

The Influence of Communication in the Buyer-Supplier Integration on Procurement Performance of Large Manufacturing Firms in Tanzania

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Abstract - Despite the efficacious communication evident in the buyer-supplier integration, material procurement performance in large manufacturing firms of Tanzania remains a challenge. The Resources Dependency and Transaction Cost Economics Theories were used in this study to analyze the influence of Early Supplier Involvement in design of specification, electronic information sharing, communication direction, and frequency of buyer-supplier meetings, (all considered key in enhancing communication in the buyer-supplier integration) on the procurement performance. 52 large manufacturing firms in Temeke Municipality were approached through a census to inform the study. From each firm, one procurement and one store manager were purposively sampled, totalling to 104 respondents. Data was collected using cross-sectional design and mixed approach under pragmatic paradigm was used for this study. Data obtained through questionnaires was analyzed using the Binary logistic regression. This study was supplemented by qualitative opinions stemming from the fact that buyer-supplier integration is a strategic aspect. The study revealed that poor procurement performance is attributed to lack of Early Supplier Involvement and limited electronic information sharing. It was recommended as per findings that with the assistance of the government, the performance of manufacturing firms can be rejuvenated using the framework developed from this study. This study unveiled the cause-effect relationship of communication in the buyer-supplier integration and procurement performance however, the mediating role of third-party logistics, which might affect the relationship, remains unknown. Also, the role of communication of buyer-supplier relationship was not considered as role of tiers suppliers. Therefore, future studies should identify the role of tier suppliers in buyer-supplier communication and consequently the supply chain firms' performance.

Keywords — Buyer-supplier Integrations, Procurement Performance, Supplier Management

1. INTRODUCTION

1.1 Background to the Problem

Highly regarded worldwide, procurement is considered a driver for organizational performance [1], and so is the buyer-supplier integration [2]. Research evidence has proved that communication is an imperative part of any successful buyer-supplier integration in developed nations [3]. Early Supplier Involvement specification designing and electronic information sharing have equally proved to be an integral part of functional buyer-supplier integrations [4]. Developing nations are increasingly acknowledging the vital role played by procurement performance in effective material delivery [5]. However, inefficient procurement systems remain a major hurdle in private sectors [6]. The majority of firms have completed major operational shifts from the traditional arm length approach to strategic buyer-supplier integrations, in an effort to rip the benefits of the latter [7]. Amidst all efforts however, lasting solutions to poor performance are yet to be realized despite the solid nature of buyer-supplier integrations [8]–[10].

Tanzania's manufacturing sector is challenged by the unreliability of materials supply [11] a situation only aggravated by the inability to promptly and adequately supply materials [12]. It has been observed that ineffective buyer-supplier integrations is a driving engine for poor procurement performance in the majority of struggling buying firms [13]. Communication in the buyer-supplier integration has been described by [14] as a vital aspect of the buyer-supplier integration with profound implications for the maize market performance in Tanzania in terms of sales volume, revenue and sales profitability. It is upon such a background that this study analyzed the influence of the buyer-supplier integration on procurement performance of large manufacturing firms, with a particular focus on delivery time and

quantity of materials. Communication in the buyer-supplier integration, in terms of modality, content, direction, and frequency, was analyzed as the root cause of performance as recommended by [15].

The lack of an efficient framework for the reliable supply of materials to large manufacturing firms, despite efficient communication among buyers and suppliers remains a major block to organizational success [11]. Studies from other settings show that communication components like Early Supplier Involvement in specification designing, communication modality, particularly electronic information sharing, direction that is responsive feedback and frequency particularly of meetings are of the essence. It is against such a background that a communication framework for the buyer-supplier integration featured with Early Supplier Involvement is critically required. The framework is imperative for designing specifications, enhancing electronic information sharing, ensuring responsive feedback, and boosting the frequency of buyer-supplier meetings, in a bid to augment procurement performance, particularly prompt material delivery in Tanzania's large manufacturing firms.

1.2 Statement of the Problem

Communication in the buyer-supplier integration is considered key to organizational performance [14]. Despite its importance, large manufacturing firms are challenged by the unreliable supply of materials [11]. The Government of Tanzania has made efforts to remedy the situation by encouraging supply chain linkages through the Sustainable Industrial Development Policy [16] and the Integrated Industrial Development Strategy [17]. However, a lasting solution is yet to be achieved as evidenced by the frequent delay of materials delivery in inadequate amounts to large manufacturing firms [18].

Studies have revealed that content modality, direction, and frequency of communication should be considered in the analysis of communication in the buyer-supplier integration [15]. It is therefore disputable that the existing procurement performance is a result of communication components such as the nature of Early Supplier Involvement, communication modalities electronic sharing of information, communication direction that is responsive feedback, frequency of buyer-supplier meetings. Studies have revealed that Early Supplier Involvement in specification designing [19], electronic information sharing [20][14], provision of responsive feedback [14] and the frequency of buyer-supplier meetings [21] are major determinants of successful communication in buyer-supplier integrations.

Available literature on buyer-supplier integrations hardly documents their contribution to performance in terms of cost, quality, prompt and adequate material delivery [9], [14]. This study therefore sought to establish the influence of communication in the buyer-supplier integration, specifically Early Supplier Involvement in designing of specifications, electronic sharing of information, provision of responsive feedback and frequency of buyer-supplier meetings, on procurement performance of large manufacturing firms in Tanzania.

2. LITERATURE REVIEW

2.1 Theoretical Literature Review

Several theories attempt to explain the influence of communication in the buyer-supplier integration on procurement performance. However, the current study was built on the Transaction Economics and Resources Dependency Theories.

2.1.1 Transaction Cost Economics Theory

Pioneered by Ronald Coase in 1937, the Transaction Cost Economics theory assumes that procurement performance significantly depends on the buyer-supplier integration. Performance also greatly depend both parties' ability to avoid self-interest in their communication through proper management of Early Supplier Involvement, electronic information sharing, responsiveness and greater communication frequency [8], [9], [14], [15]. Similar buyer-supplier integration studies focus on cost efficiency unlike [22], who found that few buyer-supplier integrations are solely based on transaction cost. It is for this reason that this study was guided by the Transaction Cost Economics Theory alongside the Resource Dependence Theory.

2.1.2 Resource Dependency Theory

Pioneered by Pfeifer and Salancik in 1978, the Resource Dependence Theory explains how resources outside the firm can contribute to organizational success. Resources are very scarce and organizations can alternatively enrich their performance by establishing a sustainable mechanism to ensure consistent material supply [23], [24]. Communication characterized by information sharing, Early Supplier Involvement, responsiveness and frequent meetings is considered essential in the buyer-supplier integration and key for organizational performance [1], [14], [25]. This theory has however been criticized for its limitation in elucidating behavioural and performance aspects. With these weaknesses in mind therefore, the Resource Dependency Theory was employed alongside the Transaction Cost Economics Theory,

popularly known for predicting performance [26].

2.2 Empirical Literature Review

Various empirical studies were critically reviewed and contributed to the hypothesis tested in this study as follows:

2.2.1 Early Supplier Involvement Design Specifications and Procurement Performance

Early Supplier Involvement in the designing process of specifications is a critical vertical integration mechanism for successful communication in buyer-supplier integrations [27]. Early Supplier Involvement has further ensured prompt materials delivery [19]. Since manufacturing firms in Tanzania experience difficulties in terms of adequate and prompt delivery of materials, the current study comparatively analyses [19] findings in the context of Tanzania, a developing country. Since, the quantity and time of materials needed is regarded as resource advantage to the buying firms then the researcher had to hypothesize as follows;

H_{0 1.1} *There is no significant influence of ESI in designing of the specification in buyer supplier integration on the procurement performance in terms of delivery time of materials in large manufacturing firms in Tanzania.*

H_{0 1.2} *There is no significant influence of ESI in designing of the specification in buyer supplier integration on the procurement performance in terms of delivered quantity of materials in large manufacturing firms in Tanzania.*

2.2.2 Electronic Information Sharing and Procurement Performance

Empirical literature reveals different findings on how information sharing in the buyer-supplier integration influences procurement performance. Several scholars agree that the integration is imperative for successful procurement performance [25], [28], little is known of the influence of buyer-supplier information sharing on procurement performance [4] and it is upon such a background that this study attempted to reveal a reliable stance. Based on the ground that the performance of large manufacturing firms in Tanzania is poor, the following hypotheses are developed;

H_{0 2.1} *There is no significant influence of electronic sharing of information in buyer supplier integration on the procurement performance in terms of delivery time of materials in large manufacturing firms in Tanzania.*

H_{0 2.2} *There is no significant influence of electronic sharing of information in buyer supplier integration on the procurement performance in terms of delivered quantity of materials in large manufacturing firms in Tanzania.*

2.2.3 Buyer-suppliers' Communication Direction and Procurement Performance

Mutual communication is imperative as it helps in the identification of existing business bottle necks, consequently improving procurement performance [15]. Communication characterized by responsiveness further facilitates the buyer-supplier integrations' performance in Tanzania's maize market [14] thus; the current study explores the influence of the buyer-supplier communication direction on procurement performance of large manufacturing firms in Tanzania. Therefore, the researcher was interested to know whether the poor performance in the manufacturing firm is Tanzania is attributed to the lack of bi-directional flow of communication or not by hypothesizing the following:

H_{0 3.1} *There is no significant influence of communication direction in buyer supplier integration on the procurement performance in terms of delivery time of materials in large manufacturing firms in Tanzania.*

H_{0 3.2} *There is no significant influence of communication direction in buyer supplier integration on the procurement performance in terms of delivered quantity of materials in large manufacturing firms in Tanzania.*

2.2.4 Buyer-supplier Meetings and Procurement Performance

Although findings on how the frequency of buyer-supplier meetings influence procurement performance are controversial, the majority of studies support that frequent meetings significantly enhance performance [21], [29] while others dispute the same [30]. This study was therefore conducted in an attempt to provide clarity amidst vast controversy. The contradiction has called for the following hypothesis;

H_{0 4.1} *There is no significant influence of the frequency of holding meetings in buyer supplier integration on the procurement performance in terms of delivery time of materials in large manufacturing firms in Tanzania.*

H_{0 4.2} *There is no significant influence of the frequency of holding meetings in buyer supplier integration on the procurement performance in terms of delivered quantity of materials in large manufacturing firms in Tanzania.*

Available literature on buyer-supplier integrations hardly documents their contribution to performance in terms of cost, quality, prompt and adequate material delivery [9], [14]. This study therefore sought to establish the influence of communication in the buyer-supplier integration, specifically Early Supplier Involvement in designing of specifications, electronic sharing of information, provision of responsive feedback and frequency of buyer-supplier meetings, on procurement performance of large manufacturing firms in Tanzania.

3. METHODOLOGY

3.1 Study Area

This study was conducted in Temeke since the Municipality accommodates 55% of all large manufacturing firms in Tanzania [31]. It was reported in a similar study that approximately 68% of all surveyed manufacturing firms in Temeke experienced unreliable supply of materials [11].

3.2 Research Philosophy

Pragmatic paradigm was adopted because positivism and interpretivism were both fundamental for the current study. A quantitative method with a positivism approach was necessary owing to the cause-effect integration that exists between communication in the buyer-supplier integration and procurement performance. There was also need to test Transaction Cost Economics and Resource Dependency Theories through formulated hypotheses. Interpretivism was also used to explore how buyer-supplier communication affects procurement performance by obtaining qualitative opinions on strategic attitudes and perceptions on buyer-supplier integrations.

3.3 Research Approach

The convergent parallel mixed research approach was used in this study for a comprehensive account of the study problem [32]. Data were collected separately using questionnaires and an interview guide for quantitative and qualitative approaches respectively. The problem under investigation required both surveyed and qualitative findings on grounds that the buyer-supplier integration is a strategic aspect to be revised in all large manufacturing firms in Tanzania.

3.4 Sampling

The study population comprised of all large manufacturing firms in Tanzania and more specifically, 55 firms from Temeke were selected

using the census approach. Thereafter, 1 procurement and 1 stores manager from each firm was approached, informed about the study and consent to participate was obtained. Thus, a total of 110 respondents were recruited for the study. However, only 104 respondents returned their duly filled in questionnaires hence reducing the sample size to 104, which was still adequate considering the following: First, [33] recommend that a sample size of 30 and above is adequate for inferential statistical analysis. Previous studies on buyer-supplier integrations and procurement performance employed the following sample sizes; [14] used a sample of 65 respondents, [34] recruited 90, and [9] recruited 112 thus, the sample size was generally within the acceptable range in reference to previous studies. Procurement and store managers were selected because they are believed to have the most relevant information regarding how the existing buyer-supplier integrations of large manufacturing firms could deliver materials on time and in the right quantity. Moreover, procurement cycle positions and stores manager at a better position of experiencing the performance of buyer-supplier integrations because they interact with the suppliers through order placing and receiving materials from suppliers [1].

3.5 Data Collection Process

Data was collected using survey approach and semi-structured in-depth interviews as follows: The Questionnaire was used for survey purpose to conveniently obtain quantitative data from 104 procurement managers since the application of this tool saves time, financial resources and controls bias as observed by [35]. Prior to its application, the questionnaire was tested through piloting with 12 respondents as suggested by Kothari [35] who recommends that the minimum sample for a pilot study should be 10 respondents. Semi-structured in-depth interviews were used to gather qualitative information from procurement and store managers; the aim was to obtain in-depth understanding of the influence of communication in buyer-supplier on the procurement performance of large manufacturing firms in Tanzania. Collecting qualitative data from the same respondents who had previously provided quantitative information was harmless since consistence in data obtained through either tool would increase credibility of findings [32]. Saturation principle was used in data collection as supported by [36]. Also, since communication is exhibited by both parties in the buyer-supplier integration, supply chain managers of both manufacturing and supply firms acted as key informants, from whom data was obtained through semi-structured interviews.

3.6 Model Specification

Quantitative data were analyzed using Binary Logistic regression through SPSS, since the analysis is highly recommended where causal-effect integrations comprise of multiple categorical predictor variables with the binary outcome variable [37]. The Binary Logistic Regression was also used since the cause-effect integration in this study comprises of multiple independent categorical variables and one dependent variable with the binary response as statistically expressed below;

$$\text{logit}(\pi(x)) = \ln\left(\frac{\pi(x)}{1-\pi(x)}\right) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5$$

Whereby,

π = likely hood that materials are delivered late/delivered with creation of shortage.

β = constant (the value at which the fitted line crosses the y-axis)

x_1 = use of ESI in designing specifications

x_2 = electronic sharing of information

x_3 = communication direction

x_4 = frequency of buyer-supplier's meetings

$\beta_1 \dots \beta_5$ = Beta (slope; change in y for a 1 unit change in x). It measures the strength of predictors

NB: x variable was captured using the ordinal scale of 1-5, π captured with binary scale of 0 and 1

4. DATA ANALYSIS AND FINDINGS

Data that informed the current study was quantitatively and qualitatively analyzed. Qualitative data were analyzed using thematic analysis while quantitative data were analyzed using binary logistic regression using the SPSS. 104 questionnaires were dully filled and returned.

4.1 Diagnostic Tests

Diagnostic tests on the assumptions of the model are imperative (Field, 2013) hence, other tests were also conducted apart from those that checked the nature of the variables in the integration. The model fitted the data using Hosmer Leme Show Model of Goodness of Fit and its P values were 0.652 and 0.688. Since P values were both greater than 0.05. This shows that the model is not insignificant and hence appropriate for this study as suggested by [38]. Correlation was also checked using both inter item correlation matrix and Variance Inflation Factor. Inter-item correlation coefficients were both below 0.8 implying that

there is no multicollinearity as suggested by [39]. Variance Inflation Factors were all less than 10, implying that there is no multicollinearity as suggested by [40]. Normality tests were also conducted using data that was automatically converted into log odds. The skewness ranged from -0.408 to 0.285 and hence all were between -2 and +2 as supported by [40].

4.2 Major Findings

The P-value was computed to obtain the basis of interpretation used in hypothesis testing and the odd ratio (ExpB) was used in the identification of the contribution of the predictor variables on the outcome variables. Variables whose P values < 0.05 were rejected and those with P value > 0.05 accepted as suggested by [41]. The implications of communication in the buyer-supplier integration on procurement performance in terms of prompt material delivery and quantity of materials delivered were separately computed to check how they are adequately addressed.

4.2.1 Early Supplier Involvement Specifications process and the Procurement Performance

Both hypotheses were rejected because the P values were 0.047 and 0.034 respectively and hence less than 0.05. The odds ratio of 2.154 means that a unit increases on in the use of Early Supplier Involvement in the development specification in communication of buyer-supplier integration leads to the more likelihood of poor procurement performance of large manufacturing firms in Tanzania by 2.154 and 2.267 for delivery time and delivered quantity respectively. This implies that, among other reasons, poor supplier involvement in designing of specifications may contribute to poor procurement performance in Tanzania's large manufacturing firms. Supply chain managers from both sides of the buyer-supplier integration were also of the same opinion. These findings concur with those of [19] who conducted a similar study in developed countries and provides lessons to be learnt by developing countries.

4.2.2 Buyer-supplier Electronic Information Sharing and Procurement Performance

Both hypotheses were rejected because the P values were 0.038 and 0.043 respectively and, hence less than 0.05. The odds ratio of 1.549 and 1.417 means that a unit increase in the use of electronic sharing of information in the communication of buyer-supplier integration leads to the likelihood of poor procurement performance in large manufacturing firms of Tanzania by 1.549 and 1.417 for delivery time and delivered quantity respectively. This implies that among other reasons, poor electronic information sharing contributes to poor

procurement performance in large manufacturing firms in Tanzania. An analysis of findings from interviews reveals that most respondents are reluctant to use Enterprise Resource Planning, fearing that confidential information will be leaked, as supported by key informants. These findings are supported by [25] who studied the buyer-supplier integration in E-public procurement in Kenya. Since there is considerable variation between public, private sector procurement and nations, these findings put it clear that electronic sharing of information is imperative in varied disciplines.

4.2.3 Buyer-Supplier Communication Direction and Procurement Performance

Both hypotheses were failed to be rejected because P values were 0.051 and 0.134 respectively and, hence, they were all greater than 0.05. The odds ratio of 0.622 and 0.660 means that a unit increases in communication direction of the buyer-supplier integration reduces the likelihood of poor procurement performance in large manufacturing firms of Tanzania by 0.622 and 0.660 for delivery time and delivered quantity respectively. Therefore, it is implied that, among other factors, the communication direction of the buyer-supplier integration is of no harm to the current procurement performance of large manufacturing firms in Tanzania. Similar findings were qualitatively established findings and further found that mutual communication encourages the provision of the much-needed responsive feedback, as supported by supply chain managers, similarly supported by [14].

4.2.4 Buyer-Supplier Meetings and Procurement Performance

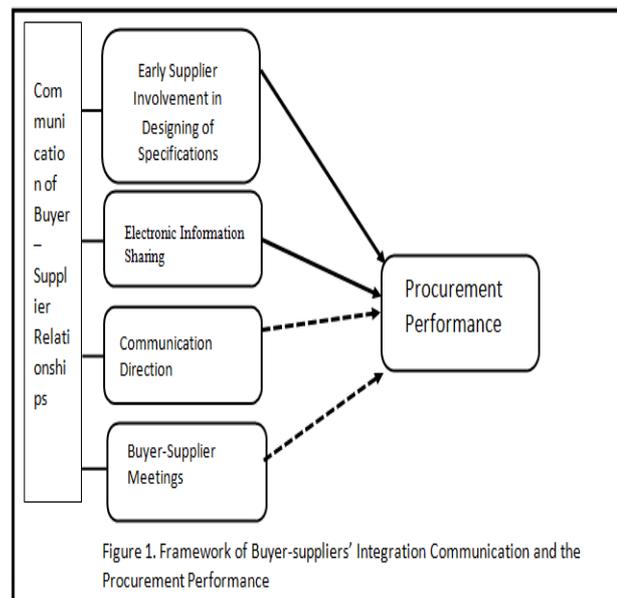
Both hypotheses were failed to be rejected because the P values were 0.051 and 0.134 respectively and hence all greater than 0.05. The odds ratio of 0.631 and 0.691 means that a unit increase in the frequency of buyer-supplier meetings in the buyer-supplier integration reduces the likelihood of poor procurement performance in large manufacturing firms of Tanzania by 0.631 and 0.691 for delivery time and delivered quantity respectively. This also implies that among other factors, the frequency of buyer-suppliers' meetings is of no harm to the procurement performance of large manufacturing firms in Tanzania. Qualitative findings support that frequent buyer-supplier meetings are no longer a challenge due to technological advancement that makes it possible to remotely hold meetings on applications like Skype and WhatsApp groups. [30] Also, found that the frequency of buyer-supplier meetings had negligible contribution to performance.

Lastly, worth noting is that the implication of the same independent variables on delivery time and delivered quantity was more or less equal despite of the differing outcome variables. This is perhaps because shortage of materials will automatically occur once they are not promptly delivered.

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The framework in **FIGURE 1**, developed as per study findings should be used to improve the procurement performance. Moreover, for the framework to be feasible, various variables should be managed differently. Communication variables pointing to procurement performance with straight lines signify poor practice and hence require strong emphasis. Moreover, communication variables pointing to procurement performance with dotted lines signify that good practice and hence require less emphasis. Elements of good communication practices should not be discarded from the developed framework because by so doing, the framework would be incomplete and hence another problem will be technically created



5.2 Recommendations

The developed framework should be adopted by large manufacturing firms in Tanzania and a favourable environment for the implementation of this framework should be created. This study unveiled the cause-effect relationship of communication in the buyer-supplier integration and procurement performance however, the mediating role of third-party logistics, which might affect the relationship, remains unknown. Also, the role of communication of buyer-supplier

relationship was not considered as role of tiers suppliers. Therefore, future studies should identify the role of tier suppliers in buyer-supplier communication and consequently the supply chain firms' performance.

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