Going the extra mile: vital third party logistics service providers’ pre-selection activities by pharmaceutical organizations

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Abstract. In this study, the investigation of the vital activities by pharmaceutical organizations in Nigeria before their final selection of third party logistics service providers (3PLSPs) was conducted. A sequential exploratory mixed method approach, with Delphi study preceding a quantitative survey was adopted. Data analysis of the Delphi panellists’ responses shows some of these activities in top ranking include: analysing present costs of function(s), adequate due diligence and visiting 3PLSPs’ locations. Exploratory factor analysis of the data extracted two main factors out of the activities named “Internal preparedness” and “Proactive and authentication initiatives”. Valuable contributions from the Delphi panel of experts and this entire study to knowledge, research methodology and policies have been made from the results of the study.

Keywords: Logistics outsourcing, 3PLSPs pre-selection, pharmaceutical logistics,

1. Introduction
The Council Supply Chain Management Professionals [1] defines logistics as “the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements”. The resources managed and by implication, the flows in logistics include the intangible items such as products and goods or the intangibles such as time and information. Based on the flows, logistics is divided into three, namely: inbound, outbound and reverse logistics. Not only is logistics important in the movement of goods and services from the point of origin to the final destination, it has become a veritable tool for economic growth and wealth creations for nations [2, 3] and source of competitive advantage by organizations [4, 5]. Even though logistics includes such internal operations as transport, warehousing, retail and wholesale distribution; it has been largely associated with third-party operations with the active involvement of third party logistics service providers (3PLSPs) [6].

2. Outsourcing and Third Party Logistics
Denicolai et al. [7] define outsourcing as “the procurement by a focal firm of goods and/or services from independent outside suppliers, when those goods and/or services had previously been provided internally within the firm”. Organizations around the world in the last two decades or so have increasingly turned to outsourcing – the externalisation of work activities traditionally performed in-
house; to enhance their competitiveness and improve business operations and performance. This trend is not surprising, given the purported benefits of outsourcing that have been touted in both academic and professional circles over the years [8]. The major factor that has led to increased outsourcing is the need to focus on core competencies. The ability to free up organizational resources and capabilities to concentrate on the organization’s core competency is one of the greatest determinants of whether outsourcing can be considered as strategic or not [9]. Firms therefore utilize the services of third party logistics service providers (3PLSPs) in a bid to reduce the administrative burden of managing these logistics activities, focus their efforts on top business priorities and achieve a much-needed efficiencies and competitiveness in their overall supply chains strategies.

3. 3PL service providers’ pre-selection.
The decision to outsource logistics to third party service providers (3PLSPs) is a strategic one which involves many processes and stages based on some pre-determined criteria. These criteria vary from industry to industry and from organizations to organizations. The performance of 3PLPs has a direct impact on the supply chain performance, future development and competitiveness of the outsourcing organization. Therefore, the importance of an effective 3PLSP selection mechanism cannot be overemphasized [10]. The selection of most suitable 3PLSPs transcends the traditional practice of prices’ comparison to include multiple factors of strategic importance. Various 3PLPs selection and evaluation criteria have been reported in several empirical studies. These selection and evaluation criteria have been utilized in different sectors and organizations [11, 12]. Beyond meeting the pre-determined criteria for selection, some organizations including those in the pharmaceutical industry where stringent regulatory and compliance standards are required, go the extra mile in conducting some activities aimed at justifying their decision to outsource, and verifying the claims of the potential 3PLPs before the final selection decision is made. These activities cut across both internal and external processes and include but not limited to: analysing present costs of function(s); adequate due diligence; visiting 3PLPs’ locations, developing service levels agreement (SLA); contract preparation; contract negotiation; corporate governance checks; developing critical proactive “Corrective And Preventive Action” (CAPA) plans; preparing an exit plans/provisions; verification of listed references; developing a back-up plan; engaging present clients of potential 3PLP; appointing a relationship manager and developing a transition plan. Studies have shown that outsourcing companies go through these rigorous activities and steps, painstakingly and sometimes spending about 6 to 12 months in the whole process, engaging/involving different cadres of people in the organization [13]. These activities are proactive in nature, designed to reduce and mitigate the risks associated with outsourcing before the final selection decision is made [14].

4. Research gaps.
In the last couple of decades, several studies have been conducted in various areas of logistics and supply chain management in general and third party logistics in particular. These common and evolving areas include reverse logistics, design of 3PL network, green supply chain management, lean logistics, sustainability performance measurement of logistics and supply network, 3PLSP selection for various industries, amongst others [11, 12, 15, 16]. Predictably, most of these studies have been conducted in developed economies. Few have been conducted in the developing economies like Nigeria or other sub-Saharan African countries. In 2017, a study by Karrapan et al [17] investigated the benchmarking criteria for evaluating 3PLSPs in South Africa. Furthermore, prior to the recent work of Laghrabl [18] and Gardas [19], there existed no studies on 3PLSP selection criteria in the pharmaceutical industries in developing countries. None exists for the pre-selection activities by outsourcing organizations in the pharmaceutical industry of developing economies. This study intends to fill the gaps identified above.

5. Research question
What are the vital activities engaged by pharmaceutical organizations prior to final selection of the third party logistics service providers in Nigeria?
6. Research Objective
To investigate the vital activities engaged by pharmaceutical organizations prior to the final selection of the third party logistics service providers in Nigeria.

7. Research Methodology
An exploratory sequential mixed methodology was adopted in this study [20], with a Delphi study (qualitative) conducted and followed by a quantitative survey. While the two methods were complementary, the Delphi study, conducted with a panel of industry experts, helped in the ranking of the latent variables/activities, while the quantitative survey was used to conduct the factor analysis.

7.1. Delphi Study
The Delphi study utilizing industry experts and strategic role players was included in the study to determine the ranking and by implication, the critical importance of the activity being investigated. The Delphi panel was composed of 17 expert members (10 Chief Executive Officers, 3 Country Managers and 3 Executive Directors) drawn from the five categories in the private sector of the industry: multinational manufacturing - 6 (35.3%), overseas’ manufacturers’ representatives – 2 (11.8%), indigenous manufacturers - 3 (17.6%), importers/distributors - 4 (23.5%) and large pharmacy chains – 2 (11.8%). They were all University graduates with 3 (17.6%), 12 (70.6%) and 2 (11.8%) holding Bachelor’s, Master’s and Ph.D degrees respectively. The average years of relevant industry experience of the expert panellist was 26 years.
A questionnaire consisting of one closed-ended question (what are the risks associated with outsourcing of outbound pharmaceutical value chains in Nigeria?) consisting of 15 sub-questions/latent variables identified from extant literature was used to conduct 2 rounds of the Delphi iterations before a consensus was achieved. Panellists responded to the questionnaire with an impact scale of 1 – 10 in ascending degree of influence and rating. Achievement of consensus was through the use of the mean and median values of the responses. The mean responses were further ranked (from 1 – 15) in order of importance of the activity. The results and discussions of the responses are given in section 9.

7.2. Quantitative survey
A questionnaire of one closed-ended question (as earlier illustrated under the Delphi study) containing the same 15 sub-questions/latent variables was administered to 133 respondents drawn from both sectors (private and public) of the pharmaceutical industry of Lagos State, South West Nigeria. All seven categories (multinational manufacturing, overseas’ manufacturers’ representatives, indigenous manufacturers, importers/distributors, large pharmacy chains, State and Local government pharmaceutical services) of the industry were sampled using a cross-sectional non-probability sampling technique. Responses were rated on a Likert scale of 1 – 5, according to the level of agreement and criticality of the measured variable. 103 questionnaires were returned, completed, out of which 100 were valid, representing 77% response rate. The results of the responses were analysed with the statistical software, Statistical Package for Social Sciences (SPSS) version 25 using descriptive, inferential and exploratory factor analysis (EFA) statistics.

8. Results
The results from the two methods employed in this study are given in Tables 2 to 5. Table 1 contains the dictionary of the latent variables/activities investigated and used in the questionnaires.
Table 1: Definition of Latent Variables/Activities

| Latent Variable/Activity                                      | Definition                                                                                                                                                                                                 |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analysing present costs of function(s)                       | Determination of the costs of supply chain functions by the organization prior to outsourcing                                                                                                                                                          |
| Adequate due diligence                                        | Comprehensive appraisal of the 3PL, especially to establish its assets and liabilities and evaluate its potentials, structure and capability to deliver advertised service(s)                                                                                     |
| Advertising a Request for proposal (RFP)                     | Putting out an advert to solicit for proposals, by the outsourcing company for interested 3PL organizations to submit their business proposals to provide supply chain services                                                                                  |
| Engaging present clients of potential 3PL partner             | Discussions with current customers of potential 3PL by the outsourcing organizations find out more about their capacity to provide advertised services                                                                                                                   |
| Verification of listed references                             | Confirmatory visits to/contacts with people/organizations listed by potential 3PL as references                                                                                                                                                         |
| Developing service levels agreement (SLA)                     | Developing an agreement to spell out reciprocal service levels, commitments and obligations between the outsourcing organization and the 3PL service provider                                                                                                             |
| Preparing an exit plans/provisions                            | Making a proactive, contingency plans to exit the outsourced relationship should it fail                                                                                                                                                                     |
| Developing a transition plan                                 | Developing a plan for seamless transfer of management of supply chain functions to a newly contracted 3PL service provider                                                                                                                                  |
| Developing a back-up plan                                    | Developing a fallback position to the management of outsourced supply chains function should the need arise                                                                                                                                               |
| Contract negotiation                                          | A take-and-give discussion of the various provisions and obligations of the contract with 3PL service provider                                                                                                                                               |
| Contract preparation                                          | Preparing the legal document to formalize the engagement of the potential 3PL service provider                                                                                                                                                                 |
| Visiting 3PLs’ locations                                     | Physical visits to operational locations of 3PL service providers to verify claims made in their submission of proposal                                                                                                                                     |
| Corporate governance checks                                  | Confirmatory investigation on the system of rules, practices and processes by which the 3PL is directed and controlled (corporate governance) as stated in their response to the RFP                                                                                   |
| Appointing a relationship manager                            | The appointment of a manager by the outsourcing organization to act as the point of contact (POC) between it and the potential 3PL service provider                                                                                                                   |
| Developing critical proactive Corrective And Preventive Action (CAPA) plans | A proactive process document for corrective and preventive action consisting of improvements to an organization's processes taken to eliminate causes of non-conformities or other undesirable situations that may arise in the outsourced relationship.                     |

Table 2 shows the mean & median item scores for the latent variables and their ranking by the Delphi panellists.
Table 2: Ranking by Delphi Panellists

| Activity                                      | Median | Mean  | Ranking |
|-----------------------------------------------|--------|-------|---------|
| Analysing present costs of function(s)        | 10     | 9.2   | 1       |
| Adequate due diligence                        | 10     | 9.2   | 2       |
| Visiting 3PLs’ locations                      | 10     | 9.0   | 3       |
| Developing service levels agreement           | 10     | 9.0   | 4       |
| Contract preparation                          | 9      | 9.0   | 5       |
| Contract negotiation                          | 9.5    | 8.8   | 6       |
| Corporate governance checks                   | 9      | 8.7   | 7       |
| Developing critical CAPA                      | 9      | 8.4   | 8       |
| Preparing an exit plans/provisions            | 8.5    | 7.9   | 9       |
| Verification of listed references             | 8.5    | 7.9   | 10      |
| Developing a back-up plan                     | 8      | 7.9   | 11      |
| Engaging clients of potential 3PLSP           | 8      | 7.6   | 12      |
| Appointing a relationship manager             | 8      | 7.6   | 13      |
| Developing a transition plan                  | 8      | 7.5   | 14      |
| Advertising a Request for proposal            | 7      | 6.2   | 15      |

Exploratory factor analysis was conducted, and prior to conducting the factor analysis, the suitability and adequacy of the data for the analysis was determined. The correlation matrix showed many coefficient values of more than 0.30, showing a strong correlation between the factors. The internal reliability of the scale and composite scores was adequate with the Cronbach's Alpha value of 0.95, above the recommended minimum value of 0.6, thus supporting the factorability of the data. The results for the factor analysis are presented in Tables 3 - 5.

Table 3: Total Variance Explained

| Initial Eigenvalues | Extraction Sums of Squared Loadings | Rotation Sums of Squared Loadings |
|---------------------|------------------------------------|---------------------------------|
| Factor              | Total % of Variance | Cumulative %       | Total % of Variance | Cumulative %       | Total % of Variance | Cumulative %       | Total                |
| 1                   | 8.738     | 67.217          | 67.217             | 8.738     | 67.217          | 67.217             | 5.28                |
| 2                   | 1.02      | 7.847           | 75.065             | 1.02      | 7.847           | 75.065             | 4.478               |
| 3                   | 0.756     | 5.817           | 80.881             | 0.756     | 5.817           | 80.881             |                     |
| 4                   | 0.511     | 3.928           | 84.809             | 0.511     | 3.928           | 84.809             |                     |
| 5                   | 0.471     | 3.621           | 88.43              | 0.471     | 3.621           | 88.43              |                     |
| 6                   | 0.356     | 2.74            | 91.169             | 0.356     | 2.74            | 91.169             |                     |
| 7                   | 0.301     | 2.317           | 93.486             | 0.301     | 2.317           | 93.486             |                     |
| 8                   | 0.244     | 1.875           | 95.362             | 0.244     | 1.875           | 95.362             |                     |
| 9                   | 0.183     | 1.41            | 96.772             | 0.183     | 1.41            | 96.772             |                     |
| 10                  | 0.142     | 1.09            | 97.862             | 0.142     | 1.09            | 97.862             |                     |
| 11                  | 0.104     | 0.797           | 98.659             | 0.104     | 0.797           | 98.659             |                     |
| 12                  | 0.096     | 0.741           | 99.4               | 0.096     | 0.741           | 99.4               |                     |
| 13                  | 0.078     | 0.6             | 100                | 0.078     | 0.6             | 100                |                     |

Extraction Method: Principal component analysis.

Exploratory factor analysis was conducted with principal axis factoring with oblimin rotation. As shown in Table 3, two (2) factors with eigenvalue of more than 1 were extracted. The two factors extracted accounted for 75.06% of the total variance explained. Factor 1 accounted for 67.2% while Factor 2 accounted for 7.8% of the total variance explained.
Table 4: Communalities of variable coefficients

| Latent variable/Activity                  | Initial | Extracted |
|------------------------------------------|---------|-----------|
| Analysing present costs of function(s)   | 1.000   | 0.728     |
| Adequate due diligence                   | 1.000   | 0.735     |
| Visiting 3PLs’ locations                 | 1.000   | 0.644     |
| Developing service levels agreement      | 1.000   | 0.782     |
| Contract preparation                     | 1.000   | 0.704     |
| Contract negotiation                     | 1.000   | 0.794     |
| Corporate governance checks              | 1.000   | 0.785     |
| Developing critical CAPA                 | 1.000   | 0.709     |
| Preparing an exit plans/provisions       | 1.000   | 0.639     |
| Verification of listed references        | 1.000   | 0.816     |
| Developing a back-up plan                | 1.000   | 0.889     |
| Engaging clients of potential 3PLSP      | 1.000   | 0.723     |
| Appointing a relationship manager        | 1.000   | 0.811     |
| Developing a transition plan             | 1.000   | 0.728     |
| Advertising a Request for proposal       | 1.000   | 0.735     |

Table 4 shows the communalities of the component variables showing high coefficients after the extraction process. Furthermore, after the rotation of the component variables, two variables (developing a transition plan and engaging the clients of potential 3PLSP) were dropped on account of inter-factor cross loading, leaving behind the remaining 13 variables grouped in 7 and 6 respectively in the two factors extracted.

Table 5: Rotated Component Matrix

| Latent Variable/Activity                  | Component 1 | Component 2 |
|------------------------------------------|-------------|-------------|
| Analysing present costs of function(s)   | 0.812       |             |
| Adequate due diligence                   | 0.804       |             |
| Verification of listed references        | 0.793       |             |
| Developing a back-up plan                | 0.770       |             |
| Developing a transition plan             | 0.759       |             |
| Preparing an exit plans/provisions       | 0.736       |             |
| Advertising a Request for proposal       | 0.688       |             |
| Developing service levels agreement      |             | 0.507       |
| Corporate governance checks              |             | 0.888       |
| Visiting 3PLs’ locations                 |             | 0.821       |
| Developing critical CAPA plans           |             | 0.816       |
| Appointing a relationship manager        |             | 0.771       |
| Contract preparation                     |             | 0.664       |

The rotated component matrix in Table 5 shows the extracted factors and components. From the relationships between these variables listed above, Factor 1 was termed “Internal preparedness”, while Factor 2 was named “Proactive & authentication initiatives.”

9. Discussions

9.1: Factor 1 - Internal preparedness
Preparedness refers to a state of being ready. In this first factor, the critical internal activities and processes that assist the outsourcing organization’s readiness for the strategic transition to the outsourced relationship are discussed. The component variables as listed earlier address various aspects of the outsourcing project. Fundamental to this factor and phase is the situational assessment of the organization, involving the comprehensive analysis of its current logistics functions to determine level of performance and the associated costs for internal management. Greaver [21] considers this important step as exploring strategic implications of the outsourcing decision. It will be helpful and serve as a veritable tool in the tenure of the relationship and for evaluation of the deliverables of the contract. The process also involves the benchmarking of the functions and comparative analysis of various dimensions of the functions with external alternatives [22, 23]. The next activity in the internal preparedness factor is the “request for proposal” (RFP). In this study, this step/activity was ranked low. This is probably because of the form in which the activity was captured in the questionnaire – “advert for RFP”. In Nigeria, except for some multinational and Foreign Donor organizations, not many organizations spend to advert for RFP. Instead, the outsourcing organizations use various means like professional groups, technical networks & associations, references, 3PL service providers’ websites and direct contacts to send out their RFPs. Howbeit, this is an activity that all the organizations conduct prior to the selection of their preferred service providers.

Other activities listed in this factor address additional areas of internal situational assessment and checks (adequate due diligence & verification of listed references), effective and seamless migration to the new business architecture (developing a transition plan) and advanced measures to guarantee against future gaps in the relationship and to provide a business continuity plan in the event of a failure (developing a back-up plan & preparing an exit plans/provisions). Perunovic et al. [24] provide a framework for the outsourcing process where they refer to the pre-selection stage as “preparation”. In their framework, the preparation stage sums the activities in five strategic questions they named as: whether? What? Where? When? & How? with each question addressing the critical activity at this stage of the outsourcing process. Furthermore, Perunovic and Perderson [25] list the key activities at the preparation stage to include screening of potential vendors, the outsourced process configuration, drafting of service level agreement (SLA) and the determination of the preferred length of the outsourcing contract. Strategic transitions like the outsourcing transition is a critical one which needs to be properly managed, hence an activity like “developing a transition plan” is embedded in the pre-selection stage to ensure a seamless, non-disruptive migration to the new business model of the organization.

9.2: Factor 2 - Proactive & authentication initiatives
This second factor containing other pre-selection activities by the outsourcing organizations are various proactive steps taken to: ensure potential sources of failures are identified and a template for their remediation developed (developing critical proactive Corrective & Preventive Action (CAPA) plans) and have a cordial and mutually beneficial relationship (appointing a relationship manager). Furthermore, this factor helps in the verification of claims by the 3PLSP in responding to the RFP (visiting 3PLs’ locations); confirm the firm’s modus operandi, management, ownership structure and business continuity (corporate governance checks) and finally, to prepare the outsourcing contract, with adequate provisions and clauses to accommodate various aspects of the future relationship; spell out obligations of both parties (developing SLA & contract preparation). The preparation phase and the pre-selection activities help to design the future of the outsourcing relationship [25] and to ensure that one of the strategic goals of outsourcing decision to be competitive in the short (present) and long term (future) are achieved [23]. In a country like Nigeria with huge population and vast geography, visiting the 3PL locations is critical to confirming the capacity of the 3PLSP to offer an advantage in the areas of lead-time reduction and reduced transportation costs that are distance-related [23]. As the complexity of the pharmaceutical logistics and supply chains grows, it is vital for these outsourcing organizations to authenticate the resources at the disposal of their potential service providers not only to achieve execution of routine services, but also to design optimal and innovative solutions to the benefit of their
customers [26, 27]. These solutions according to Zhang et al. [28] go beyond the traditional, tactical performance of efficiency and costs reduction, to include capabilities to responding to the ever-changing dynamism in the operating environment. The outsourcing contract is very critical in guiding the principles of the relationship and hence should reflect such components as the type, pricing, reward/penalty clauses and vital performance indicators and measures [29]. These terms and provisions are included in the contract to avoid future contractual disputes and relationship failures. Even though many criteria and pre-selection activities are in use and have been considered by the outsourcing organizations, over time, and especially in the last decade, more attention has been focused on issues of performance pedigree, financial structure and control systems of the 3PLSPs, thus providing a more robust framework for their assessment, prior to final selection and engagement by the outsourcing organizations [30].

10. Conclusion and recommendation
Beyond meeting the pre-determined criteria for selection, some organizations, including those in the pharmaceutical industry where stringent regulatory and compliance standards are required, go the extra mile in conducting some activities aimed at justifying their decision to outsource and verifying the claims of the potential 3PLPs before the final selection decision is made. In this study, the most critical activities as ranked by the expert Delphi panellists with minimum mean and median values of at least 9 out of the 10-point scale are: analysing present costs of function(s), adequate due diligence, visiting 3PLSPs’ locations, developing service levels agreement and contract preparation. The results of the quantitative survey and EFA confirm that adequate internal preparedness and authentication initiatives are critical in the final processes leading to the selection of 3PLSPs in the pharmaceutical industry. This is very important in countries like Nigeria and other resource-limited countries with limited capacities in the third party logistics sector. Finally, it is recommended that pharmaceutical organizations in resource-limited countries like Nigeria and other developing countries take extra steps in conducting the preparatory and pro-active activities considered in this study to ensure that the goals and gains from their logistics outsourcing decisions are realized.

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