

## Co-Creation and Delivery Performance in Oil and Gas Firms in Port Harcourt

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**Annotation:** The study examines the association between co-creation and delivery performance of oil and gas firms in Port Harcourt. The aim of this study is to examine the relationship between co-creation and delivery performance of oil and gas firms in Port Harcourt. The study adopted quasi-experimental research design method. Two hundred and thirty-seven (237) copies of questionnaires were distributed; two hundred and two (202) copies were fit for analysis. Multiple regression Statistical tool was adopted with the aid of Statistical Package for Social Sciences (SPSS version 21). The findings of the study showed that co-creation significantly relates with delivery performance. Based on the findings, the study recommended that managers of oil and gas firms should collaborate with customer to co-create for the betterment of the organization.

### 1.0 Introduction

Nigerian oil and gas industry has remain a donor to national growth and development since the 1960s as it provides over 95% of the country's total export income and 80% of her total national income (Ihua, et al., 2009). Operations in the oil and gas sector are subdivided into the upstream and downstream oil firms with three main business arrangements functional in the industry, vis-à-vis: Joint Ventures (JV) i.e. Joint Operating Agreements (JOA) between the Federal government and multinational operators such as Shell, Agip, and Chevron (Ihua et al., 2009). In addition, Obasi (2003) noted that the federal government of Nigeria played a critical role in the upstream division of oil and gas activities in cooperation with the Nigerian National Petroleum Corporation (NNPC). In furtherance to this, the oil and gas sector in Nigeria is majorly operated around the Niger Delta States region of which residents suffer great loss despite the profits gained from oil and gas business. This has caused an upsurge in the violence and quarrels between host communities and oil firms and has affected oil and gas delivery performance (Effiong, 2010).

Co-creation has become a widely used term to describe a shift in thinking from the organization as a definer of value to a more participative process where people and organizations together generate and develop meaning. Prahalad & Ramaswamy (2004) viewed co-creation as a term used to describe an emerging range of business practices in which customers work with firms to add value through collaboration and participation with other chain members and with customers in the specification, design, manufacturing, and support of product and services. It is associated with the opportunity to gain competitive advantage by developing unique competence, together with the appropriate firms' resources and technological capabilities gearing at better satisfying customers demand and it occurs whenever customers actively interact with organizations to shape their experiences and value perception which is realized and assessed in the social process of simultaneous production and consumption.

The customers' roles are various, e.g. a customer as the innovator - his or her ideas and knowledge contribute to new service; a customer as the source of competence, customers define an important

value for themselves and co-create it (Prahalad & Ramaswamy, 2004); a customer as the co-producer contributing to development of the service specification, quality control and marketing; a customer as the promoter of service provider who becomes a part of a customer-driven community by advocacy and WOM; a customer as the partial employee who performs tasks in service production (Vargo & Lusch, 2008). Co-creation refers to the practices a company uses to collaborate with its stakeholders during the design, development and deployment of its products and services (Kirah, 2009).

In the oil and gas rich country like Nigeria, delivery performance has been an issue as we have witnessed several scarcities of oil and gas in some part of the country. The activities of oil and gas establishment over the years in oil-rich countries like Nigeria especially in Rivers State has caused more harm than good as host communities suffer negligence and have led to violence between firms and stakeholders. It has been recorded that oil and gas firms are faced with the challenge of managing their delivery performance, in a time with high-level of uncertainty, resulting from increasing road block by host community youths and competition. This has suggested co-creation initiatives to be implemented in meeting the on-time delivery, delivery reliability and delivery speed demands. However, oil and gas firms must co-create with customers and other stakeholders like suppliers to find a way delivery efficiency could be attained. Late delivery, ineffective and slow response to order requirements for delivery and demands, delay response to customer requirements the need for sustainable practices and inability to utilize alternative routes in situations of traffic congestions in oil and gas sector still a commanding issues around the country.

The availability of these problems presents the oil and gas firms with the challenge to progress and improve in order to meet the needs of customers and the rapidly changing world of business. However, it is important that these problems be investigated through empirical research in order to develop a better understanding of the developments taking place within the industry, especially within the customer co-creation context. In the light of this, the researcher envisaged the possibility of a relationship between co-creation and delivery performance in oil and gas firms in Port Harcourt. The study aimed at examining the relationship between co-creation and delivery performance in oil and gas firms in Port Harcourt through customer participation and customer citizenship behaviour.

## 2.0 Review of Related Literature

### 2.1 Theoretical Framework

The theory underpinned this study is social exchange theory. Social exchange theory holds that people who put more effort into an activity – such as co-creating customers – are motivated by the expected returns (Blau, 2004). The literature on customer motives to co-create value confirms that customers expect different benefits in return for co-creation. Namibian & Baron (2009) argue that customers who co-create should expect (1) hedonic benefits (*i.e.*, pleasurable experiences); (2) cognitive benefits (*i.e.*, knowledge about products, services, and technologies); (3) social benefits (*i.e.*, relational ties among participants); and (4) personal benefits (*i.e.*, status and self-efficacy). Based on this review, Fuller (2010) confirms that customers expect (1) intrinsic playful tasks (*cf.* hedonic benefits), (2) opportunities to keep up with new ideas and develop skills (*cf.* cognitive benefits), (3) opportunities to connect with like-minded people (*cf.* social benefits), and/or (4) self-efficacy and recognition (*cf.* personal benefits). This review, however, adds the importance of (5) pragmatic benefits in the form of solutions better meeting personal needs; and (6) economic benefits in the form of monetary rewards.

Remarkable is that the aforementioned expected co-creation benefits were identified in not only research on co-creation in oil and gas sector but also research on co-creation in general (Etgar, 2008; Hoyer et al., 2010). This research grouped the expected co-creation benefits into broader categories. Etgar (2008), for instance, identified three broad categories of expected co-creation benefits. The first category refers to economic benefits, including reduction of risks associated with receiving inappropriate products or services (pragmatic benefits) and a compensation in line with the effort made (economic benefits). The second category refers to social benefits, including both opportunities for social contact (social benefits) and better status and social esteem (personal benefits). The third category refers to psychological benefits, which include enjoyment, fun, and excitement (hedonic benefits) and learning and mastering new skills and techniques (cognitive benefits). Therefore, we conclude that the expected co-creation benefits are: *hedonic benefits*: having pleasurable experiences, *cognitive benefits*: acquiring new knowledge/skills, *social benefits*: being able to connect with other people, *personal benefits*: gaining a better status and recognition, *pragmatic benefits*: solutions better meeting personal needs, *economic benefits*: compensation in line with effort made.

## 2.2 Concept of Co-Creation

The very literal meaning of co-creation is: together (co-) make or produce something (new) to exist (creation). Co-creation finds its origin in co-production where consumer participation was integrated in the supply chain to improve delivery performance (Author's Observation, 2021). At first, it was introduced to achieve cost minimization but in 1990 John Czepiel introduced the idea that co-creation may also lead to greater customer satisfaction. Song & Adams (1993) noticed that co-creation could also be an opportunity to differentiate. At the turn of the century, Prahalad & Ramaswamy (2004) presented the idea that customers are taking active roles and that their relationships with firms are shifting. Prahalad & Ramaswamy continued along this route and in 2004 they published a paper in which they used the term *value co-creation*. They described co-creation of value as an initiative of the customer that is dissatisfied with the available choices and therefore takes action. Jaworski & Kohli (2006) somewhat followed the assumption that the customer is looking for a dialogue with the firm and proposed guidelines to "co-create the voice of the customer". Now, economies in the West are transforming towards a service dominant logic and consumers no longer buy either goods or services, but products that provide a service and the value depends on the customer experience.

Vargo & Lush (2008) argue that in a service dominant logic (opposed to a goods dominant logic) the customer is always a co-creator. Co-creation in social marketing is, according to Kotler & Lee (2008), "a process that applies marketing principles and techniques to create, communicate, and deliver value in order to influence target audience behaviours that benefit society as well as the target audience". Thus, participants are engaged in joint analysis, development of strategy and structured learning to achieve behavioural change. Participants in co-created projects are assumed to partake deliberately in exchange instead of being "passive consumers of messages and programs" (Lefebvre, 2009). In simple terms, the social marketer is theorised as co-creating value in the form of dialogue, interaction, communication and collaboration with the target audience, in order to enhance the output value of favourable and desirable behaviours that the public are willing to adopt (Silvia et al., 2013).

Some studies argue that it is the creation of value in a more interactive process in which customers and firms work together to generate new products and services (Ind & Coates, 2013; Skiba & Herstatt, 2009). The nature of co-creation relies on the approach we take toward it; if the customer is invited to participate in the co-creation process, it is the firm that creates value for customer

(Zwass, 2010). Co-creation is defined as developing new products and services in a quicker and more relevant and innovative way than traditional processes which it brings about an opportunity for continued interaction between the firm and customers and the firm is willing to work with external stakeholders (Wandahl et al., 2011).

### 2.2.1 Customer Participation Behaviour

A key challenge facing firms is encouraging customer participation in the process of creating value because that requires the customer to expend their own energies to help co-create. Despite this, firms are highly motivated to encourage customer participation as it is considered an important tool to help improve their productivity - reflected by both service practitioners and researchers accepting and recognising the active role of customers as resource integrators in value co-creation (Arnould, 2008; Vargo & Lusch, 2008). Customer participation is conceptualized as the degree to which customers are involved in the production and delivery of the service by providing information, sharing information, making suggestions and other resources (Chan et al., 2010). However, customers' willingness to contribute to value co-creation seems less favourable for the firms in relation to what they hope to achieve by actively engaging the customer in the process (Chan et al., 2010). One reason may be an inadequate type of participation requirement from the customer for any given service context and since this may impact desired service outcomes, the aspect of the co-creation process needs a much richer understanding.

Customer participation behaviour is the process by which customers take part in the encounter by providing information and knowledge, labour and task performance, and behaviours (Mustak et al., 2016). From the perspective of the service-dominant logic, customers contribute towards co-producing a service by participating proactively during the encounter (Chan et al., 2010). The term "customer participation behaviour" has been widely used over a long period in marketing and related disciplines (Mustak et al., 2016). Customer participation behaviour captures the crux of customers' involvement in developing goods or services, the extent of such participation can be active (self-check-in at the airport) or passive (being present for the haircut) - which also includes situations without the complete involvement of the customer. Co-production results when the customer collaborates with the firms to produce service, making collaboration and production the two important elements (Vargo & Lusch, 2008).

### 2.2.2 Customer Citizenship Behaviour

More than two decades have passed since Ford (1995) and Bettencourt (1997) introduced the concept of customer citizenship behavior, which is based on the organizational citizenship behavior theory positing that effective organizational functioning requires employees to be willing to perform a variety of spontaneous behaviours not specified in their job descriptions (Ford, 1995). Ford (1995) argues that like employees, customers engage in a variety of citizenship behaviours such as reporting problems to employees, recommending a place of business to friends, or displaying a bumper sticker advertising their support for an organization. Moreover, Bove et al. (2009) note that similar to organizational citizenship behavior, customers positively affect the performance of employees, the organization, and other customers, and help create a desirable setting for the parties in a service encounter.

Customer citizenship behavior is the whole of the extra-role behaviours that customers perform without expecting any award, in a way that will increase the quality of goods or services of firms (Groth, 2005). Customer citizenship behavior is constructive and beneficial behavior that positively affects customers and firms (Bove et al., 2009). For example; customers can share their positive experiences with other customers, send out the visuals of the goods they buy to other customers,

move their customers to where they have goods or services with their own vehicles, and encourage employees to correct various negativities by sharing them with a positive communication. All these behaviours have proved to be beneficial to firms to operate more effectively (Van Doorn et al., 2010).

Further, Johnson & Rapp (2010) propose slightly eight different dimensions (expanding behaviours, supporting behaviours, forgiving behaviours, increasing quantity, competitive information, responding to research, displaying brands, and increasing price). Yi & Gong (2013) argue that customer citizenship behaviour encompasses feedback, advocacy, helping, and tolerance dimensions. Customer citizenship behaviour dimensions: (1) making recommendations, (2) providing feedback to the organization, (3) helping other customers, (4) display of relationship affiliation, (5) participation in firm activities, (6) benevolent acts of service facilitation, and (7) flexibility.

### 2.3 Delivery performance

Delivery performance can be defined as the level up to which products and services supplied by an organization meet the customer expectation. It provides an indication of the potentiality of the supply chain in providing products and services to the customer. This metric is most important in supply chain management as it integrates (involves) the measurement of performance right from supplier end to the customer end (Madhusudhana et al., 2011). Fast, reliable delivery is a key consideration when a firm selects a supplier (Viswanadham, 2000). Superior delivery performance can motivate customers to buy repeatedly or even pay more (Rao et al., 2011). Firms have implemented various practices to enhance delivery performance.

Delivery performance includes two high-level dimensions, reliability and speed, which can be further broken down into four more-detailed dimensions: on-time delivery rate, early delivery inaccuracy, late delivery inaccuracy, and delivery speed. Each dimension may affect customers' operations differently. For example, fast delivery allows buying firms to speed up their operations, while on-time delivery enables them to plan and coordinate their manufacturing activities accurately. Manufacturers need to prioritize different dimensions of delivery performance because they often clash: "Short lead time and a high probability of on-time delivery are fundamentally in conflict with one another" (Hopp & Sturgis, 2000). However, related empirical studies typically only examine a single dimension or a composite measure of delivery performance (e.g., order timeliness, Vaidyanathan & Devaraj, 2008).

Delivery performance can be defined as the level up to which products and services supplied by an organization meet the customer expectation (Madhusudhana et al., 2011). It provides an indication of the potentiality of the supply chain in providing products and services to the customer. Delivery performance provides an indication of how successful the supply chain is at providing products and services to the customer. Moreover, the organization shall promote supplier monitoring of the performance of their manufacturing processes. The organization shall determine, collect and analyze appropriate data generated as a result of monitoring and managing from other relevant sources such as suppliers (ISO, 2002). Performance measurement describes the feedback or information on activities with respect to meeting customer expectations and strategic objectives (Lehtonen, 2001).

#### 2.3.1 Delivery Reliability

Reliability is defined as the ability to perform a promised service consistently and precisely (Andaleeb & Conway, 2006). Similarly, reliability is concerned with the delivery of the service in

an appropriate condition on time (Holloway and Beatty, 2003). Reliability is translated into the ability of the service provider to execute the service in a safe and efficient manner (Mileide et al., 2013). It depicts the consistent performance, free on compliance, in which the customer can trust. The service provider must deliver what was promised without the need for rework. Reliability refers to the ability to deliver expected standard at all time, how the organization handle customer services problem, performing right services for the first time, providing services within promised time and maintaining error free record (Iberahim et al., 2016). Yang & Fang (2004) stated that reliability consists of accurate order of fulfilment, accurate record, accurate quote, accurate billing, and accurate calculation of commissions which keep the service promising to the customer. It means that the service company delivers accurate and flawless service to customers' directly from the first time on and does that in the promised time. The overall structure of the businesses is determined by the characteristic of the core element together with the feature of each of the separate elements (Albayrak et al., 2010).

Blanchard, (2004) stated that one of the main parameters which describe the performance of a logistic system is its reliability. Reliability delivery can be referred as number of products delivered on confirmed delivery date divided by number of products ordered (Schonsleben, 2016). Johnson & Davis (1998), posit that metrics based on delivery windows capture the most important aspect of the delivery process, which is reliability. Reliability delivery is a crucial factor of successful finished products provided by logistics service providers.

### 2.3.2 Delivery Speed

Delivery speed is typically measured by fulfilment cycle time and its variants (Rao et al., 2014). Speedy delivery is an important way the operations function creates customer value (Sawhney & Piper, 2002). So & Song (1998) study of service sectors suggests that promising uniform fulfilment time can be used as a marketing strategy to attract customers. Li & Lee (1994) analytical model shows that even when competitors have an adequate processing rate, firms with faster processing and delivery still enjoy a price premium and a larger market share. Morash et al. (1996) show that delivery speed positively affects growth in return on investment (ROI), growth in ROS, and overall ROS. In the context of e-commerce, delivery speed is also critical. Griffis et al. (2012) demonstrate delivery time is associated with purchase satisfaction and the number of referrals for online retailers. In competing with retail chains with brick-and-mortar outlets, web-only vendors such as Amazon.com will face a major disadvantage if their delivery systems respond slowly (Vaidyanathan & Devaraj, 2008). These prior studies examining delivery speed do not adequately control for order size (larger orders may take longer) or customer purchase volume (firms may prioritize large orders), raising potential endogeneity concerns. Morash et al. (1998) find delivery speed is positively associated with growth in ROI, growth in ROS, and ROS.

A higher delivery speed (a shorter supply lead time) allows buyers to carry fewer safety stocks to achieve desired customer service levels, ultimately reducing inventory costs (Zipkin, 2000). In addition, faster supplier delivery helps improve buyers' cash flow because cash is tied up in inventory for less time (Handfield & Pannesi, 1992). Finally, when buyers encounter unexpected supply chain disruptions, fast delivery from suppliers allows them to restore normal operations and meet their own customer demands with minimal delays. Thus, we expect that speedy delivery helps suppliers to win more customer orders.

### 2.4 Co-Creation and Delivery Performance

Co-creation is defined as collaborative work between a consumer and a firm in an innovation process, whereby the consumer and firm engage in the activity of co-ideation, co-design, co-

development and co-creation of new products or services (Prahalad & Ramaswamy, 2004c; Russo-Spena & Mele, 2012). Co-creation is a form of marketing strategy that emphasizes the generation and on-going realization of mutual firm-customer value. Prahalad & Ramaswamy (2004) described co-creation in their view not only as a trend of jointly creating products, but also moving away from customers buying products and services as transactions, to those who buy products and service as part of an experience. Payne et al., (2008) suggest that the key to creating value is to co-produce offerings that mobilize your customer base. And if your company does not capture the intelligence to create more fulfilling experience by co-creating activities, your competitors will.

In part, co-creation is a specific form of user contribution whereby “active” as opposed to “passive” consumers participate with the firm and voluntarily contribute input (be that knowledge, informed opinions, experience or resources) into an innovation process, whose outcome is better and more market-focused innovation (Russo-Spena & Mele, 2012). The concept of value co-creation states value could be created through close interactions between enterprises and customers, but also between business partners (Monteiro et al., 2013). Nahi (2016) defines co-creation in the context of inclusive business as "an iterative interaction (broad and strong) that empowers communities in economic disadvantage and integrates their knowledge and capabilities with those of the private enterprise and other actors through a process of planning and execution of business models and ecosystems."

According to Chathotha et al. (2012) co-creation is a process in which high level of participation by and collaboration of customers with companies is required for customizing and innovating new products and services. It is the participation of customers in creating the main product which is accomplished through innovation and is tied closely to usage, value-in-use and the conception that “value can be determined only by the customer”. Roser et al. (2013) argued that all co-creation approaches have two common qualities: the widening of organizational boundaries and the involvement of co-creators. They concluded that firm performance usually use a pool of ideas and strategies and has its own unique approach in co-creation which is specific in its aim to increase the productivity of a firm’s performance.

#### **2.4.1 Customer Participation Behaviour and Delivery Performance**

Customer participation behaviour can be a double-edged sword (Chan et al., 2010), in general customer participation behaviour is perceived to be beneficial, bringing economic, relational, and psychological benefits to service employees and customers at the individual level (Chan et al., 2010), and improving productivity and effectiveness at the organisational level (Bendapudi & Leone, 2003). Customer participation behaviour is often defined as the extent to which customers provide or share information and get involved in service production, and these inputs result in meaningful and cooperative contributions to the service process (Chan et al., 2010). It includes two key dimensions: (1) customer cooperation facilitating the transaction, and (2) customer co-production demonstrating active engagement and extra effort (Auh et al., 2007). Customer cooperation refers to transaction-related participation, reflecting that customers as partial employees need to share basic information and fulfil their roles and responsibilities pertaining to the transaction, such as following directions from the employee (Bettencourt, 1997).

Typically, a mandatory customer input includes people (e.g., the customer’s presence at dental clinic), objects (e.g., clothes for tailoring), information (e.g., providing information for tax preparation), and preferences (e.g., choosing a flight for travel). Replaceable participation refers to those essential activities that could be potentially performed by customers as well as service providers meaning the presences of substitutes (in terms of performance) are available to the

customer when experiencing the service. The inputs required are similar to mandatory but there is a choice in the actor performing the task (e.g., grocery check-out done by an employee or self-checkout by customer) and this choice is largely at the discretion of the customer. In contrast, voluntary participation refers to activities that are either performed by the customers and/or the service providers but are not essential for the service delivery to occur, however, they do potentially help enhance the customer’s overall service experience. Customer participation in co-creation may also lead to enhanced value perceptions (France et al., 2018; Ind et al., 2019) and enhanced loyalty (Cossío-Silva et al., 2016) for the co-creator. Based on this backdrop, the following hypotheses were formulated:

**Ho<sub>1</sub>:** There is no significant relationship between customer participation behaviour and delivery reliability in oil and gas firms in Port Harcourt.

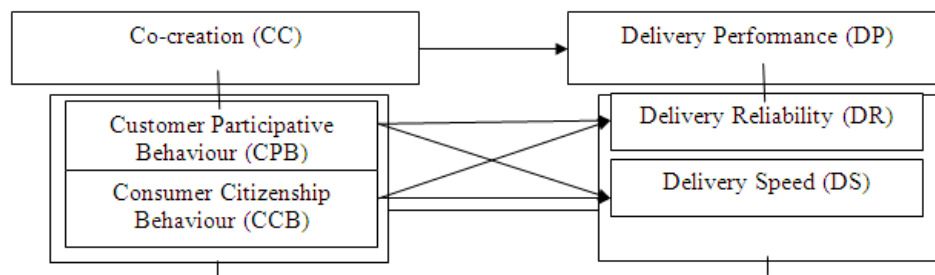
**Ho<sub>2</sub>:** There is no significant relationship between customer participation behaviour and delivery speed in oil and gas firms in Port Harcourt.

### 2.4.2 Consumer Citizenship Behaviour and Delivery Performance

Prior literature indicates customer citizenship behavior can be categorized (Bove et al., 2009). This review of the varied examples in the literature suggests that there are seven broad categories of customer citizenship behavior. First, positive WOM communication among customers is a behavior that indicates consumer attraction and loyalty to the firm and may enhance a firm’s image and elevate customers’ service quality expectations and evaluations (Groth, 2005). Guo et al. (2013) showed that customer citizenship behavior enhances customer satisfaction. Furthermore, Mandl & Hogleve (2019) find a positive relationship between customer citizenship behavior and customer loyalty such as repurchase behavior. Gong et al. (2016) identify the psychological mechanisms that account for both the positive and negative effects of customer citizenship behavior on customer outcomes such as customer value and customer well-being, showing that customer citizenship behavior enhances customer outcomes through customer self-determination but hinders customer outcomes by generating customer role stress. Yi et al. (2011) show that customer citizenship behavior is positively related to employee satisfaction, commitment, and performance, which lead in turn to employee loyalty. Furthermore, Shannahan et al. (2017) confirm that customer citizenship behavior is positively related to employee performance, which leads in turn to employee productivity. Based on this background, the following hypotheses are highlighted:

**Ho<sub>3</sub>:** There is no significant relationship between customer citizenship behaviour and delivery reliability in oil and gas firms in Port Harcourt.

**Ho<sub>4</sub>:** There is no significant relationship between customer citizenship behaviour and delivery speed in oil and gas firms in Port Harcourt.



**Fig. 1: Operational relationship between co-creation and delivery performance**

**Source:** Researchers operationalization, 2021



### 3.0 Methodology

Extant literatures have employed different methodological strands and scientific explanation in research. Yi & Gong (2012) conducted a study on customer value co-creation and used a survey research method; Reitz (2012) tested hypotheses through structural equation modelling. Ana (2015) tested hypotheses using Correlations analyses. Based on this review, this study employed quantitative methodological paradigm to explain scientific inquiries on co-creation and delivery performance. For this purpose, the paper adopted quasi-experimental research design often referred to as survey will be used. The population of this study comprises customers of ninety-nine (99) registered oil and gas firms in Port Harcourt, Rivers State (Rivers State Yellow Page Directory 2013-2014). The study employed Taro Yamen formula to select 79 Gas and Oil firms in Rivers State as the accessible sample size. Three (3) copies of questionnaire were issued to each of these selected oil and gas firms in Rivers State which was filled by the firms' regular customers. In total, two hundred and thirty-seven (237) copies of structured questionnaire were distributed, which were used for our analysis. Given the above fact, the method of sampling techniques adopted is convenience sampling. Question types included self-selection tick box, ranking and five-point Likert scales asking participants the extent to which they agreed or disagreed with a series of statements. Multiple regressions was used to test the relationship between mystery shopping dimensions and sales force performance improvement measures.

### 4.0 Results and Discussion

The study being predominantly quantitative, generated data using the structured questionnaire; a total of 237 copies of questionnaire were distributed to target oil and gas firms within a specified time-frame; copies were manually distributed through established contacts in the selected companies, thereafter retrieval was also accomplished through same contacts in the companies. Retrieval of distributed copies recorded a success of 202 copies, thus accounting for 85% of the total number intended for the study; thereafter, copies were examined and cleaned for errors, missing values and blank sections.

**Table 4.1 Age Distribution of Respondents.**

Age (years)	Number	Percentage
20-30 yrs	23	11
31-40 yrs	74	37
41-50 yrs	62	31
51 yrs and above	43	21
<b>Total</b>	<b>202</b>	<b>100</b>

**Source: Researcher's Field Survey, 2021**

This classification reveals a higher proportion and frequency percentage of the participants fall into the 31–50 years categories (67%) while the categories with the least frequency percentage falls into the 20-30 & 51 years and above (33%). The data reveals a greater proportion of the participants are in their middle ages, implying some level of usage growth and stability on patronage.

**Table 4.2 Marital Status of Respondents**

Details	Frequency	Percentage %
Single	35	17
Married	155	77
Divorced/ Separated	12	6
<b>Total</b>	<b>202</b>	<b>100</b>

**Source: Researcher's Field Survey, 2021**

Table 4.2 illustrates the majority of the respondents, being 77% (n=155) are married, while a further 17% (n=35) are single. Furthermore, 6% (n=12) are divorced/separated.

**Table 4.3: Highest Educational Qualification of Respondents**

Details	Frequency	Percentage %
O'Level	25	12
OND/NCE	27	13
Degree/HND	122	60
MSC/MBA	22	11
Ph.D/DBA	6	3
<b>Total</b>	<b>202</b>	<b>100</b>

Source: Researcher's Field Survey, 2021

Table 4.5 also indicates that 25(12%) of the respondents have obtained O'Level certificates (WAEC/NECO/GCE), twenty-seven (27) respondents representing (13%) were OND/NCE holders. One hundred and twenty-two (122) respondents representing (60%) were First Degree holders such as BSC/HND, twenty-two (22) respondents which represents (11%) have Master's Degree such as MSC/MBA. Six (6) respondents, which represent (3%) were Ph.D/DBA holders.

## 4.1 Regression Analysis

### 4.1.1 Model One

**Table 4.4: Regression Analysis showing the effect of Customer Participative Behaviour (CPB) and Consumer Citizenship Behaviour (CCB) on Delivery Reliability(DR).**

#### Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.968 <sup>a</sup>	.937	.935	23.18074	.449

a. Predictors: (Constant), Customer Participative Behaviour, Consumer Citizenship Behaviour

b. Dependent Variable: Delivery Reliability

Table 4.4 shows the significant relationship between customer participative behaviour, consumer citizenship behaviour and delivery reliability. The results indicated a regression relationship (R) of 0.968 while R<sup>2</sup> was 0.937. It reveals that the proportion of the variation in DR is explained by joint factors of 93.7%. The remaining 6.3% of the variance is explained by other factors not included in this paper. It further signified a positive and strong relationship between variables. The Durbin-Watson, 0.449, shows that there is no existence of serial multi-collinearity of the first order. The variables used were non-linearity.

**Table 4.5: ANOVA**

#### ANOVA<sup>a</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	69.440	2	34.737	15.535	.000 <sup>b</sup>
	Residual	2.781	200	2.236		
	Total	72.221	202			

a. Dependent Variable: Delivery Reliability

b. Predictors: (Constant), Customer Participative Behaviour, Consumer Citizenship Behaviour

Table 4.5 reveals the strength of variation on delivery performance variable at 0.000 significant levels. This shows that the relationship is significant. The ANOVA result on influence of values indicates a numerator for whose degrees of freedom (df) =2, denominator df =200. This is collaborated by the P value = 0.000 which is less than 5%. This implies that customer participative behaviour, consumer citizenship behaviour jointly have significant level of explanation of the relationship between co-creation and delivery performance.

**Table 4.6: Coefficients**

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.		
					B	Std. Error
1	(Constant)	3.377	2.046		4.161	.000
	Customer Participative Behaviour	.421	.362	.453	6.469	.000
	Consumer Citizenship Behaviour	.593	.460	.330	5.582	.000

a. Dependent Variable: Delivery Reliability

**Regression Model: Delivery Reliability = 3.377+(0.421CPB + 0.593CCB)**

Premised on the above coefficient table, a significant and positive relationship existed between the CPB, CCB and DR. It further showed that the variables have below 0.05 significance levels of 95%. Unstandardized coefficient beta for CPB was 0.421, which means that if CPB increases by a unit, DR increases by 0.421. Also for CCB was 0.593, which means that if CCB increases by a unit, DR increases by 0.593.

### 4.1.2 Model Two

**Table 4.7: Regression Analysis showing the effect of Customer Participative Behaviour (CPB) and Consumer Citizenship Behaviour(CCB) on Delivery Speed(DS).**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.849 <sup>a</sup>	.720	.714	3.21477	.771

a. Predictors: (Constant), Customer Participative Behaviour, Consumer Citizenship Behaviour

b. Dependent Variable: Delivery Speed

Table 4.7 shows the significant relationship between customer participative behaviour, consumer citizenship behaviour and delivery speed. The results indicated a regression relationship (R) of 0.849 while R<sup>2</sup> was 0.720. The model summary reveals that the proportion of the variation in DS is explained by the joint factors of 72.0%. The remaining 28.0% of the variance is explained by other

factors not included in this paper. It further signified a positive and strong relationship between variables. The Durbin-Watson, 0.771, shows that there is no existence of serial multi-collinearity of the first order. The variables used were non-linearity.

**Table 4.8: ANOVA**

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	77.096	2	88.908	15.511	.000 <sup>b</sup>
	Residual	22.574	200	5.732		
	Total	99.760	202			

a. Dependent Variable: Delivery Speed

b. Predictors: (Constant), Customer Participative Behaviour, Consumer Citizenship Behaviour

As evidenced in table 4.8, the Pv was  $0.000 < 0.05$ , which posited a significant association between CPB, CCB and DS. The F-ratio ( $F_{2, 202} = 15.511$ ) showed significant interaction existed in the model. The t-ratio showed significance influence of CPB and CCB on DS.

**Table 4.9: Coefficients**

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.506	1.245		2.834	.000
	Customer Participative Behaviour	.915	.847	.839	3.984	.000
	Consumer Citizenship Behaviour	1.555	1.046	.925	3.772	.000

a. Dependent Variable: Delivery Speed

**Regression Model: Delivery Speed = 2.506 + (0.915CPB + 1.555CCB)**

Premised on table 4.9, a significant and positive relationship existed between CPB, CCB and DS. It further showed that the variables have below 0.05 significance levels of 95%. Unstandardized coefficient beta for CPB was 0.915, which means that if CPB increases by a unit, DS increases by 0.915. Also for CCB was 1.555, which means that if CCB increases by a unit, DS increases by 1.555.

## 4.2 Discussion of the Results

### Customer participative behaviour and delivery reliability and delivery speed are positively and significantly related

The research hypotheses stating the relationship between customer participative behaviour and the measures of delivery performance sought to determine the relationship existing between that stated dimension and measures as it affects oil and gas firms in Port Harcourt. The result was analyzed and the null hypotheses were rejected as the interpretation reveals that CPB affect DR and DS. The hypotheses reveal that the relationship between the variables is positive and significant.

In support of this relationship, Zhuang (2010) study revealed a positive and significant relationship between information search and performance. The author suggested that, firms with more emphasis on the co-creation interactions may gain greater customization competence. Also, Yi & Gong (2012) study showed that customer participation behavior and exhibit different patterns of antecedents and consequences and as such found a positive correlation with firm's performance. Prahalad and Ramaswamy (2004) found out that for customers to be loyal, dialogue and access to information is very important and thereafter firms will gain competitive advantage.

### **Consumer citizenship behaviour and delivery reliability and delivery speed are positively and significantly related**

The research hypotheses stating the relationship between consumer citizenship behaviour and delivery performance measures sought to determine the relationship existing between that stated dimension and measures as it affects oil and gas firms in Port Harcourt. The result was analyzed and null hypotheses three and four were rejected as the interpretation reveals that CCB affect DR and DS. The hypotheses reveal that the relationship between the two variables is positive and significant.

In support of this relationship, Yi & Gong (2012) findings revealed that, customer citizenship behavior correlates with organizational performance. Vargo and Lusch (2004) study found out that firms can offer resources to the customers but value is only created once the customer uses the resources. Also individual receiving the benefits of the transaction will determine the value derived from it based on their current experience, previous experience and unique needs.

### **5.0 Marketing Implications**

The aim of this research was to determine the relationship between co-creation and delivery performance in oil and gas firms in Port Harcourt. Based on the responses given by customers of these firms on their understanding of the concepts, the summary of our conclusion is therefore presented that: oil and gas firms can improve delivery performances when they engage in the use of co-creation, because when customers realize how relevant they are to the firm, they tend to render excellent support to their preferred firms. Finally, from our findings and discussions, the study discovered that the value co-creation elements; customer participative behaviour, consumer citizenship behaviour positively affect delivery performance in oil and gas firms in Port Harcourt.

The study therefore recommends that, Managers of oil and gas firms should know that customers who are intensely involved with their offerings assign a greater importance to their purchase. In addition, Managers of oil and gas firms should be aware of how their customers obtain information about their product settings so as to manage the firms' external communications effectively. This finding can be valuable for managing firms' marketing communications by delivering the right amount of information to the right customer. Managers of oil and gas firms should be aligned to deliver an overall compelling customer experience through interactions with customers in order to properly understand their feels about their offerings. Oil and gas firms should consider customers as valuable resources, in terms of both their formal roles and voluntary behavior that support the business environment of oil and gas. Furthermore, they should recognize that customers conduct their voluntary behavior without thinking of getting a salary, bonus or any monetary or non-monetary incentives, but they volunteer to support their firms.

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