

**RESEARCH ARTICLE | OPEN ACCESS****Queuing Theories on the Customer Satisfaction of Business Enterprises in Enugu State****Ede, T. E.¹, Ogbuke, J. C.² & Nwobia, C. E.³**¹Department of Psychology and Sociological Studies, Ebonyi State University, Abakaliki, Nigeria²Department of Marketing, Enugu University of Management and Technology, Enugu State, Nigeria³General and Entrepreneurial Studies, David Umahi Federal University of Health Sciences, Uburu, Nigeria***Corresponding Author****Background**

In modern society, every service organization desires to be involved in a queuing system or queue in some way. Examples include a retail check-out line, waiting for a bank teller and queuing for healthcare services. Queuing theory plays a huge role in solving and preventing operational bottlenecks and service failures in the organization. In other words, to manage, solve and prevent crisis situations such as congestion, build-ups, overload, overcrowding, service delays, production bottlenecks, idleness and other similar problems, the banking sector, without much ado requires the knowledge and simplified applications of the queuing theory, which is mathematically and can be complex (Fakokunde, Mustapha, and Aremu, 2017). Therefore, a queuing system becomes very important and is a model widely used. The queuing system is connected with the quality of services of the organization. Management systems assist customers in the form of queue number dispensing machines to faster service and happier consumers. This enhances the quality of life which is extremely important for the organization's customers and

most probably leads to customer retention and return (Surapong, Wanno, & Jirasek, 2014). Agencies with management queue systems help to plan services and help with the ability to manage even with limited resources. This can also significantly shorten the waiting time of the customers or clients as well (Bouzada, 2009).

Queuing theory is the numerical investigation of holding up lines or queues. In the early 1900s, a researcher named Erlang out of passion initiated the studies on a very significant problem as related to the congestions encountered in telephone traffic (Zavanella, et al., 2015). This passionately initiated idea further gave birth to queuing theory

ABSTRACT

The study evaluated the Queuing theories on the customers' satisfaction of business enterprise in Enugu state. The specific objectives were to: examine the effect of arrival process on the customer retention and evaluate the effect of services process on the accessibility of business Enterprises on Enugu state. The area of the study was Enugu state. The population of the study was two hundred and ninety three (293) employees of the selected business enterprises in Enugu metropolis in Enugu State for the study. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. Two hundred and eighty-seven (287) employees returned their questionnaire and accurately filled. That gave 98 percent response rate. Data was presented and analysed by mean score and standard deviation using Sprint Likert Scale. The hypotheses were analysed using Z - test statistic tool. The findings indicated that Services process had positive significant effect in the customer retentions in business enterprise, $Z(95, n = 287), 8.146 < 10.271, P, < .05$ and Arrival process had positive significant effect on the customer retention in business enterprises in Enugu state, $Z(95, n = 287), 8.633 < 10.153, P, < .05$. The study concluded that Services and Arrival process had positive significant effect in the customer retentions in business enterprises in Enugu state. The study recommended among others that the business enterprises should enhance better service process whether the organization produces goods or offers services, this will define the customer experience and will either lead to customer satisfaction, referrals, or repeat business, or even disappointment.

Keywords: *Queuing Theories; Customer Satisfaction; Business Enterprises; Enugu State*

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which is seen to be new in the branch or scope of applied theory of probability (Agyei, Asare-darko, & Odilon, 2015). Upon the discovery of the term queuing theory as it gradually became very germane tool to the growth and development of several branches of social life and applied science (Abiodun, 2017). Queues at a given service delivery centre increase as a result of variance in the pattern of arrival of customers, and the times of service alongside unnecessary lines mostly frustrates and discourages the end-users, hence, making them to look for the required service from another Centre (Vargha, 2018, Bendel, & Haviv, 2018). Banking sectors have perpetual queues owing to the significance of the services they render to humanity and this poses a merging challenge of queue management in the execution of their jobs and in the effective delivery of services to their customers (Afolalu, et al., 2019).

Queue discipline refers to the logical ordering of customers in a queue and determines which customer will be chosen for service when a server becomes free. Common queue disciplines include first-in-first-out (FIFO), last-in-first-out (LIFO), service in random order (SIRO) etc. FIFO queue discipline implies that services begin in the same order as arrivals, but that customers could leave the system in a different order because of different length service times. Based on this the study aimed to evaluate Queuing theories on the customer satisfaction of business enterprises in Enugu state. Queue behaviour refers to the actions of customers while in a queue waiting for service to begin. In some situation, there is a possibility that incoming customers will balk, renege, or jockey (move from one line to another if they think they have chosen a slow line).

Statement of the Problem

Queuing theory in operations research contributes to designing an efficient queuing system for a business. The theory guides the professionals to systematically explore the finest method and arrange the setup. It gives primary importance to balancing efficient service and the system's economic viability. An efficient queuing system in place enhances customer service. The application of queuing theory may be of particular benefit to receptionists with high-volume out customer workloads and/or those that provide multiple points of service.

Queuing has become a symbol of inefficiency of publicly funded business enterprises in the world and Nigeria is not an exception. Managing the length of the line is one of the challenges facing most business enterprises. A few of the factors that are responsible for long waiting lines or delays in providing service are: lack of passion and commitment to work on the part of the business enterprise staff, overloading of available staff, bank officials attending to customers in more than one section, and few number of systems places, challenges of Arrival process, services process and number of services. These put business enterprises managers under stress and tension, hence tends to dispose off a customer without attending to their needs, which often leads to customer dissatisfaction.

However, considering the benefit of queuing system its hurdles needed a redress which failure to curtail could lead hto poor quality service, output, cost-ineffective, attraction of new customers, workflow systems, waste time reduction, poor accessibility of business, income generations etc. Based on this the study aimed to evaluate Queuing theories on the customer satisfaction of business Enterprises in Enugu state.

Objectives of the Study

The main objective of the study was to evaluate the Queuing theories on the customers' satisfaction of business enterprise in Enugu state. The specific objectives were to:

- i. Examine the effect of arrival process on the customer retention of business enterprise in Enugu state
- ii. Evaluate the effect of services process on the accessibility of business Enterprises on Enugu state.

Research Questions

- i. What is the effect of arrival process on the customer retention of business enterprise in Enugu state?
- ii. What is the effect of services process on the accessibility of business Enterprises on Enugu state?

Statement of Hypotheses

- i. Services process has effect n the customer retentions in business enterprise
- ii. Arrival process has effect on the customer retention in business enterprises

Review of the Related Literature

Conceptual Review

Queuing Theories

The **Queuing Theory**, also called as a **Waiting Line Theory** was proposed by A.K. Erlang. According to him, the queuing theory applies to those situations where a customer comes to a service station to avail the services and wait for some time (occasionally) before availing it and then leave the system after getting the service. Queuing theory is a branch of mathematics that studies how lines form, how they function, and why they malfunction. Queuing theory examines every component of waiting in line, including the arrival process and the number of customers among others, which might be people, data packets, cars, or anything else. Queuing theory aims to design balanced systems that serve customers quickly and efficiently but do not cost too much to be sustainable (Investopedia Team, 2023). Queuing theory refers to the mathematical study of the formation, function, and congestion of waiting lines, or queues. It's also referred to as queuing theory, queue theory, and waiting line theory. Queuing theory is a powerful tool to analyse the daily phenomenon of waiting in line. Discover how to define queuing theory, how it started, why it's important, and how it can be applied to real-life situations (Queue, 2023).

Components of Queuing theories

Arrival Process

The **Arrival Process** is the first element of the queuing structure that relates to the information about the arrival of the population in the system, whether they come individually or in groups. Also, at what time intervals people come and are there a finite population of customers or infinite population (Business, 2024) Arrival Process is a critical aspect of queuing theory. It refers to the different ways customers or entities arrive at a service facility. The general arrival process is a specific type of arrival process where customers arrive randomly and independently of each other. This type of arrival process is common in many real-world scenarios, such as customers arriving at a bank, patients arriving at a hospital, or calls arriving at a customer service center. The general arrival process is characterized by the inter-arrival time distribution, which determines the time between the arrivals of two consecutive customers (Fastercapital, 2023).

Services Process

A service process is the sequence of steps and interactions that deliver value to your customers and meet their needs and expectations. A well-designed service process can improve customer satisfaction, loyalty, retention, and referrals, as well as reduce costs, errors, and complaints (LinkedIn, 2023). Service process is the way in which a company works so that a customer receives service. To standardize this in line with the company's identity and aims, managers will work on: Determining procedures which contribute to the process, allocating tasks and responsibilities, formulating effective schedules and routines and Defining service mechanisms and process flows (Pearson, 2024).

Customer Satisfaction

Customer satisfaction (CSAT) is a measure of how well a company's products, services, and overall customer experience meet customer expectations. It reflects your business' health by showing how well your products or services resonate with buyers. Customer satisfaction is a measure of how happy your customers are with your product or service. And for many businesses, it's the difference between a success and a failure—no pressure (Alaina, 2023 & Mbah & Ekechukwu, 2017). Customer satisfaction is a measurement of how happy customers are with a company's products and services. Customer satisfaction includes a customer's perceived quality, value and expectations of a company and what it offers. Companies use this data, which they can gather through methods like surveys and focus groups, to help them determine how they can improve their products or services to gain and keep more customers. This data also can reveal major insights into how customers relate to a brand and how they will interact with it in the future (Indeed, 2022).

Components of Customer's Satisfaction used in the Study

Customer Retention

Customer retention refers to the ability of a company or product to retain its customers over some specified period. High customer retention means customers of the product or business tend to return to, continue to buy or in some other way not defect to another product or business, or to non-use entirely (Wikipedia). Customer retention is defined as company's ability to turn customers into repeat buyers and prevent them from switching to a competitor. Customer retention indicates whether your product and the quality of your service please your existing customers (Olson, 2023). Customer retention is a metric that measures customer loyalty, or the ability for an organization to keep its customers over time. In addition to identifying the number of loyal customers, customer retention can reflect or predict customer satisfaction, repurchase behaviour, customer engagement and emotional ties to a brand. Customer retention is critical because the cost of acquiring new customers is much higher than retaining existing customers. Retained customers are also more likely to engage in word-of-mouth marketing or become brand ambassadors (Gillis, 2021; Mbah .& Ekechukwu, 2016)

Accessibility

Accessibility means that an organization has taken steps to ensure that everyone, no matter what their background, language, or personal needs, can feel comfortable in the space and with the services that organization provides. Accessibility Requires Cultural Understanding and Universal Design. Accessibility is the practice of adapting work environments, communication tools, and job duties to accommodate persons with disabilities. As set out in the Americans with Disabilities Act of 1990, employers must provide reasonable accommodations for persons with disabilities. Accessibility also is an important consideration for customer interactions. (Bamboohr, 2023). Accessibility in Business refers to the ease with which the organization's products, services, and facilities can be used by the company's employees and customers. A high degree of business accessibility is desired to be able to provide reach as many people as possible and ensure meaningful interaction with them. In business accessibility, special attention is given to people with physical and mental disabilities (Gokulnath, 2023).

Conceptual Framework

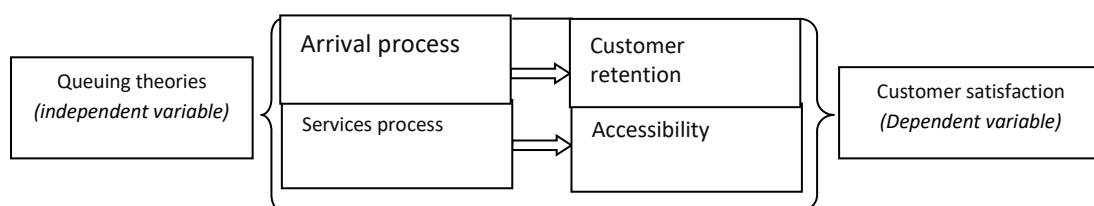


Fig 1: Conceptual Framework of the Study

Theoretical Framework

The study was guided by the Queuing theory as propounded by Agner Krarup Erlang, 1909. The study focused on Queuing theory because it is a branch of operations research, also known as stochastic service system theory or wait for the line theory, is used to study the object of a service request generated by the randomness of customer arrivals and services rate.

Queuing Theory

Queueing theory is generally considered a branch of operations research because the results are often used when making business decisions about the resources needed to provide a service. The ideas have since seen applications including telecommunication, traffic engineering, computing and, particularly in industrial engineering, in the design of factories, shops, offices and hospitals, as well as in project management (Schlechter, 2009). Queuing theory which is a branch of operations research, also known as stochastic service system theory or wait for the line theory, is used to study the object of a service request generated by the randomness of customer arrivals and services rate.

Empirical Review

Arrival Process on the Customer Retention

Oranusi, et al. (2021) conducted a study on the impact of customer complaints and feedback management on customer retention in deposit money banks in South-Eastern Nigeria. The specific objectives were to determine the impact of customer complaints management on customer retention in deposit money banks in South-Eastern Nigeria and also, to ascertain the impact of customer feedback management on customer retention in deposit money banks in South-Eastern Nigeria. The population of the study consists of customers of First Bank Nigeria Plc, Zenith Bank Plc, Union Bank of Nigeria Plc, Fidelity Bank Plc, Polaris Bank and Sterling Bank Plc in South-Eastern Nigeria. The branches of these deposit money banks in Umuahia, Awka, Abakiliki, Enugu and Owerri, representing the capitals of Abia State, Anambra State, Ebonyi State, Enugu State and Imo State in South-East geopolitical zone of Nigeria were conveniently selected. Survey method was adopted for the study and the sample size of 384 was determined using Cochran's formula. Cronbach's alpha was used to determine the reliability of the instrument and the value of 0.773 was got. Questionnaire was adopted as the instrument for the collection of primary data and was distributed to the 384 students who returned 300 that were correctly filled. Analysis of data was conducted using Pearson's product moment correlation coefficient with the aid of SPSS software version 22. The study revealed that customer complaints management has a significant positive relationship with customer retention in deposit money banks in South-Eastern Nigeria. Similarly, it was revealed that customer feedback management has a significant positive relationship with customer retention in deposit money banks in South-Eastern Nigeria. Thus, customer complaints and feedback management strategies are very efficacious marketing strategies for ensuring customer retention in the Nigerian banking industry.

Etim, et al. (2021) conducted a study on the effect of relationship marketing on customer retention in the telecommunications industry. It was conducted to assess the effects of customer care, communication, trust-building and service quality on customer retention in the telecommunications context. The study adopted survey research design. A structured questionnaire was used to obtain primary data from 198 customers of MTN Nigeria Plc and Globacom Nigeria Plc in Calabar. The data were analysed and interpreted using descriptive statistics, while the hypotheses developed for the study were tested using multiple linear regression. Consequently, the findings of the study revealed that customer care, communication, trust building and service quality had significant positive effects on customer retention of telecommunication firms in Calabar. Therefore, the study recommended that: telecommunications companies should strengthen their customer care capability by using trained service professionals to elicit and promptly resolve customers enquiries and complaints; telecommunications companies should improve communications with customers by opening up more channels such as phone calls, direct messaging, social media and email through which information can be transmitted to subscribers to enhance informed patronage decisions; and it is imperative for telecommunications companies to consolidate customers' trust in their delivery capabilities by demonstrating through effective service delivery that they are capable of satisfactorily meeting the service needs of subscribers.

Chukwu, & Uchenna (2021) conducted a study on *the impact of customer satisfaction on customer retention of some selected fast-food restaurants in Enugu metropolis*. The research was conducted to provide empirical evidence on the relationship existing between customer satisfaction and customer retention to assist the management of fast-food restaurants in Enugu metropolis to initiate policies and programs that will help them to continue to satisfy their customers. The specific objectives of the study was to examine the effects of trust, customer care, better communication, after sales service and promise fulfilment on customer retention in the fast food restaurants in Enugu metropolis. The research design used was the cross-sectional survey research design. The area covered by the study was Enugu metropolis and the instrument used was questionnaire that was confirmed using content validity and test-retest for reliability. The employed analytical techniques comprises of simple tables, percentages, simple regression in statistical package for social sciences (SPSS version 20) to analyse and treat the data collected. The results obtained from the study revealed that trust, customer care, better communication, after sale services and fulfilled promises have positive and significant effects on customer retention of fast-food restaurants in Enugu metropolis. Based on the findings, the study recommended that the managements of all the fast food restaurants in Enugu metropolis should deliver consistent, reliable and dependable services to their customers to gain their trust, provide adequate customer care to ensure that customers' needs are met during and after the services are delivered, provide adequate and better communication networks to enable them collect and handle all complaints arising from product use, develop and maintain effective and efficient after sale services to ensure periodic calls and visit to keep customers informed of new offers and benefits and consistently re-evaluate performance against standard to ensure

all promises made during the transaction are fulfilled. Customers are assets to every business organization and getting them satisfied after service use makes them to be loyal to the organization.

Oby, et al. (2021) conducted a study on the growing importance of retailing to the development of nations, it is imperative to ask; to what extent does retail channel service relates to customer retention in chain stores in Nigeria. The main objective of the study is to examine the significant relationship between retail channel service and customer retention in chain stores in Nigeria. The study adopted a quantitative research design using a survey method. The study population comprised 65 retail chain stores registered with the Enugu Branch of Pillars Association of Nigeria as of July 2020. The questionnaires were pretested for comprehension, relevance and validity through ten operators of retail superstores and three scholars in the field of distribution channel management. The reliability of the instrument was tested using Cronbach's alpha coefficient analysis in order to ensure the internal consistency and reliability of measures. The reliability coefficient obtained was 0.85. The findings of the study show that bulk breaking, spatial convenience, waiting time and product variety are positively related to customer retention. We conclude that retail channel service has a positive and significant influence on customer retention of retail chain stores in Nigeria. The retail chain stores, if effectively coordinated, and their marketing channel service properly managed, is capable of enhancing the tendencies of these retail stores in retaining their existing customers.

Madumere (2021) conducted a study on the link between service quality perception and customer loyalty intention to road transport firms in the South East of Nigeria. The RATER, 5Rs and Rockbridge's models were used. The cross-sectional survey design was adopted as structured questionnaire was used to elicit needed primary data for the study. A total of 340 respondents, drawn from the customers of four organized road transport firms in the South East were studied. Stated hypotheses were tested using Simple Regression Analysis at 0.05 level of significance in SPSS version 20. Findings revealed among others that there is a strong, positive and significant relationship between the RATER variables (reliability, assurance, tangibles, empathy and responsiveness) and customer loyalty intention (5Rs: repeat, retain, recommend, rebuild, reap and Rockbridge's: satisfaction, mobility) variables. It was equally discovered that customers' satisfaction level with the prevailing service quality in their chosen firms was 'Fair'. It was recommended among others that road transport firms that wish to remain competitively relevant and retain the loyalty of their customers should lay emphasis on —consistency in good service quality delivery|. It was equally recommended that the road transport firms should use the RATER model effectively in their service provision as this will serve as a guide to improved service quality provision. The study provides more insight into the service quality-customer loyalty relationship in the organized road transport industry in Nigeria by advancing a proposed framework, adapted from the three models used, for future researchers and policy makers.

Services Process on the Accessibility

Anah, and Asogwa (2017) conducted a study on the "Impact of Entrepreneurship Development on Economic Growth of Enugu State" was designed to determine the effects of entrepreneurship development on the economic growth of Enugu State. The literature reviewed brought into limelight the effect of entrepreneurship development on the Economy. The specific objectives are: to determine the extent entrepreneurial activities impacts the standard of living of the people in Enugu State, to ascertain the impact of multiple taxation on entrepreneurial activities in Enugu State and to examine the extent entrepreneurial activities create job employment for the people of Enugu State. The study used survey research design of which structured questionnaires were administered to the sample drawn from the population of the study. The data collected were analysed with chi-square (X²). The study discovered that entrepreneurial activities create job opportunities which subsequently enhance the standard of living of the people of Enugu State and therefore concludes that the role of entrepreneurial activities on economic development cannot be over-emphasized because it enhances the socio-economic well-being of the people. The study recommended that the government should revamped the initiated programmes (Micro finance bank, Bank of industry (BOI) etc.) by appointed men of good will that have passion for entrepreneurship to head some of the establishment in an attempt to enhance their activities taking cognizance of the vital role it plays on the economic development of the State.

Adonai, Mba and Ede (2020) conducted a study on the extent to which customer satisfaction affects customer retention. The objectives of the study were to ascertain the relationship between customer satisfaction and customer retention, and to examine the impact of customer satisfaction on customer retention. The study employed a quantitative method to test the study hypothesis and collected responses from the customers of a bank located in Agbani, Enugu, 120 questionnaires were distributed with a response rate of 89.2%. The study adopted descriptive statistics which incorporated the use of tables and percentages while Chi-Square was used as the statistical tool to

test the hypothesis formulated in the study. The findings show that the X2 values of 85.5 and 62.8 respectively support the proposition that customer satisfaction independently accounts for the variation in customer retention. In the same way, customer satisfaction has a significant impact on customer retention. It was therefore concluded that the effective satisfaction of customers will give room for customer retention. More so, there is a significant relationship between customer satisfaction and customer retention.

Iloh & Joseph (2022) the roles of Small and Medium Enterprises (SMEs) in Capacity building in Enugu State, with a focus on the mandates of ministries and agencies in charge of facilitating entrepreneurial development on behalf of Enugu State government. A review of other scholars' work was carried out. SMEs were defined as an economy driven agent that plays a major role towards capacity building. A theoretical framework on the concept of Community Capacity Building and Joseph Schumpeters view on development was adopted for the study. A survey design research approach was adopted. The population of the study area was a total of 1045 and a sample size of 310 derived through Taro Yammani formular. Simple random sampling method was used to select the respondents. Frequency percentage tables and chi-square statistical method was adopted to analyse the samples collected using likert scaling method. The hypothesis of the research was tested at 0.05 level of significance to find out if, SMEs play significant roles in capacity building within Enugu State and its environment. It was revealed that, SMEs have created employment but not with significant effect, and had little effect on the individuals standard of living with chi-square result of 0.00 P value rejecting the null hypotheses. It had built individual skills and technical knowledge for entrepreneurs to facilitate capacity building within the environment of Enugu state but of little effect with P-value = 0.00 rejecting the null hypotheses and accepting the alternate hypotheses have SMEs had improved on innovations on the environments of the state with chi-square value P =0.00. However, the descriptive statistics revealed that, the competitive nature of the economy and rate of graduate turnover from tertiary institutions trills down SMEs impact on employment creation. In view of these findings, this study recommended: improved fundings of Start-up loans for young entrepreneurs in order to meet up graduate turnover from universities and colleges and to put in place protective policies for young industries. More regular training and incentives programmes, consultations, supervision and counselling of both existing and aspiring entrepreneurs to improve individual skills, technical knowledge of entrepreneurs. Also, proper monitoring and evaluation techniques should be adopted by funding institutions and MDAs to ensure proper utilization of funds.

Udeh, et al. (2022) conducted a study to evaluate the customer service management practices and profitability of shopping malls in Enugu State. The specific objectives were to: examine the relationship between empowered customer service staff and sales growth of shopping malls in Enugu State, evaluate the relationship between open line communication and the income generation of shopping malls in Enugu State and determine the relationship between the effective allocation of resources and customer retention of shopping malls in Enugu state. The population of the study was three hundred and fifty-five (355) made up of management and senior staff of the selected shopping malls in Enugu state. The study made use of the whole population because of the small number. A survey design was adopted for the study. Instruments used for data collection were an interview guide and questionnaire. Three hundred and fifty-five (355) copies of the questionnaire were distributed to the respondents and two hundred and ninety-seven (297) copies were returned representing eighty-four (84%) percent, while fifty-eight (58) copies of the questionnaire were not returned representing sixteen percent (16%). This shows a high rate of respondents. Data were presented and analysed using frequency tables using Sprint Likert Scale. Mean scores and standard deviation were used to analyse the data. The hypotheses were analysed using the Pearson coefficient correlation (r) statistics tool with the aid of Statistical Package for Social Scientists (SPSS) version 20. The study revealed that Empowered customer service staff had a positive significant relationship with sales growth of shopping malls in Enugu State ($r=.196 < .872, p <.05$). An Open line communication had a positive significant relationship with income generation of shopping malls in Enugu state ($r= .533<.858, p <.05$) and Effective allocation of resources had a positive significant relationship with customer retention of shopping malls in Enugu state ($r= .269 <.822, p <.05$). The study concluded that Empowered customer service staff, An Open line communication and Effective allocation of resources had a positive significant relationship with sales growth, income generation and with customer retention of shopping malls in Enugu state. The study recommended among others that Organisations should endeavour to empower their staff for effective Customer service and for better information to make well-informed decisions that will put them one step closer to achieving their aims.

Akubilo (2023) conducted a study on the factors that appear to lead to the failure of small-scale organization in Enugu North L.G.A of Enugu State. The study used exploratory, descriptive survey. The population for the study comprised of 335 staff of two groups of respondents. These were 241 small scale organisations of 33 registered small-scale enterprises in Enugu North Government Area, and 94 staff of six banks in the Local Government Area

(three Commercial Banks, and three Microfinance Banks). Due to large number of small-scale enterprises in the Local Government Area, only 54 of them were randomly selected using purposive sampling. The instrument for data collection was a structured questionnaire. Three experts in the area of measurement and evaluation, banking and entrepreneurship education validated the instrument. In ensuring the reliability of the instrument, a test-retest approach was adopted using Pearson Product Moment Correlation Coefficient and reliability co-efficient of 0.853 was obtained which guaranteed its reliability. Data collected were analysed using mean. Results however indicated that the most common causes of business failure were lack of knowledge regarding relevant legal matters lack of funding and general lack of business acumen. It identified factors that generally seem to lead to the demise and failure of small scale businesses in Enugu North L.G.A of Enugu State.

Summary of Empirical Reviewed Literature

The studies done were carried outside Queuing theories on the customers' satisfaction of business enterprise in Enugu state and did not focus to best of my knowledge on the arrival process on the customer retention; and services process on the accessibility of business Enterprises on Enugu state, Nigeria. Most of the studies reviewed analysed their data through A purposeful sampling technique, Descriptive statistics and appropriate inferential statistics, Purposive Sampling technique, Pearson Moment Correlation Coefficient, Multiple sampling technique, Partial Least Square Structural Equation Modelling (PLS-SEM), Multiple Regression Analysis (MRA) method, Simple linear regression and Pearson correlation coefficient (r) while the present study made use of Z test to test the hypotheses. Therefore, the study aimed at filling this research gap by evaluating the Queuing theories on the customers' satisfaction of business enterprise in Enugu state, Nigeria.

Methodology

The area of the study was Enugu state. The population of the study was two hundred and ninety three (293) employees of the selected business enterprises in Enugu metropolis in Enugu State for the study. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. Two hundred and eighty seven (287) employees returned their questionnaire and accurately filled. That gave 98 percent response rate. The validity of the instrument was tested using content analysis and the result was good. The reliability was tested using the Pearson correlation coefficient (r). It gave a reliability co-efficient of 0.87 which was also good. Data was presented and analysed by mean score and standard deviation using Sprint Likert Scale. The hypotheses were analysed using Z - test statistic tool.

Data Presentation

The effect of arrival process on the customer retention of business enterprise in Enugu state

Table 1: Responses effect of arrival process on the customer retention of business enterprise in Enugu State

		5	4	3	2	1	ΣFX	-	SD	Decision	
		SA	A	N	D	SD		X			
1	Arrival process boost profits as it attracts customers.	690	168	144	66	26	1094	3.81		Agree	
		138	42	48	33	26	287		1.376		
		48.1	14.6	16.7	11.5	9.1	100%				
2	The costs of business focus are reduced with more customers.	745	180	93	68	28	1114	3.88		Agree	
		149	45	31	34	28	287		1.404		
		51.9	15.7	10.8	11.8	9.8	100%				
3	Optimizations of resources are ensured with old and new customers maintained.	690	180	123	68	29	1090	3.79		Agree	
		138	45	41	34	29	287		1.405		
		48.1	15.1	14.3	11.8	10.1	100%				
4	Purchasing decision is better made with arrival process and customers retained.	750	228	72	64	24	1138	3.96		Agree	
		150	57	24	32	24	287		1.345		
		52.3	19.9	8.4	11.1	8.4	100%				
5	There is increase in asset utilization and more customers and more customers attracted.	870	244	39	38	20	1211	4.21		Agree	
		174	61	13	19	20	287		1.225		
		60.6	21.3	4.5	6.6	7.0	100%				
Total Grand mean and standard deviation								4.206	0.917		

Source: Field Survey, 2024

Table 1, 287 respondents out of 180 representing 62.7 percent agreed that Arrival process boost profits as it attracts customers with mean score 3.81 and standard deviation of 1.376. The costs of business focus are reduced with more customers 194 respondents representing 67.9 percent agreed with mean score of 3.88 and standard deviation of 1.404. Optimizations of resources are ensured with old and new customers maintained 183 respondents representing 63.2 percent agreed with mean score of 3.79 and standard deviation of 1.404. Purchasing decision is better made with arrival process and customers retained 207 respondents representing 72.2 percent agreed with mean score of 3.96 and 1.345. There is increase in asset utilization and more customers and more customers attracted representative 235 respondents representing 81.9 percent agreed with a mean score of 4.21 and standard deviation 1.225.

The effect of services process on the accessibility of business Enterprises on Enugu State

Table 2: Responses effect of services process on the accessibility of business Enterprises on Enugu state

		5	4	3	2	1	ΣFX	-	SD	Decision
		SA	A	N	D	SD		X		
1	Improved customer deflection as employees with had better performance.	795	272	27	70	16	1180	4.11	1.252	Agree
		159	68	9	35	16	287			
		55.4	23.7	3.1	12.2	5.6	100%			
2	Service process reduces spending and delimits opportunities for people with disabilities to get - hired.	775	300	33	30	31	1169	4.07	1.327	Agree
		155	75	11	15	31	287			
		54.0	26.1	3.8	5.2	10.8	100%			
3	Productivity is increased with service process and increased in quality of life.	860	280	27	12	30	1209	4.21	1.271	Agree
		172	70	9	6	30	287			
		59.9	24.4	3.1	2.1	10.5	100%			
4	Efficiency is enhanced and creates more independence through service process.	800	296	27	56	16	1195	4.16	1.208	Agree
		160	74	9	28	16	287			
		55.7	25.8	3.1	9.8	5.6	100%			
5	There is improved customer experience and better social integration through service process.	670	336	27	82	19	1134	3.95	1.292	Agree
		134	84	9	41	19	287			
		46.7	29.3	3.1	14.3	6.6	100%			
Total Grand mean and standard deviation								4.206	0.917	

Source: Field Survey, 2024

Table 2, 287 respondents out of 223 representing 79.1 percent agreed that Improved customer deflection as employees with had better performance with mean score 4.11 and standard deviation of 1.252. Service process reduces spending and delimits opportunities for people with disabilities to get - hired 230 respondents representing 80.1 percent agreed with mean score of 4.07 and standard deviation of 1.327. Productivity is increased with service process and increased in quality of life 242 respondents representing 84.3 percent agreed with mean score of 4.21 and standard deviation of 1.271. Efficiency is enhanced and creates more independence through service process 234 respondents representing 81.5 percent agreed with mean score of 4.16 and 1.208. There is improved customer experience and better social integration through service process representative 218 respondents representing 76.0 percent agreed with a mean score of 3.95 and standard deviation 1.292.

Test of Hypotheses

Hypothesis one: Services process has effect on the customer retentions in business enterprise

		Arrival process boost profits as it attracts customers.	The costs of business focus are reduced with more customers.	Optimizations of resources are ensured with old and new customers maintained.	Purchasing decision is better made with arrival process and customers retained.	There is increase in asset utilization and more customers and more customers attracted.
N		287	287	287	287	287
Uniform Parameters ^{a,b}	Minimum	1	1	1	1	1
	Maximum	5	5	5	5	5
Most Extreme Differences	Absolute	.481	.519	.481	.523	.606
	Positive	.091	.098	.101	.084	.070
	Negative	-.481	-.519	-.481	-.523	-.606
Kolmogorov-Smirnov Z		8.146	8.795	8.146	8.854	10.271
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000
a. Test distribution is Uniform.						
b. Calculated from data.						

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value of $8.146 < 10.271$ and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that services process had positive significant effect n the customer retentions in business enterprise in Enugu state.

Decision

Furthermore, comparing the calculated Z- value of $8.146 < 10.271$ against the critical Z- value of .000 (2-tailed test at 97percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that services process had positive significant effect in the customer retentions in business enterprise in Enugu state.

Hypothesis Two: Arrival process has effect on the customer retention in business enterprises in Enugu state

		Improved customer deflection as employees with had better performance.	Service process reduces spending and delimits opportunities for people with disabilities to get - hired.	Productivity is increased with service process and increased in quality of life.	Efficiency is enhanced and creates more independence through service process.	There is improved customer experience and better social integration through service process.
N		287	287	287	287	287
Uniform Parameters ^{a,b}	Minimum	1	1	1	1	1
	Maximum	5	5	5	5	5
Most Extreme Differences	Absolute	.554	.551	.599	.565	.510
	Positive	.056	.108	.105	.056	.066
	Negative	-.554	-.551	-.599	-.565	-.510
Kolmogorov-Smirnov Z		9.385	9.341	10.153	9.577	8.633
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000
a. Test distribution is Uniform.						
b. Calculated from data.						

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value of $8.633 < 10.153$ and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that arrival process had positive significant effect on the customer retention in business enterprises in Enugu state.

Decision

Furthermore, comparing the calculated Z- value of $8.633 < 10.153$ against the critical Z- value of .000 (2-tailed test at 97percent level of confidence) the null hypothesis were rejected. Thus, the alternative hypothesis was accepted which states that arrival process had positive significant effect on the customer retention in business enterprises in Enugu state.

Discussion of Findings

From the result of hypothesis one, the calculated Z- value of $8.146 < 10.271$ against the critical Z- value of .000, which implies that Services process had positive significant effect in the customer retentions in business enterprise in Enugu state. In the support of the result in the literature review, Etim, et al. (2021) conducted a study on the effect of relationship marketing on customer retention in the telecommunications industry. Consequently, the findings of the study revealed that customer care, communication, trust building and service quality had significant positive effects on customer retention of telecommunication firms in Calabar. Chukwu, & Uchenna (2021) conducted a study on *the impact of customer satisfaction on customer retention of some selected fast food restaurants in Enugu metropolis*. The results obtained from the study revealed that trust, customer care, better communication, after sale services and fulfilled promises have positive and significant effects on customer retention of fast food restaurants in Enugu metropolis. Madumere (2021) conducted a study on the link between service quality perception and customer loyalty intention to road transport firms in the South East of Nigeria. The RATER, 5Rs and Rockbridge's models were used. Findings revealed among others that there is a strong, positive and significant relationship between the RATER variables (reliability, assurance, tangibles, empathy and responsiveness)

and customer loyalty intention (5Rs: repeat, retain, recommend, rebuild, reap and Rockbridge's: satisfaction, mobility) variables.

From the result of hypothesis two, the calculated Z- value of $8.633 < 10.153$ against the critical Z- value of $.000$, which implies that Arrival process, had positive significant effect on the customer retention in business enterprises in Enugu state. In the support of the result in the literature review, Adonai, Mbah and Ede (2020) conducted a study on the extent to which customer satisfaction affects customer retention. The findings showed that the X2 values of 85.5 and 62.8 respectively support the proposition that customer satisfaction independently accounts for the variation in customer retention. In the same way, customer satisfaction has a significant impact on customer retention. Furthermore, Iloh & Joseph (2022) the roles of Small and Medium Enterprises (SMEs) in Capacity building in Enugu State, with a focus on the mandates of ministries and agencies in charge of facilitating entrepreneurial development on behalf of Enugu State government. The descriptive statistics revealed that, the competitive nature of the economy and rate of graduate turnover from tertiary institutions trills down SMEs impact on employment creation. Udeh, Onwubiko, Okafor, Usigbe, & Okechukwu (2022) conducted a study to evaluate the customer service management practices and profitability of shopping malls in Enugu State. The study revealed that Empowered customer service staff had a positive significant relationship with sales growth of shopping malls in Enugu State ($r=.196 < .872$, $p < .05$). An Open line communication had a positive significant relationship with income generation of shopping malls in Enugu state ($r= .533 < .858$, $p < .05$) and Effective allocation of resources had a positive significant relationship with customer retention of shopping malls in Enugu state ($r= .269 < .822$, $p < .05$).

Summary of Findings

- i. Services process had positive significant effect in the customer retentions in business enterprise in Enugu state, $Z (95, n = 287), 8.146 < 10.271, P < .05$
- ii. Arrival process had positive significant effect on the customer retention in business enterprises in Enugu state, $Z (95, n = 287), 8.633 < 10.153, P < .05$

Conclusion

The study concluded that Services and Arrival process had positive significant effect in the customer retentions in business enterprises in Enugu state. The queuing system is connected with the quality of services of the organization. Management systems assist customers in the form of queue number dispensing machines to faster service and happier consumers. This enhances the quality of life which is extremely important for the organization's customers and most probably leads to customer retention and return. Agencies with management queue systems help to plan services and help with the ability to manage even with limited resources. This can also significantly shorten the waiting time of the customers or clients as well.

Recommendations

Based on findings, the following recommendations are made:

1. The business enterprises should enhance better service process whether the organization produces goods or offers services, this will define the customer experience and will either lead to customer satisfaction, referrals, or repeat business, or even disappointment. As a business owner or manager, it is vital for you to be in control of the service process
2. For effective ensuring and contributing in creating a positive experience for customers there is that need to consider arrival process and see that customers' touch point is considered.

References

- Adonai O. O. P, Mba C. C and Ede E. C (2020). Effect of Customer Satisfaction on Customer Retention: A Study of a Bank in Agbani, Enugu State, Nigeria, *International Digital Organization for Scientific Research ISSN: 2579-0757 IDOSR Journal Of Current Issues In Arts And Humanities* 6(1):87-96, 2020.
- Akubilo F. E (2023). Factors That Appear to Lead to The Failure Of Small-Scale Organization In Enugu North L.G.A Of Enugu State, *MDRMJI Multidisciplinary Research Development Journal International*, 1(1) April 2023. Retrieved from <https://mdrdji.org>.
- Alaina F (2023). What is customer satisfaction? Retrieved from <https://www.zendesk.com/blog/3-steps-achieving-customer-satisfaction->.
- Anah, S and Asogwa, O. S (2017). Impact of Entrepreneurship Development on Economic Growth of Enugu State: A Study of Registered Entrepreneurs in Enugu State, Nigeria (June 30, 2017). *International Journal of Economics, Business and Management Research*, Vol. 1, No. 02; 2017. Available at SSRN: <https://ssrn.com/abstract=3412471>.
- Bamboohr (2023). What is accessibility Retrieved from <https://www.bamboohr.com/resources/hr-glossary/accessibility>.
- Business Jargons (2024). Arrival process Retrieved from <https://businessjargons.com/arrival-process.html>.
- Chukwu, A. S, & Uchenna Z. M. (2021). Impact of Customer Satisfaction on Customer Retention: A Study of Customers of Selected Restaurants in Enugu Metropolis. *GPH-International Journal of Business Management*, 4(05), 01-09. Retrieved from <https://doi.org/10.5281/zenodo.6866569>.
- Etim G. S, Etuk I. U, Edim E. J & Ekpe S (2021) Effect of Relationship Marketing On Customer Retention in the Telecommunications Industry. *British Journal of Management and Marketing Studies*, 4(4), 68-81. ISSN: 2689-5072.
- Fastercapital (2023) Arrival Process Retrieved from <https://fastercapital.com/keyword/arrival-process.html>.
- Gillis A. S (2021) what is customer's retention Retrieved from <https://www.techtarget.com/searchcustomerexperience/definition/customer-retention>.
- Gokulnath B (2023) what is accessibility in business? Retrieved from <https://www.hurix.com/5-reasons-why-business-accessibility-is-important/>.
- Iloh A. U & Joseph C. I (2022) Roles of Small and Medium Enterprises in Capacity Building in Enugu State, *Journal of Social Sciences & Humanities*, 7(2).
- Indeed (2022) What Is Customer Satisfaction? Retrieved from <https://www.indeed.com/career-advice/career-development/what-is-customer-satisfaction>.
- Investopedia Team (2023) What Is Queuing Theory? Retrieved from <https://www.investopedia.com/terms/q/queuing-theory.asp>.
- LinkedIn (2023) Services Process Retrieved from <https://www.linkedin.com/advice/0/how-do-you-design-service-process-works>.
- Madumere, H. I (2021) Service Quality Perception and Customer Loyalty Intention to Road Transport Firms in South East, Nigeria. Retrieved from https://phd-dissertations.unizik.edu.ng/repos/81173644750_126630885810.pdf.
- Mbah. P.C.& Ekechukwu, C. (2017). Investigating the effect of customer loyalty on profitability of A-C drugs, Emene, Enugu. *International Research Journal of Management and Commerce*, 4(4), 67 – 82.

Mbah. P.C.& Ekechukwu, C. (2016). The relationship between organisational pay and employee retention in manufacturing firms in south east, Nigeria. *ECONSPEAK: A Journal of Advances in Management IT & Social Sciences*, 6(6), 28 – 46.

Oby B.O., Ananaba U., Udoka S.O., Samuel N.N. (2021), Retail Channel Services and Customer Retention in Physical Chain Stores in Nigeria. *International Journal of Entrepreneurship and Business Innovation* 4(1), 96- 108. DOI: 10.52589/IJEI- 5B62AJ4J.

Olson S (2023) what is customer retention? Retrieved from <https://www.zendesk.com/blog/customer-retention/>.

Oranusi, I. N, Nwaizugbe, I. C, Okolo, V. A, Ikpo, K. P & Ogbodo, I. H (2021) Impact of Customer Complaints and Feedback Management On Customer Retention In Deposit Money Banks In South-Eastern Nigeria *International Research Journal of Human Resource and Social Sciences ISSN (O): (2349-4085) ISSN(P): (2394-4218)8(2)*, February 2021.

Pearson S. (2024) The Service Process Retrieved from <https://tallyfy.com/service-process/>.

Queue (2023) What is queuing theory? Retrieved from <https://queue-it.com/blog/queuing-theory/>.

Udeh, B. I., Onwubiko, V. U., Okafor, O. C., Usigbe, P. E. & Okechukwu, E. U. (2022). Customer Service Management Practices and Profitability of Shopping Malls in Enugu State. *Contemporary Journal of Management*, 4(3), 46-65