



CONFIRMATORY FACTOR ANALYSIS REVALIDATION OF THE PERCEIVED LEADERSHIP COMMUNICATION QUESTIONNAIRE (PLCQ-OR)

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ABSTRACT

The Perceived Leadership Communication Questionnaire (PLCQ-OR) is a short, reliable, and valid instrument for measuring leadership communication from the perspectives of the follower. Drawing on a need to include this research tool in future investigations focusing on Nigerian based organizations, this article describes the re-validation of the one-dimensional 6-item scale using a sample of customer service providers in the local and international airline industry (N = 298). As a result of model fit indices using Confirmatory Factor Analysis, item 2 was removed from the model being justified to be candidate for deletion as it is too similar to items 5 and 6. For internal consistency, factor loading results range from .84 to .97, which is above the suggested threshold; Composite reliability results show (0.96) and AVE validity results show (.89), both of which are also above the threshold. Discriminant validity indicate that a moderate positive relationship exists between perceived leadership communication and dimensions of organizational commitment; affective ($r = .42, p < .05$), continuance ($r = .46, p < .05$) and normative commitment ($r = .42, p < .05$).

Keywords: communication, leadership, scale re-validation, Nigerian sample

INTRODUCTION

Background to the Study

Perceived leadership communication is a new variation in the numerous studies and research on leadership communication. The binding factor of every organization that will continue to exist as a living organism, is effective communication between the leader and the led; which comprise of activities such as receiving instructions from a supervisor, meeting an executive in order to get feedback for job performance, or discussing problems of a professional or even personal nature with a superior (Schneider, Maier, Lovrekovic & Retzbach, 2015). Schneider et al. (2015) stipulate that "organizational members with leadership responsibility have to provide their employees with work-relevant information, give them feedback about how they have done their jobs, and show them consideration in order to establish a good work relationship with their subordinates" (p.176). No doubt, these obligations are very key to successful progress and continuity of every organization and so laying emphasis on its importance cannot be over-reaching. Researchers have concluded that communication is at the fore-front of the administrative and supervisory functions expected from a leader, making communication a dominant duty of leadership (Barnard, 1938; Jablin, 1979; Luthans & Larsen, 1986; Fleishman, Mumford, Zaccaro, Levin, Korotkin and Hein, 1991; Schneider et al., 2015).

Leader communication has long been established to be an important factor in higher worker motivation and performance (Robbins, 2001), while it has great prospective to support organizations in their pursuit for employees who would show commitment to work. Leadership communication is therefore the connection that transfers behavioral objective to employees and the catalyst for building the foundation for employer confidence (Mayfield & Mayfield, 2002). Conventionally, communication was seen as a simple directional process, in which a sender transmits information to one who receives, understands and then acts on the information (Johansson, Miller & Hamrin, 2011).



According to Johansson et al. (2011), researchers have recently increased their application of a better approach to communication, in which superiors and subordinates are seen as active participants who interpret information differently. With the help of this interpretation and interviews with organizations, communication has been viewed as practice, while retaining the position of an equal procedure in which those that participate have dissimilar outlook and give different meanings (Johansson et al., 2011). Concerning communication, both the employer and the employee are answerable to their actions depending on their understanding of what is communicated. There are certain factors that have been found to have great influence on communication in an organization, such as, communication climate, organizational culture and the social circumstance that can both enable and restrain the leader's communication (Johansson et al., 2011). For organizational leaders, a core responsibility is to direct organizations through the tool of effective communication, towards achieving strategic objectives, while articulating the association's main goal, vision, technique and objectives (Johansson et al., 2011).

Cohen (2004) reports that most leadership theories pay little attention to communication, and communication scholars have not systematically explored the prerequisites of effective leadership (Schneider et al., 2015). While transactional leadership focuses on contingent rewards, transformational leadership concentrates on functionalities like inspiring or stimulating employees and expressing a vision about the future organization. Both share a leader-centered perspective (Bass, 1998; Schneider et al., 2015). Even though one can deduce that especially transformational leadership behaviors are primarily communicative, communication processes have not been explicitly considered according to the two major leadership approaches (Schneider et al., 2015). One can boldly draw the same conclusion for LMX theory, which focuses on the specific relationship or dyad between a leader and an individual follower (Graen & Uhl-Bien, 1995; Schneider et al., 2015). Hertzsch, Schneider, & Maier (2012) provide an approach to leadership communication by specifying and extending a framework for investigating interpersonal communication processes in organizations (Schneider et al., 2015). As a result of the understanding of a communication-based approach to leadership and following a theoretical framework of interpersonal communication processes in organizations, Schneider et al. (2015) describes the development and validation of a one-dimensional 6-item scale in four studies. The Perceived Leadership Communication Questionnaire (PLCQ) is a short, reliable, and valid instrument for measuring leadership communication from both perspectives of the leader and the follower.

Organizations in Nigeria remain a focus of research owing to the delicate nature of the country's position in global sustainable development issues. Being the most populated black African nation, the potentials of trade and commerce in Nigeria are unending, attracting international interests and investment. The business environment in organizations embedded in Nigeria must align with global trends and best practices to ensure competition and sustainable development. In this respect, it is imperative for Nigerian based organizations to come under research that focuses on how leaders in these organizations communicate with subordinates. If Barnard, as far back as 1938 identified leadership communication as the first function of executives, and the same is true till date, then it must be true in Nigeria as well. Schneider et al. (2015) identified the way subordinates perceive communication from their leaders as paramount to effective communication; which is invariably vital to establishing sustainability in successful business organizations. Schneider et al. (2015) conclude that "a new, coherent instrument, which focuses on the communication aspects of leadership behavior and theoretically connects leadership and communication, is needed". Again, if perceived leadership communication is key to research on sustaining employee satisfaction and a tool to



measure the same for the western world has been successfully developed, the researcher found it vital to standardize the same tool using a Nigerian sample. The general functioning of the business world may be true across the globe, but the dynamics will differ from culture to culture. Nigeria being a different culture from the European or American culture also embraces different dynamics in terms of effective leadership communication. This dynamism is the focus of the study as it is expected to be captured when revalidating the Perceived Leadership Communication Questionnaire PLCQ as a tool for measuring how employees perceive their leaders' communication effectiveness.

Objective

The major objective of this study is to revalidate the Perceived Leadership Communication Questionnaire, using Confirmatory Factor Analysis in a Nigerian sample.

METHOD

Design

The study adopted a field survey design involving administration of questionnaire in which perceived leadership communication serve as independent variables, while organizational commitment was the dependent or criterion variable.

Sampling technique

A two-stage sampling technique was adopted for collection of data. This comprised the simple random sampling and convenient sampling techniques. Simple random sampling was used to select two airlines; one local (AERO Land) and one international airline (KLM) from available airlines serving in Nigeria with headquarters in Lagos. Convenient sampling was subsequently used to administer questionnaires to participants.

Sample

Two hundred and ninety eight employees participated in this study. The sample size comprised of 179 (60.1%) of total respondent are male and female account for 119(39.9%). The respondent relationship status shows that 112(37.6%) were married, 181(60.7%) of total respondent had never been married while 3(1.0%) were divorced. Only two respondents failed to reveal their relationship status. Furthermore, respondent age ranged from 20- 64 years old while in terms of educational qualification, it was found that 25(8.4%) had OND, 39(13.1%) were HND holders, 200(67.1%) were BSc Holders, 24(8.1%) had MSc, 4(1.3%) had diplomas and only 2(0.7%) claimed to have Senior Secondary School Certificates. Finally respondents job tenure shows that 234(78.5%) had been employed between 1-10 years, 46(15.4%) had been employed between 10-20 years while 9(3.0%) had been employed in their organisation between 20-30 years. 9(3.0%) however did not reveal their length of service.

Measures

Perceived Leadership Communication: Perceived Leadership Communication was measured by adopting Schneider, Maier, Lovrekovic & Retzbach (2015) Perceived Leadership Communication Questionnaire (PLCQ). The questionnaire consists 6 items which measures how employees perceived the communication approach of their leader. The instrument is designed in a 5 point Likert Scale format which ranges from 0 to 4 (0 = *completely disagree*; 1 = *somewhat disagree*; 2 = *neither agree nor disagree*, 3 = *somewhat agree*, 4 = *completely agree*).

Organizational Commitment Scale: Organizational Commitment was measured by Allen and Meyers (1990) Organisational Commitment Scale. This 24-item self-



administered instrument consists of the following three components: Affective, Continuance and Normative Commitment. The scale has eight items to measure each component. Typical examples of items are 'I would be very happy to spend the rest of my career with this organisation', 'I enjoy discussing my organisation with people outside of it', 'I really feel as if this organisation's problems are my own' and so on. Respondents were required to indicate the extent to which they agree or disagree with each item using a 5 point Likert scale labelled 5 = strongly agree, 4= agree, 3= undecided, 2= disagree, 1= strongly disagree.

Procedure

The respondents were given paper and pencil questionnaire with information that explains the purpose of carrying out the study which solicits for voluntary participation and assurance of confidentiality were also communicated. The management of the firm was consulted for permission before administration of the questionnaire.

DATA ANALYSIS

Preliminary analysis

In order to evaluate the items of the Perceived Leadership Communication Questionnaire (PLCQ) for univariate normality; both skewness and kurtosis were used. Before scanning data for univariate normal distributions, items of the questionnaire were analyzed for missing data; it was found that some respondents did not answer some questions; however, those questions were less than 20% of total items they answered. Gaskin and John (2016) reiterated that if missing data are more than 20% of total engaged items, such respondent should be removed from the study. However, no respondent had missing data more than 20%. All the observed variables in the scale were measured at ordinal level; median substitution approach is most appropriate to treat the missing data (Gaskin & John, 2016).

**Table 1
Skewness and Kurtosis Statistics Result**

Variables	Item1	Item2	Item3	Item4	Item5	Item6
N	298	298	298	298	298	298
No response	0	0	0	0	0	0
Skewness	-.427	-.574	-.461	-.495	-.519	-.771
Std. Error of Skewness	.141	.141	.141	.141	.141	.141
Kurtosis	-1.726	-1.531	-1.693	-1.625	-1.623	-1.242
Std. Error of Kurtosis	.281	.281	.281	.281	.281	.281

Sources: Author's Field Survey (2017)

For univariate normality test, the rule of thumb is that for data to be normally distributed, the degree of skewness and kurtosis must not be more than 1. Various acceptable ranges have been propounded in literature. George and Mallery (2010), Trochim and Donnelly (2006) Field, (2009) and Gravetter and Wallnau (2014) suggest that both skewness and kurtosis must range between (±2). However, Kline (2005) suggests that items skewness of ≤ 3 and Kurtosis of ≤ 10 are acceptable. Statistical Package for the Social Sciences version (23) was used to analyse the data. The result that all the six items in the Perceived Leadership Communication Questionnaire shows, is that the distribution of the data is moderately normal. No items exceed that cut off point suggested



by George and Mallery (2010), Trochim and Donnelly (2006), Field (2009), Gravetter and Wallnau (2014) or Kilne (2005). The analysis summary is presented in Table 1.

Confirmatory Factor Analysis

In order to confirm the factor structure of Perceived Leadership Communication Questionnaire (PLCQ), confirmatory factor analysis (CFA) was employed. Analysis of moment structure version (23) (Aubuckle, 2014) was employed to analyze the measurement model. The justification for choosing CFA over Exploratory Factor Analysis (EFA) is the fact that Perceived Leadership Communication Questionnaire (PLCQ) is a standardized scale which has been established in literature and is Uni-dimensional (Schneider et al., 2015). The aim of this study is to confirm the factor structure of this questionnaire in the Nigerian sample. In order to evaluate the factor structure of the model, various "goodness of fit" indices were used. Goodness of fit indices in structural equation modeling would serve as the criteria for assessing whether proposed model is supported by the sample data.

Table 2
Cutoff Criteria

Measure	Terrible	Acceptable	Excellent
CMIN/DF	> 5	> 3	> 1
CFI	<0.90	<0.95	>0.95
SRMR	>0.10	>0.08	<0.08
RMSEA	>0.08	>0.06	<0.06
P Close	<0.01	<0.05	>0.05

Source: Hu and Bentler (1999).

Goodness of fit indices such as CFI, TLI, CMIN (X/DF), RMSEA, P-CLOSE were all used to evaluate the model fit in this study. According to Hu and Bentler (1999), the following fit indices and their range as presented in Table 2 are adequate in CFA.

RESULTS

In order to confirm the factor structure, all six items of the perceived leadership communication scale were loaded on only one factor as this has been theoretically confirmed (Schneider et al., 2015). Meanwhile three different competing models were tested. In the first model, all items loaded on the same factor and factor loadings range from .85 to .97. Even though the data distribution were found to have univariate normality, however, the test of multivariate normally using mehdiat test indicates that the data severely deviated from multivariate normality; therefore bootstrapping approach using (2000) samples were used with Bollen-Stine method. It was found that the fit indices were very poor ($X^2=258.4$, $Df=9$, $p=0.001$, *Bollen-Stine*, $P = .001$ $CMIN= 28.708$, $CFI=.918$, $TLI=.863$; $RMSEA=.305$, $PCLOSE=.000$). In order to evaluate the causes of model poor fit, the modification indices (MI) was evaluated to improve the model fit. Item 2 and item 6 error variance needed to be correlated ($MI=142.972$) in other words, they needed to be set as free parameters. Model two was estimated after correlating the error variance of item 2 and 6. The results indicate better but still poor model fit as some of the fit indices



are below the cut off criteria presented in Table 2. The result of model two indices shows ($X^2=76.339$, $Df=8$, $CMIN/DF= 9.542$, $p=0.001$, *Bollen-Stine*, $P = .021$ $CFI=.978$, $TLI=.958$; $RMSEA=.170$, $PCLOSE=.000$). Even though CLI and TLI are all beyond cut off point the $CMIN/DF= 9.542$, $RMSEA=.170$, and $PCLOSE=.000$) all indicates poor model fit (Byrne, 2010; Hair et al., 2006; Kline, 2005; Malthora & Dash, 2011).

Further observation from the model modification indices suggest that error variance of item 2 and 5 ($MI=38.34$) should be set as free parameters in order to remove model fit. Since the error variance of item 2 has been previously correlated with item 6, item 2 is justified to be candidate for deletion as it is too similar to item 5 and 6. Therefore item 2 was removed from the model. The model three was estimated and the result show a good model fit ($X^2=14.138$, $Df=5$, $CMIN/DF= 2.828$, $P=0.015$, *Bollen-Stine*, $P =.619$, $CFI=.996$, $TLI=.993$; $RMSEA=.078$, $PCLOSE=.137$). The third model have good and acceptable model fit. The interpretation of the model fit is presented in Tables 3 & 4.

Table 3

Confirmatory factor analysis of Perceived Leadership Communication Questionnaire (PLCQ)

Models	CMIN	DF	CMIN/DF	CFI	TLI	RMSEA	P-close
Model One	258.4	9	28.708	.918	.863	.305	.000
Model Two	76.34	8	9.543	.978	.958	.170	.000
Model Three	14.14	5	2.828	.996	.993	.078	.137

Source: Authors Field Survey (2017)

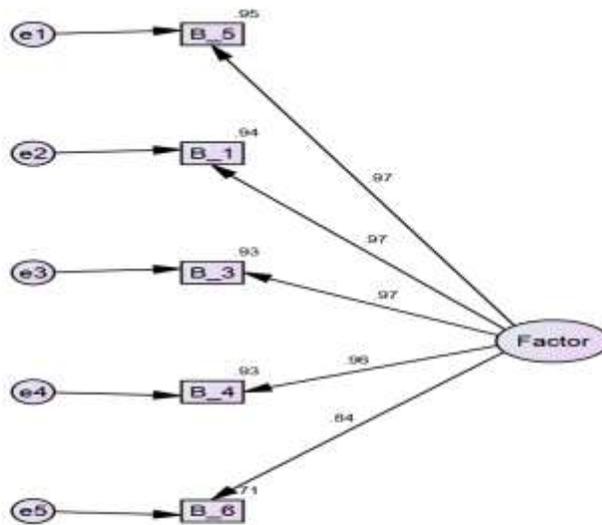


Fig 1: Measurement model of Perceived Leadership Communication Questionnaire



Table 4
Model three fit indices result and interpretation

Measure	Estimate	Threshold	Interpretation
CMIN	14.138	--	--
DF	5	--	--
CMIN/DF	2.828	Between 1 and 3	Excellent
CFI	0.996	>0.95	Excellent
RMSEA	0.078	<0.06	Acceptable
P-Close	0.137	>0.05	Excellent

Source: Authors Field Survey (2017)

Construct Validity and Reliability of the Measurement Model

The construct validity was ensured through the examination of items factor loading, Construct reliability (CR) and Average variance Extracted (AVE). Hair et al., (2006) suggest that factor loading, Composite Reliability (A more reliable measure of items internal consistency), and AVE are the three major indicators of convergent validity which measure the degree to which items in the questionnaire converge together to measure the construct of interest. Fornell and Lacker (1981) and Hair et al., (2010) suggest that for scales to possess adequate convergent validity, factor loading must be ($\geq .70$), Composite reliability (CR) must be ($\geq .70$), and Average variance extracted (AVE) which is the sum of square root of item loading divided by the number of items in the construct must be ($> .50$). It is found that the factor loading of the final model range from (.84 -.97) which is above the threshold suggest by Hair et al., (2010); both composite reliability (0.96) and AVE (.89) are also above the threshold suggested by Fornell and Lacker (1981). This result suggests that the scale possesses convergent validity.

In order to estimate the discriminant validity, the factor scores on leadership communication was correlated with organizational commitment scale which has three major dimensions (Affective, Continuance and Normative). It is hypothesized that there will be a significant positive low to moderate relationship between these two variables in order to establish the discriminant validity. As hypothesized, the result presented in Table 5 indicates that a moderate positive relationship exist between perceived leadership communication (using the mean scores of the five items modified version of PLC) and organisational commitment. It was found that perceived leadership communication is related to affective ($r=.42, p<.05$), continuance ($r=.46, p<.05$) and normative commitment ($r=.42, p<.05$).

Table 5
Zero-Order Correlational matrix of variables

Variables	M	SD	Leader com	Affective	Continuance	Normative
Leader com	2.43	1.78	1			
Affective	1.90	.49	.42**	1		
Continuance	2.02	.60	.46**	.92**	1	
Normative	3.86	1.20	.42**	.91*	.97**	1



**= Correlation is significant at 0.01(two-tailed)

DISCUSSION

The short but reliable 6-item Perceived Leadership Communication Questionnaire is put under scrutiny and the outcome was that one of the items was selected to be deleted because it was very similar to two other items which were different. The revalidated PLCQ-OR for the Nigerian sample resulted in a 5-item reliable and valid scale for effectively measuring how employees feel about the level of communication they receive from their leaders. A third attempt at a model fit (5-item scale) on a one-dimensional model yielded good fit indices, showed high factor loadings, and excellent internal consistency: factor loading results range from (.84 - .97) which is above the suggested threshold; Composite Reliability results show (0.96) and AVE validity results show (.89), both of which are also above the threshold. Moreover, bivariate correlations supported discriminant validity of the PLCQ-OR. The outcome of the PLCQ-OR is to measure employee satisfaction which will lead to other concepts like general job satisfaction, work engagement, employee commitment and so on. Organizational Commitment was therefore used to analyze correlations with PLCQ-OR and the correlations were high. Item content did not indicate conceptual differences. The positive relationship with the criterion variable organizational commitment indicates concurrent validity. A moderate positive relationship exists between perceived leadership communication (using the mean scores of the five items modified version of PLC) and dimensions of organizational commitment; affective ($r=.42, p<.05$), continuance ($r=.46, p<.05$) and normative commitment ($r=.42, p<.05$).

Limitations and Future Directions

The results of the study have practical implications for different areas like teaching and executive/management training in leadership communication for organizations and educational sectors. It is however imperative to mention some limitations and suggest issues that should be addressed by future research. This study only covered the "others rating" of the Perceived Leadership Communication Questionnaire (PLCQ-OR). Other studies using Nigerian samples should also compare results of "others rating" with results of "self-rating". Larger sample sizes are needed for assessing measurement invariance of the PLCQ-SR and PLCQ-OR across different leaders or organizations (Schneider et al., 2015). Initial criterion validity was established in terms of concurrent validity only via organizational commitment. Additional subjective (e.g., satisfaction, organizational citizenship behavior) and objective (e.g., group performance outcome or role-based performance) criteria should be included to further investigate the predictive validity of the PLCQ. Additionally, several measures for communication-related constructs (e.g., communicator style) should be added to examine the incremental validity of the 5-item PLCQ (Schneider et al., 2015).



CONCLUSION

Perceived leadership communication is a new area in the numerous studies and research on leadership and the binding factor of every organization that will continue to exist as a living organism, is effective communication between the leader and the led. The Perceived Leadership Communication Questionnaire (PLCQ) is a short, reliable, and valid instrument for measuring leadership communication from the perspectives of the follower developed and validated by Schneider et al. (2015). Drawing on a need to include this research tool in future investigations focusing on Nigerian based organizations, this study carried out a process of re-validating the one-dimensional 6-item scale using a Nigerian sample of customer service providers in the local and international airline industry (total N = 298). As a result of model fit indices using Confirmatory Factor Analysis, item 2 was removed from the model being justified to be candidate for deletion as it is too similar to items 5 and 6. For internal consistency, factor loading results range from (.84 -.97); Composite Reliability results show (0.96) and AVE validity results show (.89) also. Discriminant validity was established also as results indicate that a moderate positive relationship exists between perceived leadership communication (using the mean scores of the five items modified version of PLC) and dimensions of organizational commitment; affective ($r=.42$, $p<.05$), continuance ($r=.46$, $p<.05$) and normative commitment ($r=.42$, $p<.05$).

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APPENDIX

PLCQ-OR Before Revalidation

Instructions: Indicate the extent to which each item applies to you and your supervisor using the following scale:

- 0 = Completely disagree
- 1 = Somewhat disagree
- 2 = neither disagree nor agree
- 3 = Somewhat agree
- 4 = Completely agree

- | | | | |
|---|---|---|---|
| 1. My supervisor is sensitive to the needs of others. | 0 | 1 | 2 |
| 3 4 | | | |
| 2. My supervisor seems to like devoting his time to me. | 0 | 1 | 2 |
| 3 4 | | | |
| 3. I am content with the way my communication with my supervisor is going. | 0 | 1 | |
| 2 3 4 | | | |
| 4. My supervisor and I share an understanding of how we would like to achieve our goals. | 0 | 1 | 2 |
| 3 4 | | | |
| 5. My supervisor and I can speak openly with each other. | 0 | 1 | 2 |
| 3 4 | | | |
| 6. Especially when problems arise, my supervisor and I talk to each other even more intensively in order to solve the problems. | 0 | 1 | |
| 2 3 4 | | | |

PLCQ-OR After Revalidation

Instructions: Indicate the extent to which each item applies to you and your supervisor using the following scale:

- 0 = Completely disagree
- 1 = Somewhat disagree
- 2 = neither disagree nor agree
- 3 = Somewhat agree
- 4 = Completely agree

- | | | | |
|---|---|---|---|
| 1. My supervisor is sensitive to the needs of others. | 0 | 1 | 2 |
| 3 4 | | | |
| 2. I am content with the way my communication with my supervisor is going. | 0 | 1 | 2 |
| 3 4 | | | |
| 3. My supervisor and I share an understanding of how we would like to achieve our goals. | 0 | 1 | 2 |
| 3 4 | | | |
| 4. My supervisor and I can speak openly with each other. | 0 | 1 | 2 |
| 3 4 | | | |
| 5. Especially when problems arise, my supervisor and I talk to each other even more intensively in order to solve the problems. | 0 | 1 | |
| 2 3 4 | | | |