors all have a significant impact on social media adoption. In contrast, the technological factor was found to be the least predictor. Major implications for the study are policy implications, improving WNGO practice, advancing scholarly research on Information Technology (IT) adoption and theoretical contributions through extending previous research conducted in developed countries in a new setting.

Key words: Social media, information and communication technological, social/environmental organisations, social change(s).

INTRODUCTION

Information is a fundamental component of human actions and its value to individuals and organisations is overwhelming. Various studies (Aguolu and Aguolu, 2002; Kamba, 2007) have discussed what information is

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in general and in non-governmental organisations (NGOs) context (Palomino, 2006; Rudasill, 2006). Ifidon and Ifidon (2007) suggest that in a world where interactions at every stratum of society have become imperative, information plays a predominant role in every process of the interaction among people and between nations. In the context of NGOs, Palomino (2006) posits that NGOs produce and disseminate information in order to further awareness and encourage a change in reality.

Traditionally, numerous methods are adopted by organisations to share information. Such methods include storytelling, memorizing, repetition, dancing, acting, observing and demonstrations. To enhance cooperation and meet information sharing needs, WNGOs in Nigeria share information through seminars, workshops, conferences, face to face conversation and through phone calls (Saleh, 2012). Similarly, they share information in more conventional ways, such as national, zonal and local level meetings. However, WNGOs in Nigeria have several unique characteristics that cause their efforts to adopt technologies for information sharing challenging. Characteristics, such as a weak financial base, lack of office spaces, lack of technical expertise or understanding of the resources, illiteracy and socio-cultural attitudes, are almost usual (Oyelude and Bamigbola, 2013). As a consequence of these characteristics, the WNGOs in Nigeria and as in most developing countries are challenged by a poor record of information sharing among them, high communication cost, duplication of activities, lack of access to global information resources and delays in the dissemination of information (Reade-Fong and Gorman, 2005).

However, with the advent of information technology, NGOs over the years have adopted a mixture of technologies for different functions like social networking and advocacy (Nah and Saxton, 2012), internet publishing and information sharing (Jain, 2011) and advocacy, mobilisation of support and fundraising (Rudasill, 2006). Among these technologies, social media is an important technology that takes into account an increasing scope of interaction and an easy path for users to generate and consume various contents. These contents include Telepresence applications (Skype, Face Time), Video sharing (YouTube), Video conferencing and Wikis, blogs, and micro-blogs (Twitter, Tumblr).

Social media offer diverse benefits in information sharing practices (Constantinides, 2014; Palomino, 2006). The emerging global information sharing practice is one where social media creates a seamless gateway, which challenges organisations, their communication strategies and, of course, engagement with the public. The greatest contribution of social media is to enhance global outreach that is efficient and cost effective. With this benefit, social media allows WNGOs to widely disseminate information and expand their activities locally and globally. Through these new platforms, WNGOs have also found a medium to promote ideas and commit people to activities as well as promote access to comprehensive and reliable information. Consequently, there is a great potential for the improvement of WNGO's information sharing practice. Although, there are many benefits of the social media applications in enhancing information sharing among WNGOs, their adoption rate has not been very significant. The adoption of social media applications by WNGOs in Nigeria is less evident.

The problem why some organisations adopt social media applications for information sharing and others (more especially in developing countries) do not is an important issue that needs to be addressed. This issue is important, particularly in the case of inter-organisational relationships due to the earnest attention social media had received since its inception at the beginning of the 21st century from youth, academia, profit and non-profit organisations and governments worldwide. Unfortunately, its adoption density in most developing countries, including Nigeria, is low (Internet World Stat, 2016). Likewise, only a handful of studies (Bortree and Seltzer, 2009; Greenberg and MacAulay, 2009; Walter et al., 2009) mostly in the developed countries have investigated any aspect of non-governmental organisations social media adoption and use. Therefore, there is the need to understand the factors that surround social media adoption to speed up its adoption among WNGOs. Understanding the factors affecting social media adoption would help government appreciate its importance and take cogent policy measures that will promote its adoption by WNGOs.

The objective of this paper is to investigate the factors affecting social media adoption in terms of its information sharing benefits for a non-profit organisation (WNGOs) in a developing country, Nigeria. A vast literature on the subject of social media adoption exists in the developed countries. Most of the literature in this field focuses on aspects of profit organisations and ground on traditional organisational information systems adoption theories, such as the diffusion of innovation (DOI) theory (Roger, 1995) and the technology-organisations-environment (TOE) framework (Tornatzky and Fleischer, 1990). Such studies as well as the existing theoretical approaches do not adequately advance our understanding of what factors affect social media adoption in WNGOs. Therefore, the study is guided by these key research questions:

(1) What factors influence WNGOs' social media adoption?
(2) What adoption factors have a significant relationship with social media adoption among WNGOs?

Theoretical background

For the purpose of this study, theories and models that focus on organisational technology adoption, where

decisions are made at the organisational level, are pertinent. To study technology adoption in an organisational context, the Diffusion of Innovation (DOI) (Rogers, 1995) and the Technology-Organisation-Environment Framework (TOE) (Tornatzky and Fleischer, 1990) are the most frequently employed models.

The DOI is a theory that tries to explain the degree to which new ideas and technology spread through communities, operating at both the individual and organisational levels (Oliveira and Martins, 2011). Rogers (1995) proposes that the attributes of innovation, such as relative advantage, compatibility, complexity, trialability and observability, are perceived as the individual's attributes that affect the rate of adoption of innovations (Alrawabdeh, 2014). For Rogers (1995) innovations that are perceived by individuals to have a higher relative advantage, compatibility, trialability, observability and less complexity will be adopted faster than other innovations (Arpaci et al., 2012).

The DOI model has been used to investigate the adoption of information technology in organisations in general (Bultum, 2012; Chong, Lin, Ooi and Raman, 2009; Sahin, 2006) and in social media context (Dahnil et al., 2014; Kim et al., 2010). However, despite the extensive usage of the DOI theory, some researchers have expressed concern about its multifaceted nature. This, in essence, has made the DOI theory difficult to be associated with a single purpose or area (Totolo, 2007). One other limitation of the DOI is that the theory ignores the impact of demographic differences among adopters, such as age, gender, income and education, which have been found to have a significant influence on users' attitudes towards the adoption of technological innovation (Abukhzam and Lee, 2010). In addition, the DOI is based on the innovation's characteristics and the social system surrounding it. Due to this, the constructs are limited and any variations are restricted to the variables in the model. The limitation in variables indicates inadequate constructs in the adoption behaviour (Khan and Woosley, 2011). Yet, the limitations of DOI have not impacted on its usage in areas such as sociology, psychology, anthropology and information technology (Christensen and Remler, 2009). DOI is aimed at explaining the actual adoption of technologies; the model similarly offers a relatively holistic basis for analysing the technology adoption at the organisational level. Likewise, it can be implemented in multiple fields beside IT and is a good predictor of social and technological change. Thus, this paper considers the model suitable for this study.

Tornatzky and Fleischer (1990) proposed and developed the Technology-Organisation-Environment (TOE) framework. According to Bultum (2014), it is intended for studying the prospect of the successes of technological innovations. The TOE framework identifies three determinants that influence the adoption of new innovations in an organisation: the technological, the organisational and the environmental contexts. The technological context describes the technology (internal and external) relevant to the organisation. The technology aspect may comprise both equipment and processes (Bagale, 2014). The organisational aspect describes the characteristics of the organisation, such as the organisation's size, slack and degree of centralisation, the quality of human resources, managerial structure and complexity (Arpaci et al., 2012). The environmental characteristic is the area in which an organisation operates. This includes government regulations, technology support, infrastructures, size and structure of the organisation and competitors.

Several studies have applied and adopted the TOE framework to investigate various information technologies (Arpaci et al., 2012; Bagale, 2014). Some of these studies have adopted only the TOE as a theoretical framework while others have combined it with other theories, such as the Diffusion of Innovations and the Institutional Theory to understand various technological innovations. Even though results from these studies are generally mixed, organisational factors tend to predict better technology adoption than environmental effects. Despite the mixed results, the TOE is acknowledged to be a holistic and well received framework in the context of innovation adoption by organisations. As the TOE framework focuses on the entire organisational characteristics of technology adoption and disregards the individual aspect, the TOE framework is, therefore, appropriate for this study.

Limitations in the technology adoption theories to appropriately study all types of innovations have prompted studies to further move beyond the dominant paradigms of the DO1 theory and the TOE framework. In this study, we define an innovation as any idea, practice or object that is perceived by an individual or other unit of adoption (Rogers, 2003; Rogers, 1983). In this regard, we consider both social media platforms and their adoption for information sharing as innovation. Social media as a technological innovation is different from existing IT technologies. Its features, including effective crowd sourcing tool for testing new products and services as well as supporting intra and inter-organisational operations (Fosso Wamba and Carter, 2014), supporting peer to peer interaction and social networking, which in turn allow for the democratisation of knowledge and information (Constantinides, 2014), enabling stakeholders and government to communicate, collaborate and engage in governance (Oliveira and Welch, 2013) and creating a user-oriented information sharing ground where any people or organisation can create or circulate information content (Kim et al., 2010), considerably differentiate it from other IT technologies.

Against this backdrop, in order to understand the factors affecting the adoption of social media by WNGOs there is the need to develop a new model. In this study, we follow an approach similar to that used by (Chong et al., 2009) and merges the study to a set of determinants

related to the Diffusion of Innovation (DOI), the Technology-Organisation-Environment (TOE) framework and an additional new determinant in adoption studies called Information Sharing Behaviour (ISB). The model proposed comprises of four dimensions: technological, organisational, environmental and information sharing behaviour dimensions.

Technological factor dimension

The first dimension, technological factor, refers to the barriers of technology adoption and its perceived benefits (Aghaunor and Fotoh, 2006). Technological factors such as relative advantage, complexity and compatibility significantly influenced innovation adoption (Robinson, 2009). Relative advantage is defined as the degree to which an innovation is perceived as being better than the idea it supersedes (Rogers, 2003). According to Aghaunor and Fotoh (2006), what affects the adoption of an innovation is whether the innovation is seen as beneficial.

Compatibility is defined as the degree to which an innovation is perceived as consistent with a pre-existing system. Previous innovation adoption studies have found compatibility to positively and significantly influence innovation adoption in organisations (Kinuthia, 2015; Li, 2010). Issues including compatibility with users' value, beliefs and past experiences of their social system are considered as the factors influencing adoption of innovation (Fichman and Kemerer, 1999).

The next feature "complexity", been reported to have negative associations with innovation adoption (Rogers, 2003). A high level of perceived complexity will negatively affect innovation, such as the social media adoption. According to Nagy et al. (2014), innovations that are simpler to understand and use are adopted faster than those requiring the development of new skills and understanding. Accordingly, we hypothesise that:

H1: There is a direct relationship between technological factor and WNGOs social media adoption decision.

Organisational factor dimension

The organisational context describes the internal factors that influence an innovation adoption in an organisation. Common organisation characteristics are top management support, financial and human resources.

Top management support is an important factor used to determine the readiness of organisations to adopt an innovation (Olupot et al., 2014). In the context of social media, Hoffmann et al. (2014) posit that members of an organisation need the support of their top managers to successfully realise a social media project. This support can include considerable investment on IT infrastructure

like hardware and software implementation and maintenance (Khoumbati and Thermistocleous, 2006).

Financial resource is a significant factor affecting the operation of organisations. In the context of social media, Hoffmann et al. (2014) state that financial resource allocation is a critical element of a successful social media adoption project. One important organisational factor is human resource.

Human resources: the possession of necessary IT skills and the experience of members are valuable assets of an organisation. According to Newton (2014), resource availability, including employees, to undertake social media communications and the availability of training in relation to social media have a significant association with organisations innovativeness. Therefore, we hypothesise that:

H2: There is relationship between organisational factor and WNGOs' social media adoption decision.

Environmental factors dimension

Environmental factor attributes: government support, IT infrastructure and legal framework affect the adoption of social media.

Many studies (Li, 2010; Park and Lee, 2014) have reported government support to have significant impact on the adoption of innovation. Dahnil et al. (2014) posit that policies put forward by government have a significant effect on how fast innovations are taken up or diffuse in a population. As the world continues to witness amazing growth in computer and telecommunication technology, governments are now redirecting and focusing into IT investments, from policy formulation to heavy infrastructure development.

IT infrastructure, in its turn, entails the level of IT resources of an organisation. This infrastructure is indispensable for organisation's innovativeness. Wide ranges of IT infrastructure such as communication technologies, the internet, hardware and software and other mobile web-based information transmission technologies are used in organisations. Studies on innovation adoption, including social media have described the current IT infrastructure in organisations and countries as a key factor in operational accomplishments (Federal Republic of Nigeria, 2012; Olupot et al., 2014).

The third attribute refers to the legal and regulatory framework. Previous innovation adoption studies have established that a lack of legal and regulatory framework is significant barriers to IT adoption (Alrawabdeh, 2014; Kapurubandara and Lawson, 2006). Social media legal issues include privacy and attached risk, disclosures of confidential information and security and attached risk (Al Barki and Kisswani, 2014). Li (2008) states that lack of guidelines and monitoring issues, with respect to social media, are also crucial in controversial circumstances.

Thus, we hypothesise that:

H3: There is relationship between environmental factor and WNGOs' social media adoption decision.

Information sharing behaviour factor

The fourth dimension is that of information sharing behaviour factor, which is used to evaluate whether an organisation has the necessary information sharing attribute for overall adoption of new technology (Chong et al., 2009). Attributes such as trust, information and cost are usually included under the information sharing behaviour construct.

With respect to trust, Chong et al. (2009) posit that winning the trust of employees, customers and collaborating partners is essential to organisational technology adoption. Previous studies have indicated that trust has a significant association with technology adoption (Bultum, 2012; Chong et al., 2009). In the context of social media, Constantinides (2014) states that trust had a positive relationship with social media adoption to source, create, exchange and share information. It is also a significant determinant of information sharing in a virtual community (Bousari and Hassanzadeh, 2012; Rogers and Stemmle, 2011; Dawes, Cresswell & Pardo, 2009).

Information distribution denotes the process by which an organisation shares information among its units and members (Chong et al., 2009). The more organisations distribute information the greater the information sharing process. In this regard, organisations that adopt and use IT applications to distribute information are more likely to have an information sharing behaviour in place (Chong et al., 2009).

Cost in turns, has a significant relationship with IT adoption in organisations. Previous studies have established that it is an essential factor for technology adoption and use in organisations (Ghobakhloo et al., 2012; Khoumbati and Thermistocleous, 2006). According to Kuikka and Äkkinen (2011), the cost of adopting social media is typically lower than the cost of adopting more traditional organisation-wide information system as services are often free or can be used with small monthly payments, but they still incur measurable costs in terms of resource usage and time. We hypothesise that:

H4: There is relationship between information sharing behaviour factor and WNGOs' social media adoption.

Research framework

This study proposes an integrated organisational social media adoption framework that includes the elements of the TOE framework, the DOI theory and ISB. Thus, the proposed framework consists of twelve common factors (independent variables) drawn from technology, organisational, environmental and information sharing behaviour factors. The relationships of these factors with the adoption of social media in WNGOs are as shown in Figure 1.

RESEARCH METHODOLOGY

In this study, a quantitative approach was used by administering a survey questionnaire as the research tool. Data are collected to test the hypotheses or answer questions about people's opinions on some phenomenon (Gay et al., 2009). The survey is one of the predominant research strategies for IT/IS research (Lee and Shim, 2007). Similarly, survey allows a researcher to collect data from a large population that cannot be observed directly. Thus, the survey method was employed so as obtain data at one point in time and to have wider perspective through a bigger sample than what is usually obtainable through in-depth interviews. The research population includes 2175 registered members and management officials of 87 WNGOs in North-West Nigeria. Probability sampling using simple random sampling technique was used in this study because the population studied is dispersed around the North West, therefore to make the study feasible and to generalise the results to the entire population, the simple random sample was proposed. Also, the simple random sample has been found to be one of the best methods for inferential statistics (Babbie, 2013). The random sample targeted all the registered members and management officials of the WNGOs. The sample was drawn from a list of WNGOs names recorded in SPSS in order to use SPSS functions to randomize the sample. Using the Raosoft sample size calculator (which is an Internet based sample size determining software), a sample of 327 participants was calculated using the following equation:

$$X=Z \, (^C/100)^2 \, r \, (100\text{-}r), \; n = N \times (C^{N\text{-}1}) \, E^2 + (x), \text{ and } E = \text{Sqrt} \, (N\text{-}n)^{X/n} \, (N\text{-}1)$$

where N = is the population size, r = is the fraction of responses that you are interested in, $Z \, (^c/100)$ = is the value of the confidence level C, using a margin of error of 5%, Confidence level at 95%, population size of 2,175 and a response rate of 50%. From the 327 respondents sampled, 250 completed and returned their questionnaire, giving a response rate of 76.5%.

Empirical data for this study was collected using self-administered questionnaire. The process of administering and collecting the survey questionnaire lasted for about eight weeks. Each questionnaire was distributed to the participants and a covering letter was attached describing the objectives of the survey. An incentive of N400 ($2) worth of a recharge card was offered for completion of the study. Completed copies of questionnaire from the respondents were picked up by the research assistants. In addition, follow-up was used to make sure questionnaires were filled.

The questionnaire was designed using prior IT adoption literature (Aghaunor and Fotoh, 2006; Chong et al., 2009; Arpaci et al., 2012; Hoffmann et al., 2014). The questionnaire items from the previous studies were modified and structured to make them more relevant to the social media adoption context. A total of 35 questionnaire items measure WNGOs social media adoption decision. Respondents were asked to specify the level of their agreement or disagreement with various statements concerning factors affecting social media adoption on a five-point Likert scale with response options ranging from 1-5 (1= Strongly Disagree 2= Disagree 3= Neither Agree nor Disagree 4= Agree 5= Strongly Agree).

Technological Factor	Organisational Factor	Environmental Factor	Information Sharing Behaviour Factor
Relative advantage Compatibility Complexity	Top management support Financial support Human resources	Government support ICT infrastructure Legal framework	Trust Information distribution Cost

Social media adoption in WNGOs
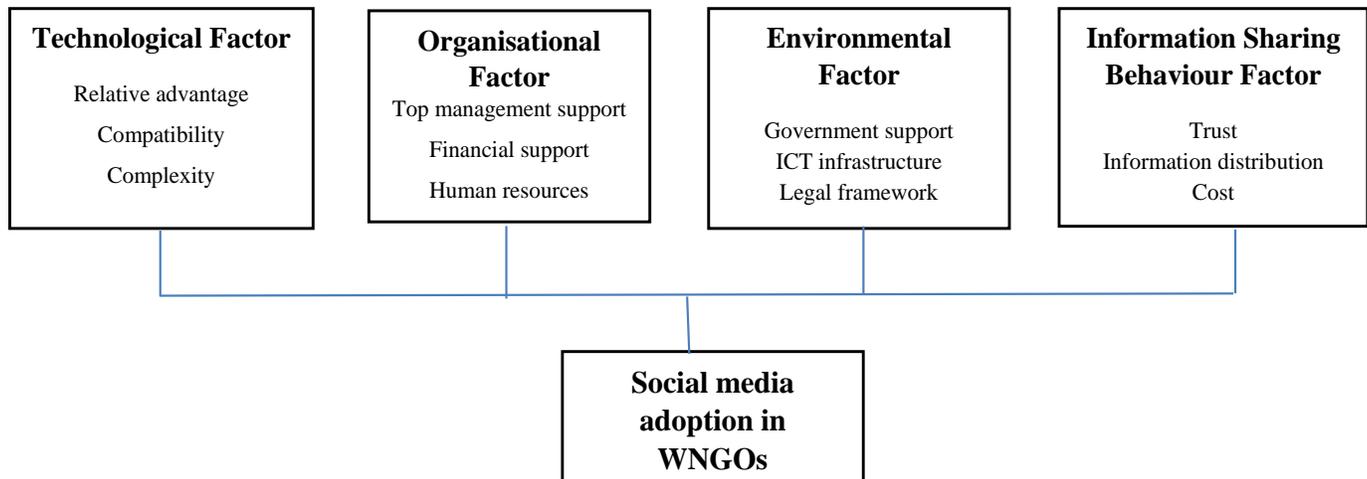
Figure 1. The research model.

Data analysis

The data was analysed using descriptive statistics and multiple regression analysis. The dependent variable was WNGOs social media adoption decision; independent variables were the technology, organisational, environmental and information sharing behaviour factors. All responses were entered to the statistical package (SPSS) version 23 – Statistical Product and Service Solution, and IBM product acquired by IBM in 2009 (Hejase and Hejase, 2013).

Profile of organisations

The demographics of WNGOs showed that 65.6% (n = 164) are national-based WNGOs compared 34.4% (n = 86) community-based ones. In terms of organisation size, 47.2% (n = 118) of these WNGOs have more than 400 memberships, 30.0% (n = 75) of them have between 301 and 400, 14.0% (n = 35) 201 and 300, 5.6% (n = 14) 101 and 200 and 3.2% (n = 8) 100 or less. In the years of operation, the result indicated that most 91.6% (n = 229) of the WNGOs have been running in Nigeria for more than 20 years. Furthermore, on the level of education attained by members of the WNGOs, most of the memberships 73.6% (n = 184) are on the diploma/NCE/degree demographic. The second largest grouping was the secondary school certificate holders with 19.2% (n =48) and the last was the postgraduate degree holders with 7.2% (n = 18). On the WNGOs' experience with social media tools in information sharing. The findings reveal varying results. As the results showed, the majority (71.2%) (n = 178) of the respondents revealed that their organisations have no social media experience in the sharing of information. However, 12% (n = 30) indicated that their organisations have less than one-year experience, 10.8% (n = 27) one to five years' experience and 6% (n = 15) above five years' experience.

Normality test

To examine the data for normality, Sharpiro-Wilk test of normality for checking the assumptions about a normal distribution was performed. The significant level of the Sharpiro-Wilk test shows a p < 0.05, therefore we reject the H_0, thus confirming the data is normal.

Scale reliability and factor analysis

Reliability was tested in terms of the Cronbach's alpha reliability coefficient. The reliability coefficients of each element of adoption factors for social media, that is, technological factor, organisational factor, environmental factor and information sharing behaviour factor were 0.785, 0.776, 0.801, and 0.774, respectively (Table 1). The Cronbach alpha measures of internal consistency showed high reliability at 0.785 for the nine statements of technological factor: relative advantage, compatibility and complexity, 776 for eight statements of organisational factor: top management support, financial and human resources, 801 for nine statements of environmental factor: government support, IT infrastructure and legal and regulatory framework and 774 for eight statements of information sharing behaviour factor: trust, information distribution and cost.

Factor analysis was carried out to test the construct validity of the survey questionnaire. Kaiser-Meyer-Olkin's (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to assess the suitability of the respondent data. The guiding rule of thumb suggests that the KMO index ranges from 0 to 1, with 0.50 considered suitable for factor analysis. The Bartlett's Test of Sphericity should be significant (p < 0.50) for factor analysis to be suitable (Williams et al., 2012). The KMO index and the Bartlett's Test of Sphericity (Table 2) reveal that the survey data is suitable for factor analysis. The factor analysis suggests that the measurement model has satisfactory convergent and discriminant validity. With regards to the convergent validity, most of the items exhibited a loading higher than 0.50 on their respective components. For the discriminant validity, the results suggest that the measurement exhibited somewhat reasonable discriminant validity in the context of this study.

Principal component analysis (PCA) was used to extract four factors (components). The Kaiser's criteria (eigenvalue > 1 rule) were applied to determine the factor extraction. The results of the eigenvalue of all the factors are greater than 1.0. Together, these four factors explained approximately 43.3% of the variance in the 35 measures. The maximum variance that is explained by a single factor is 13.49 (Table 3). Thus, approximately 13.5% is the variance

Table 1. The Cronbach's Alpha for Each factor (Field Data, 2015).

Variable	No. of Items	Cronbach's alpha
Technological factors	RA1+RA2+RA3+CT1+CT2+CT3+CXT1+CXT2+CXT3	0.785
Organisational factors	TMS1+TMS2+TMS3+FS1+FS2++HR1+HR2+HR3	0.776
Environmental factors	GS1+GS2+GS3+IT1+IT2+IT3+LF1+LF2+LF3	0.801
Information sharing behaviour factors	TR1+TR2+TR3+ID1+ID2+CT1+CT2+CT3	0.774

Table 2. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.669
	Approx. Chi-Square	882.104
Bartlett's Test of Sphericity	df	45
	Sig.	0.000

Table 3. Component extraction and total variance (Field Data, 2015).

	Total variance explained			Rotation sums of squared loadings		
	Initial Eigenvalues		Cumulative%			
Component	Total	VARIANCE (%)		Total	Variance (%)	Cumulative (%)
1	4.725	13.499	13.499	4.579	13.083	13.083
2	4.309	12.312	25.81	3.877	11.077	24.16
3	3.621	10.346	36.157	3.662	10.464	34.624
4	2.494	7.127	43.284	3.031	8.659	43.284

Extraction Method: Principal Component Analysis.

explained by a single factor, indicating that the data do not suffer from the common method bias because the variance explained by a single factor is less than 50%.

RESULTS

Correlation analysis

Predictably, the relationships between all the adoption factors were positively correlated with WNGOs social media adoption decision. The relationship between technological factors (r = 0.566, p < 0.001), organisational factors (r = 0.639, p < 0.001), environmental factors (r = 0.781, p < 0.001), information sharing behaviour factors (r = 0.605, p < 0.001) and WNGOs social media adoption decision were positive and statistically significant.

Multiple regression analysis

The hypothesised relationship between the dependent variable and the four independent variables were tested

using regression analysis. Result summary is shown in Table 4. Variance-Inflation Factor (VIF) and Tolerance statistics were used to test for multicollinearity among the independent variables in the model. A severe multicollinearity problem is assumed to exist if the variance inflation factors (VIF) for β's is greater than 10 (Ngo Theresa, 2012). Tolerance can vary from 0 to 1 with 0 denoting complete independence and 1 showing total dependence, meaning that the bigger the value of tolerance the better (Totolo, 2007). In this study, it appears that multicollinearity is not a problem because the VIF for the β's is less than 10. Similarly, the tolerance indicator for all the four factors were found to be greater than 0.1. These results, therefore, argue that there is no multicollinearity problem. Similarly, the Durbin-Watson value of 1.978 indicated that there is no autocorrelation problem in the data.

The global F test, which tests the significance of the independent variables as a group for predicting the response variable, was used for determining the adequacy of the model. The calculated P-value 0.000 was found to be lower than the 0.05 level of significance. This indicates that the model $y = \beta_{0} + \beta_1 T + \beta_2 O + \beta_3 E +$

Table 4. Regression analysis on adoption factors in social media adoption decision

Independent variable	Beta	t	Sig.	Results	Tolerance	VIF
Constant	-	7.837	-	-	-	-
Technological factors	0.566	10.817	0.000	Supported	0.892	1.122
Organisational factors	0.639	13.082	0.000	Supported	0.654	1.530
Environmental factors	0.781	19.666	0.000	Supported	0.596	1.679
Information sharing behaviour factors	0.605	11.970	0.000	Supported	0.761	1.315

Overall model F = 1690.027, p < 0.05, R^2 = 0.934, Adjusted R^2 = 0.872, β = 0.934.

β_4ISB + ε is significant for predicting WNGOs social media adoption on the four independent variables.

In addition, the p value 0.000 of the calculated F statistics (F = 1690.027) is <0.05. This result, therefore, signifies that the relationship between the dependent and independent variables is strong, thus confirming the utility of the model. Additionally, the individual standardised coefficients that explain the contribution each factor has on the criterion reveals that the highest (β = 0.781) for environmental factors also shows it is the strongest predictor that explains the WNGOs' social media adoption decision. The result further reveals that organisational factor (β = 0.639) and information sharing behaviour factor (β = 0.605) are rather than technology factor (β = 0.566) were more positively associated with the WNGOs' social media adoption decision. The value of R-square for the final model was found to be (R^2 = 0.872), which means about 87.2% of the total variation of WNGOs social media adoption decision is accounted for by the independent variables. Therefore, the regression model suggests that all the four factors are significant determinants of the WNGOs' social media adoption decision. Consequently, all the hypotheses, H1, H2, H3 and H4 are supported.

DISCUSSION

The study reveals that the technology factor is the least significant predictor of the WNGOs' adoption decision. Consistent with IT and social media adoption literature, technology factors have a significant impact on social media adoption decision in organisations. In this study, technology attributes relative advantage, compatibility and complexity have been found to have significant impact on the adoption of social media by WNGOs. This result is consistent with prior studies (Ghobakhloo, 2012; Newton, 2014; Kinuthia, 2015) which reported that these variables significantly influence technology adoption.

The regression model findings reveal that organisational factor is significant and positively linked to social media adoption decision. The result indicates that hypothesis 2 is supported. The result of this study further shows that organisational factor variables, top management support, financial and human resources have significant impact on the adoption of social media by WNGOs. This finding has precedence in previous studies on social media from Hoffmann (2009), Kuikka and Äkkinen (2011) and Nah and Saxton (2012). The finding indicates that WNGOs that have enough management support, financial and human resource are more likely to adopt social media.

In addition, the result reveals that the environmental factor is perceived to contribute the most predictors to social media adoption decision (β = 0.781), which implies that Hypothesis 3 is supported. Existing studies on IT adoption, including social media, have found other factors to contribute most to innovation adoption. For example, Rad et al. (2014) reported that technology and social characteristics have more impact on the adoption of the Social Research Network Site. The results of this current study suggest that the environmental factor requiring government support, legal and regulatory framework and IT infrastructures all have a substantial impact on the adoption of social media applications by WNGOs. This finding supports prior studies on technology adoption, including social media (Alrawabdeh, 2014; Bagale, 2014; Bultum, 2014). The finding implies that the WNGOs that are hindered by poor government support and inadequate IT infrastructure and lacking legal and regulatory policies are less likely to adopt social media tools for information sharing.

The result of the regression model further suggests that the information sharing behaviour is a significant determinant of social media adoption decision. This result, therefore, indicates that Hypothesis 4 is also supported. This is a significant finding, given the fact that past studies on social media adoption by Bultum (2014), Fosso Wamba and Carter (2014) and Newton (2014) have not studied the effects of information sharing behaviour factor in the social media adoption context. However, this finding is not without precedence in IT adoption study. For example, Chong et al. (2009) revealed that information sharing culture has the most significance in the adoption of c-commerce. Among the information sharing behaviour factors, this research examines how trust, information distribution and cost affect social media adoption. Both variables were found to have a significant impact on the adoption of social media by WNGOs. This finding supports relevant and

extant literature (Newton, 2014; Oliveira and Welch, 2013; Park et al., 2011).

CONCLUSIONS, IMPLICATIONS AND LIMITATIONS OF THE STUDY

This study has attempted to explore and assess the factors affecting the adoption of social media by WNGOs in a developing country, Nigeria. By applying dominant IT adoption paradigms: Diffusion of Innovation Theory, Technology-Organisation-Environment Framework and an additional new factor in technology adoption study, the information sharing behaviour factor, the study offers an integrated model that can be used to explore the impact of different technology, organisational, environmental and information sharing behaviour characteristics on the adoption of social media by WNGOs. Regression analysis results reveal that technological, organisational, environmental and information sharing behaviour attributes constitute the key factors that impact significantly on the adoption of social media in organisations.

This study contributes to both research and practice. The theoretical contribution includes the integration of information sharing behaviour factor into the Diffusion of Innovation Model and the Technology-Organisation-Environment Framework to form one comprehensive model. This has, therefore, contributed to furthering our understanding of social media adoption decision among WNGOs. Past studies (Fosso-Wamba and Carter, 2014; Nah and Saxton, 2012) have identified lack of organisational-level research on social media adoption as well as dearth of appropriate theory to understand what constrains non-profit organisations to adopt social media tools or drives them to different communication strategies. The proposed model incorporates the information sharing behaviour factor, which has not been given attention in previous social media adoption studies. In particular, this study has added an information sharing construct consisting of trust, cost and information distribution as additional dimensions of adoption determinants in the model. Although trust has been studied in existing inter-organisational relationship studies (Chong et al., 2009), studies on social media adoption did not include the cost and information distribution elements. Also, the study model has extended previous research in the developed countries to a new setting, that of NGOs in less develop countries, and WNGOs in North-Western Nigeria in particular.

Regarding practical implications, this study demonstrated that there is a statistical significant relationship between environmental factor and social media adoption decision. The empirical results show that environmental factors such as government support, national IT infrastructure and legal and regulatory framework significantly impact on adoption of social media by WNGOs in Nigeria. This finding thus suggests several policy implications. First, policy makers should provide comprehensive policies and support to encourage the WNGOs to adopt and use the social media. The policies should be periodically re-evaluated to suit the dynamic features of the organisations, the social media applications and the inter-organisational relationship arrangement. Second, the government should make the adoption of IT infrastructure more affordable to the WNGOs. This can be achieved through the reduction of tariff on IT applications and accessories. Lastly, adequate legislations, such as 'cyber laws', should be put in place to regulate, protect and secure online transactions. For practitioners wanting to encourage the adoption of social media should address these challenges by developing requisite strategies.

This study also shows that there is a significant and positive relationship between organisational factors and social media adoption. The empirical findings study suggest that top management support, financial resources and human resources are important determinants to the WNGOs' social media adoption. These findings hold implications for both policy makers and practitioners with regard to investment on IT infrastructure, financial and human capacity development. WNGOs' leadership should be proactive (credible, committed and inspiring) in advancing the adoption of social media through the provision of adequate resources in terms of management, knowledge, skills and finances. Given the numerous capacity challenges associated with social media adoption in WNGOs, this finding may help policy makers to provide support. Providing staff development, capacity building training and financial support can help to enhance the adoption.

Information sharing behaviour factors also had a significant and positive relationship with social media adoption. This study demonstrates that trust, information distribution and cost are critical factors affecting social media adoption. This finding has several implications. For practitioners, it indicates that the leadership of WNGOs will need to develop strategies that will allow the organisations to take advantage of social media as a means of information sharing. This can be accomplished by creating safety and security measures to guarantee confidence and trust among collaborating partners. Findings also show that cost affects the adoption of social media. In this respect, policy makers and donor agencies may be able to leverage the WNGOs capacities to strengthen the adoption of the social media.

This study indicates that the technology factor is the least predictor of social media adoption. Apart from the technology variables of relative advantage, compatibility and complexity, future studies should explore other such variables that may significantly affect adoption. For example, security concerns of social media could be an interesting variable worth exploring. The higher the

perceived security concerns of the services, the less likely social media will be adopted.

There are limitations associated with this study. Firstly, social media adoption is relatively new in Nigeria. As such, the area of study could not boast of sizeable amount of relevant literature. Secondly, the study was conducted in North-West Nigeria which may not be representative of other zones of the country. This may decrease the generalisability of the findings of the study. However, it could be interesting to conduct this study in other zones and compare the results with this study. Thirdly, there is a possibility of self-report bias: where some of the respondents could hide genuine information, or could have hidden genuine information.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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