Pertanika J. Soc. Sci. & Hum. 24 (1): 53 - 96 (2016)

PERTANIKA JOURNALS

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

Construction and Development of Quantitative Scale to Measure Source Credibility in the Maternal Mortality Context

Che Su Mustaffa[1]* and Salah Saudat Abdul Baqi[2]

[1]Department of Communication, School of Multimedia and Communication Technology, Universiti Utara Malaysia, 06010 Sintok, Jitra, Kedah, Malaysia
[2]Department of Communication, University of Ilorin, P.M.B. 1515, Ilorin, Kwara State, Nigeria

ABSTRACT

Many communication studies have established the role of credibility of the source on effective information dissemination. In particular, the factors of believability, trustworthiness, and related attitudinal attributes of the source have been found to have a high influence on the effectiveness of a message. However, very little attention has been paid to the influence of the demographic characteristics of the source. The major objective of this study was to develop a scale for measuring characteristics of gender, age, and socio-economic status of the source on effective dissemination of information on maternal mortality. The inclusion of factors such as perceptions of gender, age and socio-economic status of the source to source credibility study provides a sound appreciation of the influence of visible characteristics of the source on attitudinal and behavioural changes on the content of disseminated messages. Accepted psychometrics scale-development procedures were followed that rigorously tested a large pool of items for their reliability and validity. A total of 365 respondents were involved in this study. Data for the study were gathered through quantitative surveys that included men, and women of childbearing age in north-central Nigeria. Using exploratory and confirmatory samples, the current research developed a 16-item semantic differential scale to measure the influence of demographic characteristics of the source on effectiveness of delivering a message. The scale was validated using respondents' self-reported measures perception toward the source's gender, age and socio economic status. From a theoretical perspective, by identifying and measuring this tri-component construct, the researcher can validly assess the impact of each of the dimensions on the source credibility scale on maternal mortality information. The findings of this research have supported the views of previous scholars that the

ARTICLE INFO

Article history:
Received: 18 December 2013
Accepted: 28 September 2015

E-mail addresses:
chesu402@uum.edu.my (Che Su Mustaffa),
sau_baqi@yahoo.com (Salah Saudat Abdul Baqi)
* Corresponding author

ISSN: 0128-7702

effectiveness of disseminated information depends largely on the credibility of the source. The resulting scale demonstrated high reliability and validity. The generated instrument has increased the array of measuring items that are available for source credibility and diffusion of innovation studies. The acceptable validity and reliability values of the instrument strengthen their replication in other studies and other context. The findings of this study contribute to knowledge both at the academic and pragmatic realms. They offer important contributions for communication planners change agents and individuals in their day-to-day communication discourse on the application of source credibility and diffusion of innovation theories. Consistent with source credibility theory-based studies, this study has justified the assertion that an increased perception of characteristics of the source leads to an increase in message effectiveness as proved by the introduction of demographic features of the source to the source credibility model. Findings are explained in depth and methodological, theoretical and managerial implications are highlighted.

Keywords: Age, gender, instrument development, message effectiveness, source credibility, socio-economic status, maternal mortality

INTRODUCTION

Credibility refers to a person's perception of the truth of a piece of information. It is a multi-dimensional concept that serves as means for the receiver of the information to rate the source or transmitter of the information pertaining to the communication. A detailed review of literature on source credibility over the last six decades indicates much research has been undertaken on the effect of source credibility in various disciplines. (See for example, Hovland & Weiss, 1952; Koslin, Stoops, & Loh, 1970; Dutta-Bergman, 2003). However, except for a few studies (Pearson, 1980; Freiden, 1984; Markham, 1988; Engstrom & Ferri, 2001) the demographic features of the source are rarely considered in examining credibility (Pornpitakpan, 2004).

The impact of visible characteristics of the source on message effectiveness is confirmed by Sapsord and Jupp (1996) who observed that "the respondents will ascribe beliefs and opinions to the interviewer (source) on the basis of visible characteristics such as accent and dress (perceived social class), ethnic origin, or gender" (p.97). Nonetheless, the demographic characteristics of the source in determining message acceptance has received little attention. This probably is due to lack of a standardised instrument for measuring the impact of perceptions of demographic features of the source on message effectiveness. This is turn could be due to the minimal attention given to the study of demography of source credibility, which was noted by Pornpitakpan (2004). In the context of health behaviour, socio-economic status and gender are rarely integrated in explaining the credibility assigned to the source by message recipient. Equally worrisome is the lack of investigation of perceptions of age

characteristics of the source in credibility literature (except for example, Weibel *et al.*, 2008). Similarly, there seems to be a "conspiracy of silence" against maternal mortality, an issue that still ravages most developing countries (Briggs, 2009) and which researchers have largely neglected.

Interdisciplinary studies have revealed that gender differences are relevant in virtually every human activity. Gender refers to the socially defined differences between men and women, which are based on widely shared norms within the society (West & Zimmerman, 1987). These differences often pose barriers to communication depending on the weight and direction of stereotypes that are prevalent in particular societies (Verberder, 1996). Gender studies have become a topical issue globally especially in the social sciences given the pervasive nature of gender dynamics at all strata; thus, its evolution as an integrated part of academic research for many decades either as the primary focus of the study (predictor variable), or as one of many control variables (Freiden, 1984; Macintyre & Hunt, 1997; Fox, 2005; Gallivan & Benbunan-Finch, 2008). This study aims at developing a scale for measuring characteristics of gender, age and socio-economic status of the source on effective dissemination of information on maternal mortality. The factors for the study were generated from a pool of literature drawn from different fields of study that discussed all the variables of interest (gender, age and socio-economic status). These were rigorously treated to fit the present context. The inclusion of perceptions of gender, age and socio-economic status of the source to source credibility study provides a sound appreciation of the influence of visible characteristics of the source on attitudinal and behavioural changes towards the content of disseminated messages

REVIEW OF LITERATURE AND EMPIRICAL STUDIES

Extant literature on source credibility has established a link between the characteristics of the source and the audience's attitude towards the disseminated message; thus, the overarching impact of source credibility on developmental communication is unequivocal. Several empirical studies have been conducted on the influence of source credibility on effectiveness of communication (Hovland & Weiss, 1952; Koslin *et al.,* 1970; Dutta-Bergman, 2003; Clow *et al.,* 2011; Nagy *et al.,* 2011). These findings have prompted the use of testimonials for advertising, endorsers for political aspirants, developmental campaigns and advocacies. Common attributes of the source that are often explored include: trustworthiness, expertise, competence, attractiveness, dynamism, objectivity, believability, professionalism, attractiveness, authoritativeness and related attributes of the source and have been found to have a high influence on message effectiveness (Hovland & Weiss, 1952; Dholakia, 1987; Pornpitakpan, 2004; Copeland *et al.,* 2011; Nishith *et al.,* 2012).

A study by Hovland and Weiss (1952) revealed that the weight attached to a source's trustworthiness has a signicant

impact on how the recipient rates the piece of information or message received. They further reported that, though subjects tend to support spontaneously the views of a high credibility source, this trust is reduced with time and the subjects tend to share the views of the low credibility source thus recalling the opinion expressed in the message but most likely forgetting the source because of the initial low rating. This is an action that the duo tagged the "sleeper effect". On a general note, a source with high credibility often elicits more favorable disposition to an advocacy than a source with low credibility (Pornpitakpan, 2004). However, all the attitudinal qualities that attracted the focus of previous researchers require some level of intimacy or interaction between the source and the receiver to decipher while not much has been documented on the infuence of visible demographic features of the source on message effectiveness (Pornpitakpan, 2004).

In a review of multi-disciplinary articles on gender studies in Cuba from 1974 to 2001, Sarmiento (2003) revealed a rich understanding of the interplay between the sexes in the society that is occasioned by gender study. She concluded that it is impossible to study any matter concerning social behaviour without a gender perspective. Source and receiver are held accountable for their actions on the basis of their sex, while their membership in one or the other sex category can be used to legitimitise or discredit their other activities. Gender refers to the socially defined differences between men and women, which are based on widely shared norms within the particular society (West & Zimmerman, 1987). These differences often constitute barriers to communication depending upon on weight and direction of the stereotype that are prevalent in a particular society (Verberder, 1996). (this is a repetition from page 7). In his discussion of masculinity and femininity of cultural dimensions, Hofstede (2002) observed that men are adjudged to be assertive, ambitious, and tough while women are expected to be subservient, tender and attractive. He stressed that "attractive women can use their beauty as weapons in social competition" (p. 101), thus acknowledging the controversial strength of the gender of the source (male and female) in eliciting desired change in behaviour from message receivers. In the same vein, Wood (1994) found that men and women communicate for different reasons; while women communicate to establish and maintain relationship with others, men communicate to exert control, preserve independence and enhance status.

The significance attached to the concept of age has been well documented in literature. Like gender, the concept of age is relative across culture. In a typical power distance culture, (Hofstede, 2002), elders enjoy unreserved respect and pride of place in all endeavours. This view can be juxtaposed with the findings of Krueger, *et al.* (2003) whereby age is found to determine earning potentials: great potentials for the young and diminishing potentials for the old. Abdelmagid (1990) reported an inconsistent role of age in moderating

human judgement. While age interacted significantly in the Policy-Self and Self-Others indices, it failed to interact either as the main effect or in a moderating capacity with the Self-Others index.

Mueller and Parcel (1981) have defined the concept of socio-economic status (SES) as the relative standing of a family or individual on a hierarchical social structure, in relationship to their access to or control over wealth, prestige and power. These characteristics can pass for source credibility measures based on their potential ability to attract believability to whatever their possessor says. The examination of SES has taken the centre place in assessing the development of a place or an individual (Vaughn, 1958; Jalovaara, 2001). Following the arguments for and against the various measures of socio-economic status (SES), the examination of SES credibility of a source as perceived by the audience is based on education, cultural background, marital status and professionalism of the source. Professionalism is preferred to occupation due to its favourable consideration in a naturalistic setting (Greenhalgh *et al.*, 2004). As can be seen from the argument for and against each measure of socio-economic status, many studies have adopted and made different submissions of various measures of SES. Although some researchers have conducted studies on gender and age as measures of socio-economic status (Aiyedun, 2003; Dwidevi & Lal, 2003; Vereecken *et al.*, 2005), Finch (1986) and Morgan (1986) have validated their status as predictor variables. Therefore, the current measurement considers education, professionalism, cultural leaning and marital status as more pertinent measures of the influence of SES as the source for effective dissemination of information on maternal mortality.

In an extensive review of publications on the persuasiveness of source credibility from a wide range of disciplines, Pornpitakpan (2004) reported that only few studies were based on the perception of the source's gender while perceptions of source's age and socio-economic status received no relevant mention in the review of articles that spanned five decades. The awareness of the strong relationship between persuasive tendencies which is built on trust and the subsequent attitudinal and behavioural changes lends credence to the search for the right mixture of source credibility in bringing about changes, especially in the health sector.

Thus, this current article provides a research-based solution for diagnosing source credibility in information dissemination of maternal mortality. First, we discuss the conceptual basis for a new construct called the Source Credibility Scale (SCS). Following this, we present the systematic development and validation of a new multifaceted instrument and a discussion about measurement model.

ORIGIN OF SOURCE CREDIBILITY STUDIES

Source credibility refers to a set of attributes or characteristics of a source that influences how the receiver or the audience responds

towards his message. It can also be seen as an assessment of a set of physical and demographic attributes of the source that influence how the receiver responds or behaves towards the message. The concept enjoys a universal appeal as old as recorded history (Baran & Davis, 2003). The study is rooted in the theories of attitude change in social psychology (Pornpitakpan, 2004) but its reference can be traced to "the Aristotelian dictum that the source's character may almost be called the most effective means of persuasion he possesses" (Pearson, 1982, p.3). However, early empirical study of the concept credits it to Hovland and his colleagues at Yale University (Baran & Davis, 2003).

Hovland, a psychologist with a background in behaviourism in learning theory, headed a team of researchers in an experimental evaluation of the effectiveness of various programmes offered by the Information and Education Division of the United States army during World War II. The experiment involved using a source (films) as stimulus and receivers as subjects while systematically controlling other external variables in order to measure the source's (films) effectiveness in influencing attitudes and motivation. The outcome of the experiment revealed that although the movies successfully increased knowledge about the war, they were not as effective in influencing attitude and motivation. The group also discovered that the stimulus only succeeded in strengthening existing attitudes rather than cultivating new ones (Baran & Davis, 2003).

This initial discovery led to a sustained interest in what is now known as source credibility. The group considered the communicator, the content of the message and the audience as central factors in attitude change. In their examination of the communicator, they based source credibility on two factors - trustworthiness and expertise - and concluded that high credibility in a communicator was synonymous with an increased attitude change and vice-versa (Hovland, Janis, & Kelly, 1951). This model has been adopted in diverse areas of studies that require changes in attitude and behaviour towards advocated patterns. Principal among these fields are applied psychology, abnormal and social psychology, marketing, advertising, politics, and communication (Hovland & Weiss, 1951; Koslin, Stoops, & Loh, 1970; Dutta-Bergman, 2003; Pornpitakpan, 2004). There appears to be widespread acceptance of the assumption that the characteristics of a communicator can impact greatly the acceptance of the message by the audience (Pearson, 1982; Dholakia, 1987). This finding prompted the use of testimonials for advertising, endorsers for political aspirants, developmental campaigns and advocacies. Although the consequence of diverse attributes of the source on message effectiveness has been examined as would be seen in later parts of the current study, the interactive influence of gender, age, and socio-economic status of the source on effective message dissemination has received little attention from researchers (Pornpitakpan, 2004). In a study of socio-

economic position, gender and health, Macintyre and Hunt (1997) noted that interactions between these variables are worth examining because they "structure opportunities and life chances" (Macintyre & Hunt, 1997, p. 329). The current study argues that age, gender and socio-economic status of the source are crucial additional factors that can make or mark the success of a communication transaction.

The Factor Model

The factor model determines the extent to which the receiver judges the source as credible. This perspective is based on the assumption of credibility study as a multi-dimensional concept that can only be captured fully by multi-item measures (Eisend, 2006). The factor model of source credibility adopts semantic differential items that are later grouped into dimensions of credibility using explorative factor analysis. This reveals a multitude of dimensions of source credibility as evidenced in Pornpitakpan's (2004) critical review of five decades of publications on persuasiveness of source credibility and corroborated by Eisend (2006) who reported that the factor model is often used in source credibility studies. Consequently, numerous dimensions of source credibility have attracted interest of researchers. In his search for acceptable dimensions of source credibility in marketing communication, Eisend (2006) harnessed a multitude of 28 factors of source credibility from the early days of the development of the concept. These factors ranged from similarities between message source and receiver (ethos), media credibility, to plain source credibility. He derived a typology of 49 most frequently used credibility dimensions as presented in Table 1.

To attenuate the envisaged procedural problems that are identified with generalisation of these diverse source credibility dimensions, Eisend (2006) came up with three main dimensions: sincerity, professionalism and attraction. Teven and McCroskey's (1997) measures of credibility have gained widespread application in recent studies on classroom teacher-student communication transactions (Zhang, Zhang, & Castelluccio, 2011). Teacher credibility is measured by the dimensions of competence, trustworthiness and caring (Teven &McCroskey, 1997). However, all these attitudinal qualities require some level of intimacy or interaction between the source and the receiver to decipher. This model has been criticised for the likelihood of creating artificial and unstable factors (Schweitzer 1969; Meyer 1988). Another critique of factor analytic approaches to the study of credibility by Cronkhite and Liska (2009) expressed some reservations for the seemingly haphazard scale selection, exclusive use of similar names for factors having different scales, statistical procedures, and conceptualisation of souce credibility without being cognisant of the interaction between an evaluation of the communicator, characteristics of the receiver and judgement of the message (Baran & Davis, 2003).

TABLE 1
Previous factor model studies of source credibility

No	Author (s)	Concept Specification	No. of Factors	Dimensions
1.	Hovland *et al.* (1953)	Communicator credibility	2	Trustworthiness and expertness
2.	Aronson, Turner and Calsmith (1963)	Message discrepancy	2	High and low credibility
3.	Hewgill and Miller, 1965; Miller and Hewgill (1966)	Threat of the message	3	Counsellor's expertness, trustworthiness, and attractiveness
4.	Bochner and Insko, (1966)	Message discrepancy	2	High and low credibility
5.	McCroskey (1966)	Source Credibility	2	Authoritativeness and character
6.	Strong (1968)	Message discrepancy in counselling	2	High and low credibility
7.	Whitehead (1968)	Source Credibility	4	Trustworthiness, Competence, Dynamism, Objectivity
8.	Berlo *et al.* (1969)	Source Credibility	3	Competence, Trustworthiness, Dynamism
9.	Golberge (1969)	Gender (author) credibility	5	Article's value, Persuasiveness, profundity, the author's writing style and competence
10.	Berlo *et al.* (1970)	Source credibility	3	Safety, Qualification and dynamism
11.	Horai *et al.* (1974)	Source variable	2	Physical attractiveness and expertise
12.	Falcione (1974)	Source credibility	4	Gender, Age, Physical attractiveness, Trust
13.	McGuire (1978)	Source variable	3	Credibility, Attractiveness, Power
14.	McCroskey and Jenson (1975)	Source credibility	5	Source, Extraversion, Competence, Composure, Character
15.	Pearson (1982)	Role of gender in source credibility	4	Competence, Trustworthiness, Dynamism, Coordination
16.	Freiden (1984)	Endorser credibility	3	Endorser type, Gender of communicator, Age of audience

TABLE 1 (*continue*)

17.	Meyer (1988)	News credibility	5	Fairness, Unbiased, Completeness, Accuracy, Trustworthiness
18.	Ohanian (1990)	Celebrity endorsers' credibility	3	Gender, Completeness, Accuracy
19.	Craig (1992)	Gender stereotype in TV commercials	2	Male vs Female roles
20.	Eisend (2006)	Spokesperson credibility	3	Sincerity, Professionalism, Attraction

METHOD

The study reviewed literature that generated items to measure the credibility ascribed to gender, age and socio-economic status of the source by message recipient in determining message effectiveness. The tested and validated items were then administered on selected samples through a survey.

Instrument Development

A variety of studies have already dealt with the discovery of dimensions of credibility using explorative factor analysis (Eisend, 2006). The usual procedure is to confront study participants with a number of semantic differential items. Subjects rate the credibility of the source of communication applying those items and data is then combined to factors by means of factor analysis. The factors are interpreted as dimensions of credibility. This entire procedure is defined as the factor model of credibility.

Factor model studies of credibility revealed a multitude of dimensions of source credibility. Table 2 gives an overview of previous factor model studies. These dimensions highlight competence and trustworthiness identified in initial source credibility research by Hovland and colleagues (Hovland *et al*., 1951; Hovland & Weiss 1952), namely competence (competence, expertise, expertness, knowledge ability, qualification, smart dimension) and trustworthiness (trustworthiness, character, personal integrity). In addition, frequently used dimensions related to characteristics of presentation style or the appearance of the source (dynamism, attractiveness, attraction, role model dimension, presentation) is highlighted.

Table 2 also presents a summary of major studies that have addressed the scaling of source credibility. Although all the studies were designed to measure the same construct, there is no consistency among the authors as to the number and types of dimensions that source credibility comprises. Furthermore, with the exception of McCroskey (1966), none of the authors have assessed the reliability and validity of the resulting scales. As should be apparent, most attempts to assess the impact of source

credibility have been based on instruments of unknown reliability. This fact partially explains the inconsistencies in the literature regarding the impact of communicator credibility as it relates to attitude formation and attitude change. Given the accumulative nature of research, and the fact that researchers base and build the findings of their studies on those of others, there must be a consistent measurement approach for source credibility. This measurement approach must first provide a theoretical basis for the selection of constructs to represent the hypothesised dimensions of source credibility, and second, must produce a valid, reliable measurement scale. In view of the widespread theoretical and empirical interest in the concept of source credibility, the purpose of the present research is to advance and later assess a tri-component construct using psychometrically accepted procedures to produce a reliable and valid scale.

The vast number and variability of the dimensions already indicate some procedural problems. In particular, the

TABLE 2
Source Credibility Scale

Author (s)	Dimensions Measured	Number of Items	Reliability Checks	Validity Checks	Scale Type*	Method of Analysis
McCroskey (1966)	Authoritativeness Character	6 6	Yes	No	SD	Factor Analysis
	Authoritativeness Character	23 20	Yes	No	LIK	Factor Analysis
Whitehead (1968)	Trustworthiness Competence Dynamicism Objectivity	18 4 3 3	No	No	SD	Factor Analysis
Bowers and Philips (1967)	Trustworthiness Competence	7 5	No	No	SD	Factor Analysis
Berlo, Lernert, and Mertz (1969)	Safety Qualification Dynamism	5 5 5	No	No	SD	Factor Analysis
Simpson and Kahler (1980-81)	Believability Dynamism Expertness Sociability	8 6 7 3	No	Limited	SD	Factor Analysis
Wynn (1987)	Expertness Dynamism Believability Sociability	12 6 3 3	No	No	SD	Factor Analysis

Note: *SD = Semantic Differential; *LIK = Likert Scale.

problems can be ascribed to methodological issues of item generation, item selection and ordering, the factor analysis procedure, and the interpretation of factors. One point of criticism refers to the procedure of item generation; if existing literature is the source of items, the problem of a missing theory of credibility must be faced (McCroskey & Young 1981; Meyer 1988). On the other hand, a possibility exists that respondents, when characterising different sources of credibility, also associate the credibility of a source with the source's image in general. Because the researchers are able to determine a priori the possible factors through their selection of items and may even influence the outcome of the factor loadings in their choice of the number of similar items, factor models are sometimes said to produce artificial and unstable factors (Schweitzer, 1969; Meyer, 1988). The use of the same items for different dimensions leads to the assumption that the factors are not always independent. Therefore, factor analysis procedures assuming orthogonal factors are often times inappropriate. With respect to factor interpretation, researchers have used different expressions to describe dimensions with loadings on identical items, for example, "character" and "trustworthiness" (Wanzenried & Powell, 1993). These methodological problems take the bulk of responsibility for unequal results of factor model studies in addition to varying aspects of the research setting (e.g., communication situation or topic; cf. Applbaum & Anatol, 1973, 1972; Baudhuin & Davis, 1972; Burgoon 1976; Liska, 1978; Powell & Wanzenried, 1995, 1992, 1991; Schweitzer & Ginsburg, 1966; Scott & Landry, 1982).

Basically, those inconsistencies indicate a lack of measurement reliability (Tucker, 1971). Almost none of the cited studies above used reliability or validity checks to evaluate the results. However, validity and reliability are central conditions of generalisability and applicability of the results of factor model studies and hence, they are considered in the subsequent parts of this study.

Development of Items for the Source-Credibility Scale

Items were developed from literature to measure the influence of gender, age, and socio-economic status on effective dissemination of health information (Hair *et al*., 2010). The questions were framed carefully to elicit responses that provided answers to the research questions and aid measurement of the relationship between identified variables. Responses to the questions were in close-ended forms for ease of analysis. However, provision was made for some brief expressions where necessary.

The instrument was later given to 10 experts for testing validity and reliability, before the self-administered questionnaire was subjected to a pilot study to ensure proper interpretation of instructions and questions by the respondents (Baxter & Babbie, 2004; Creswell, 2007). Data for the actual study was obtained from 380 respondents out of which five cases constituted outliers and were deleted

accordingly (Hair, *et al*., 2010). The target population was men and women of child-bearing age between 15 and 65 years of age in Kwara State, Nigeria. Fifteen is the National Population Centre-acknowledged reproduction age for females, while 65 is the retirement age from federal public service. The records of Women of Child Bearing Age (WCBA) in the State guided the selection of samples for inclusion in this study (Kwara State Demographic Data, 2008). Although the sample determination was based on women's list because maternal mortality primarily concerns women, the inclusion of men in the study was in response to the need to 'reduce gender imbalance in reproductive health matters' as well as 'to increase the involvement of men in reproductive health' (Revised National Health Policy, 2004, p. 34). A systematic sampling procedure was adopted in selecting every 4th household from three wards from each of the selected LGAs (Ajikobi, Mbandawaki and Wara osin/Egbejila from Ilorin West; Gwanara, Yashikira, and Kaiama from Baruten; and Omupo, Ilala and Ajasse from Ifelodun LGAs). According to Sekaran (2003), a systematic sampling procedure can be adopted where a list of entire members of the population can be generated from which a predetermined *nth* would be selected for inclusion. Individual participants were selected through a simple random sampling. Fish and bowl technique (Baxter & Babbie, 2001; Baxter, 2004) was adopted in determining who was to be included from households that had more than two eligible respondents. However, there were instances in which all the eligible respondents in the household were included, depending on the size of the town or village. Small pieces of paper on which yes/no were written were presented to the prospective respondents as a quantitative data gathering instrument.

TABLE 3
Description of initial items and their sources

Constructs	Sources	No. of items	Brief description
Gender of the Source	Crocco *et al*. (2008); Smith (2008); Duggan and Banwell (2004); Orewere (1991); Feldman-Summers *et al*. (1980); Bochner, (1994); Pearson, C.J (1982); Ogwurike (2005)	23	Audiences' perception of the impact of the gender of the source, on effective information dissemination.
Age of the Source	Dwivedi and Lal (2007); Crocco (2008); Lin and Burt (1975); Engstrom (1996)	13	The impact of young or older sources on message credibility.
Socio-Economic Status of the Source	Aiyedun (2003); Krueger *et al*. (2003); Imoh (2008); Ogwurike (2005); Orewere (1991); Lin and Burt (1975); Duggan and Banwell (2004);	14	The degree to which socio-economic status such as education, marital status, professionalism, and cultural relevance of the source influence message acceptability.

Depending on the number of people aged between 15 and 65 years in each household, a maximum of two respondents were selected for inclusion from each household. The questionnaire was administered personally by the researcher with the aid of five research assistants between December 2010 and March 2011. The validity of the instrument was confirmed via exploratory and confirmatory factor analysis (EFA and CFA).

The literature on source credibility, information effectiveness, gender, age, socio-economic status and maternal mortality was reviewed extensively in an attempt to develop an appropriate instrument for this study. Initially, a total of 50 items were developed for the three exogenous variables in our self-designed instrument. Twenty-three items were designed to measure the influence of gender of the source, 13 to measure the influence of age of the source and 14 to measure the influence of socio-economic status of the source as presented in Table 3 below. However, only 20 items withstood the test of time after the rigours of the initial validity tests.

Rating Scales for the Responses

In line with conventional practice in source credibility studies (Eisend, 2006), a Semantic Differential Scale with bipolar adjectives was employed to describe the respondents' attitude towards particular issues raised in the items. The respondents were instructed to choose from a five-point response scale in which the minimum score was 1 (Very Much Unlike Me) and the maximum score was 5 (Very Much Like Me). Scholars have argued that a five-point scale is as reliable as any other rating mechanism (Sekaran, 2010). Neuman (2006) argued in support of having non-attitude and middle position or no opinion responses; however, the use of an interval scale like a Semantic Differential Scale establishes the equality of the magnitude of differences between one point on the scale and the next thus, giving more meaning to the response choices by the respondents.

RESULTS

Preliminary steps to inferential statistical analysis

Sequel to the commencement of inferential statistical analysis, data was examined to ensure compliance with basic assumptions that govern the application of multivariate analysis to research. A violation of these assumptions can lead to the creation of errors which can impair the credibility of research findings. Notable among these basic assumptions are tests of normality, multicollinearity and heteroscedasticity. Prior to conducting these tests, data was screened and treated for missing values and outliers.

Data screening

To confirm the assumption of psychometric properties before applying necessary data analysis techniques, this study employed a series of data screening approaches such as detection and treatment of missing values, identification of outliers, tests for assumptions of normality, multicollinearity,

etc. This analysis is a major pre-requisite to determining the choice of data analysis technique (Lattin, Carrol, & Green, 2003; Byrne, 2010).

Detection and treatment of missing data

Missing data refers to information not available for a respondent but available to others in the study. This can occur if the respondent fails to complete one or more sections in a survey, from data/code entry error (Baxter & Babbie, 2004), or from problem of data collection where respondents were requested to skip certain portion of the questionnaire that are not applicable to them (Hair, Black, Babin, & Anderson, 2010). Except for the latter which can be ignored, untreated missing data reduces sample size available for analysis. This can impede generalisation of findings possibly leading to erroneous results. Preliminary inspection of returned instruments revealed that 30 out of the 410 returned questionnaires had more than half of the required information not provided by the respondents. These cases were excluded from the analysis in line with the recommendation of Hair, Black, Babin, Andersen, and Tatham, (2010) that, in a situation where a researcher does not fall short of sample size, it is better to exclude cases of respondents with more than 50% missing data. Consequently, 380 cases were entered into SPSS for windows version 14 for analysis. In checking for missing data, each of the variables was inspected for scores that were out of range or empty cells via frequency tables in SPSS. The identified errors were tracked down in data file and aligned according to the inputs in the code book. In instances where out of range scores were entered from responses, the name of the variable in which the error occurred was clicked on SPSS, the column highlighted and the questionnaire checked for correct value. Five of such cases were observed for the sex variable in the demographic section of the instrument in which an out-of-range value of '3' was keyed in instead of either 1 or 2. The affected case numbers were visited and fixed accordingly. After fixing the errors, the frequencies were run again. Twenty six instances of missing data involving 22 cases were observed. Of these cases, only one had three missing data while two had two missing data each and the remaining 19 cases recorded one missing data each. The 26 instances were remedied with mean substitution as one of the most acceptable techniques of generating replacement values for missing data (Chaffee, 1991; Hair *et al*., 2010).

Detection and treatment of outliers

Outliers are observations with values distinctly different from those of other observations in the data set. Byrne (2010) describes it as observations which are numerically distant to the rest of the data set. As observed by Hair *et al*. (2010), outliers could be beneficial or problematic, depending on their status in a particular data. They explain that an outlier is beneficial when it helps to fish out characteristics of the population that might have gone unnoticed in the normal course of analysis while a

problematic outlier gives false impression about population 'and can seriously distort statistical tests' (p.64). Given the gravity of the impact of outliers in shrouding the reality in statistical findings, Hair *et al*. (2010) recommend that detection and treatment of outliers be effected at various levels. Detection of outliers at the univarite level was conducted by inspection of box plots using the exploratory descriptive method in SPSS while Mahalanobis distance was calculated to detect outliers at the multivariate level (Pallant, 2003).

An inspection of the box plot for each of the variables revealed four outliers extending more than 1.5 box length from the edge of the box (Pallant, 2003) for the gender variable. Although Hair et.al. (2010) cautions on the deletion of outliers 'unless demonstrable proof indicates that they are truly aberrant and not representative of any observations in the population' (p.67), this study is confident the deletion of few cases from a sample size of 380 will not hamper the findings in this study. Case numbers 142,268, 269 and 271 were deleted accordingly in three repeated actions after which clear box plots were displayed. Similar exercises were performed on other variables in the study and they all presented neat box plots - an indication that data was free of outliers and thus, satisfying one of the requirements for multivariate analysis. (Pallant, 2003; Hair *et al*., 2010). For visual inspection of box plots for the six variables in this study, please see Appendix A.

At the multivariate level, the Mahalanobis distance of data from its predetermined threshold; p = 0.001 (Tabachnick & Fidell, 2007) was calculated. This involved the reading of the critical value of the data based on the number of independent variables (Pallant, 2003) from the chi-square table. With 23 degree of freedom (number of items in the independent variable) critical value in this study was x^2 (23, 0.001) = 49.728. Next, the Mahalanobis distance was calculated through linear regression in SPSS version 14. The entry of the Mahalanobis check creates a new data title; 'Mah_1' at the end of the data file. Only one case presented Mah_1 greater than 49.728 and was deleted accordingly. Subsequent analysis in this study was therefore based on a sample size of 375 having lost five cases to outliers at both univariate and multivariate check levels.

Normality Tests

Measures were taken to ascertain normal distribution of data in this study as a prequisite for multivariate analysis. Failure to do this can lead to a misleading relationship between the variables under study and jeopardise the significance of research findings. One of the measures of testing the normality of data was an assessment of its distribution through skewness and kurtosis (Hair et.al., 2010). Various values have been ascribed to acceptable skewness and kurtosis by scholars. While Kline (2005) approves of ± 3 value for skewness, and ± 8 for kurtosis, Tabanichnick and Fidell (2007) say both should not be greater than ±2. Although a perfect skew assumes the value of zero, this is 'rather an uncommon

occurrence in the social sciences' (Pallant, 2003:53). All the variables in this study present acceptable values of skewness and kurtosis within the set criterion by the two cited scholars. Table 4 displays the normal distribution of all measured variables in this study with skewness and kurtosis not greater than ±2; the table further indicates that all the variables were positively skewed.

Another statistical test for normality employed in this study was the Kolmogorov-Smirnov statistics which also assesses the normality of distribution of scores. The significant value obtained ($p<0.01$) is due to the large sample involved in the study (n=375). Pallant (2003) explains that it is very rare to have an insignificant Kolmogrov- Smirnov value ($p > 0.05$) with large samples of more than 200. Table 5 shows the results of the statistical test on all the measured variables.

Other tests of normality were conducted through visual inspections. Hair *et al*. (2010) encouraged researchers to gain a better perspective of a variable through its histogram which is a graphical representation of frequency of occurrence of the variable in a data set. Thus, the normality of the distribution of data in this study is further established by the presentation of histograms and the normal probability plot for each of the variables in this study. A histogram is said to indicate normal distribution when the distribution is clustered at the middle of the curve thus displaying a high peak (kurtosis) while the two tails of the curve indicate a symmetery of distribution (Pallant, 2003). The normal probability plot is based on an assumption that the data lie on a 'reasonably straight diagonal line from bottom to top' (Pallant, 2003: 144; Tabachnick & Fidell, 1996). The histograms and the normal probability plots are presented in Appendix A.

Multicollinearity

The focus of inspection in multicollinearity is observing the degree of relationship that exists between the independent variables and the dependent variable. Multicollinearity occurs when the correlation between the independent and the dependent variables on one hand, and the intercorrelation between the independent variables on the other is .7 and above (Pallant, 2003.; Hair, Black, Babin, & Anderson, 2010). Hair *et al*. (2010) further explain that the existence of multicollinearity between

TABLE 4
Values of Skewness and Kurtosis of measured variables

Variable	Skewness	Standard Error	Kurtosis	Standard Error
Gender of the source	-.384	.126	-.867	.251
Age of the source	-.207	.126	-.719	.251
Socio-Economic Status of the source	-.197	.126	-1.030	.251
Mass Media	-.964	.126	.412	.251
Interpersonal Channels	-.766	.126	-.223	.251
Effective Information Dissemination	-.953	.126	.093	.251

variables hampers the predictive power of the independent variables on the dependent, just as it makes determination of the unique roles of the independent variables difficult. The correlations result reveals the absence of multicollinearity between the independent variables, as well as between the independent and the dependent variable. The correlation between effective information dissemination (EID) and gender of the source characteristics (GSC) is 0.231, between EID and age of the source characteristics (ASC) is 0.103, between EID and socio-economic status of the source (SESC) is 0.413, all of which are less than the upper ceiling of 0.7 (Hair *et al*., 2010). Also, the intercorrelation between the independent variables is less than 0.7. Between GSC and ASC is 0.692, while the correlation between GSC and SESC is 0.630. Between ASC and SESC is 0.593. The table also shows a clear distinction between the measures of the two moderating variables. The correlation between the mass media and the interpersonal channel is 0.505.

Other ways of testing for multicollinearity are tolerance and Variance Inflation Factor (VIF). Tolerance refers to 'the amount of variability of the selected independent variable that is not explained by the other independent variables' (Hair *et al*., 2010: 201). This is obtained from: $1\text{-}R^2$ formula (Pallant, 2003; Hair *et al*., 2010, p.201). On the other hand, the Variance Inflation Factor (VIF) refers to the degree to which the standard error has been inflated by multicollinearity. The formula for obtaining VIF is 1/Tolerance. Arguably, multicollinearity exists when tolerance value is low and the VIF value is high. Researchers seem to defer on a common cutoff thresh hold on tolerance value, but we adopted a minimum tolerance value of .10 which corresponds to a VIF value of 10 suggested by Hair *et al*. (2010) in this study. Any value less than 0.1 is said to suffer multicollinearity.

The test for multicollinearity is conducted by assigning the role of dependent

TABLE 5
Test of Normality: Kolmogorov- Smirnov statistics for all measured variables

Variabe	**Kolmogorov-Smirnov[(a)]**			**Shapiro-Wilk**		
	Statistic	df	Sig.	Statistic	df	Sig.
Gender of the Source	.100	375	.000	.955	375	.000
Age of the Source	.076	375	.000	.979	375	.000
Socio-Economic Status of the Source	.082	375	.000	.958	375	.000
Mass Media	.127	375	.000	.914	375	.000
Interpersonal Channel	.147	375	.000	.926	375	.000
Effective Information Dissemination	.182	375	.000	.902	375	.000

a Lilliefors Significance Correction

variable to each of the independent variables in turn to assess the amount of variance in the selected variable that is unexplained by the remaining independent variables (Hair *et al*., 2010). Going by this and the suggested minimal acceptable tolerance value (.10), this study can be said to be free of multicollinearity with tolerance vs VIF values of 0.648 vs 1.543; 0.601 vs 1.664; and 0.509 vs 1.964 for GSC, ASC, and SESC variables respectively as presented in Table 6.

Assumptions of Linearity

An important but under reported requirement for multivariate analysis is the test for linearity between dependent and independent variables (Hau & Mash, 2004). In order not to run afoul of this rule, this study adopted the suggestion of Hair *et al*. (2010) that the linear relationship between the variables in a study can be assessed through a graphic inspection of histograms, normal probability plots of regression standardised residuals for the dependent variable and the scatter plot of residuals against predicted values. As indicated in appendix, the histogram shows that the data set is reasonably normal. That the normal distribution is a good model for the data is further confirmed by normal probability plot which reveals positive linear correlation between the variables while the scatter plot lends credence to the random nature of data by indicating no clear relationship between the residuals and predicted values.

EXPLORATORY FACTOR ANALYSIS (EFA)

In line with the convention of available literature on Structural Equation Modeling (SEM), Hair *et al*. (2010) and Bryne (2010) suggested a two-step model building method. The first step involves performing confirmatory factor analysis (CFA) to estimate the overall fit of the measurement model in testing the relationship among constructs as well as to define the nature of each construct whether reflective or formative. The second step involves using the covariance matrix resulting from the CFA from the measurement model, to test the hypothesised relationships between the constructs in the structural model (Hair

TABLE 6
Test for Multicollinearity

Dependent variable	Independent variable	Collinearity Statistics	
		Tolerance	VIF
Gender of the Source	Age of the Source	.648	1.543
	Socio-economic Status of the Source	.648	1.543
Age of the Source	Socio-economic status of the source	.601	1.664
	Gender of the source	.601	1.664
Socio-economic Status of the Source	Gender of the Source	.509	1.964
	Age of the Source	.509	1.964

et.al., 2010). However, pior to conducting confirmatory factor analysis, an exploratory factor analysis (EFA) was performed to purify and validate the untested self-designed measurement scales as suggested by Bryne (2010) and Hair et.al. (2010).

Literature has underscored the need for EFA to identify, summarise and assist in validating factors that contribute differentially to the causal explanation of variance in effective dissemination of information on maternal mortality (Hair *et al*., 2010). Following this suggestion, the present study used SPSS version 14.0 for Windows to perform the EFA. Here, data was allowed to statistically load on factors that were independent of theory or any a priori assumptions related to the measurement instrument (Hair *et al*., 2010). Rules guiding the performance of factor analysis assert that data must meet certain underlying assumptions among which is sample size. The sample size of 375 after deleting the five cases that constituted outliers was adequate for the performance of EFA (Cochran, 1977). The Measure of Sampling Adequacy (MSA), otherwise known as Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy, has been theoretically argued to vary between 0 and 1 (Pinsonneault & Kraemer, 1993). A MSA value that is closer to 0 indicates an existence of higher partial correlation between the variables thus rendering the application of factor analysis to such data inappropriate. A value closer to 1 is an indication that the patterns of the correlation are compact, or as Hair *et al*.(2010) succintly put it, "reaching 1 when each variable is perfectly predicted without error by the other variables" (p.104). Consequently, the application of factor analysis to such data is expected to yield distinct and reliable factors (Pinsonneault & Kraemer, 1993; Hair *et al*., 2010). To play it safe, Hair *et al*. (2010) suggested that KMO / MSA values must exceed 0.50 to be deemed fit for factor analysis; otherwise, the researcher would either need to collect more data and/or include more variables. To appreciate the strength of the measure, Hair *et al*. (2010) classified any value of 0.80 and above as meritorious; 0.70 and above as middling; 0.60 and above as mediocre; 0.50 and above as miserable; while value below 0.50 was considered unacceptable. The KMO for the data in this study is 0.901, which empirically falls within the category of data that are classified as meritorious. This establishes the appropriateness of factor analysis to the data gathered for this study with some degree of confidence.

The Bartlett test of sphericity, a statistical measure for the presence of correlation among variables, is another prerequisite for the performance of factor analysis (Hair *et al*., 2010). Importantly, it is argued that for any factor analysis to be efficient, the researcher needs to establish the correlation matrix has significant relationships among some of the variables of interest. Bartlett, Kotrlik, and Higins (2001) affirm that for any Bartlett's test to be significant, it must obtain a statistical significance with a value less than 0.05. The output of Bartlett's test in this study: (χ^2 = 8069.102; DF= 1431; sig.= .000) confirms the existence of a

relationship between perceptions of gender of the source, the age of the source, and the socio-economic status of the source; the latter have been included in this study for further analysis. This implies that the data in this study is significant at $p < 0.001$.

Having conformed with the stated rules of thumb for performing factor analysis, a Principal Component Analysis (PCA) with Varimax Rotation was performed on the variables: perceptions of gender, age, and socio-economic status of the source. Applying the latent root criterion, only factors that accounted for the variance of at least a single variable were considered for retention (Hair *et al*., 2010). The 50 items that represented all the constructs were factor analysed with unspecified eigenvalue resulting in the extraction of six factors with an eigenvalue greater than 1 accounting for 48% of the total variance extracted. This is an acceptable solution value in the social sciences (Hair *et al*., 2010) which means that the three distinct factors reflecting the three categories of constructs being studied were all significant. Notably, the first few factors usually explain a larger percentage of variances that are recorded in a study (Hair *et al*., 2010). For instance, factor 1 explains about 32 % of the total variance in the analysed data set in this study. The results of the eigenvalues extracted and percentage of variance explained are presented in Table 7.

As explained earlier, a critical look at the unrestricted EFA showed that a few items fell short of the recommended 0.50 cut-off criterion in addition to a a few crossloaded items that could cause confusion in interpretation (g1 and ses3). However, the low loading and the crossloaded were considered for deletion at the confirmatory factor analysis level (Tabachnick, 1996; Pallant, 2003; Hair *et al*., 2010).The itemised results indicate that gender of the source variable was measured by seven items after the deletion of two items with less than a 1.0 standard deviation, age of the source was measured by seven items after the deletion of one item with less than a 1.0 standard deviation and socio-economic status of the source was measured by six items, all totalling 20 items to represent the exogenous constructs. It is worthy of mention that a subsequent analysis through CFA indicated that the average variance extracted in the constructs ranged from 0.75 to 0.88; values that are all greater than the 0.50 cut off criterion as suggested by Nunnally and

TABLE 7
Eigenvalue extracted and total variance explained for the constructs

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.353	31.970	31.970	7.353	31.970	31.970
2	2.076	9.025	40.995	2.076	9.025	40.995
3	1.750	7.609	48.604	1.750	7.609	48.604

Note: Extraction Method: Principal Component Analysis.

Berstein (1994). Cronbach's α were also greater than the 0.70 lower bench mark that is specified for exploratory factor analysis (Hair *et al*., 2010). Tables 8 to 10 present the complete list of items that were entered for each construct after the deletion of the three items owing to their lack of variability.

STRUCTURAL EQUATION MODELLING

The proposed model for this study was tested through structural equation modeling (SEM). Bryne (2010) explains three cardinal strengths of SEM over other forms of multivariate analysis such as regression and ANOVA among others. These are: 1) its ability to simultaneously estimate two structures: the measurement model and the

TABLE 8
Factor Analysis Results and Cronbach's alpha for Gender of the Source

Code	Items	Loading	Cronbach's α
G1	I accept the content of a message if the source is of the same gender as me.	0.677	0.848
G2	I am more willing to seek further information on a given message if the source is of the same gender as me.	0.637	
G5	I seek further clarification on a given message from others if the initial information was from a male source.	0.478	
G9	I am more willing to listen to a female source of information because of her fluency.	0.578	

TABLE 9
Factor Analysis Results and Cronbach's alpha for Age of the Source

Code	Items	Loading	Cronbach's α
A2	I accept information from elderly sources only.	0.550	0.800
A3	I believe a young source is more innovative in delivering messages.	0.361	
A4	I am willing to adopt messages from a source that is within my age group.	0.540	
A5	I believe a source of information becomes less effective as the person grows older.	0.513	
A6	I will not pay attention to any information if delivered by a young person.	0.643	
A7	I believe a young person does not have adequate knowledge to deliver a message.	0.744	
A8	I believe the elders are too emotional to deliver messages effectively.	0.522	

TABLE 10
Factor Analysis Results for Socio-economic Status of the Source

Code	Items	Loading	Cronbach's α
SES1	I believe a highly educated source of information only addresses the rich.	0.551	0.801
SES2	I will believe a message if the source is culturally relevant to me.	0.559	
SES3	I believe the profession of the source plays a role on his/her style of information delivery.	0.338	
SES4	I am better informed if the source is a specialist on the issue of discussion.	0.694	
SES5	I will adopt the content of a given message if the source is a high profile figure.	0.721	
SES6	I will cross check any information from unmarried sources.	0.731	

structural model in a single structure; 2) its ability to assess and estimate measurement errors in the explanatory variables that can lead to untold inaccuracies, and, 3) the application of SEM incorporates both unobserved (latent) and observed variables as against other forms of multivariate analyses that are based on observed variables only. The relevance of SEM to the current study is underscored by Shook, Ketchen, Hult, and Kacmar, (2004) who noted that the application of SEM becomes handy when "strong theoretical underpinnings are critical to causality inferences" (p. 398) in nonexperimental research.

The measurement model indicates how measured variables or indicators come together to represent their unique constructs while the structural model shows the interrelationship between the constructs (Hair *et al*., 2010). The first stage involved the confirmatory factor analysis (CFA) to estimate the overall fit of the measurement model among the constructs (characteristics of the source's gender, age, socio-economic status). The general specifications for a simple measurement model that: 1) each measurement indicator is congenial. i.e. it has non-zero loading on the construct it measures but a zero loading on other constructs; 2) the error terms are independent of each other and the factor; 3) associations between the indicators are not measured; and 4) one of the loading paths that are hypothesised to measure a construct must be constrained to have a value of 1.00 for the purpose of model identification are applied here (Kline, 2005; Hair *et al*., 2010; Bryne, 2010). This involves an examination of parameter estimates and goodness of fit (Bryne, 2010) through the maximum likelihood procedure. Importantly, all the hypothesised measures for the constructs are reflective.

CONFIRMATORY FACTOR ANALYSIS (CFA)

The hypothesis to be tested here relates to the pattern of causal structure linking the constructs of perceptions of characteristics

of a source's gender, age and socio-economic status of the source and their consequence on the construct of effective information dissemination. To perform the CFA, all the constructs with their indicators must interact to test their fitness to the model (Hair *et al*., 2010). Unlike the EFA, CFA in SEM pre-specified indicators are attached to constructs in a bid to validate the model (Bryne, 2010; Hair *et al*., 2010). Through CFA, the strength of each indicator on its latent construct is examined based on factor loadings. Bryne (2010) explained that the factor loading of each measure indicates the correlation coefficient between it and its latent construct. Consequently, in order to establish the validity and the reliability of the measurement model, this study conducted CFA on the individual constructs that constitute the exogenous variables. However, Hair *et al*. (2010) cautioned that the determination of the performance of an item should not rest solely on significant loading alone, rather, consideration should also be given to the statistical significance of each estimated coefficient. Although all the loadings are significant at p = .001, the items that are observed to be of lower values are subject for deletion (Bryne, 2010; Hair *et al*., 2010). The CFA loading depicts the standardised maximum loading estimate for the 20 indicators representing perceptions of characteristics of gender, age, socio-economic status of the source — the exogenous constructs.

CONSTRUCT RELIABILITY AND VALIDITY

Construct validity was evaluated by assessing the item loadings, their corresponding *t*-values, composite reliabilities as well as average variance extracted. A critical view of the results in Table 8 below reveals that a larger percentage of the proposed indicators of the constructs of interest to this study have factor loadings above 0.50 indicating that the hypothesised items truly have strong relationship with the conceptualised model, an evidence of convergent validity (Hair *et al*., 2010). Their significant critical ratios (*t*-value > 1.96, p < 0.001) are also indicative of their differences on the constructs they are purported to measure; if otherwise, Anderson & Gerbing (1988) suggested that such indicators should be eliminated. Table 11 presents all 20 items of the exogenous constructs with loadings ranging from 0.438 to 0.724 before modification. Of equal importance to SEM is the calculation of composite reliability to demonstrate the reliability of factors and the internal consistency of the items. The established composite reliability indicates a strong internal consistency between the indicators in the model as well as a correlation between all the constructs in the model. This leads to a conclusion that the data in this model have both construct and convergent validity as the estimates of most of them are > 0.5 minimum criterion (Hair *et al*., 2010). The composite reliability values are in the range of 0.806 to 0.88; exceeding the 0.70 minimum criterions Fornell and Larcker set (1981).

MEASUREMENT MODEL

The measurement model examines how the observed variables converge to represent the constructs they measure (Hair *et al*., 2010). As Anderson and Gerbing (1988) and Hair *et al*. (2010) advanced the application of structural equation modelling, the measurement model comes before the final structural model. The hypothesised measurement model for this study is presented in Figure 1 below. The model bears indicators loaded on their predetermined exogenous constructs. Bryne (2010) noted four important procedures to fitting a hypothesised model. They are: 1) the model fitting process, 2) the issue of statistical significance, 3) the estimation process, and 4) the goodness-of-fit statistics as discussed inter-alia.

DISCRIMINANT VALIDITY

To pass the test of discriminant validity, the average variance extracted for any two constructs that are measured must be greater than the square of correlations that exist between them (Fornell & Larcker, 1981). Discriminant validity also confirms that individual measurement indicators only represent one latent construct without cross loading.

TABLE 11
Summary of item analysis

Constructs	**Code**	**Factor Loading**	***t*-value**	**Composite Reliability**
Gender of the Source	G1	.629	12.045***	**0.880**
	G2	.587	12.383***	
	G3	.597	12.348***	
	G4	.674	11.654***	
	G5	.616	12.237***	
	G6	.687	11.589***	
	G9	.576	12.515***	
Age of the Source	A2	.529	12.718***	**0.820**
	A3	.496	12.895***	
	A4	.673	11.637***	
	A5	.674	11.652***	
	A6	.631	12.002***	
	A7	.464	12.982***	
	A8	.650	11.903***	
SES of the Source	SES1	.656	11.664***	**0.806**
	SES2	.689	11.167***	
	SES3	.509	12.750***	
	SES4	.566	12.459***	
	SES5	.724	10.606***	
	SES6	.684	11.156***	

Note: *** $p < .001$.

Table 12 presents the summary of the calculated variance extracted (VE) based on the squared multiple correlation (SMC) and the standardised error of variance (SE). The Average Variance Extracted (AVE) in this study ranged from 0.58 to 0.73, thus exceeding the minimum 0.5 criterion (Barclay, Thompson & Higgins, 1995). This implies that the variance of the measurement error is less than the variance the latent construct captured.

The examination of the discriminant validity of this model was conducted by comparing the square root of the average variance extracted (AVE) for a given variable with the correlation between that variable and other variables in the study. The diagonal elements in the correlation matrix are replaced by the square root of the AVE as presented in Table 13.

In summary, the assessment of discriminant validity confirms the independency and uniqueness of the constructs in this study. The AVE for the individual constructs is greater than the correlation between all the constructs thus,

TABLE 12
Variance extracted

Construct	SMC	SMC^2	S E	VE
GSC	.395	0.156025	.054	
	.344	0.118336	.056	
	.356	0.126736	.062	
	.454	0.206116	.057	
	.380	0.1444	.058	
	.471	0.221841	.053	
	.332	0.110224	.057	
		1.083678	0.397	0.73
ASC	.279	0.077841	.068	
	.246	0.060516	.121	
	.453	0.205209	.115	
	.454	0.206116	.120	
	.398	0.158404	.115	
	.215	0.046225	.073	
	.422	0.178084	.067	
	2.732	0.932395	**0.444**	0.68
SESSC	.430	0.1849	.144	
	.475	0.2256	.133	
	.259	0.0670	.129	
	.320	0.1024	.140	
	.524	0.2745	.111	
	.468	0.2190	.114	
		1.0734	0.771	0.58

supporting discriminant validity (Hair *et al*., 2010).

TESTING INDIVIDUAL CONSTRUCT MEASUREMENT MODEL

In order to establish convergent validity of measured variables on the construct they are proposed to represent, it is advisable to conduct single-group measurement analyses (Bryne, 2010; Hair e. al., 2010). The CFA tests were based on multiple goodness-of-fit indices to affirm the strength of the models (Breckler, 1990; Anderson & Gerbing, 1992).

PERCEIVED GENDER OF THE SOURCE CREDIBILITY MEASURES

The hypothesised model for the gender of the source variable had all seven indicators entered as shown in Table 14. Although this result was fairly fit, the required ratio of < 0.2 was not achieved; the RMSEA was also higher than the acceptable < 0.05 value. Consequently, acceptable goodness of fit indices was achieved after the model was trimmed. Item g1 was deleted based on its high modification indices and cross loading on other indicators.

PERCEIVED AGE OF THE SOURCE MEASURES

Although the seven items hypothesised for the age of the source model met the criterion for the measurement of goodness of fit indices, the ratio was greater than the cut-off less than 2 values. Hence, item a2 was deleted at this individual measurement test level on the basis of cross loading on the modification index. A summary of the fitting process is presented in Table 15.

TABLE 13
Test of Discriminant Validity

Construct	1	2	3
Age of the Source	0.68		
Socio-Economic Status of the Source	0.458***	0.58	
Gender of the Source	0.544***	0.546***	0.73

Note: The bold numbers on the diagonal are the Average Variance Extracted (AVE); off diagonal numbers are the correlations among constructs; ***p < 0.001.

TABLE 14
Measurement Model for Perceived Gender of the Source Construct

	X^2	DF	Ratio	Pvalue	GFI	AGFI	CFI	TLI	RMSEA
First Model	61.26	14	4.378	.000	.953	.907	.933	.900	.095
Trimmed model[a]	17.12	9	1.903	.0.04	.986	.967	.985	.975	.049

Note a: Fit model was achieved for the gender of the source variable after the deletion of g1owing to high modification indices and cross loading.

PERCEIVED SOCIO-ECONOMIC STATUS OF THE SOURCE MEASURES

Six items were hypothesised to represent the socio-economic status of the source construct. The CFA measurement test yielded just fair results. Although the GFI had a value greater than 0.9, the AGFI, CFI, and TLI were less than the minimum cut-off criterion. The ratio was also greater than 2, and the RMSEA is greater than the cut off 0.05 criterion (Bryne, 2010; Hair *et al*., 2010). Hence, the need existed for modification to achieve the acceptable goodness of fit indices. In pursuing an acceptable fit model, items SES1 and SES2, which were observed to have higher modification indices, were deleted. The outcome is presented in Table 16.

ASSESSING MEASUREMENT MODEL VALIDITY

The measurement model for the exogenous constructs was tested in the current study. In processing the CFA, the maximum likelihood estimation (MLE) was adopted for parameter estimation given the sample size was > 100 (Ding, Velicer, & Harlow, 1995).

MEASUREMENT MODEL FOR THE EXOGENOUS CONSTRUCT

Having established the convergent validity of the measures on the individual exogenous constructs at the preliminary single-group analyses, perceptions of the three demographic variables of the source (gender, age and socio-economic status constructs) were caused to interact in a single composite measurement model as suggested by Hair *et al*. (2010) so as to gauge their causal relationships on the

TABLE 15
Measurement Model for Perceived Age of the Source Construct Model

	X^2	DF	Ratio	Pvalue	GFI	AGFI	CFI	TLI	RMSEA
Hypothesised Model	34.10	14	2.436	.002	.975	.951	.965	.948	.062
Trimmed model[a]	15.67	9	1.741	.074	.986	.968	.986	.976	.044

Note a: The fit model for the perceived age of the source data was achieved after the deletion of item a2.

TABLE 16
Measurement Model for Perceived Socio-Economic Status of the Source Model

	X^2	DF	Ratio	Pvalue	GFI	AGFI	CFI	TLI	RMSEA
Hypothesised Model	82.33	9	9.149	.000	.930	.837	.889	.815	.147
Trimmed model[a]	3.060	2	1.530	.216	.996	.980	.997	.991	.038

Note a: Fit model is achieved after the deletion of SES1 and SES2**.**

endogenous construct. A correlation was run to examine the relationships between them as well as to establish their differences. Table 17 shows that the correlation between the three constructs ranges between 0.582 and 0.768, which are adequate correlation parameters and all item covariance are significantly different (*t*-value > 1.96).

Of the 20 items that were hypothesised in the study as measuring the influence of the perceived characteristics of gender, age and socio-economic status of the source on effective dissemination of information on maternal mortality, only 16 were statistically reliable and fit the final measurement model. Fig.1 reveals the relative chi-square (χ^2/df) for the data is 1.942, the GFI= .940, the AGFI= .919, the CFI = .946, the TLI = .936 while the RMSEA = .050 demonstrating that the indicators on the three constructs fit the model. Although the model did not meet the 0.95 cut-off criterion for the absolute and incremental indices (Hu & Bentler, 1999; Bryne, 2010, Hair *et. al*., 2010), it satisfied the minimum requirement of 0.90 albeit with a significant p-value. Modification to achieve the acceptable GOF indices will be done at the level of measurement testing for exogenous constructs.

Profile of Respondents

The sample comprised 45.3% male (n = 170) and 54.7% females (n = 205). Some of them, 39.5% (n = 148), fell within the age group of 30 and 44 years with 26.4% (n = 99) between 15 and 29 years; and 26.9% (n = 101) between 45 and 60 years while 7.2% (n = 27) were more than 60 years. A little above half of them, 51.5% (n = 193) belonged to the low education group (respondents having a maximum of secondary school certificate) while 48.5% (n = 182) of them had higher education (respondents with degrees ranging from diploma to Ph.D. certificates). A number of them, 47.5% (n = 178), were in salaried jobs while 8.5% (n = 32) of them were housewives. Others were into sales and services: 25.5% (n = 94), farming: 15.5% (n = 58), and students: 3.5% (n = 13).

With regards to marital status, a larger percentage of the respondents: 75.7 % (n = 284) were married while 24.3 % (n = 91) were unmarried, separated, divorced or widowed but collectively classified as unmarried as their status at the time of the interview read. Respondents with more than four children constituted 32.0% (n = 120) of the sample, 20.3% (n = 76) had a maximum of two, 27.7% (n = 104) had a maximum of

TABLE 17
Correlations among Exogenous Constructs

Covariances	Estimates	S. E.	C. R. (*t*-value)	Correlations
GSC <--> ASC	.229	.034	6.667***	.768
GSC<--> SESC	.222	.043	5.202***	.582
ASC<--> SESC	.269	.046	5.819***	.710

Note: ***p < 0.001.

four children while 20.0% (n = 75) had no child at all. An analysis of the respondents by their various social organisations revealed that a large number of them, 29.9% (n = 112), associate themselves with religious groups followed by 21.6 % of them (n = 81) who belonged to developmental unions while 18.6% (n = 63) were members of women's organisations; 12.5% (n = 47) were members of youth organisations and 7.7% of them were members of professional/ technical groups while 11.5% did not belong to any social group.

DISCUSSION

Since the original contributions to source credibility studies by Hovland, Janis, & Kelly, 1953; Berscheid, 1966; Chaiken, 1979; Johnson, Torcivia, & Patrick, 1968; McGinnies & Ward; 1980; Mills & Harvey, 1972; Ross 1973; Wu & Shaffer 1987 in communication; Applbaum & Anatol, 1972; Berlo, Lernett, & Mertz, 1969; McCroskey, 1966; Miller & Basehart, 1969; Whitehead, 1968 in marketing and Baker & Churchill, 1977; Caballero & Solomon, 1984; DeSarbo & Harshman, 1985; Kahle & Homer 1985; Mowen & Brown, 1981; Wynn, 1987 in advertising,

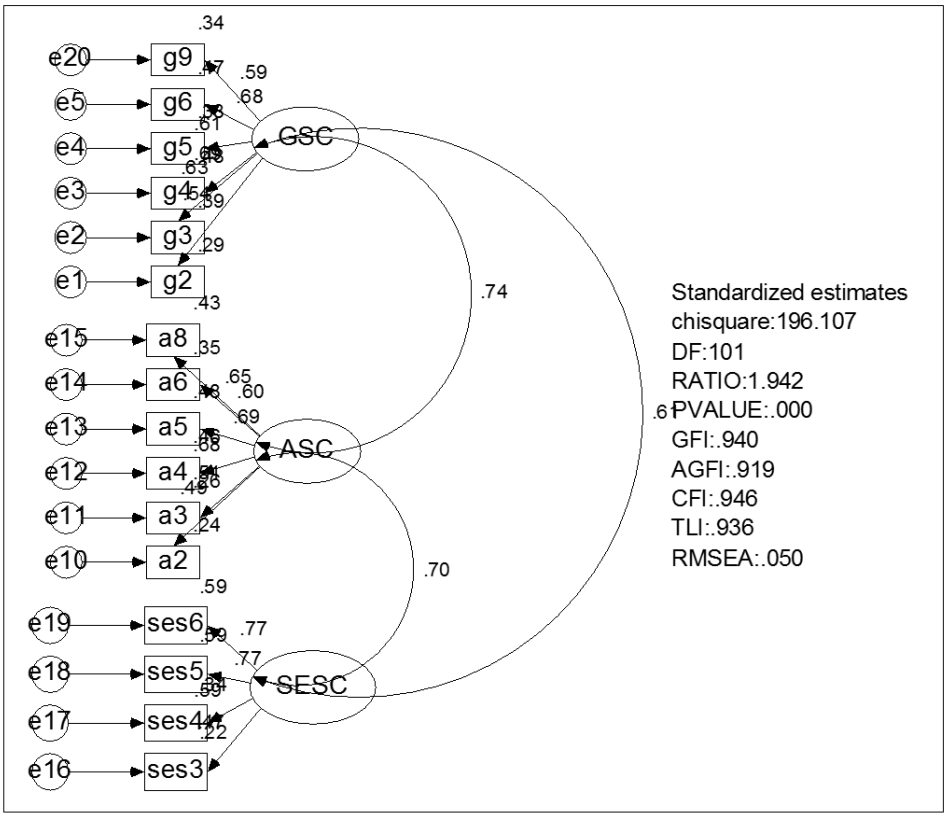


Fig.1: Measurement model for the exogenous constructs.

source credibility has been operationalised variously by means of a reliable and valid measurement . However, experimental studies that have been used for various dimensions of source credibility have not been consistent in their manipulation checks of the experimental variables. The current research has defined the domain of source credibility construct and has developed a reliable and valid scale for its measurement.

All in all, the following 16 items in Table 18 were found fit to examine the impact of the demographic features of the source on his or her credibility.

The measurement consists of three constructs, 1) perception towards gender, 2) age, and 3) socio- economic status of source credibility in effective information dissemination regarding maternal mortality. From a theoretical perspective, by identifying and measuring this tri-component construct, the researcher can validly assess the impact of each dimensions of the source credibility scale on maternal mortality information or any attitude or behavioural change information.

The findings of this research have supported the views of previous scholars that the effectiveness of disseminated information depends largely on the credibility of the source. In specific terms, the findings have lent credence to the findings of Sarmiento (2003) who said that asymmetries in perceptions of the gender of the source would impact credibility of message delivered.

TABLE 18
Items Found Fit to Examine the Impact of the Demographic Features of The source on His or Her Credibility

S/N	Item
1	I am more willing to seek further information on a given message if the source is of the same gender as me.
2	I easily remember a given message if it is from a female source.
3	I discuss any information from a female source with my spouse before taking decision.
4	I seek further clarification on a given message from others if the initial information was from a male source.
5	I can identify myself in a message if it is from a female source.
6	I am more willing to listen to a female source of information because of her fluency.
7	I accept information from elderly sources only.
8	I believe a young source is more innovative in delivering messages.
9	I am willing to adopt messages from a source that is within my age group.
10	I believe a source of information becomes less effective as the person grows older.
11	I will not pay attention to any information if delivered by a young person.
12	I believe the elders are too emotional to deliver messages effectively.
13	I believe the profession of the source plays a role on his/her style of information delivery.
14	I am better informed if the source is a specialist on the issue of discussion.
15	I will adopt the content of a given message if the source is a high profile figure.
16	I will cross check any information from unmarried sources.

The findings of this study are also consistent with literature that extent to which perceptions of age of the source determine message effectiveness directly correlates with certain characteristics of the message recipient(Al-Maghrabi & Dennis (2010). Borrowing from Krueger, Rogers, Hummer, LeClere & Huie, (2003) age determines earning potentials: great potentials for the young ones and diminishing potentials for the old. It is consistent with a report by Salman and Hashim (2011) report on the generational difference between the younger and older Malays in the ranking of mass media outlets for information sourcing and internet usage. Dwivedi and Lal (2007) contended that elders needed to be trained to get maximum benefit from information technology. This can further inform their roles as information sources and recipients. Different communication processes and channels reach different age groups depending on the social, economic, political and geographical context. The socio-economic status of the source plays a small role in determining the success or otherwise of the disseminated message.

LIMITATIONS

The present study has a number of limitations and their identification should help to refine future research efforts. The first was the lack of a standardised instrument for adaptation in this study. This is probably due to the minimal attention to the study of demography of source credibility as noted by Pornpitakpan (2004) and the "conspiracy of silence" against issues of maternal mortality (Briggs, 2009) by researchers. As a result, items were generated from a pool of literature from different fields of study that discussed all the variables of interest to this study (Baxter & Babbie, 2001; Baxter, 2004). Borrowed from other studies, these items were streamlined to fit the present context.

Second, the measurement of the variables was an issue of concern. Some researchers prefer to study the variables of interest by dimensions (Pearson, 1982). However, no strict rule exists about the form of measures to be adopted in different contexts. Most importantly, the measures of a study depend on the underlying objects of such studies. Hence, assessment of perceptions of gender, age and socio-economic status of a source as well as the determinants of effective dissemination of information on maternal mortality were measured holistically. Unlike other studies on source credibility which were based on experimental methods (Hovland & Weiss, 1953; Pearson, 1982), data for this study was gathered through a self-report approach that may be susceptible to common method variance. However, adequate measures were employed to rid data of this ambiguity. A self-report approach was pertinent to this study in order to obtain information from the respondent in his/her natural setting without manipulations in a bid to respect "the centrality of the patient's point of view in monitoring medical care outcomes" (Ware & Sherbourne, 1992, p. 473) as well as their reactions to health information. Self-rating also elicited sincere spontaneous responses

from the respondents on their perceptions of the gender, age, and socio-economic status of a source.

Finally, the study involved cross-sectional data gathering rather than a longitudinal one, which is more appropriate for instrument development and model testing. However, rigorous measures were taken to enhance research credibility. The instrument was subjected to pre-and pilot-tests for various forms of validations. Expert assessment meant that some items were reworded, and the number pruned down significantly for content validity. The pilot test administered to respondents with characteristics that were similar to the target respondents strengthened the reliability of the findings. Construct validity was established through reliability tests and exploratory factor analysis. Individual item's performance was tested for inter-item reliability (Ware & Sherbourne, 1992).

CONCLUSION AND RECOMMENDATIONS

This article provides a basis for the potentially relevant associations between the demography of the source and information dissemination outcome. It is expected that if message recipients are convinced of this important association, they will be more attentive and responsive to the communicating-to-induce change process. Of the initial 50 items that were drawn from the pool of literature to examine the impact of the perceptions the gender, age and socio-economic status of the source on message effectiveness, 16 items strongly emerged as fit for measuring the constructs.

The consistent use of the same instrument can illuminate the comparison of findings across several studies and can contribute to source-scale credibility literature. Thus, the present scale can be adapted to a variety of situations. Researchers in political science can use the scale to investigate the credibility of a political candidate. In political campaigns, a candidate's success depends on his/her ability to acquire the voter's trust, approval, and confidence in his/her knowledge and ability from demographic perspective. In instructional settings, the scale can be used to evaluate the influence of the instructor's characteristics on student's evaluations of the teacher. The generated instrument has increased the array of measuring items that are available for source credibility and diffusion of innovation studies. The acceptable validity and reliability values of the instrument strengthen their replication in other studies and other context.

REFERENCES

Abdelmagid, M. M. (1990). The moderating role of social desirability, age, and experience in human judgment: Just how indirect is policy capturing? *Organizational Behavior and Human Decision Processes*, *1*(1), 19-40.

Aiyedun, A. (2003). Determinants of technology adoption decisions among farmers in the Federal Capital Territory, Abuja. *The Nigerian Economic Society*, *1*(3), 186-198.

Al-Maghrabi, T., Dennis, C., & Halliday, S. V. (2010). Antecedents of continuance intentions towards E-shopping: The case of Saudi Arabia. *Journal of Enterprise Information Management, 24(*1), 85-111.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423.

Applbaum, R. F., & Karl, W.E. (August, 1972). The factor structure of source credibility as a function of the speaking situation. *Speech Monographs, 39*, 216-222.

Applbaum, R. F., Anatol, L., & Karl, W. E. (August, 1973). Dimensions of source credibility: A test for reproducibility. *Speech Monographs*, *40*, 231-237.

Bagozzi, R. P. (1994). *Principles of marketing research*. Oxford, UK: Blackwell.

Baker, M. J., & Gilbert, A. C. Jr. (November, 1977). The impact of physically attractive models on advertising evaluations. *Journal of Marketing Research*, *14,* 538-555.

Banjo, A. (1989). The status and roles of English as a second language. *Nigerian Educational Forum, 12*(1), 20-42.

Baran, S. J., & Davis, D. K. (2003). *Mass communication theory: Foundations, ferment, and future* (3rd ed.). Belmont, CA: Wadsworth.

Barclay, D., Thompson, R., & Higgins, C. (1995). The partial least squares (PLS) approach to causal modeling: personal computer adoption and use an illustration. *Technology Studies, 2*(2), 285–309

Bartlett, E. J., Kotrlik, W.J., & Higins, C. C. (2001). Organizational research; Determining appropriate sample size in survey research. *Information Technology, Learning and Performance Journal*, *19*(1), 43-50.

Baudhuin, E. S., & Davis, M. K. (1972). Scales for the measurement of ethos: Another attempt. *Speech Monographs*, *39*, 296-301.

Baxter, L. A. & Babbie, E. (2004). *The basics of communication research*. Canada: Thomson Learning Academic Resource Center.

Berlo, D. K., James, B. L., & Robert, J. M. (1969). Dimensions for evaluating the acceptability of message sources. *Public Opinion Quarterly*, *3*(5), 63-576.

Berscheid, E. (1966). Opinion change and communicator-communicatee similarity and dissimilarity. *Journal of Personality and Social Psychology*, *4*(6), 670-680.

Briggs, N. D. (2009). *Women's health: A nation's wealth.* Port Harcourt: Panam Nigeria Publishers.

Bryne, B. M. (2010). *Structural equation modelling with AMOS: Basic concepts, application and programming* (2nd ed.). New York, NY: Routledge Taylor and Francis Group.

Burgoon, J. K. (1976). The ideal source: A reexamination of source credibility measurement. *Central States Speech Journal*, *27*(3), 200-206.

Caballero, M., & Paul, S. (1984). Effects of model attractiveness on sales response. *Journal of Advertising, 13*(1), 17-23, 33.

Chaiken, S. (1979). Communicator physical attractiveness and persuasion. *Journal of Personality and Social Psychology*, 37(2), 1387-1397.

Clow, K. E., James, K. E., Sisk, S. E., & Cole, H. S. (2011). Source credibility, visual strategy and the model in print advertisements. *Journal of Marketing Development and Competitiveness, 5*(3),24-31.

Copeland, D. E., Gunawan, K., & Bies-Hernandez, N. J. (2011). Source credibility and syllogistic reasoning. *Memory Cognition, 39*(1)*,* 117-127.

Cochran, W.G. (1977). *Sampling techniques* (3rd ed.). New York, NY: Wiley.

Creswell, J. W., Vicki, L., & Clark, P. (2007). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.

DeSarbo, W. S., & Richard A. H. (1985). Celebrity-brand congruence analysis. In H. Leigh & C.R. Martin (Eds.), *Current Issues and Research in Advertising* (pp. 17-52.). Ann Arbor, MI: Division of Research, Graduate School of Business Administration, The University of Michigan.

Dholakia, R. R. (1987). Source credibility effects: A test of behavioural persistence. *Advances in Consumer Research, 14*(1), 426-430.

Dutta-Bergman, M. (2003). Trusted online sources of health information: Differences in demographics, health beliefs, and health information orientation. *Journal of Medical Internet Research, 5*(3), 89-97.

Dwidevi, Y. K., & Lal, B. (2007). Socio-economic determinants of broadband adoption. *Industrial Management & Data Systems*, *107*(5), 654-671.

Eisend, M. (2006). Source credibility dimensions in marketing communication – A generalized solution. *Journal of Empirical Generalization in Marketing Science*, *10*, 1-33.

Engstrom, E., & Ferri, A. J. (2001). Looking through a gendered lens: Local U.S. television news anchors' perceived career barriers. *Journal of Broadcasting & Electronic Media*, *44*(4), 614-634.

Finch, J. (1986). Age. In R. G. Burgess (Ed.), *Key variables in social investigation* (pp.12-30). London: Routledge & Kegan.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Freiden, J. B. (1984). Advertising spokesperson effects: An examination of endorser type and gender on two audiences. *Journal of Advertising Research, 24*(5), 33-41.

Gallivan, M., & Benbunan-Finch, R. (2008). Exploring the relationship between gender and career outcomes for social scientists: Implication for research in I. S. scholarship. *Information Technology and People, 21*(2), 178-204.

Greenhalgh, T., Robert, G., McFarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovation in service organisations: Systematic review and recommendations. *The Milbank Quarterly, 82*(4), 581-629.

Hair, J. F., Black, W. C., Babin, B. J., Andersen, R. E., & Tatham, R. L. (2010). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Hofstede, G. (2002). *Exploring culture: Exercises, stories and synthetic cultures*. Yarmouth, ME: Intercultural Press.

Hovland, C. I., & Weiss, W. (1952). The influence of source credibility on communication effectiveness. *The Public Opinion Quarterly*, *15*(4), 635-650.

Hovland, C. I., Janis, I., & Kelly, H. (1951). *Communication and persuasion.* New Haven, CT: Yale University Press.

Hu, L.T., & Bentler, M. P. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

Jalovaara, M. (2001). Socio-economic status and divorce in first marriages in Finland 1991-1993. *Population Studies*, *55*(2).

Johnson, H. H., James, M. T., & Patrick, M. (1968). Effects of source credibility on the relationship between authoritarianism and attitude change. *Journal of Personality and Social Psychology*, *9*(2), 179-183.

Kahle, L.R., & Pamela, M. H. (March, 1985). Physical attractiveness of the celebrity endorser: A social adaptation perspective. *Journal of Consumer Research*, *11*, 954-961.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford.

Koslin, B., Stoops, J., & Loh, W. (1970). Source characteristics and communication discrepancy as determinants of attitude change and conformity. *Journal of Experimental Social Psychology*, *3*(3), 230-242.

Kwara State Demographic Data. (2008). *In National Population Commission, USA (Nigeria) and ICF Macro*.

Krueger, P. M., Rogers, R.G., Hummer, R.A., LeClere, F.B., & Huie, S.A.B. (2003). Socioeconomic status and age: The effect of income sources and portfolios on U.S. adult Mortality. *Sociological Forum*, *18*(3), 465-482.

Liska, J. (1978). Situational and topical variations in credibility criteria. *Communication Monograph*s, *45*(1), 85-92.

Macintyre, S., & Hunt, K. (1997). Socio-economic position, gender and health: How do they interact? *Journal of Health Psychology*, *2*(3), 315-334.

Markham, P. L. (1988). Gender and the perceived expertness of the speaker as factors in ESL listening recall. *TESOL Quarterly*, *22*(3), 397-406. Retrieved from http://www.jstor.org/stable/3587286

McCroskey, J.C., & Young, T.J. (1981). Ethos and credibility: The construct and its measurement after three decades. *The Central States Speech Journal, 32*(1), 24- 34.

McCroskey, J. C. (1966). Scales for the measurement of ethos. *Speech Monographs*, *33*(1), 65-72.

McGinnies, E., & Charles D. W. (1980). Better liked than right: Trustworthiness and expertise as factors in credibility. *Personality and Social Psychology Bulletin*, *6*(3), 467-472.

Meyer, P. (1988). Defining and measuring credibility of newspapers: Developing an index. *Journalism Quarterly*, *65*(3), 567-574.

Miller, G. P., & Basehart, J. (March, 1969). Source trustworthiness, opinionated statements, and response to persuasive communication. *Speech Monographs*, *36*(1), 1-7.

Mills, J., & Harvey, J. (1972). Opinion change as a function of when information about the communicator is received and whether he is attractive or expert. *Journal of Personality and Social Psychology, 21*(1), 52-55.

Morgan, D. H. J. (1986). Gender. In R. Burgess (Ed.), *Key variables in social investigation* (pp. 31-53). London: Routledge & Kegan.

Mowen, J. C., & Stephen, W. B. (1981). On explaining and predicting the effectiveness of celebrity endorsers. *Advances in Consumer Research, 8*(2), 437-441.

Mueller, C. W., & Parcel, T. L. (1981). Measures of socioeconomic status: Alternatives and recommendations. *Child Development*, *52*(1), 13-30.

Neuman, W. L. (2006). *Basics of social research qualitative and quantitative approaches* (2nd ed.). Upper Saddle River, NJ: Pearson Education.

Nagy, B., Kacmar, M., & Harris, K. (2011). Dispositional and situational factors as predictors of impression management behaviors. *Journal of Behavioral and Applied Management*, *12*(3), 229-245.

Nishith H, B., Jayswal R M., & Jayswal M. M. (2012). Fictious human v/s non-human created animated spokes-characters endorsement: An empirical examination of source credibility and respondent's age. *Journal of Marketing & Communication, 8*(2), 19-24.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.

Nunnally, J. C. (1978). *Psychometric theory*. New York, NY: McGraw-Hill.

Orewere, B. (1991). Possible implications of modern mass media for traditional communication in a Nigerian rural setting. *African Media Review*, *5*(30), 53-65.

Pallant, J. (2003). *SPSS Survival Manual: A Step By Step Guide to Data Analysis Using SPSS for Windows (versions 10 and 11)*. Philadelphia, PA: Open University Press.

Pearson, J. C. (1980). A factor analytic study of the items in three selected sex-role instruments. *Psychological Reports*, *46*(3c), 1119-1126.

Pinsonneault, A., & Kraemer, K. L. (1993). Survey research methodology in management information systems: An assessment. *Journal of Management Information Systems*, *10*(2), 75-105.

Pornpitakpan, C. (2004). The persuasiveness of source credibility: A critical review of five decades' evidence. *Journal of Applied Social Psychology*, *34*(2), 243-281.

Powell, F. C., & Wanzenried, J. W. (1995). Do current measures of dimensions of source credibility produce stable outcomes in replicated tests? *Perceptual and Motor Skills*, *81*(2), 675-687.

Powell, F. C., & Wanzenried, J. W. (1992). An empirical test of the Leathers personal credibility scale: Panel responses to the Clinton candidacy. *Perceptual and Motor Skills*, *75*(3f), 1255-1261.

Powell, F. C., & Wanzenried, J. W. (1991). Perceptual changes in source credibility: Repeated tests using two candidates during a political campaign. *Perceptual and Motor Skills*, *73*(3), 1107-1114.

Ross, J.A. (1973). Influence of expert and seer upon Negro mothers of low socio-economic status. *The Journal of Social Psychology*, *89*(1), 79-84.

Revised National Health Policy. (2004). Federal Ministry of Health, Nigeria, pp.34-35

Salman, A., & Hashim, M. S. (2011). Information seeking in the ICT age: How different age groups respond to the phenomenon. *The Journal of Development Communication*, *12*(1), 61-71.

Sapsord, R., & Jupp, V. (1996). *Data collection and analysis*. London: Sage Publications.

Sarmiento, M. N. (2003). Gender studies in Cuba: Methodological approaches 1974-2001. *Gender and Society*, *17*(3). Retrieved from http://www.jstors.org/stable/3594640

Schweitzer, D., & Ginsburg, G. P. (1966). Factors of communicator credibility. In C.W. Backman & P.F. Secord (Eds.), *Problems in Social Psychology* (pp. 94-102). New York, NY: McGraw-Hill.

Scott, C. D., & Landry, R. M. (1982). Source credibility in advertising: The impact of repetition. In J.H. Summey, B.J. Bergiel, & C.H. Anderson (Eds.), *A spectrum of contemporary marketing ideas.* Proceedings of the 1982 Conference of the Southern Marketing Association, Southern Marketing Association (pp. 341-343). Carbondale, IL: The Southern Marketing Association and Southern Illinois University.

Sekaran, U., & Bougie, R. (2010). *Research methods for business*: *A skill building approach* (5th ed.). New York, NY: Wiley.

Shook, C. L., Ketchen, D. J., Hult, T. M., & K. Kacmar, M. (2004). An Assessment of the Use of Structural Equation Modeling in Strategic Management Research. *Strategic Management Journal, 25*(4), 397-404.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York, NY: Harper Collins.

Teven, J. J., & McCroskey, J. C. (1997). The relationship of perceived teacher caring with student learning and teacher evaluation. *Communication Education*, *46*, 1-9.

Vaughn, C. L. (1958). A scale for assessing socio-economic status in survey research. *Public Opinion Quarterly*, *22*(1), 19-34.

Verberder, R. F. (1996). *Communicate!* Belmont, CA: Wadsworth Publishing Company.

Vereecken, C. A., Inchley, J., Subramanian, S. V., Hublet, A., & Maes, L. (2005). Health inequalities: The relative influence of individual and contextual socio-economic status on consumption of fruit and soft drinks among adolescents in Europe. *European Journal of Public Health, 15*(3), 224-232.

Ware, J. E., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36). *Medical Care, 30*(6), 473-483.

Weibel, D., Wissmath, B., & Groner, R. (2008.) How gender and age affect newscasters' credibility - An investigation in Switzerland. *Journal of Broadcasting and Electronic Media*, *53*(3), 466-484.

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender and Society*, *1*(2), 125-151.

Whitehead, J.L. (1968). Factors of source credibility. *Quarterly Journal of Speech*, *54*(1), 59-63.

Wood, J. T.(1994). *Gendered lives: Communication, gender and culture*. *Journal of Organizational Behavior*, *12*, 609–620.

Wu, C., & David R. S. (1987). Susceptibility to persuasive appeals as a function of source credibility and prior experience with the attitude object. *Journal of Personality and Social Psychology*, *52*(4), 677-688.

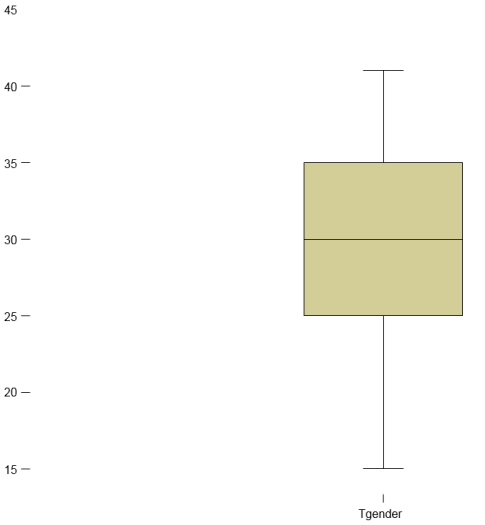
Wynn, G. W. (1987). The effects of a salespersons' credibility and sales managers. In J. M. Hawes & G. B. Glisan (Eds.), *Developments in Marketing Science, 10* (pp. 353-358). Bal Harbour, FL.

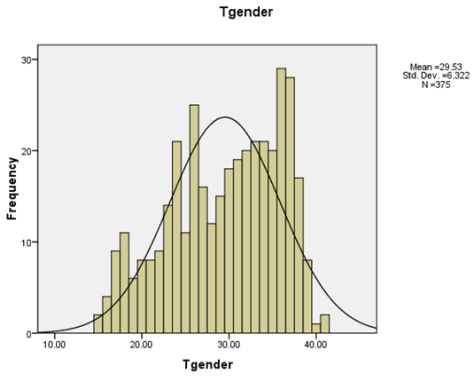
Zhang, Q., Zhang, J., & Castelluccio, A. (2011). A cross-cultural investigation of student resistance in college classrooms: The effects of teacher misbehaviour and credibility. *Communication Quarterly*, *59*(4), 450-464.

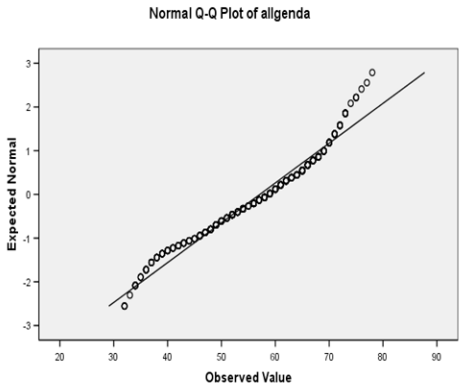
APPENDIX A

ASSESSMENT OF NORMALITY

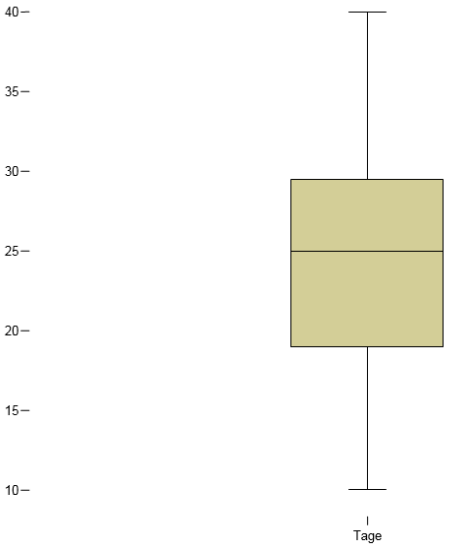
Perception of gender of the source box plot, histogram and normality plot

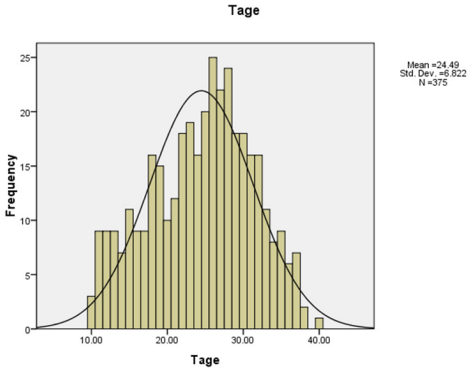


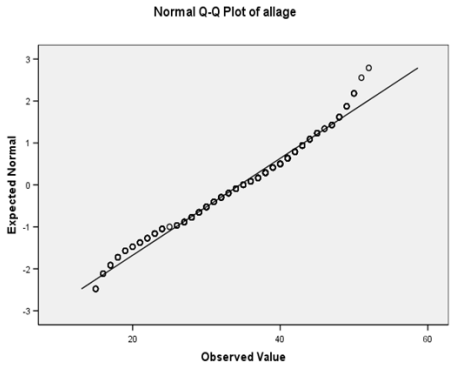




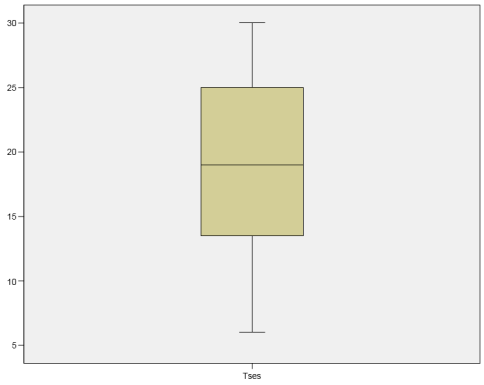
Perception of Age of the Source's Box plot, Histogram and Normality plot

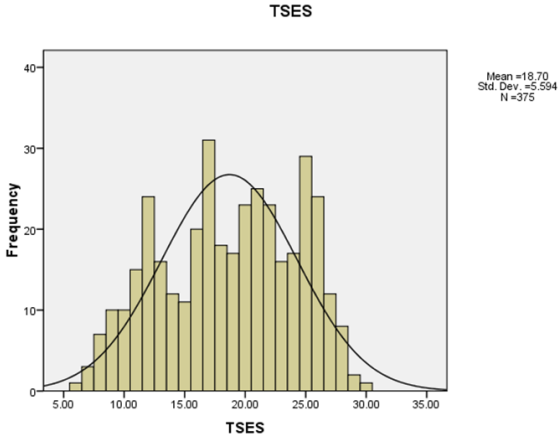


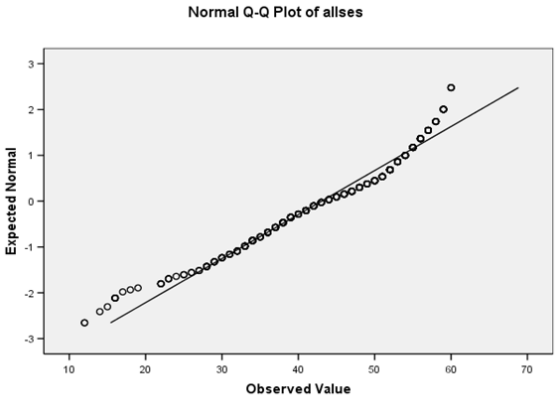




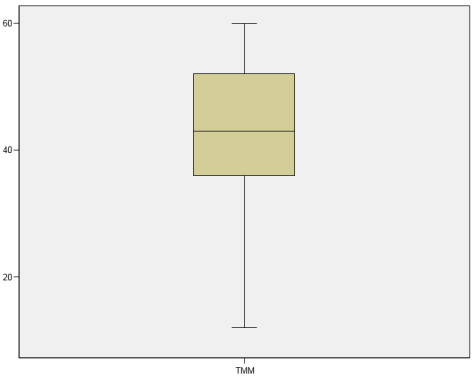
Perception of Socio-Economic Status of the Source's Boxplot, Histogram, and Normality plot

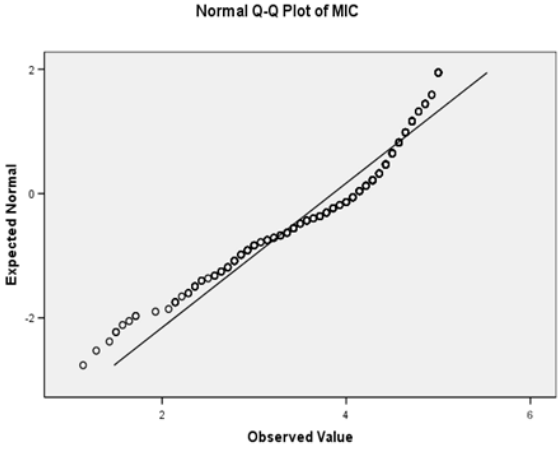


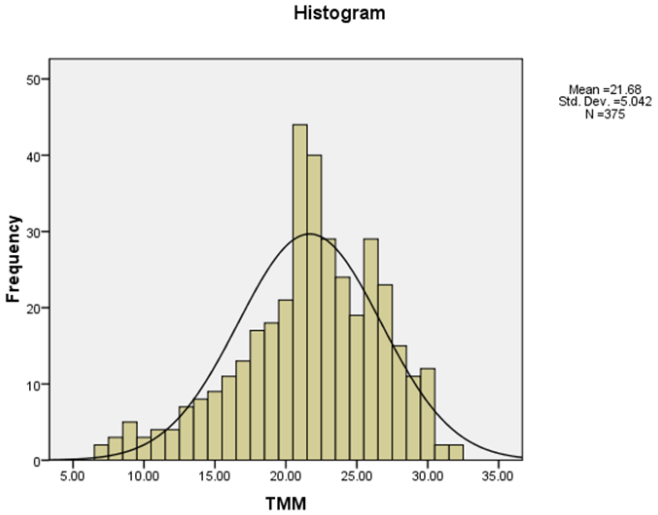




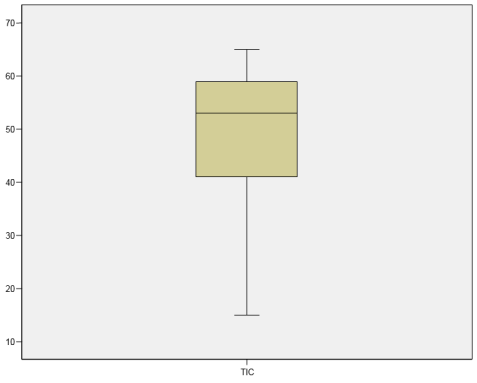
Impact of Massmedia Boxsplot, Histogram, and Normality Test

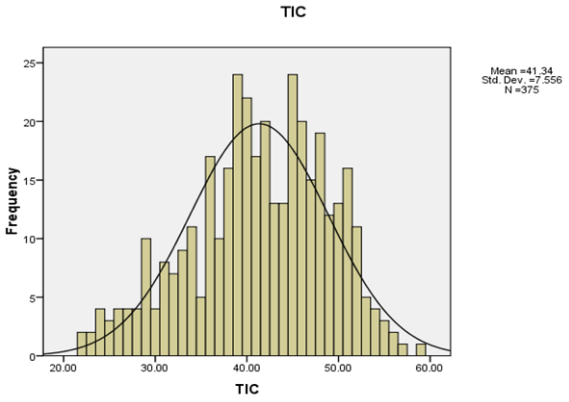


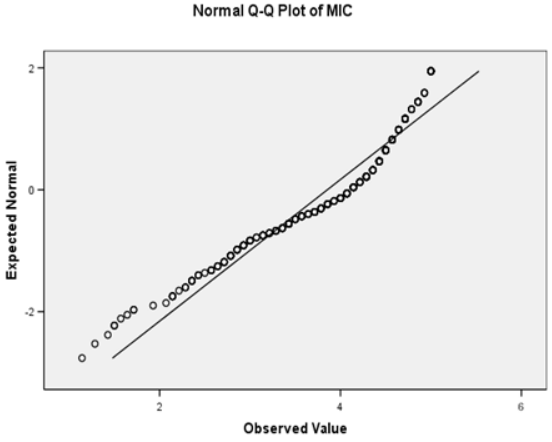




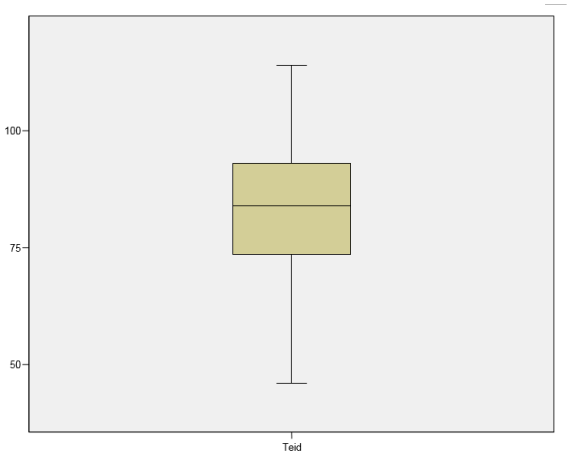
Impact of Interpersonal Communication, Box spot, Histogram and Normality Plot

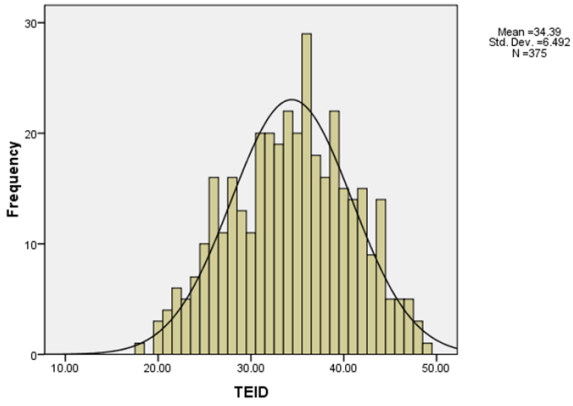


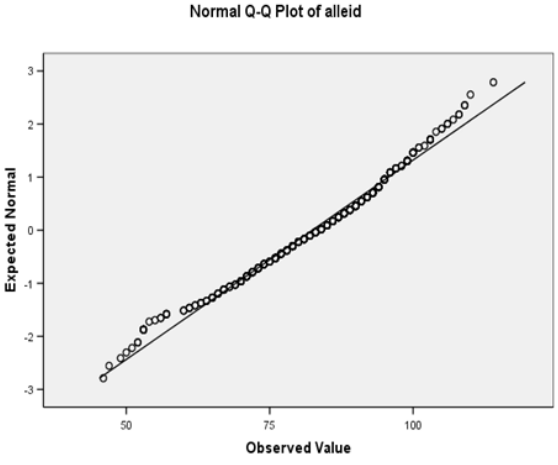




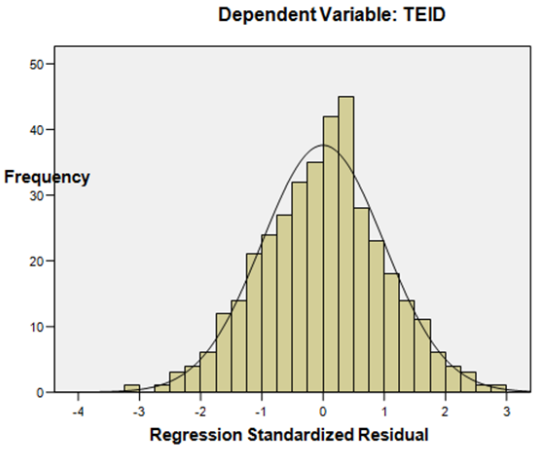
Effective Information Dissemination; Boxplot, Histogram, and Normality plot



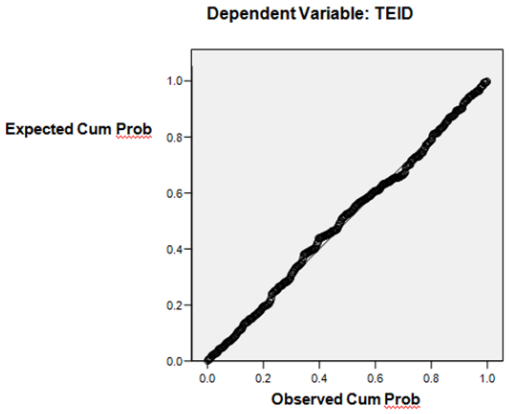




Test of Linearity



Normal P-P Plot of Regression Standardized Residual



Scatterplot

Regression Standardized Residual