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ENTREPRENEURIAL INNOVATION AND THE QUALITY OF FAST FOODS FIRMS IN PORT
HARCOURT RIVERS STATE

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Abstract

This study took an empirical investigation of the relationship between entrepreneurial innovation and the quality of Fast Food firms in Port Harcourt, Rivers State. Entrepreneurial innovation experimented with product innovation and process innovation. Quality was used as a mono-dimensional construct for this research. Data was generated using structured questionnaire and were administered amongst 225 Fast Food workers in Port Harcourt. The hypothesis was tested using partial least square – structural equation modeling (PLS-SEM) through the SmartPLS computer software. The outcome showed both product and process innovation had significant relationships with quality. The implication here was that, the higher the level of innovation, the lower the cost of operation and better food quality. Additionally, on observation, it could be seen that, product innovation had greater effect on cost than process innovation. In conclusion, management should be more customers focused, by considering their needs and preferences, so as to develop tailor made products. It was recommended therefore, that the Fast Food restaurants should continuously innovate in relation to quality, as it will significantly impact their innovative and business performance. This will also improve brand recognition, productivity and value addition over competition.

Keywords: Entrepreneurial Innovation, Product Innovation, Process Innovation, Quality.

Introduction

In any adaptive system, single all-effective “causes” cannot exist (Smil 2017). Manufacturing a product with supposed excellent quality is very difficult task in product development project today. To achieve superior quality of good and services, cost and time must be present. However, there are difficult tasks in getting to the desired quality without encountering the limitations of technology, development time, product systems capabilities and the limit of financial access. In the light of this, perceived quality must be controlled during all stages of product development.

It has been argued that higher levels of competitiveness enhance a firm's capacity to respond to "customer needs, requirements and expectations more efficiently and effectively than commercial rivals do" (Karman, & Savanevičienė, 2020), through improved quality of products/services, low operational cost, faster response time, greater delivery flexibility and hard-to-copy managerial routines (Singh, Garg & Deshmukh, 2007; Joshi, Nepal, Singh-Rathore & Sharma, 2013; Ulengin, Onsel, Aktas, Kabak & Ozayd, 2014).

That being said, scholars (e.g., Kathuria, 2000; Fraj et al., 2015; Anning-Dorson, 2018) have approximated firm's competitiveness in terms of quality of products and services relative to competitor's offering, and cost superiority. This study focuses on quality as one of the variables where innovation can be determined in organizations.

The public who patronize your business expect a product or service to meet certain standards. Sylva (2020) submits that quality is "a measure of the extent of durability, reliability, functionality, superiority and overall excellence of a product or service which leads to favorable user experience". Quality practices have been touted as enablers of organizational competitiveness (Zhang, 2001; Đorđević et al., 2011; Liu, Lee & Hung, 2016). In quick service (fast food) restaurants, quality- expressed as food quality, service quality, interaction quality, environmental ambience, cleanliness, aesthetics, convenience, waiting time, price, and layout and design influence's patrons' behavioral intentions and outcomes (Ryu & Jang, 2007; Wall & Berry, 2007; Hwang & Lambert, 2009; Kim et al., 2009; Barber et al., 2011). In addition, literature suggests that quality is a predictor of a customer's dining experience, patrons' loyalty and restaurant success (Namkung & Jang, 2007; Ryu & Han, 2010).

Be that as it may, the Resource Based View (Barney, 1991) suggests that organizations achieve competitiveness - indexed in this study as quality and cost - when they strategically and optimally deploy bundles of resources and capabilities (Penrose, 1959; Rumelt, 1984; Wernerfelt, 1984). One of such idiosyncratic capabilities that enable organizations to concatenate bundles of competitive advantages is the ability to embark on sustainable innovation. It is by no coincidence that, for the past decades, innovation has continued to occupy a lofty position in strategic management research and the pantheon of scholarly discourse. It is a common notion that, due to the fierce competition among firms, innovation is no longer an option but a mandatory culturally embedded exercise. Innovation is an attribute of businesses (Schumpeter, 1934) that "involves the introduction of a new idea, process, technique, managerial practice, product or service; or the modification and improvement of these, geared towards optimizing the performance indices of an organization" (Sylva, 2020).

Product innovation is the introduction of new product/service into the market, or making significant changes in existing ones, to meet customers taste and preferences (Psomas et al., 2018). It is the implementation of creative ideas into new products or service offerings (Amabile & Pratt, 2016; Castillo-Vergara & García-Pérez-de-Lema, 2020), which leads to organizational renewal (Danneels, 2002), quality improvement, cost reduction, higher levels of firm growth, market expansion, profitability, efficiency and competitiveness (Danneels & Kleinschmidt, 2001; Leiponen & Helfat, 2010; Berends et al., 2014). Such innovation could be reflected in replacement of obsolete products (Meroño-Cerdán & López-Nicolás, 2017), packaging, size, and presentation (Leiponen & Helfat, 2010; García-Zamora, González-Benito & Muñoz-Gallego, 2013).

To show how critical product innovation is, Cho, Bonn, Han and Kang (2018) investigated the mediating effect of product innovation on the nexus between Partnership

(strength and diversity) and performance of independent restaurants in Florida, USA. Ofoegbu and Onuoha (2018) evaluated the empirical linkage between dynamic capabilities and competitiveness of fast food restaurants in Port Harcourt. Curiously, despite the ubiquity and compendia of studies on innovation and competitiveness (e.g. Rodríguez-Pose and Hardy, 2017; Bloodgood, 2019; Lafuente et al., 2019; Kruja, 2020), research on the empirical interface between these variables in the fast food sector remains under-researched and piecemeal from what we know.

The theorizing logic behind this current study is that, while entrepreneurial innovation may promote quality in fast food restaurants, such relationship will be amplified when the managers and owners of businesses increase their investment in training and development at the workforce. It is hoped that this study will provide a deeper understanding and do greater justice to the complexity and distinct flavor of entrepreneurial innovation and its possible correlates (in this case, quality) in a developing country context such as Nigeria.

The quick-service (fast food) restaurant industry is a major part of the hospitality industry (Adeola & Ezenwafor, 2016). People patronize fast food products because they can be consumed with ease anywhere and at any time. Furthermore, the rapid expansion of the industry in the country has attracted frenetic competition. While the fierce competition rages - coupled with new technologies, the introduction of new foods and recipes and the increasing demands of consumers - fast food restaurants in Nigeria are facing challenges of providing quality food/services at lower costs in an era of skyrocketing prices of factor inputs and prohibitive cost of doing business.

Specifically, complaints from patrons indicate that there is need for improvement in quality of food and services as most of the fast food firms grapple with slow pace of serving food, inconsistent quality of meals, narrow range of menus, poor attitude of staff towards customers and billing errors, amongst others.

Moreover, quick service restaurants have the challenge of minimizing or controlling the above mentioned costs in order to maximize profits and remain competitive (Bertagnoli, 2010). Overall, as competition in the quick service restaurant industry gets fierce - coupled with intense food inflation, unstable cost of raw materials, plus demand for lower prices by customers and higher wages by employees - managers are preoccupied with the problem of how to make reasonable profits in a sustainable and competitive manner through cost control measures.

This study intends to investigate the relationship between Entrepreneurial innovation and product /service quality of Fast Food Firms in Port Harcourt, Rivers State. Examine the relationship between product innovation and quality; in addition, assess the relationship between process innovation and quality.

The following hypotheses were developed:

H₀₁: There is no significant relationship between product innovation and Quality.

H₀₂: There is no significant relationship between process innovation and Quality.

Based on the above, this study is of the view that Entrepreneurial Innovation may be deployed to address the issues of quality in the Fast Food sector of Rivers State.

Literature Review

Entrepreneurial Innovation

Innovation is one of the key features of entrepreneurial behaviour (Yuen, & Ng, 2021). It is considered a dominant factor in a firm's competitiveness and the single most important factor in enhancing and sustaining competitiveness (Guan, Zhang, Zhao, Jia &

Guan, 2019). Innovation is a key practice underpinning the survival and competitiveness of firms in a competitive globalized environment (Hanif, & Asgher, 2018). Within the business context, innovation is considered the basis of strategic change through which firms can gain and sustain competitive advantage (Franco, 2020). According to Nelson (1993), innovation encompasses “the processes by which firms master and get into practice product designs and manufacturing processes that are new to them”. Such a broad understanding of innovation is particularly meaningful within the context of innovative entrepreneurship insofar as upgrading technology or improving skills may lead to more efficient use of scarce resources or higher-quality outputs, but not necessarily to new products or patents. Innovation opens new ground and opportunities in both local and international market by offering new products and ideas to both local and foreign markets (Ferreira, Fernandes, & Ratten, 2017).

Plessis (2007) defined innovation as a formation of new knowledge which helps the new business returns, which has purpose to make organization’s internal business process and structure more sophisticated and produce the market acceptable product and services. Although, there is no generally accepted definition of innovation, however, most professionals and scholars agree that, innovation is the introduction of a new method of production, creation or opening of new markets, and new products or services.

In today’s competitive world, old methods are not efficient anymore. Hence, the need for new and improved products and services. The requirement for surviving the stage of competition is using new methods and product innovation is one of these new techniques being considered globally (Calanton et al, 2002; Cooper and Kleinschmidt, 1993). A sound innovation management plan is not enough — it must translate into viable products and positive business results. To improve returns on product innovation investments, organizations need to effectively govern and measure their new product development processes from end to end, from strategic road mapping to idea development to innovation execution.

Product innovativeness has been of major interest to management scholars (Masaaki & Scott, 1995; Schmidta & Calantone, 1998), in that it is a critical antecedent to product success (Zirger, 1997; Sethi et al., 2001), which in turn is highly associated to sustainable business success (Henard & Szymanski, 2001).

Innovative products present great opportunities for businesses in terms of growth and expansion into new areas. Significant innovations allow companies to establish dominant position in the competitive marketplace, and afford new entrants an opportunity to gain a foothold in the market (Danneels & Kleinschmidt, 2001).

There is also a propensity in the literature to incorporate various other perspectives of innovation in product innovativeness. For example, Danneels and Kleinschmidt (2001) incorporated two perspectives of product innovation. (i) From the customers’ perspective, characteristics such, as innovation attributes, adoption risks, and levels of change in established behavioral patterns are regarded as forms of product newness; (ii) From the firm’s perspective, environmental familiarity and project-firm fit, and technological and marketing aspects are viewed as dimensions of product innovation.

Quality

Quality is one of the most important dimensions of a firm’s level of competitiveness. In fast food firm, quality is seen in terms of service and product (Hellstand, 2010). Hence, in this work, quality represents both service and product quality. Quality is a competitive

weapon in the marketplace. It engenders competitive advantage by providing products that meet or exceed customer needs and expectations (Lee & Zhou, 2000). Quality, as stated by (Kazan, Ozer, & Cetin, 2006), is defined using different perspectives, as it is a subjective goal that has indefinable characteristics. An early definition of quality is that of (Juran, 1974) as “fitness for use”. The definition of (Juran, 1974) employs the customer’s perspective in defining quality; it is the customer who decides what goods or services best satisfy his/her needs. A similar approach is taken by (Reeves & Bednar, 1994), who define quality as excellence, value, conformance to specifications and meeting or exceeding customers’ expectations. Therefore, it can be concluded that the customer perspective is central to any definition of quality. This conclusion leads a firm to view quality as a competitive weapon that should be adopted as a strategy with a major role in creating and sustaining its competitive advantage.

As a result of competitive pressure, quality service has emerged as a fundamental organizational strategy for survival (Wong & Sohal, 2002; Hellstand, 2010). Quality has therefore emerged as one concept that has aroused increased interest both in the business world and in the academia. This has become increasingly a phenomenon in the entrepreneurial sector, where the goods and services offered are strikingly the same, thereby making service quality the only differentiating factor (Hellstand, 2010). Quality itself is conformance to specification, which would mean that positive quality is achieved when a product/service specific quality meets or exceeds preset standards or promises (Ekinici & Sirakaya, 2004). Quality assessment is dependent on consumer needs and expectations, and it remains indispensable in the marketing of services.

Quality is a long-term commitment by the institutions providing services to satisfy the needs and desire of customers continuously; that responsibility falls on both the management of enterprise service and its employee. To achieve these needs and desire, it is important to achieve high level of quality in the multiplicity of economic benefits. The idea of the overall quality means excellence, clear standards and high performance, (Pride & Ferrell, 2006).

This project was buttressed by entrepreneurship theories such as General Theory of Entrepreneurship – Shane (2003), and Resource Based View (RBV) Theory – Barney (1991).

General Theory of Entrepreneurship – Shane (2003)

The general theory of entrepreneurship was developed by Shane (2003). The theory opine that entrepreneurship research typically has two aspects; first stream centers on the characteristics of entrepreneurs themselves, their abilities to recognize opportunities, their strategies and resource acquisitions as well as their organizing process (Shane, 2003). The second Stream centers on contextual factors external to the entrepreneurial business itself. These factors include industry characteristics and the environment in which entrepreneurs operate successfully (Erin, 2012). This study focuses on the individual determinants, with emphasis on emotional intelligence in the organizational and environmental contexts including the individual demographics.

Resource Based View (RBV) Theory – Barney (1991)

The Resource Based View (RBV) theory was developed by Barney (1991), and suggests that a firm can distinguish itself from its competitors and can create sustainable competitive advantage only if it possesses valuable, rare, and inimitable resources (Barney, 1991). Human capital is an intangible asset of firms that enables them to be more successful. The valuable skills, knowledge and abilities of an entrepreneur may lead to sustainable competitive advantage of firm because entrepreneurial competencies are

usually very rare and difficult for rivals to develop all essential competencies. Only the competent entrepreneurs may develop and lead successful strategies towards the success of businesses. For instance, the firm's RBV theory relates its value creation process to the manager's capability in finding or developing resources (Barney, 1991). In other words, in this approach, organizations are regarded as a collection of resources that are heterogeneously allocated in several industries and the thing that makes organizational performance different is the unique blend of the resources it possesses.

Empirical Review

Innovation is vital to business activities, because it sets the pace for growth and business success. It also provides a competitive advantage over rivals. Some studies showed here demonstrated the effect of product innovation and product quality on brand loyalty amongst others. A research was conducted on smart phone users living in the central district of Rise province in North East Turkey, where 432 questionnaires were administered on product innovation, product quality, brand awareness, brand loyalty and brand image. The result indicated that, there was a positive effect of product innovation on brand awareness, brand image and brand loyalty. These findings can be likened to the work of (Hamid et al 2012; Hanaysha and Hilman, 2015; Wang et al., 2017; Ming et al.,2011;Torres et al.2015;Hameed,2013) confirming that product innovation also had significant impact on brand loyalty, brand awareness, brand image.

Kiveu, Namusonge and Muathe (2019) also analyzed the effect of innovation on firm's competitiveness in manufacturing SMEs in Nairobi County, Kenya. Data was collected from a sample of 284 enterprises for the period 2012–2014. Multiple linear regressions was used to analyze the effect of innovation on competitiveness. The findings indicated that 97% of the manufacturing SMEs were innovating with majority implementing incremental innovations. It indicated that Process, marketing and organizational innovations had positive significant effect on competitiveness, while product innovation had positive non-significant effect. The study concluded that implementation of process; marketing and organizational innovations resulted in an increase in firm competitiveness. Manufacturing SMEs can therefore improve their competitiveness by implementing the different types of innovations. The combined effect of the four innovation types were higher than for each individual innovation type, hence firms are better off, implementing different types of innovations as compared to any one type of innovation.

Gunday, Ulusoy, Kilic, and Alpkan (2011) explored the effects of the organizational, process, product and marketing innovations on the different aspects of firm performance. This study reports on an innovativeness study in the Turkish manufacturing industry, drawing on a sample of 184 manufacturing firms. A theoretical framework was empirically tested identifying the relationships amid innovations and firm performance. The study showed organizational innovation, product innovation, and process innovation positively and significantly correlated with innovative performance ($r = 0.537$, $p < 0.01$; $r = 0.431$, $p < 0.018$; $r = 0.210$, $p < 0.206$). However, market innovation was not significantly correlated with innovative performance ($r = 0.344$, $p < 0.037$). The findings support the claim that innovation in relation to quality in manufacturing firms has positive and significant impacts on innovative performance.

Methodology

This study adopted a cross-sectional survey, found in quasi-experimental research analysis family. The study area of the research are the locations of all major fast – food

restaurants and only focused on their Port Harcourt, head offices in Rivers States. The population comprised 31 fast-foods registered with Port Harcourt Business Directory (<https://www.businesslist.com.ng/category/fast-food/city:port-harcourt>), and were found to have been in business for at least five years with not less than 10 employees. The study focused on managers, supervisors, customer service attendants, marketers and cashiers. For this study, the Krejcie and Morgan (1970) sampling size table was used to determine a sample size of two hundred of twenty five (225) from the target population of five hundred and forty nine (549) employees from thirty one (31) fast foods in Port Harcourt, Rivers State. There were two sources of data collection employed in this study, which are primary and secondary sources. Data for this study were collected through the use of a structured questionnaire that was administered to the respondents. Face and content validity was initially used to ascertain the level of validity of the instrument and construct validity was also used. The reliability of this study's instrument was confirmed through the use of the Cronbach Alpha values and factor loadings via SPSS version, 25 and SmartPLS 3.2.9. The techniques used to analyze the demographic characteristics of the respondents, were simple percentages and pie-charts plus the aid of Statistical Package for Social Sciences (SPSS) version 25. Secondly, this SPSS version 25 was again used to examine the univariate statistics (means, standard deviations, skewness and kurtosis) of each of the study variables. Thirdly, to test the multivariate analysis in order to determine the relationships between predictor variable (Product innovation) and the criterion variable (Quality), the Partial Least Square – Structural Equation Modelling (PLS-SEM) was used with the aid of the SmartPLS version 3.2.9 computer software.

Results and Discussion

Assessing the Validity and Reliability of the Instrument

This section dealt with the validity and reliability of the research instrument. The essence of this was to establish the validity and reliability of the instrument. It showcased the factor loadings, the Cronbach alpha values, composite reliability (CR), the average variance extracted (AVE), and the correlation matrix which established the discriminant validity of the constructs. Each of these analyses was aided by SmartPLS 3.2.9.

Evaluation of the Main Constructs

As previously stated, the constructs for this study were; entrepreneurial innovation which is the regressor variable, quality which is the regressand. Entrepreneurial innovation has two dimensions; product innovation and process innovation. Quality is a mono-dimensional construct. Thus in assessing the main construct of the study, CFA, composite reliability, AVE and square root of AVE were ascertained for every latent variable and their item scales. The crux of performing CFA was to derive the factor loadings of all the manifest variables, the composite reliabilities (CR) of the major construct; which is a better reliability report (Bagozzi & Yi, 2012), the convergent and discriminant validities of constructs by ascertaining their AVEs, and the model fit. This will enable the researcher to guarantee both the convergent and discriminant validity of the study instrument and as well plunge any item that do not meet the criteria (Campbell & Fiske, 1959, p. 82). Although different threshold marks have been set by different authors for suitability of the factor loadings (0.4 - Bagozzi, Yi & Philip, 1991; 0.6 - Nunnally & Bernstein, 1994; 0.7 - Nunnally, 1978; 0.8 - Cronbach, 1951), that of Bagozzi (2010) was adopted as the yardstick for determining the acceptability or otherwise of the item loadings in this study.

Thus any item with factor loadings below 0.4 was inapplicable for the study and was consequently rejected. Similarly, the researcher also considered the general rule for

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accepting reliability which according to Nunnally (1978) is a minimum benchmark of 0.6 for explanatory study and 0.7 for confirmatory study. However, this study is a confirmatory study since the instrument was adopted as stated earlier. Thus the threshold for accepting the composite reliability was 0.7. All of these rigorous analyses were performed to establish that the data generated for this study meet the basic condition for parametric analysis. The results were shown in figures 4.1 and tables 4.16:

Table 1: Assessment of the Regressor, Regressand

Constructs	Items	Mean	S.D	Factor Loadings	C.R	AVE	Sq Roots of AVEs
				>0.70	>0.70	>0.50	
Product Innovation	Our company is faster in bringing new product/service offerings into the market than any other	3.835	.4347	.834	.936	.649	.806
	New service/product introductions are meaningful to our customers	3.782	.4823	.812			
	Our company is always able to extend our range of product/services	3.619	.4342	.814			
	Our new product/service introductions make us the preferred in the market	3.338	.4213	.782			
	Our company is always able to differentiate our products/services from the competition	3.893	.4344	.789			
	My firm always introduces products/services that are new to the industry	3.113	.4821	.866			
	Our products and services are often perceived as novel by customers	3.445	.4342	.717			
	Our recent products and services are only of minor changes from our previous products and services (R)	3.893	.4344	.822			
Process Innovation	We are constantly improving our business process	3.5853	.7158	.823	.919	.740	.860
	Our company is able to change its service process at a great speed in comparison with our competitors	3.7097	.5557	.861			
	Our future investments in new service processes are significant compared with our annual turnover	3.5663	.7580	.873			
	We are able to adopt different service processes to meet customer needs	3.893	.4344	.882			
Quality	Food or service provided promptly and exactly as requested	3.5991	.6314	.986	.944	.682	.828
	Our work environment is clean, safe, comfortable, convenient and serene	3.7143	.6020	.712			
	Members of staff are warm, caring, friendly, neat, courteous, polite and always ready to attend to customers	3.6912	.5284	.704			
	We consistently serve attractive variety of food and provide services with minimal billing error	3.835	.4347	.888			
	We have a strong reputation for serving hygienic, balanced, and healthy food/ quality services	3.782	.4823	.711			
	We do not ensure quality packaging (R)	3.619	.4342	.884			
	Quality of our food and services meet regulatory requirements	3.7143	.6020	.781			
	We receive several customers'	3.6912	.5284	.894			

	complaints in respect of the quality of our food and services (R)						
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Source: SmartPLS 3.2.7 Output, 2021.

Table 1 shows the assessment of the predictor and criterion constructs which are entrepreneurial innovation and quality. The predictor construct was dimensioned by product innovation and process innovation; with product innovation measured by 8 statement items, while process innovation was measured with 4 statement items. Quality was measured with 8 statement items. From the table, it could be seen that the factor loadings for all the items exceeded the threshold of 0.6 (Bagozzi, Yi & Philip, 1991) with the minimum loading being .704. These values were all significant at $p < 0.000$; thus establishing the convergent validity of the constructs. The CR values for the constructs were .936 for product innovation, .919 for process innovation, .944 for quality, indicating high level of reliability. The AVE values which are .649, .740, and .682 respectively, were above the 0.50 benchmark (Bagozzi & Yi, 2012; Akter, Wamba & D' Ambra, 2019), Thus, indicating satisfactory results.

Table 2: Correlation Matrix of Study Constructs

Constructs	Mean	S.D	AVEs	Product Innovation	Process Innovation	Quality
Product Innovation	3.855	.3335	.649	.806		
Process Innovation	3.220	.5433	.740	.192	.860	
Quality	3.633	.3683	.682	.288	.480	.828

* The square root of the AVEs on the diagonal

Source: SmartPLS 3.2.7 Output, 2021.

Table 2 showed the correlation matrix of the constructs together with their AVEs, mean and standard deviation. This was done to confirm the discriminant validity of the constructs. The output showed that the square root of the AVEs on the diagonals of the correlation matrix were greater than the correlation values, which indicates that the constructs do not have similar items but are rather distinct from each other. This means that the items discriminated well; thus proving acceptable discriminant validity as well as eliminate the possibility of multicollinearity problems (Sekaran, & Bougie, 2010).

Tests of Hypotheses and Evaluation of Structural Path Significance

Having fulfilled the requirements of the measurement model, the structural model was examined. The structural model is where the actual test of hypothesis was conducted. Thus, in this section the correlation between entrepreneurial innovation and quality was undertaken. Entrepreneurial innovation was measured with product innovation and process innovation. Next, quality is measured as a mono-dimensional construct.

At this stage, hypotheses were tested to agree or repudiate the underlying reasoning. Hypotheses were tested by examining the significance of the path coefficients (β) and the coefficients of determination (R^2 or predictive accuracy) were identified. Then, the predictive relevance of structural model (Q^2) was assessed as an alternative to goodness-of-fit, using a nonparametric approach called Stone-Geisser test (Stone, 1974; Geisser, 1975). This test uses a blindfolding procedure (e.g., Hair et al. 2011) to create estimates of residual

variances. Positive Q^2 values confirm the model's predictive relevance in respect of a chosen construct (Fornell & Cha, 1994; Hair et al., 2011).

The last part of structural analysis (for main effect) was the evaluation of the effect size of each path in the model by means of Cohen's f^2 (Cohen, 1988). The effect size measures if an independent latent variable has ample impact on a dependent latent variable. It is the increase in R^2 of the LV to which the path is connected, relative to the LV's proportion of unexplained variance (Chin, 1998). Values for f^2 between 0.020 and 0.150, between 0.150 and 0.350, and exceeding .350 indicate that an exogenous LV has a small, medium, or large effect, respectively, on an endogenous LV (Cohen, 1988).

The conditions to either accept or reject the stated hypotheses, for path coefficients (β values), values from .10 to 0.29, .30 to .49 and .50 to 1.0 are considered as weak, moderate and strong correlations, respectively (Cohen, 1988). Then, for a two tailed test, t values greater than 1.96 are significant, while t values less than 1.96 are non-significant (Hair et al., 2011).

The hypotheses were tested in figure 1. The results of the analyses were reflected in path relationships, path coefficients, standard errors and t-statistics.

H₀₁: There is no significant relationship between product innovation and quality.

H₀₂: There is no significant relationship between process innovation and quality.

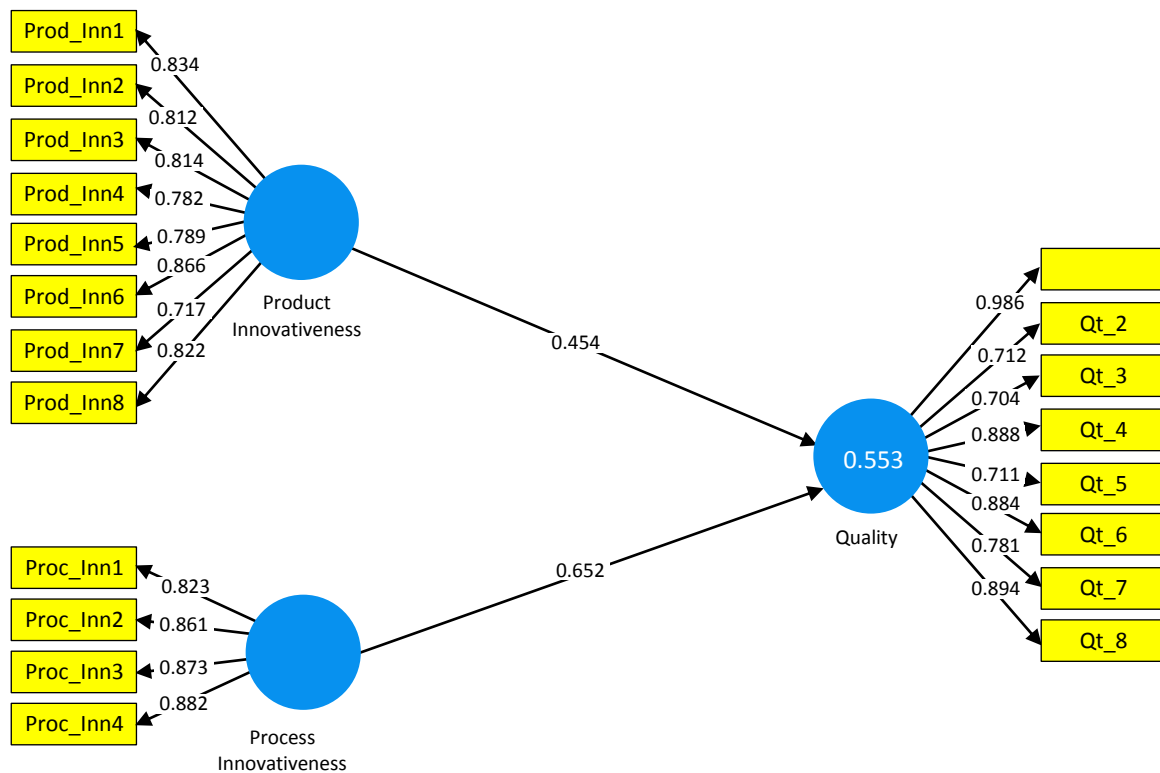


Figure 1: Test of Hypotheses One and Two

Source: SmartPLS 3.2.9 Output, 2021.

Table 3: Results of Hypotheses Testing (H₀₁ – H₀₂)

Hypotheses	Path Coefficient (β)	Standard Error	T. Value	P. Value	Decision
Pr -> Qt	.454	.033	9.217	.000	Not supported
Pi -> Qt	.652	.056	8.342	.000	Not supported

Note: Pr = Product Innovation, Pi = Process Innovation, Qt = Quality, T-Statistics greater than 1.92 at .05 level of significance.

Source: SmartPLS 3.2.7 Output, 2021.

Figure 1 and table 3 reveals the direct path model regarding the relationship between entrepreneurial innovation (product innovation and process innovation) and quality. The first hypothesis stated that product innovation does not significantly correlate with quality. The result in figure 1 and table 3, showed that hypothesis one was not supported with a ($\beta = 0.454$; $t = 9.217$; $p < 0.001$). Equally the association between process innovation and quality was significant ($\beta = 0.652$; $t = 8.342$; $p < 0.001$), thus hypothesis two was not supported.

Table 4: Effect Size of Latent Variables ($H_01 - H_02$)

Paths	Correlation Value	Predictive Accuracy (r^2)	Adjusted r^2	Effect Size (f^2)	Remarks on Effect Size
Pr -> Qt	.506	.489	.484	.425	Not supported
Pi -> Qt	.652	.556	.552	.498	Not supported

Note: Pr = Product Innovation, Pi = Process Innovation, Qt = Quality, r^2 , 0.19 = weak, r^2 , 0.33 = Moderate, r^2 , 0.67 – substantial (Cohen, 1988), T-Statistics greater than 1.92 at .05 level of significance.

Source: SmartPLS 3.2.7 Output, 2021.

As a supplement to the R^2 assessment of the endogenous constructs, the variation in the R^2 value when a specific predictor is omitted from the model is also evaluated. Effect size is the observed variation on the dependent variable due to the omission of an exogenous variable (Chin, 1998).

$$\text{Mathematically, effect size } (f^2) = \frac{R_{\text{variable present}}^2 - R_{\text{variable absent}}^2}{1 - R_{\text{variable present}}^2}$$

As a guideline, effect size (f^2) of 0.02 = small; 0.15 = medium, while 0.35 = large effect of an exogenous latent variable. Effect sizes below 0.02 are counted as zero effects (Cohen 1988). Table 4 shows the respective effect sizes on the endogenous sub-constructs of the model. Process innovation had the strongest effect on quality with an f^2 value of 0.498.

Discussion of Findings

The study investigated the nexus between entrepreneurial innovation and quality of fast foods restaurants in Rivers State. The hypotheses were tested using PLS-SEM with the aid of SmartPLS 3.2.9. The results are discussed below.

Hypothesis one focused on the relationship between product innovation and quality, while hypothesis two focused on process innovation and quality. The results revealed that both dimensions of entrepreneurial innovation are positively significantly correlated with quality. This implies that the entrepreneurs' ability to create novel products/services via improved process plays significant role in the quality of their product/service. Hence, the findings demonstrate that the ability of fast foods restaurants to remain in business and be competitive is directly related to their level of innovation. This finding is consistent with that of Hermundsdottir and Aspelund (2021), who examined sustainability innovations and firm competitiveness in Norway and found entrepreneurs' innovativeness contribute significantly to their competitiveness and overall business performance. Similarly, in a study in South Korea, Lee, et al., (2019) investigated the impact of innovation capability on competitiveness and found that innovation capability has positive significant impact on competitiveness. Hence, they recommended that entrepreneurs should be innovative since it contributes to their competitiveness and general business performance.

Furthermore, the finding that entrepreneurial innovativeness propels quality extends the postulation of Schumpeter's theory of innovation, which believes that the main function of an entrepreneur is to introduce innovations by offering quality products and services which will lead to higher performance. Also, the finding corroborates Barney's (1991) resource-based view, which opines that a firm can distinguish itself from its competitors and can create sustainable competitiveness using its internal resources.

Conclusion and Recommendations

Conclusions

The study concludes that entrepreneurial innovation improves quality of the fast foods restaurants in Rivers State, as such, placing entrepreneurial innovation as a backdrop within this study provides a place to affirm the emphasis on dimensions such as product and process innovation, and their usefulness for enhancing quality. Therefore, the use and implementation of entrepreneurial innovation is important and increases the chances of competitive edge.

Quality is significant for fast food restaurants to prevail in their operations and improve chances of competitiveness. Entrepreneurial innovation contributes significantly towards quality by the use of training and development. Fast food restaurants thrive and compete on the basis of their ability to provide quality foods and services at avoidable prices. Hence, it was concluded that, entrepreneurial innovation influences quality of fast food restaurants positively as it resulted to better quality and reduced cost.

Recommendations

In view of the research and the importance of entrepreneurial innovation and competitiveness of fast food restaurants, this study suggests:

- i. Fast Food Firms should encourage creativity and originality amongst their employees, the implication being development of new and quality products/services which will give them competitive advantage over rivals.
- ii. Management of the fast food restaurants should consider the needs and preferences of the customers when developing new products, as this will ensure these products satisfy customer needs.

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