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IMPACT OF WORKING CAPITAL MANAGEMENT ON FINANCIAL PERFORMANCE OF QUOTED CONSUMER GOODS SECTOR IN NIGERIA

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ABSTRACT: *This study examined the impact of working capital management on the financial performance of listed manufacturing firms in Nigeria. The population of this study consisted of all the quoted firms in the consumer goods sector in Nigeria, out of which nine (9) companies were selected based on data availability. For the 10 years spanning 2011-2020, data were gathered from the annual financial reports of the nine quoted companies in the consumer category. Descriptive statistics, correlation, and panel regression analysis methods were employed in data analysis. The outcome of the Hausman test revealed that the estimation of the random effect is the most efficient. The result revealed that inventory turnover had a positive insignificant effect on return on asset. Trade receivable collection period had negative insignificant effect on return on asset. Trade payable payment period had negative insignificant effect on return on asset. Cash conversion cycle had negative insignificant effect on return on asset. The study concluded that working capital management has no significant effect on financial performance of the selected firms over the period of the study. The study recommended that the whole system of the organization should pay more attention to working capital management.*

KEYWORDS: Inventory Turnover, Trade Receivable, Trade Payable, Cash Conversion Period and Financial Performance

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INTRODUCTION

For any business organization to grow and develop, it must have a right mix of working capital components. The working capital must be planned in such a way that will allow the firm to have sufficient amount of current assets to liquidate its short term obligation as at when due. The purpose of working capital management is to strike a balance between profitability and liquidity. Working capital management is an integral part of financial management because it has implication for firm' profitability and liquidity (Knauer & Wöhrmann, 2013). However, it must be ensured that current asset is not held in excess of what is required for the business, otherwise it will impair firm's profitability. Also, if current asset is far below what is necessary for the business, it can make the organization to be illiquid and unable to meet its short-term obligation when due.

According to Lu (2013), in every business, there are many benefits expected to accrue to the organization if its current assets and current liabilities are properly constructed and well managed. Composition of working capital differs across different organization. In the service sector, receivables mostly constitute the larger part of current assets, whereas, it is inventory that form the larger part of current assets in non-service sector. The relevance of working capital management has come to the fore of every organization, as most of the business managers are making efforts to determine factors that influence working capital as well as optimal working capital level that can be held to increase business performance by reducing risk level (Gill, Biger & Mathur, 2010).

Deloof (2003) postulated that working capital management is an integral element of a business overall strategy which is adopted by management in creating value for the business and repositioning the business to be more competitive in the market. Working capital management (WCM) is a managerial accounting strategy focusing on maintaining efficient levels of a firm's current assets and current liabilities. It deals with the administration of a firm's current assets and current liabilities (Harris, 2005).

Overtime some firms perform better than the other despite the similarities in the resources available to them in term of assets, human capital and other resources. Despite the crucial nature of working capital management, many promising and viable investment with high rate of return had turned out to be failures and went down (Salandeen, 2001). In Nigeria, many factories have been shut down owing to wrong working capital management. This has, however, led to untimely and unplanned disengagement of many Nigerian workers and put them in the unemployment market. Therefore, the study investigated the impact of working capital management on the financial performance of quoted consumer goods sector in Nigeria

LITERATURE REVIEW

Working Capital Management

Working capital management is a process which involves planning, control and decision making on how a business entity will finance its current assets (Brigham & Houston, 2011). Working capital management involves formulation and implementation of policies, development and execution of strategies, and taking every other necessary courses of actions to ensure that there is a right mix of current assets and current liabilities (Li & Han-Wen,

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2006). There should be a balance between liquidity and profitability if working capital elements (inventory, cash, receivables & payables) are properly managed (Uremadu, Egbide & Enyi, 2012). In line with the above, Mathuva (2010) asserted that working capital management involves implementation of strategies that will speed up cash collection from debtors, making optimal use of credit facilities from creditors/suppliers, purchasing inventories in right quantity and maintain optimal cash balance. The author claimed that if working capital is efficiently and effectively managed, it will improve organizational performance. According to Raheman and Nasr (2007), operational and financial efficiency of a business organization mostly depends on how working capital is being managed. Efficiency in working capital management ensures that cash is available in right quantity to settle expenses incurred for the purpose of the business and liquidate short term obligations. If working capital is properly managed, it can lead to increase in profitability (Kamau & Ayuo, 2014).

Inventory Turnover Period and Financial Performance

Within the context of business, inventories include raw materials, work in progress and finished goods. Inventory turnover period is the length of time it will take a firm to convert its inventory of raw materials into finished goods or the length of time it will take a seller to convert inventory of finished goods into sales. For any business that is dealing in physical items/products other than services, there is need for efficiency in inventories management to guarantee its survival and profitability. In business organization, there must be strategies that will ensure optimal inventory level every time. This is necessary in order to avoid cases of excessive inventory and shortage of inventory. When the inventory level is too high unnecessarily, it can lead to deterioration and pilferage, if not properly preserved and secured respectively. However, its shortage can lead to loss of sales. Inventory management system must be designed and implemented in such a way that will allow the organization to purchase every type of inventory in the right quantity, at the right time, at the cheapest price and minimize the level of waste in the use of the inventory. In businesses, there are different systems that can be used to manage inventories, including inventory level system, economic order quantity model, periodic review system, two bin system, ABC system, just in time system among others. Chen et al. (2005) affirmed that business organizations with unnecessarily excessive inventory level usually have a very low returns from their inventories. Meanwhile, unnecessarily low inventory level is more likely to generate average returns for the business.

According to Eroglu and Hofer (2011), maintaining a moderate level of inventory is the most effective method of inventory management. Keeping inventories unnecessarily high is a waste of resources, and it must be avoided or reduced to the barest minimum. Nyakundi et al. (2016) investigated how working capital management affects financial performance among small and medium scale enterprises in Kenya. The study adopted mixed method research design, and the data obtained for the study were analyzed using regression analysis to establish the relationship between the variables of the study. Statistical findings showed that inventory management has direct effect on financial performance of the sampled firms. Akmal, Bushra, Muhammad, Shumaila, Abdul and Tariq (2020) empirically tested the relationship between working capital management and firm's performance. The study used secondary data and the data were analyzed using inferential statistics. Empirical findings revealed that inventory management is positively related to firm's performance. Based on this, the hypothesis below was formulated and tested to achieve the objective of the study.

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H_{01}: Inventory turnover period does not have any significant effect on financial performance of selected listed manufacturing firms in Nigeria.

Trade Receivables Collection Period and Financial Performance

ACP is the length of time it takes a firm to collect or receive payments from its debtors or customers. In order to achieve operational efficiency, in both service and non-service firms, management must ensure that there are effective strategies and procedures that will facilitate cash collection from credit customers as early as possible. The shorter the receivable collection period, the better it is for the organization. When cash is received on time from customers, it will enable the organization to meet other business needs that require immediate settlement. If trade receivables are not efficiently managed, there are tendencies for bad debt to occur. Granting trade credit to customers may be necessary for market penetration, and to win a large market share, depending on the nature of the product being dealt with or the industry where the firm is operating. Effective management of trade receivables is more likely to impact positively on business performance. Trade receivable collection period determines the length of time it requires a business organization to collect cash from credit customers, on average basis. This can be assessed using number of days, weeks, and months. The common practice among many businesses is that credit customers are usually allowed to settle their bills within one month (Mekonen, 2011).

In Nigeria, Madugba and Ogbonnaya (2016) statistically tested how working capital management influences firm's performance. For the purpose of the study, the data used were obtained from the annual reports of the sampled firms. These data were analyzed using inferential statistics, and it was empirically observed that financial performance of the sampled firms is substantially influenced by effective receivable management. Contrarily, the study conducted by Akmal, Bushra, Muhammad, Shumaila, Abdul and Tariq (2020) revealed a negative relationship between trade receivable management and financial performance among studied firms in Pakistan. Based on this, the hypothesis below was formulated and tested to achieve the objective of the study.

H_{02}:Trade receivable collection period does not have any significant impact on financial performance of selected listed manufacturing firms in Nigeria.

Trade Payables Payment Period and Financial Performance

Trade payable is the amount of money that a business is owing its suppliers for goods purchased on credit. It is the most common short term credit facility enjoyed by many businesses, and when available, it should be utilized to the fullest. However, a business organization must be cautious when using trade credit as a means of finance. If it is not properly managed, it can lead to liquidity problem. When payment for goods purchased on credit is unnecessarily delayed, it may damage the reputable of a business and impair its credit worthiness. As a direct consequence, poor credit rating can make it so difficult for businesses to get more trade credit from their regular suppliers and receive resistance from potential suppliers. Trade payable payment period is the velocity or frequency by which a business settles or liquidates its short term obligation with the suppliers (Afeef, 2011). The length of the period can be determined by averaging trade payables over credit sales in days or weeks or months. It is calculated by dividing account payable by purchase and multiplying with 365 days. Actually some authors like Mathuva (2010) argued that the longer the lengthy

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of the time, the better for the businesses. Contrarily, in my opinion, it may not be so in practice. If the period is too lengthy by unnecessarily delaying payment for goods purchased on credit, the suppliers may not be willing to extend more credit to such debtor. In turn, the normal business activities of the debtor may be badly affected, if it heavily relies on trade credit, and lead to poor profitability.

In Pakistan, the empirical study conducted by Akmal, Bushra, Muhammad, Shumaila, Abdul and Tariq (2020) revealed that trade payables management is more likely to directly affect firm's performance. Besides, in the work of Madugba and Ogbonnaya (2016), statistical evidence obtained by the researchers showed that efficiency in payables management, to some extent, can lead to increase in business financial performance. Based on this, the hypothesis below was formulated and tested to achieve the objective of the study.

H_{03}: Trade payable payment period does not have any significant impact on financial performance of selected listed manufacturing firms in Nigeria.

Cash Conversion Cycle

Cash conversion cycle is the length of time it takes a business to pay its suppliers for goods purchased and receive cash from its customers for goods sold. Cash conversion cycle plays a pivotal role in the determination of working capital requirement of a business. The shorter the cycle, the smaller the amount of working capital required, and vice versa. The length of time between when cash is paid to suppliers and when cash is collected from customers is determined by a lot of factors. The cycle is majorly affected by the rate of inventory turnover, receivable collection period and payable payment period. Business entity must ensure that those three areas of working capital are properly managed, in order not to make its cash conversion cycle to be too lengthy. If the length of time is too long, it can threaten the liquidity of the firm. This, however, can hamper the normal activities of the business and impact negatively on the performance of the firm. Besley and Brigham (2005) opined that cash conversion cycle is the distance between receivables collection time and payables payment time, on average basis. It is mostly ascertained in manufacturing firms by adding up raw material turnover time, work-in-progress turnover time, finished goods turnover time and receivables collection time, and deducting payables payment time from the sum.

In Cyprus, Maria and Petros (2010) investigated how firm's performance is influenced by working capital management. The empirical results obtained, using regression analysis, showed that firm's financial performance is influenced by cash conversion cycle among the sampled firms. In the same way, Akmal, Bushra, Muhammad, Shumaila, Abdul and Tariq (2020) found a significant direct association between firm's performance and cash conversion cycle in a quantitative study conducted in Pakistan. Also, Joshua and Nurudeen (2022) studied how working capital management affects business performance in Nigeria. The empirical study revealed that return on asset, return on sales and return on investment are significantly and positively influenced by cash conversion cycle. In deviation to the above results, Mike (2014) statistically observed a negative relationship between firm's financial performance and cash conversion cycle in a study conducted in Nigeria. Based on this, the hypothesis below was formulated and tested to achieve the objective of the study.

H_{04}: Cash conversion cycle does not have any significant impact on financial performance of selected listed manufacturing firms in Nigeria.

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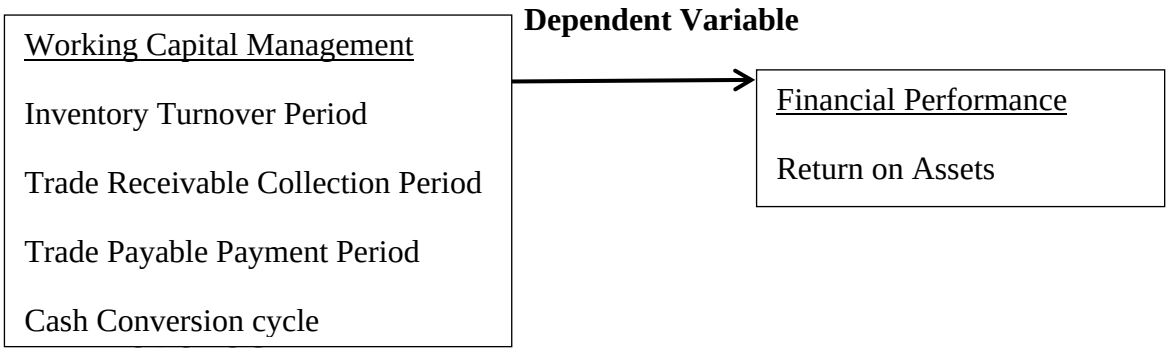
Conceptual Framework

The conceptual framework shows that working capital management measures (independent variables) affect firm's financial performance (dependent variables). When working capital management measures are put in place, they affect the efficiency of working capital and this in turn improves financial performance as measured by return on assets.

Independent Variable



Research Design

The study adopted and uses ex post facto research design because the data required for the study are already in existence.

Population of the Study

The population for this study consisted of all listed consumer goods sector in Nigeria, as at December 2020. The number of listed firms in this category was twenty one (21) as at December 2020. The reason for the selection of this sector is due to the nature of their products. All the firms in this sector are dealing in physical products and they usually maintain a sizable level of inventories, trade receivables, and trade payables.

Sample and Sampling Techniques

For the purpose of the study, the researcher sampled only nine firms from the population with complete audited annual reports for the selected period. Also, the researchers ensured that the selected firms have been listed by 2011 and remained listed till 2020. However, nine firms were selected for the study using convenience sampling technique.

Method of Data Collection

The study used secondary data which were obtained from the audited annual reports of the listed consumer goods sector to be selected from the population of the study.

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Measurement of Variables

Table 3.1 Measurement of Variable

Variables	Acronym	Measurements	Sources
Dependent Variable:			
Return on Assets	ROA	Profit after tax divided by total assets	Pais and Gama (2015)
Independent Variable:			
Inventory Turnover Period	ITP	Cost of goods sold / average inventory	Deloof (2003)
Trade Receivable Collection Period	TRCP	Account receivables x 365days/net sales	Deloof (2003)
Trade Payable Payment Period	TPPP	Trade payables/credit purchases x 365days	Deloof (2003)
Cash Conversion cycle	CCC	[(account receivable x 365days/sales)+ (account payable x 365days/purchases) – (inventory x365days/cost of sales)]	Deloof (2003)

Model Specification

The study used the statistical model below to analyze how working capital management affects financial performance of listed manufacturing firms in consumer sector in Nigeria.

$ROA=\beta_0+\beta_1ITP+\beta_2TRCP+\beta_3TPPP+\beta_4CCC++_M$

Where: ROA= return on asset; β=beta; β0-β4= Coefficient of independent variables; ITP=Inventory turnover period; TRCP=Trade receivable collection period; TPPP=Trade payable payment period; CCC= Cash conversion cycle

Method of Data Analysis

Data collected were analyzed using descriptive statistics and inferential statistics. The descriptive statistics include minimum values, maximum values, means and standard deviation. Of which, inferential statistics include correlation and regression analysis. The study also conducted some preliminary analyses before regression analysis which include normality tests, stationary test and other tests that are considered to be necessary for secondary data analysis.

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RESULTS AND DISCUSSION

Table 4.1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	100	33.32495	17.43534	2.246374	84.89091
ITP	100	5.019044	1.18269	2.836074	7.742945
TRCP	100	65.66386	42.12899	9.115633	231.8826
TPPP	100	96.69708	83.28758	8.326436	319.9439
CCC	100	93.4993	55.82222	2.055436	256.8543

NOTE: *ROA=Return on Asset (in percentage), ITP= Inventory Turnover Period (in ratio), TRCP= Trade receivable collection period (in days), TPPP= Trade payable payment period (in days), CCC= Cash conversion cycle (in days).*

Sources: *Author's Computation, (2022)*

Table 4.1 showed descriptive statistics of return on asset, inventory turnover, trade receivable collection period, trade payable payment period, cash conversion cycle for the period and firms engaged in the study. Result indicated that mean of return on asset stood at 33.3249%, with standard deviation of 17.43534% as well as minimum and maximum value of 2.246374% and 84.89091% respectively. Average values of inventory turnover, trade receivable collection period, trade payable payment period, cash conversion cycle stood at 5.019044 days, 65.66386 days, 96.69708 days and 93.4993 days, with standard deviation of 1.18269 days, 42.12899 days, 83.28758 days and 55.82222 days respectively. Also, the average value of return on asset stood at 33.32495 with standard deviation of 17.43534. This, however, revealed that the data for all the variables were close around the mean. Result also showed minimum and maximum values of 2.836074 days and 7.742945 days for inventory turnover, 9.115633 days and 231.8826 days for trade receivable collection period, 8.326436 days and 319.9439 days for trade payable payment period, 2.055436 days and 256.8543 days for cash conversion cycle, 2.246374 and 84.89091 for return on asset as well.

Correlation Analysis

Table 4.2 Correlation Matrix

	ROA	ITP	TRCP	TPPP	CCC
ROA	1.0000				
IT	0.3169	1.0000			
TRCP	-0.1034	-0.0851	1.0000		
TPPP	-0.0313	-0.0313	-0.0633	1.0000	
CCC	-0.0799	-0.0545	0.5586	0.1827	1.0000

Sources: *Author's Computation, (2022)*

Table 4.2 reported correlation between pair of variables used in the study. The result showed that return on asset has direct association with inventory turnover but inverse relationship with trade receivable collection period, trade payable payment period, cash conversion cycle

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and firm size given the correlation coefficients of 0.3169 for ROA and IT, -0.1034 for ROA and TRCP, -0.0313 for ROA and TPPP, -0.0799 for ROA and CCC as well as -0.2291 for ROA. This indicated that return on asset moves in the same direction with inventory turnover, but it moves in opposite direction to trade receivable collection period, trade payable payment period, cash convention cycle and firm size. Result also revealed correlation coefficients of -0.0851 for IT and TRCP, -0.0313 for IT and TPPP, -0.0545 for IT and CCC as well as 0.2291 for IT which showed that inventory turnover has inverse association with trade receivable collection period, trade payable payment period and cash conversion cycle, but direct relationship with firm size. Result in table 4.2 further indicated that coefficients of -0.0633 for TRCP and TPPP, 0.5586 for TRCP and CCC as well as 0.0925 for TRCP which showed that trade receivable collection period has direct connection with firm size and cash conversion cycle but indirect association with trade payable payment period. Lastly, result revealed that trade payable payment period has positive connection with cash conversion cycle and that firm size has inverse relationship with trade payable payment period and cash conversion cycle given the correlation coefficients of 0.1827 for TPPP and CCC, -0.2106 for TPPP and CCC.

Fixed Effect Panel Analysis

Table 4.3.1 Fixed Effects Estimates (Cross Sectional)

Series: *ROA IT TRCP TPPP CCC*

Variable	**Coefficient**	**Standard Error**	**T-Test Values**	**Probability**
C	5.967807	1.375282	4.34	0.000
ITP	.4135344	.4502716	0.92	0.361
TRCP	-.094673	.0830775	-1.14	0.258
TPPP	-.0089808	.0568525	-0.16	0.875
CCC	-.0647654	.0562461	-1.15	0.253
Firms Effects				
PZ CUSSON	-1.694953	.192712	-8.80	0.000
GUINNESS	-.3642928	.2024321	-1.80	0.075
NIG BREW	-.2926235	.2228562	-1.31	0.193
DANG SUGAR	-.3909787	.2124769	-1.84	0.069
NASCON	-.2066004	.2591521	-0.80	0.428
DANG FLOUR	-.9721884	.1921942	-5.06	0.000
FLOUR MILL	-1.03716	.1992552	-5.21	0.000
NESTLE	-.2786955	.2889569	-0.96	0.338
VITAFOAM	-.432012	.2688036	-1.61	0.112

R-square=0.6838 Adjusted R-square= 0.6317 F-statistics=13.13 Prob(F-stat)=0.0000

Note: *Reference firm is Unilever Plc*

Sources: *Author's Computation, (2022)*

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Table 4.3.1 presented the fixed effect estimates of the selected quoted firms over the period engaged in the study. Result revealed coefficient and probability of 0.4135344 and 0.361 ($p > 0.05$) for IT, which indicated that inventory turnover has positive insignificant effect on return on asset. Result also showed coefficients and probability of -0.094673 and 0.258 ($p > 0.05$) for TRCP, -0.0089808 and 0.875 ($p > 0.05$) for TPPP, -0.0647654 and 0.253 ($p > 0.05$) for CCC which implied that trade receivable collection period, trade payable payment period, cash conversion cycle have negative and insignificant effect on return on asset. Deviation intercept term stood at -1.694953 and 0.000 ($p < 0.05$), -0.3642928 and 0.075 ($p > 0.05$), -0.2926235 and 0.193 ($p > 0.05$), -0.3909787 and 0.069 ($p > 0.05$), -0.2066004 and 0.428 ($p > 0.05$), -0.9721884 and 0.000 ($p < 0.05$), -1.03716 and 0.000 ($p < 0.05$), -0.2786955 and 0.338 ($p > 0.05$), -0.432012 and 0.112 ($p > 0.05$) for PZ Cusson, Guinness, Nigerian Brewery, Dangote Sugar, Nascon, Dangote Flour, Flour Mill of Nigeria, Nestle and Vitafoam respectively. Reported R-square statistics in the table above stood at 0.6838 which showed that about 68.38% systematic variations in return on asset can be explained by variations in inventory turnover period, trade receivable collection period, trade payable payment period and cash conversion cycle.

Random Effect Analysis

Table 4.3.2 Random Effect Estimation

Series: *ROA IT TRCP TPPP CCC*

Variable	Coefficient	Standard Error	Z-Test Values	Probability
C	5.313913	1.319645	4.03	0.000
ITP	.5252275	.4028056	1.30	0.192
TRCP	-.0934772	.0809104	-1.16	0.248
TPPP	-.0134169	.0551036	-0.24	0.808
CCC	-.0611824	.0550033	-1.11	0.266

R-square=0.5589Wald chi2(5)= 11.50Prob> chi2 =0.0423

Table 4.3.2 presented the fixed effect estimates of the selected quoted firms over the period engaged in the study. Result revealed coefficient and probability of 0.5252275 and 0.192 ($p > 0.05$) for IT, which indicated that inventory turnover has positive insignificant effect on return on asset. Result also showed coefficients and probability of -0.0934772 and 0.248 ($p > 0.05$) for TRCP, -0.0134169 and 0.808 ($p > 0.05$) for TPPP, as well as -0.0611824 and 0.266 ($p > 0.05$) for CCC which implied that trade receivable collection period, trade payable payment period, and cash conversion cycle have negative and insignificant effect on return on asset. Result in addition revealed coefficient and probability of -0.1819238 which indicated that firm size exerts negative significant effect on return on asset. Reported R-square statistics in the table above stood at 0.5589 which showed that about 55.89% systematic variation in return on asset as measure of financial performance, can be explained by variation in working capital management measures when firm heterogeneity is incorporated into model as error term.

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Post Estimation Test

Table 4.3.3 Hausman Test

Null hypothesis	**Chi-square stat**	**Probability**
Difference in coefficient not systematic	0.63	0.9865

Source: *Author's Computation, (2022)*

Table 4.3.3 revealed a chi-square value of 0.63 alongside a probability value of 0.9865. The result showed that there is no enough evidence to reject the null hypothesis that differences in coefficients of fixed effect estimator and random effect estimation is not systematic. Therefore given the fact that the difference between fixed effect estimates and random effect estimates is significant, the most consistent and efficient estimation for the investigation conducted in the study is the random effect estimate presented in the table above.

Table 4.3.4 Other Post Estimation Test

Wald test		
Null hypothesis	**Statistics**	**Probability**
Panel homoscedasticity	2.5189	0.5679
Pesaran test		
Null hypothesis	**Statistics**	**Probability**
No cross sectional dependence	-1.507	0.1318
Wooldridge test		
Null hypothesis	**Statistics**	**Probability**
No AR(1) panel autocorrelation	0.3694	0.5583

Source:*Author's Computation, (2022)*

Result presented in table 4.3.4 showed that there is no evidence to reject null hypothesis on panel homoscedasticity, null hypothesis of no cross sectional dependence and null hypothesis of no AR (1) panel autocorrelation, given the reported probability statistics of 0.5679 > 0.05 for Wald test, 0.1318> 0.05 for Pesaran test, and 0.5583> 0.05 for Wooldridge test. Hence it can be established in the study that assumptions of equal variance of residual terms and absence of serial autocorrelation for the estimated panel-based model are fulfilled.

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CONCLUSION

The working capital management and financial performance of quoted firms in the consumer goods sector in Nigeria was investigated in this study. In order to construct a quality framework, this study analyzed numerous literatures in terms of conceptual, theoretical, and empirical literatures. Working capital management, in all of its dimensions (inventory management, trade payable management, trade receivable management, and cash conversion cycle), has an insignificant effect on financial performance, as measured by return on asset, it is necessary to conclude that working capital management has an insignificant effect on corporate performance in Nigeria. As a result, working capital management is insufficient to explain the financial performance of publicly traded firms in the consumer goods sector in Nigeria.

RECOMMENDATION

In line with the findings and conclusion of the study, the following recommendations were made:

i. Firms should set the level of economic order quantity to ensure sufficient inventory is ordered at minimal costs and establish an inventory control system to assist in efficient management of inventory

ii. Firms should regularly review payables management policies to ensure that they align with suppliers expectations in order to enhance credit worthiness and trust

iii. Firms need to design and implement adequately, policies that would shorten collection period and enhance collection of account receivables in order to ensure increase their liquidity position, and avoid cases of bad debt.

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ASSESSMENT OF PROFITABILITY AND IMPACT OF RISKED VARIABLES ON THE VIABILITY OF AJAOKUTA-KADUNA-KANO GAS PIPELINE

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ABSTRACT: *The Nigeria Gas Master Plan (NGMP) was developed in 2008 as a result of the Country's resolve to become a major player in the international gas market as well as to lay a solid framework for gas infrastructure development within the domestic market. The full liberalization of the gas industry translates to a clear definition of the roles of the different stakeholders in the industry, viz. government, institutional financiers, investors, and others. In line with the core mandate of infrastructure development and market expansion of the master plan, the pipeline is identified as a major and significant infrastructure for natural gas transportation and distribution. The South-North pipeline, i.e., Ajaokuta-Kaduna-Kano (AKK) pipeline option, requiresa significant upfront investment running into billions of dollars and is also characterised by a long lead time as many years may elapse before revenues begin to accrue. Because of the large upfront expenditure required for this project, it is imperative that investors are well informed of the risk to which their capital is exposed. This research seeks to evaluate using appropriate techniques for the economic justification of AKK. In assessing the economics of the AKK pipeline option, the discounted cash flow analysis (DCF) was employed using the following project profit indices viz; NPV, IRR, and payback. Initial investment cost (IIC) comprises the cost of constructing pipelines and compressor stations. Based on industry practice, operations and maintenance costs were assumed to be 2% of IIC, the debt ratio was 60:40, and pipeline capacity was estimated using the Weymouth formula as provided in the pipeline's rule of thumb. The cost of equity and debt was accounted for using an average weighted cost of capital. Finally, a probabilistic analysis using "@risk" was run on key inputs to test their sensitivities. AKK was estimated to have an annual gas delivery of 2.3bcm, an investment cost of $2.009 billion, and a discount rate of 15% was used. The pipeline was found to be viable, with an NPV of $484 Million, an IRR of 17.7%, and a payback period of 7 years for forty years of operation. The pipeline cash flow model was sensitive to discount rate, CAPEX, and Pipeline capacity. The Ajaokuta- Kaduna-Kano pipeline has a positive NPV of approximately $484.40 million for forty years of operation. This results in an average of about $12.11 million present value of operating net cash flow per annum, which means that the business cash flow can meet all the operating costs and still return a positive net profit.*

KEYWORDS: Profitability, Risked variables, Viability, AKK.

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INTRODUCTION

Natural gas assumes an extremely important status worldwide, both as a source of cleaner energy and a major feedstock for many products. EIA-International energy outlook (2017) projects increased world consumption of marketed energy from fuel sources-except coal, with natural gas as the fastest growing fossil fuel. The report projects an annual global natural gas increase of 1.4 %/year to 2040. Most of the world's energy growth will occur in emerging economies where strong, long-term economic growth drives increasing demand for energy.

Africa is seen by many as the next emerging market. David McDonald (2017), founder of the global millennia on Quora, posits that a drastic shift toward financial sustainability is currently happening in Africa, leading many analysts to call it the next emerging market. Apart from the financial burst, energy demand is soaring. According to BP statistical review, Africa's energy consumption grew by 1.2 percent in 2016, faster than the global average of 1.0 percent. Its share in global primary energy consumption reached 3.3 percent, the highest in BP's record. The dominance of oil and gas resources in the total energy mix will continue up to 2040 in Africa, as reported in the IEA Africa energy outlook, due to the slow growth of their potential replacement and/or alternative (Adamu &Muttaqa, 2016).

Africa is endowed with vast quantities of both fossil and renewable energy resources. It is one of the continents in the world with frequent and substantial new findings on oil and gas. According to a report by Africa Development Bank and Africa Union, Oil and Gas in Africa, in the past 35 years, oil reserves in Africa grew by over 25 percent while gas grew by over 100 percent. Africa's rich oil and gas fields and the prospects for more discoveries have transformed it into an important player and a key target in global oil and gas production (Oil and Gas in Africa, 2015).

In particular, Nigeria's underdeveloped natural gas reserves are a logical target of the international giants in the sector and for utilization and monetization. Nigeria's abundant natural gas resources must be more fully utilised to meet the rapidly increasing demand for energy, domestically and internationally. Nigeria's Natural gas availability, versatility, accessibility, and, more importantly, its clean-burning characteristics, when compared to other fossil fuels, is a substantial driver for its further utilisation in the country (Chekezie and David, 2014). The mgas market has changed in the last couple of decades, and it is currently experiencing rapid market expansion compared to other fossil fuels (Economides and Wood, 2009). Investment in natural gas, especially in transportation and storage, continues to grow to respond to increases in demand from the three major demand components- electric power generation, industrial use, and export.

As Nigeria heightens its resolve to become a major player in the international gas market and lay a solid framework for gas infrastructure expansion within the domestic market, the Nigerian gas master plan of liberalisation was approved in 2008. By fully liberalizing the market, the different roles that the government will play in institutional financiers, investors, and other stakeholders in the Natural Gas industry are clearly spelled out and undergoing further review as the plan moves into the implementation stage (Akinpelu, Omole, and Falode 2010). In line with the core mandate of infrastructural development and market expansion of the master plan, the pipeline is identified as a major and significant infrastructure for utilising natural gas. Pipeline networks are important because they run

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across multiple states to bring fuels and gases to a variety of consumers, including homeowners, businesses, and power plants (Adamu, 2015).

The Ajaokuta-Kaduna-Kano pipeline option South-North requires a large upfront investment running into billions of dollars. It is also characterised by a long lead time, as many years may elapse before revenues begin to accrue. Because of the large upfront expenditure required for these projects, investors must be well informed of the risk to which their capital is exposed (Akinpelu and Isehunwa, 2016).

This research aims to appraise the economic justification of the AKK gas pipeline using different evaluation tools used in the oil and gas industry and to account for the uncertainties involved in the gas development project.

The research objective is to determine the economic viability of a key gas infrastructure project – the AKK pipeline project. Based on these economics, it will reveal if the gas pipeline project will make economic sense to investors for consideration as an investment option in the gas infrastructure expansion drive in the country. Another objective is to estimate the profitability of the gas route to find out how lucrative, intensive and sensitive these investments are compared to others in the industry in the country.

The research is significant as it provides empirical and analytical analysis of the proposed Ajaokuta-Kaduna-Kano gas pipeline. It presents a kind of conceptual structure indicating its viability or otherwise to government and prospective investors in the gas sector. It also informs the government and prospective investors on the resulting costs and benefits of the gas pipeline to guide them in making informed investment decisions. The research is also significant because it analysis the sensitivity of the gas project to different scenarios and exposes the risk involved in the gas project to investors.

Nigeria Gas Development Projects

In Nigeria, it is technically feasible to harness natural gas for social and economic development, like in most developed countries of the world. Christiansen and Haugland (2001) noted that it is common knowledge that to find outlets for some of the gas in the domestic and regional networks, there should be a deliberate policy on gas development to eliminate routine gas flaring that is synonymous with the oil and gas industry in Nigeria. Thus, natural gas gathering, transmission, and distribution infrastructure in the domestic, regional, and international networks are critical to gas utilization. The capture and use of natural gas represent the opportunity to plan and implement economic growth and environmental preservation for sustainable development in Nigeria. Undoubtedly, domestic, regional, and international gas development projects promote gas utilization and export, energy efficiency, and sustainable management of non-renewable resources.

The selection of an appropriate development concept is required for the effective development of the hydrocarbon gas field. A number of technological solutions and engineering concepts for handling and processing gas are available. Nevertheless, the economics of any gas project is determined by the following factors: available gas reserves, cost of field development and operation, gas price, sales contracts, and governing fiscal regimes. The main technologies currently used or planned in utilising stranded natural gas resources in Nigeria are; Liquefied Natural Gas, Compressed Natural Gas, Gas pipeline, etc.

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Gas pipeline

Currently, natural gas is transported to the markets by pipelines. Transporting natural gas by pipelines which accounts for 75% of the total volume of gas transported in the world (Deshpande and Economides, 2005), is convenient and economical for onshore purposes. Pipeline is the principal and most convenient method of transporting gas, either from an offshore location to onshore for processing or to interface with existing distribution grids. It is also used for the transportation of export gas. For offshore transport of natural gas, pipelines become challenging as the water depth and the transporting distance increase. The economics of gas transportation through a pipeline is a function of distance. Durr et al. (2007) reported the relative costs of gas delivery by pipelines versus LNG. Generally, a sub-sea pipeline is limited to transporting large gas volumes over relatively short distances. Similarly, for gas volumes less than 200 MMSCFD (million standard cubic feet), the use of pipelines will lose viability to other alternatives such as Compressed Natural Gas (CNG) and electricity conversion (gas-to-wire) (Eriksen et al., 2002).

Regional Delivery System

Pipeline delivery systems in Nigeria can be categorized into two- Regional delivery systems and Nigeria Natural gas delivery systems. The regional system is an export line that delivers gas to the African sub-region, and plans are underway to expand the system to Europe. The West African Gas Pipeline (WAGP) was established as an international gas transmission system to transport natural gas from Nigeria to consumers in Benin, Togo, and Ghana. Headquartered in Accra, WAPCo owns and operates the WAGP system, which consists of 691km of pipelines and associated processing/receiving facilities in Lagos, Itoki, Tema, Takoradi, Lome, and Cotonou.

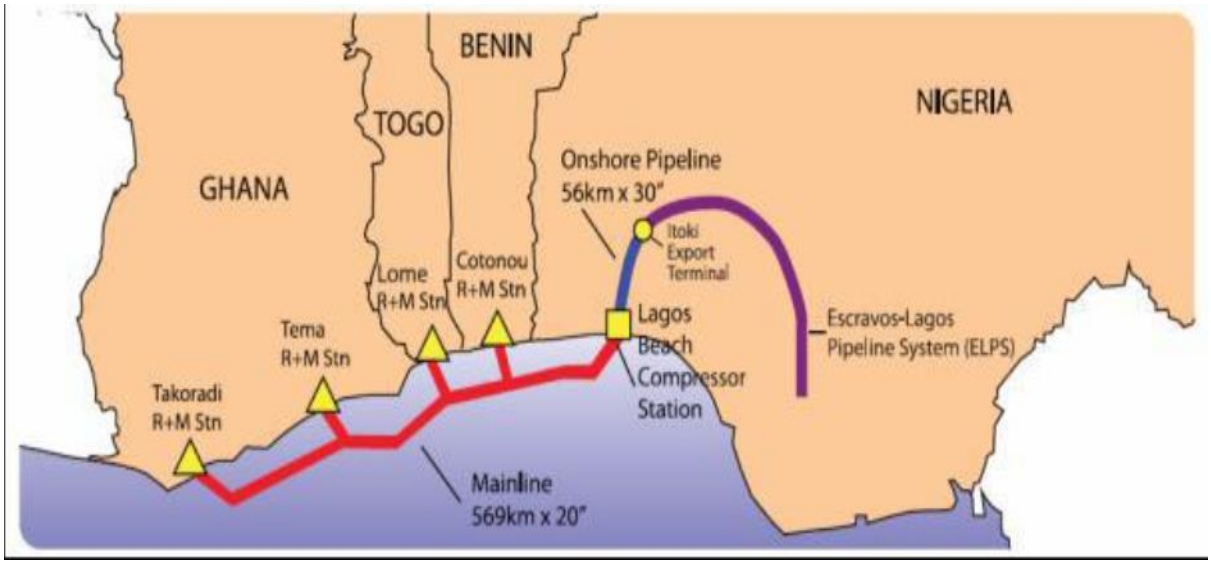

Figure 1: West Africa Gas Pipeline (WAGP). Sourced: WAGP value chain market forum.

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Gas shipped through WAGP is produced through a gas production agreement by NNPC/SPDC and NNPC/CNL. The produced gas is transmitted through ELPS, guided by a gas transport agreement. WAPCO takes delivery of the gas and delivers the same base on the provisions of a gas sales agreement to Volta River Authority (VRA) and CommuninauteElectrigue du Benin (CEB) at a cost of $8.358.

Trans-sahara Pipeline System

Nigeria, in collaboration with Niger and Algeria, proposes a trans-Saharan gas pipeline project aimed at transmitting natural gas from Nigeria's Niger Delta for delivery to the European Market. The 4,400 km pipeline project is poised to occupy a more important place in Europe energy balance. It is projected that natural gas imports may reach 85% of EU gas consumption by 2030 raising the issue of long-term security of supply (Fisoye, 2017). The supply of gas from Nigeria to the European Market would be approximately half the distance from Western Siberian fields and only 25% longer than the northern most offshore fields in Norway (Odumugbo, 2010). Therefore, Nigerian gas should be able to compete favourably in the European market, which already consumes Nigerian LNG. The Trans-Sahara Gas Pipeline (TSGP) project will help to integrate the economies of the sub-region in line with objectives of NEPAD, promote growth and poverty alleviation by opening up economic growth opportunities in the sub-region and assist in the fight against deforestation and desertification by preventing the widespread use of wood for energy (Fisoye, 2017). The project will also recover flared gas in Nigeria, which represents a loss of energy equivalent to 220.000 barrels/day with serious environmental consequences and emissions (EIE, 2017).

The proposed natural gas pipeline will be designed to connect to the existing Trans-Mediterranean, Maghreb-Europe, Medgaz, and Galsi pipelines across the Mediterranean Sea. The length of the pipeline is estimated at roughly 4,400 kilometers, with over 1000km in Nigeria, 840 km in Asia, 2300 km in Algeria, and 220 km connecting Algeria to Spain. The pipeline would initiate in the Niger Delta basin, crossing vast spans of the Sahel region and the Sahara desert before reaching HassiR'Mel, a natural gas and oil pipeline hub running to the Algerian coast.

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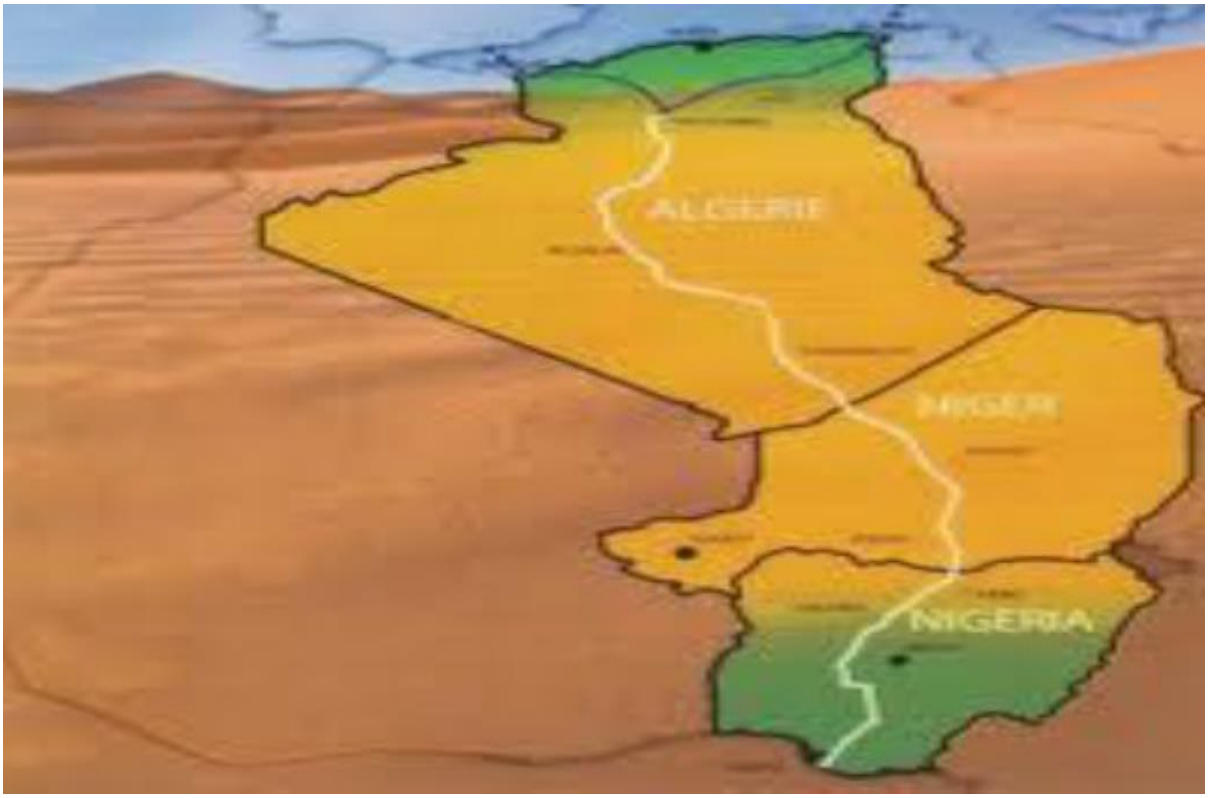

Figure 2: Trans-Sahara Gas pipeline. Sourced: Fisoye D., 2017.

Nigeria Natural Gas Delivery System

Nigeria Gas Company, a subsidiary of NNPC owns the over 1000 km gas transmission system in Nigeria comprised of the western network system, Northern network system, and Eastern network system. Majority of these pipelines are laid in the Niger delta region. Other pipelines beyond the gas-producing region are the Ajaokuta gas pipeline and the main Nigerian Escravos-Lagos Pipeline system that links the pipelines to the Lagos beach, which links to the West African gas pipeline.

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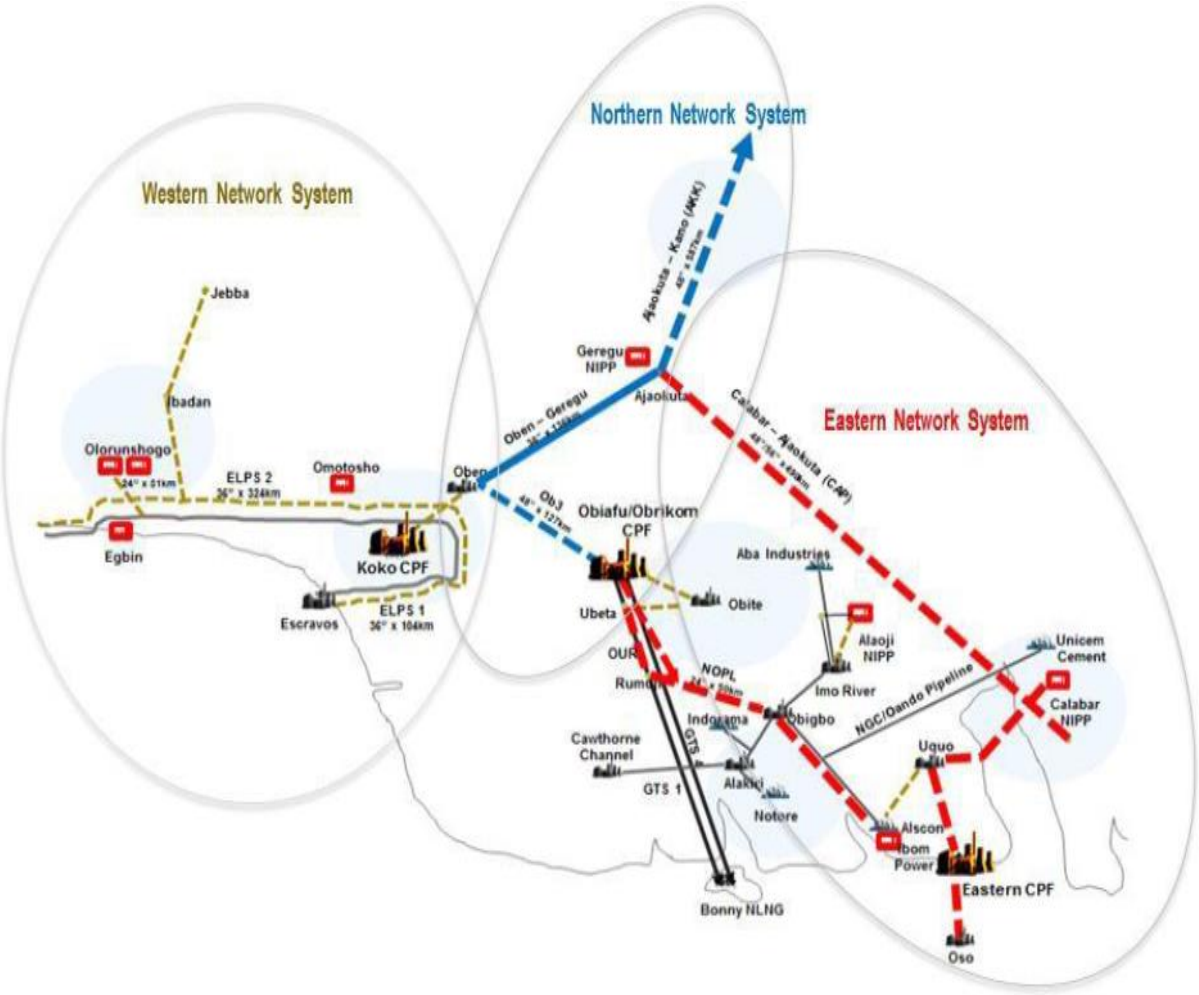

Figure 3: Nigeria Main Pipeline Systems. Sourced: Fisoye D., (2017).

Escravos-Lagos Pipeline System (ELPS)

Escravos-Lagos pipeline system (ELPS) is a natural gas pipeline built in 1989 to supply gas from the Escravos region of the Niger Delta area to Egbin Power Station, Lagos in Nigeria. The 800 mcf/d western infrastructure now feeds the southwest's s residential and industrial consumption centers and the West African gas pipeline. Subsequent spur lines from the ELP supply Delta power plant at Ughelli, Warri Refining and Petrochemical Company at Warri, the West African Portland Cement (WAPCO) Plant at Shagamu and Ewekoro, industries at Ikorodu, City Gate in Ikeja Lagos. Since the NIPP power plants emerged, ELPS has been the major gas supply artery to the power plants in Nigeria. ELPS is fed from two main systems: the Western Gas Gathering system and the southern Gathering system. The Western Gas Gathering System comprises compressor stations (CS) at Escravos Beach, Makaraba (Chevron), Jones Creek, and the Odidi CS/gas plant (GP). The Chevron Nigeria Limited Escravos Gas Plant is also connected to the gathering system that feeds gas to the Warri Gas Treatment Plant. The Southern Gas Gathering System consists of Utorogu Gas Plant. It includes a 12-inch spur line into the Ughelli metering station, which can supply gas to the NEPA Ughelli Delta VI Power Station. The Utorogu Gas Plant is connected via a 14-inch

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pipeline for the supply of AG gas into the Aladja collecting and distribution system of which the Ughelli NAG plant is part. Warri GP blends the gasses from the Western and Southern systems. The result is that the export pressure of Utorogu GP determines the export pressure into the ELPS from the Warri plant.

Escravo-Lagos Pipeline System (Expansion)

The ELPS expansion project aims to increase the ELPS system's pipeline capacity from about 1.1 bscfd to 2.2 bscfd. Phase1 of the expansion project involved looping the Escravos Node to Oben Node (PS1) segment of the ELPS. This was completed in 2013. The ongoing looping of the PS1 –PS5 segment of the ELP is ongoing, and nearing completion. After the complete looping of the ELPS, the mainline (PS1-PS5) segment will have the capacity of transporting about 2.2 bscfd with the right pressure regime.

Ajaokutoa-Kaduna-kano Gas Pipeline

AKK, also known as the trans-Nigeria gas pipeline is an extension of the south to the north gas pipeline. The south to the north gas pipeline is 56 inches and 48 inches diameter pipelines, from Calabar to Ajaokuta (of 490 kilometres), Ajaokuta to Kaduna (of 495 kilometres), and Kaduna to Kano. This is also part of the Nigerian gas master plan, which will ensure adequate gas supply to the north, improve gas infrastructure expansion within the domestic market and boost power generation (Ige, 2014). AKK is estimated to cost more than $2 billion with a debt and equity ratio of 60:40 (GMP, 2017).

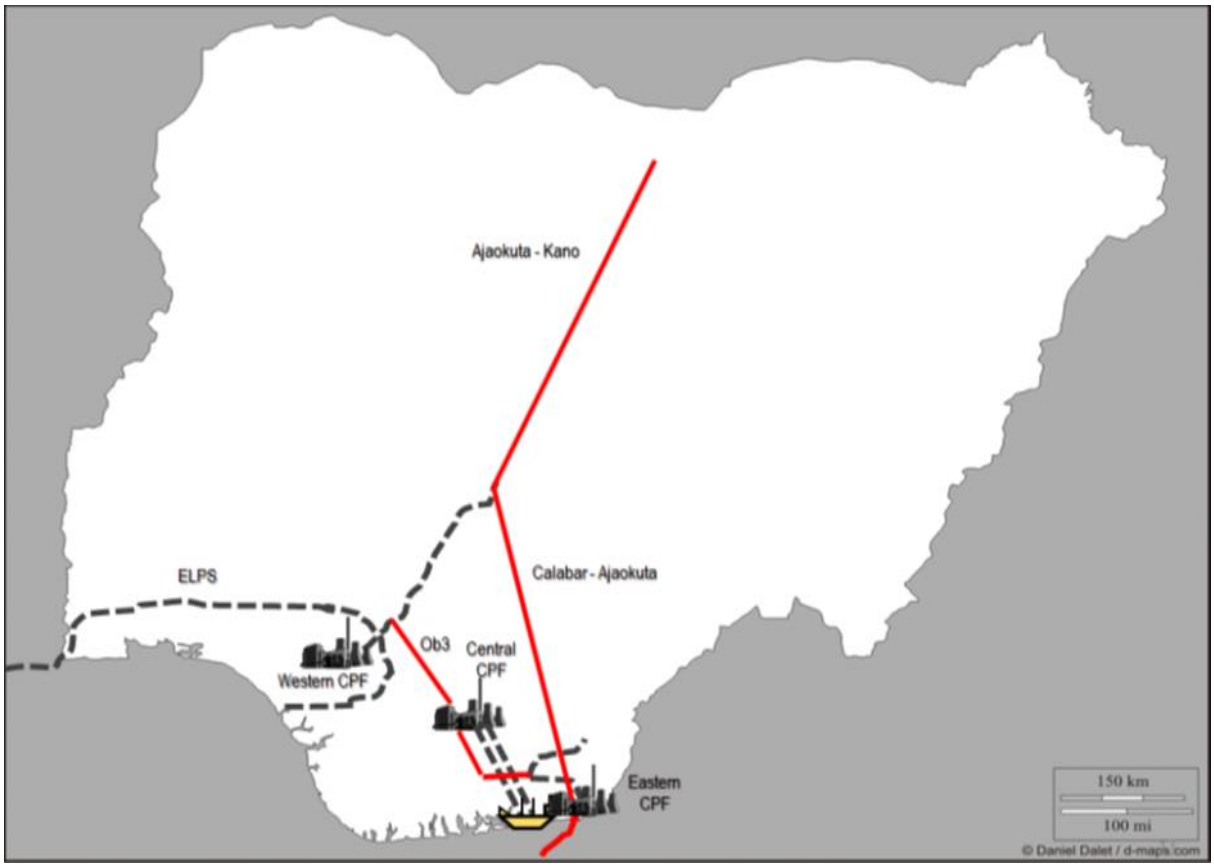

Figure 4: Nigeria Gas Transmission system. Sourced: Danieldalet/d-maps.com

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Commercial Framework

The gas pricing framework carefully balances the requirements of various stakeholder groups and comprises three sections – a regulated regime, a pseudo regulated, and a market-led regime. The figure below presents a schematic of the gas pricing framework approved by the Government. This framework can be applied generically to any sector. The framework plots the proposed gas price for the sector against a variable called the sector strategic saturation index, through which the capacity of a sector is measured against the demand for its products.

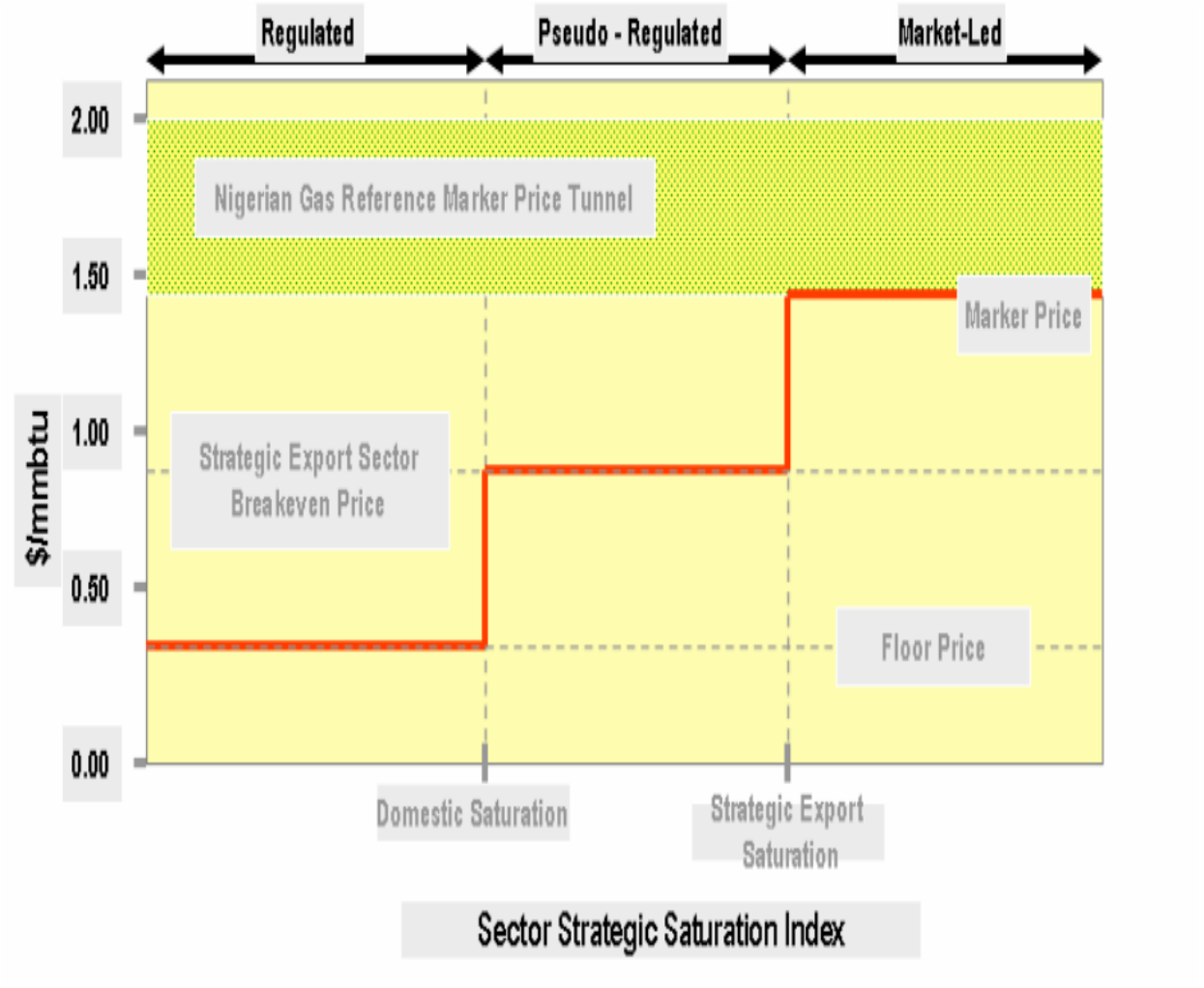

Figure 5: Sector Strategic Saturation Index. Sourced: Gas Aggregation Company of Nigeria.

METHODOLOGY

Here, the methodology in determining the economics of the Ajaokuta-Kaduna-Kano gas pipeline would be discussed. In determining the costs and benefits of the gas pipeline route, first, the capital structure comprising of debt and equity and the cost of capital of the gas pipeline will be estimated. This will be followed by an estimation of investment cost

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comprising gas pipeline material cost, pipe coating, wrapping cost, cost of constructing the compressor stations, gas delivery, and labour cost using models adjusted for inflation already existing in the literature.

The overall profitability of the proposed gas pipeline project will then be analysed using the NPV, IRR, and payback period methods.

Determination of Capital Structure and Cost of Capital

Capital structure reflects how much a project's financing results from debt as opposed to equity. Firms choose an appropriate (optimal) debt level based on a trade-off between benefits and the cost of debt (Krishnan and Moyer, 1997). Pierru, Roussanly, and Sabathier (2013) allude that the financing mix of projects is susceptible to vary substantially concerning the industrial sector. In project finance in the oil and gas industry, a typical financing mix consists of 20-40% equity, and the rest is raised as debt (Dailami and Liepziger, 1998). The average debt ratio is 67%, according to Kleimeier and Megginson (2001). The capital structure of the gas pipeline investment will be 60% debt and 40% equity, which is in line with the capital structure of most proposed domestic gas pipelines as contained in the Nigeria gas master plan. And it is also the capital structure of an average oil and gas listed company in the country.

So, the cost of equity and the cost of debt will be used to arrive at the cost of capital for the pipeline investment appraisal. For the cost of equity, there are various ways to calculate it. Here, the common approach, the capital asset pricing model (CAPM), in which an equity risk premium is added to the risk-free return, will be used (Oni, 2017). The cost of debt usually reflects the yield to maturity (or annual return) on the company's debt (Oni, 2017). Weighted Average Cost of Capita (WACC) will then be deployed to account for both cost of debt and the cost of equity, from which all cash flows will be discounted. WACC is used because it calculates the marginal cost of each source of capital marginal cost and then takes the weighted average of these costs (Oni, 2017).

$$WACC = ((E/V)*Ce) + (((D/V) * Cd) *(1-TX))$$

Where;

E is the total value of the equity,

V is the total value of the capital,

D is the total value of the debt,

C*e* is the cost of equity,

C*d* is the cost of debt and

Tx is the tax rate, which is 30 percent in Nigeria (FIRS, 2017).

Starting with the cost of debt, I will use the after-tax cost of debt going by (Oni, 2017), which is:

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$$cd = r * (1 - Tx)$$

Where:

r is the prime lending rate of the Nigerian commercial bank, which is 17.42. The prime lending rate of 17.42 is a one-year (May 2017- April 2018) average (CBN, 2018) and has been the average prime lending rate for some time now (Trending Economics, 2017). This rate is used based on the assumption that a bank will provide the debt to fund these projects within Nigeria.

The CAPM is a standard formula in finance, and it is stated as follows (Oni, 2017).

$$ke = rf + \beta(rm - rf)$$

Where:

ke is the expected rate of return on asset or cost of equity,

rf is the risk free rate of return,

rm is the expected market rate of return,

($rm-rf$) technically measures what is called the equity risk premium (ERP), which measures the additional compensation to the investor for taking the risk of investing in a riskier business, and β measures the rate at which the returns on your project fluctuates with that of the market. Beta is more project/asset specific. $rf$is the rate of return on short-term Government securities that the investor may wish to invest in, usually 90-day Treasury bill. However, the duration of your project might be better as a matching timeline for your risk-free asset (Oni, 2017). The yield on the Nigerian government bond is used as the risk-free interest rate. According to investing.com, the yield on the Nigerian government 5-year bonds has averaged around 15.61 percent for 52 weeks. The return on the bonds changes frequently; its 52 weeks range is 14.638-16.588.

The ERP, as mentioned, is the average return that investors require over the risk-free rate for accepting the higher variability in returns common for equity investments i.e., the ERP reflects a minimum threshold for investors to be willing to invest (KPMG, 2018). According to Moody's risk premium report, Nigeria's estimated equity risk premium has soared from 11.15 percent to 18 percent. So I used the latest ERP for this analysis, which is 18 percent. Therefore, the expected market portfolio return can be assumed to be 18 percent plus a 15.61 percent risk-free rate, giving 33.61 percent as the expected market portfolio return. This is the maximum return the investor will expect for investing in a riskier investment, and it will be the rm in the equation above. Rm accounts for some peculiar risk factors associated with running a business in the country. The next variable to explain is β (Beta). Beta measures the rate at which the returns on your project fluctuate with that of the market. It is calculated as the slope of a stock's return against the market's return (Oni, 2017). Beta is more project/asset specific. A Beta lower than one shows that the stock value is less volatile than the stock market, and if it is higher than 1, it shows that it is more volatile than the market. The formula for the Beta is given as follows

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$$\frac{Equity\ Beta}{1+\frac{1-tax}{debt}\left(\frac{debt}{equity}\right)}$$

Because there is no available data from Nigerian stock market for domestic gas pipeline investment, as there are no listed gas pipeline companies in the country, the average $Beta$ of seven listed oil and gas companies (BOC Gases Nigeria PLC, Conoil PLC, Eterna Plc, Forte Oil Plc, Mobil Oil Nigeria Plc, MRS Oil Nigeria Plc, Oando Plc) in the country is used as the proxy Beta for the investments, which was 0.86 as at July 2015 (Adamu, 2015).

Because the capital structure contains debt, paying off the debt by gradual retirement will be accounted for using the amortization formula (Miam, 2004).

$$Av = pv\left[\frac{i(1+i)}{(1+i)-1}\right]^{t}$$

Where

t is the total number of periods.

i is the interest

Determination of Initial Investment Cost

The initial investment cost (IIC) of this pipeline is estimated using the equation by Shashi, 2005.

$$IIC = E(CCP) + E(CCMs)$$

Where:

E (CCP) is the expected cost of constructing/laying down the gas pipelines, and

E (CCMS) is the expected cost of installing compressor stations.

The cost of constructing the pipeline E (CCP) consists of fixed cost which is the cost of material, and right of way (ROW) if applicable. It also consists of the costs of process equipment, supporting facilities, direct/indirect labour etc. According to Shashi (2005), the pipeline construction cost formula is as follows:

$$E(CCP) = PMC + PCW + LC$$

Where:

PMC is the pipe material cost, and

PCW is the cost of pipe coating and wrapping, and

LC stands for the labour cost of installing the pipeline.

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The model established by Shahi Menon, (2005) will be adopted with adjustment for inflation using CPI, provided by the Bureau of labour statics of the USA, to estimate the cost of laying down a pipeline. He suggested that the costs of constructing a pipeline include the costs of pipe materials, pipe coating and fittings, and the cost of labour for installation. These parameters were incorporated in the equation above and are defined as follows:

$PCW = PMC * 5\%.$

Therefore, the PCW is 5% of the pipe material cost, which is defined in the equation below.

$$PMC = \frac{10.68(D-T)TLC * 5280}{2000}$$

Where:

D is the diameter (outside) of the pipe in millimeters (mm),

L stands for the length of the pipe in km,

T stands for the pipe wall thickness in mm and

C is the pipe material cost in $/metric ton (NGMP, 2013).

The labor cost during installation is proportional to a number of variables, such as terrain, length, and pipeline brand. The contractor estimates labour costs with a contingency and allowance and prepares a lump-sum bid to win the contract (Haneberge and Bruce, 2013). Data from some gas construction companies show a fixed amount for every diameter and distance of the pipeline, normally $15,000 as the average labour cost during installation (Mohipour, Golshang, and Murray, 2003). In line with the above and for the purpose of this research, the labour cost of pipeline installation will be estimated using the model by Shashi Menon, 2005.

$$LC = \$15000 * diameter\ (in) * length$$

A compressor station is installed to keep natural gas flowing continually. A compressor station is normally constructed every 50-100 miles along the pipeline (Interstate Natural Gas Association of America, 2010). The minimal interval is adopted for this work to maintain high pressure. The cost of constructing and installing compressor stations will be estimated using the model established by Shahi Menon (2005), which estimates the compressor cost as $2000 per Horsepower capacity of the compressor. This figure will be corrected for inflation. Therefore, the cost of compressors for a pipeline will be $2000 multiplied by the number of compressors and then multiplied by the Horsepower capacity of the compressors.

$$CCMS = \$2000 * Horsepower * number\ of\ compressors$$

The equation below will be used to determine pipeline thickness (t), this is as contained in Shashi Menon (2005), pipeline Hydraulics.

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$$t = DO - DI$$

Where:

DO is the diameter outside, and

DI is the diameter inside.

Operating and maintenance costs will be forecasted, Although the Ajaokuta-Kaduna-Kano pipeline is not operational. O and M cost consist of costs of labour, supervision, energy, telecommunication, miscellaneous, etc. An assumption is made based on existing literature: to adopt a fixed percentage of the investment cost to be the annual O and M cost. 2% of the costs of constructing the pipeline will be assumed to be the O and M costs annually (Krey and Minullin, 2010).

Depreciation will also be accounted for using the Straight-line depreciation method, which allocates an asset's cost over its productive lives (Libby, 2004). Under the Straight-Line method, an equal portion of an asset's depreciable cost is allocated to each accounting period over its estimated useful life, which is 40 years (Libby, 2004). However, because we will have a salvage value (SV) of the gas pipelines in our analysis, a salvage value will be considered, deducted from the value of the pipelines before applying the straight-line depreciation, and is given as follows (Elliot, 2008).

$$dr = (cost - sv) * \frac{1}{useful} life$$

$$Sv = iic * (1 - dr) time$$

Where dr is the depreciation rate and sv is salvage value.

Annual Flow of Gas

For the annual gas delivery of the gas pipeline, the availability rate will be multiplied by the annual gas delivery capacity to arrive at the actual gas delivery of the pipeline (MacAllister, 2009).

$$\sum_{n=1}^{N} \quad Availability\ factor * annual\ pipeline\ capacity\ (mcf)$$

The availability rate is applied base on the existing pipelines average availability rate in the country, which is 60% (NGC, 2017). This account for the number of days the pipeline will be operational. The Nigerian regulated gas transportation cost of $0.80/Mcf is used (GACN, 2018). To calculate the volume of gas/capacity of a pipeline, the Weymouth formula is used as provided in pipeline rules of thumb (MacAllister, 2009), which assumes that the optimum number of compressors are in place to achieve the desired pressure level of the gas at the destination using the lowest compressor station intervals. It is presented in the equation below:

$$Q = \frac{(871)(d^{\frac{8}{3}})\sqrt{P_1^2 - P_2^2}}{\sqrt{L}}$$

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Where:

Q is Cubic feet of gas per 24 hours

d is pipeline inside diameter in inches

P1 is Psi (abs) at starting point

P2 is Psi (abs) at ending point

L is Length of the pipeline in miles.

Investment Evaluation Criteria

The Net Present Value (NPVcostscounts for the difference between the initial investment cost and the present values of all the future cash inflows and cash outflows using the equation below (Akinpelu, 2017).

$$NPV = -C0 + \frac{C1}{(1+r)} + \frac{C2}{(1+r)^2 \ldots + \frac{Ct}{(1+r)^t}}$$

Where:

$C0$ is the initial investment cost,

Cs are the net cash flows of respective periods,

r is the discount rate, and

t is the end period.

For the Internal Rate of Return (IRR), it is the maximum allowable rate of return on the investment; it is the discount rate that brings the business to breakeven, where NPV equals to zero. It is derived by trying so many discount rates, and the discount rate that makes the NPV zero is the IRR (Akinpelu, 2017).

The payback period is the number of years that the investor will have to wait to get back his/her initial investment. The discounted payback period is derived by dividing the absolute value of the last negative cumulative discounted cash flow by the discounted cash flow value in the following year and then adding the period of the last negative cumulative discounted cash flow, this is presented in the equation below (Akinpelu, 2017).

$$Discounted\ payback\ period = A + \frac{B}{C}$$

Where A is the period where last negative cumulative discounted cash flow was recorded,

B is the absolute value of the last negative cumulative discounted cash flow at period A, and C is the discounted cash flow value after the period A.

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Using all the above costs and benefits inputs, an annual cash flow of these investments will be derived and discounted to arrive at the net present value, IRR and Payback period, which will be used for analysis.

Analysis

Having presented models/formula to be used, the cost of the Ajaokuta-Kaduna-Kano gas pipeline would now be built. First, the pipeline thickness (t) will be calculated using the formula already presented in work. The pipeline network has a 40-inch diameter pipe.

$$t = \frac{40in - 39in}{2} = 0.5in\ (12.7mm)$$

Therefore, 0.5 in (12.7mm) will be adopted as wall thickness for AKK.

Pipeline Construction Cost

This cost over time has up to six variations but can be put under four headings- material, labour, Miscellaneous, and right of way (ROW). Each category is estimated under a separate head.

Material Cost

As established by Shahi (2005), pipe material cost (PMC) of $ 1036.36 per tonne is adopted. The cost per tonne is arrived at after treating $800/t for the effect of inflation. The PMC for the three segments of the gas pipeline are presented below:

Table 4.1: Computation of Pipe Material Cost

Pipeline	Diameter	Length (km)	Length (miles)	Pipeline Thickness(in	Cost per ton	PMC
Ajaokuta-Abuja	40	200	124.274	12.7	1036.36	71,718,830.49
Abuja-Kaduna	40	193	119.925	12.7	1036.36	69,209,011.92
Kaduna-Kano	40	221	137.323	12.7	1036.36	79,249,440.43
Total			381.522			220,177,282.80

Generally, pipes are supplied externally coated and wrapped, therefore an extra cost of say 5% is added to the bare pipe cost 220,177,282.80*0.05=11,008,864.14 . This will account for coating and wrapping costs and delivery costs. This will bring PMC to 231,186,146.98

Labour Cost

Going by Menon's (2005) equation on labour cost estimation, the cost of installing AKK is presented in table below:

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Table 4.2: Computation of Labour Cost

PIPELINE	DIAMETER (In)	LENGTH (MILES)	LABOUR COST ($/MILE)	TOTAL ($)
Ajaokuta-Abuja	40	124.274	19,431.74	96,594,402.27
Abuja- Kaduna	40	119.925	19,431.74	93,214,056.78
Kaduna- Kano	40	137.323	19,431.74	106,736,993.30
Total				296,545,452.30

For other construction cost such as road, rail, streams and river crossings, 5 % of the cost of installation will be charged, that is 296,545,452.30*0.05=14,827,272.62. This will bring the total installation cost to 311,372,724.95.

Miscellaneous

Main Valve Station

Six mainline valve stations will be installed for every 100 miles at $129,544.93 per station (Menon, 2005). The table below shows the estimates.

Table 4.3: Computation of Cost of Main Valve

Pipeline	Diameter	LENGTH (MILES)	Mainline valves	$129,544.93 per valve Station
Ajaokuta-Abuja	40	124.274	8	1,036,359.44
Abuja- Kaduna	40	119.925	7	906,814.51
Kaduna- Kano	40	137.323	8	1,036,359.44
Total				2,979,533.39

Meter Stations and Regulators

Meter stations are estimated in the table below at a fixed price of $388,634.79 per meter station and four meter stations are installed per 100 miles (Menon, 2005).

Table 4.4: Computation of estimated cost of Meter Station and Regulator

Pipeline	Diameter	Length (miles)	Number of Meter Station	$388,634.79 per meter station
Ajaokuta- Abuja	40	124.274	5	1,943,173.95
Abuja- Kaduna	40	119.925	5	1,943,173.95
Kaduna- Kano	40	137.323	6	2,331,808.74
Total		381.522		6,218,156.64

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Pressure Station

Two pressure stations are expected to be installed in every sections of the pipeline at a cost 750,000 per PRS. This gives 750,000*6=4,500,000.

Supervisory Control and Data Acquisition (SCADA) and Telecommunication Systems

This category is estimated as a percentage of the total project cost, which according to Menon (2005), ranges from 2-5%.

$$\$795,993,912.13 * 5\% = 39,799,695.61$$

Environmental and Permitting Cost

Environmental and permitting cost, according to Menon (2005), ranges from 10-15% of the pipeline cost. That is $\$835,793,607.74 * 15\% = \$125,369,041.16$

Right of Way

Menon (2005) states that most initial ROW cost ranges from 6-10 of the pipe construction cost. This would be $961162648.90 * 10\% = 96,116,264.89$

Engineering and Consultation Management

On a typical gas pipeline project, engineering and construction management costs range from 15- 20% of the total pipeline project (Menon, 2005). This will amount to $1,057,278,913.79 * 20\% = 211,455,782.79$

Contingency

This category includes costs such as legal and regulatory as well as categories not considered or envisioned when the gas project was conceptualized. Menon (2005) puts the estimation at 10-20% of the pipeline cost.

$$\$1,268,734,696.55 * 10\% = \$126,873,469.65$$

Working Capital

$$\$1,395,608,166.20 * 20\% = \$279,121,633.24$$

Allowance for Funds during Construction

AFUDC accounts for the cost associated with financing the project during various stages of construction. AFUDC cost estimate ranges from 10-20% (Menon, 2005).

$$\$1,674,729,799.44 * 20\% = \$334,945,959.89$$

Following from above, the expected cost of constructing the pipeline is

$$E(CCP) = 231,186,146.98 + 311,372,724.95 = 1,769,938,409.16$$

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Compressor Station

The cost of the compressor stations of the pipeline will be calculated in the table below. An average of 30,843.51 Horsepower (HP) capacity is used for each segment. The cost of compressor capacity is assumed to be $2,590.90 per HP, after adjusting for inflation. This takes care of material and equipment costs, labour costs for installing the compressors, equipment, instrumentation, and controls within the compressor stations.

Table 4.5: Computation of Estimated cost of Compressor Stations

Pipeline	Diameter	Length (km)	Compressor per 50 miles	Horsepower	Cost of Compressor@ $2590.90/ HP
Ajaokuta-Abuja		200	3	30843.51	79,912,450.06
Abuja-Kaduna		193	3	30843.51	79,912,450.06
Kaduna-Kano		221	3	30843.51	79,912,450.06
Total					239,737,350.18

The total cost of compressor station for the pipeline is 239,737,350.18

Therefore the total capital cost for the Ajaokuta-Kaduna-Kano is

$$IIC = \$1,769,938,409.16 + \$239,737,350.18 = \$2,009,675,759.33$$

Depreciation

Initial investment cost of pipeline will be depreciated annually using straight-line method formula as buttressed in the previous chapter. The depreciation rate is:

$$dr = \frac{2,009,675,759.33}{40} * \frac{1}{2,009,675,759.33} = 0.025.$$

Following from above, the rate at which the gas pipeline will be depreciated is 2.5% per annum. But the pipeline is expected to have scrap value at the end of its useful life. The scrap value is estimated as:$sv = \$2,009,675,759.33(1 - 0.025)^{40} = \$729,979,429.40$ Since 729,979,429.40 will be salvaged at the end of the useful life of the pipeline, it is pertinent that the said amount is deducted from initial investment cost before it is depreciated. That is

$$\$2,009,675,759.33 - \$729,979,429.40 = \$1,279,696,330.$$

Therefore, the total depreciable amount is 1,279,696,330, and the annual depreciation charge is $31,992,408.25

Operation and Maintenance

The cost associated with Operation and Maintenance of the pipeline will be estimated into fixed and variable below using the equation as stated earlier, which is 0.8 percent and 1.2 percent of IIC per annum respectively, each of which will be escalated by 2%

$$O\ \&\ M\ cost = 2,009,675,759.33 * 0.02 = 40,193,515.19\ p.a.$$

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Gas Volume

For the flow of gas in the pipelines, we will use an average °F79 (26℃) annual temperature in Nigeria (Timeanddate.com, 2018), and pressure of 60 bar at the starting point (GMP, 2008), with an expected drop of the pressure of 3.245 bar/100km (0.03245bar/km) provided the adequate number of compressors are provided based on our estimate of compressor intervals going by (McAllister, 2009).

Table 4.6: Estimated gas capacity/volume of AKK

Pipeline	Diameter	Length	Capacity (MCM)/y
Ajaokuta-Abuja	48	200	57476.185
Abuja-Kaduna	48	193	4552.976
Kaduna- Kano	48	221	4254.513
Total			66283.674

$$gas\ volume\ in\ Mcf = 2340797359073.2 * 0.80/1000 = 1{,}872{,}637{,}887.726p.a$$

The capacity in the table above represents an average level of service that can be maintained over an extended period of time and not the maximum throughput capability of a system.

Weighted Average Cost of Capital,

The cost of capital is accounted for using the WACC, from which the net cash flows will be discounted. We will first use CAPM, as described in the previous chapter, to calculate the gas pipeline cost of equity.

As earlier established, a Beta of 0.86 is used for the gas pipelines, a risk-free rate of 15.61%, and an expected market portfolio return of 18.0% are applied. For this project, and with reference to the proceeding chapter, the cost of equity (ke) is as follows:

$$Ke = 0.1561 + 0.86\ (0.18 - 0.16) = 0.18\ (18\%)$$

Therefore, the unweighted cost of equity for AKK is 18%. This tells potential investors of the opportunity cost of capital of their current or intended investment elsewhere. The cost of debt for the gas pipelines is presented in the equation below with reference to the equation in the previous section.

$$kd = 0.1742 * (1 - 0.30) = 12\%$$

Therefore, with reference to the proceeding chapter, the weighted average cost of debt and equity for the gas pipeline investments will be:

$$WACC = (0.40 * 0.18) + (0.60 * 0.12) = 0.15\ (15\%)$$

The WACC of the gas pipeline investment is 15%, and it is used as the discount rate to account for the cost of capital and time value of money.

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Amortization Cost

The amortization cost will then be, with reference to equation

$$Av = 1{,}205{,}805{,}455.60\left[\frac{0.174(1+0.174)^{40}}{(1+0.174)^{40}-1}\right] = 210.39$$

210.39 million is the annual amortization cost for the gas pipeline.

Cash Flow Analysis

Please see the appendix

Sensitivity Analysis

Sensitivity analysis was carried on NPV and changes when the discount rate varies. It was observed from the sensitivity studies that at a discount rate of 10%, AKK made $2,192.98 billion. When the discount was varied to 20%, AKK made a negative NPV of $286.97 million

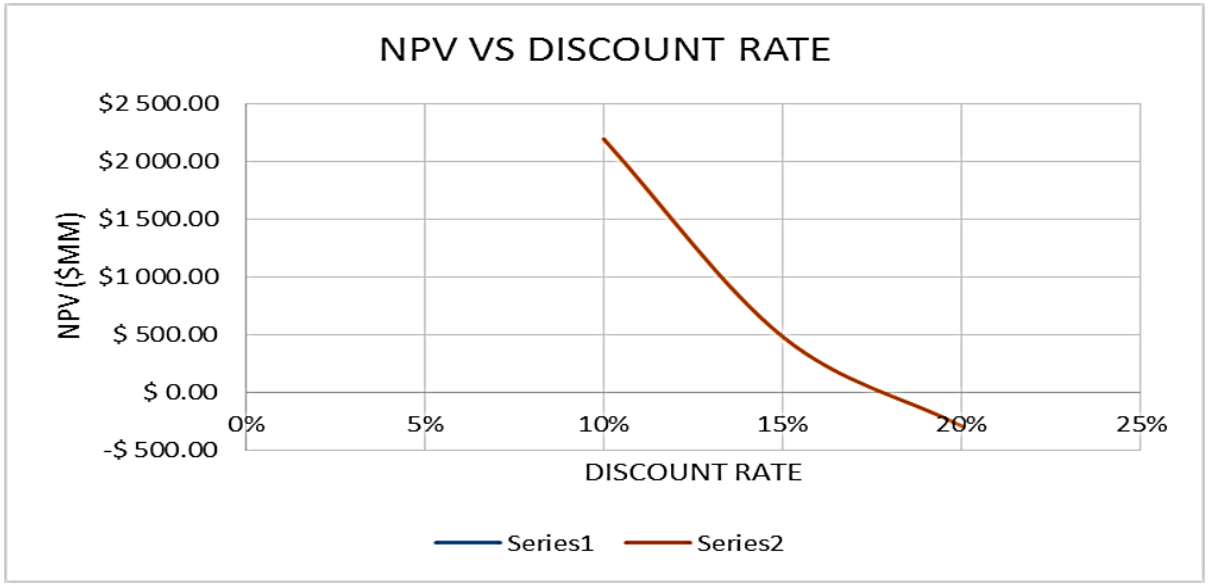

Figure 6: NPV Vs Discount Rate

Sensitivity analysis carried out to see how sensitive NPV would be to variations of Capex. The study showed NPV approaching zero as CAPEX approaches $3 billion.

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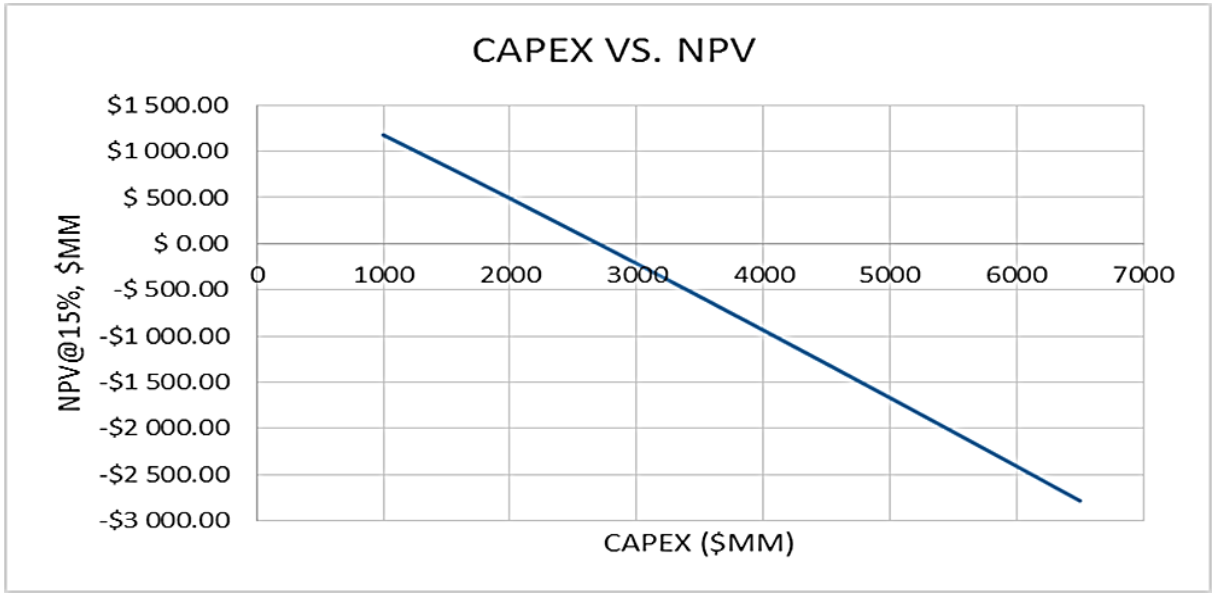

Figure 7: CAPEX Vs NPV

The figure below displays the sensitivity of IRR to CAPEX. The study shows an indirect relationship; as AKK's CAPEX increases, its IRR decrease and vice versa.

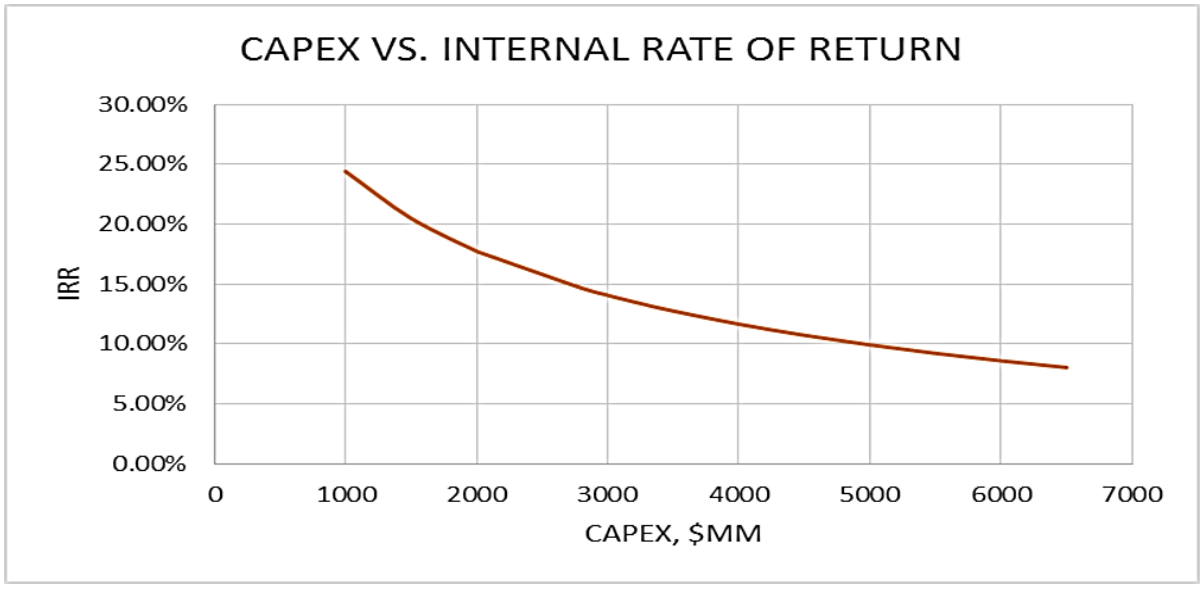

Figure 8: CAPEX Vs IRR

The figure below shows how sensitive PBP is to CAPEX. As CAPEX increased, PBP also increased.

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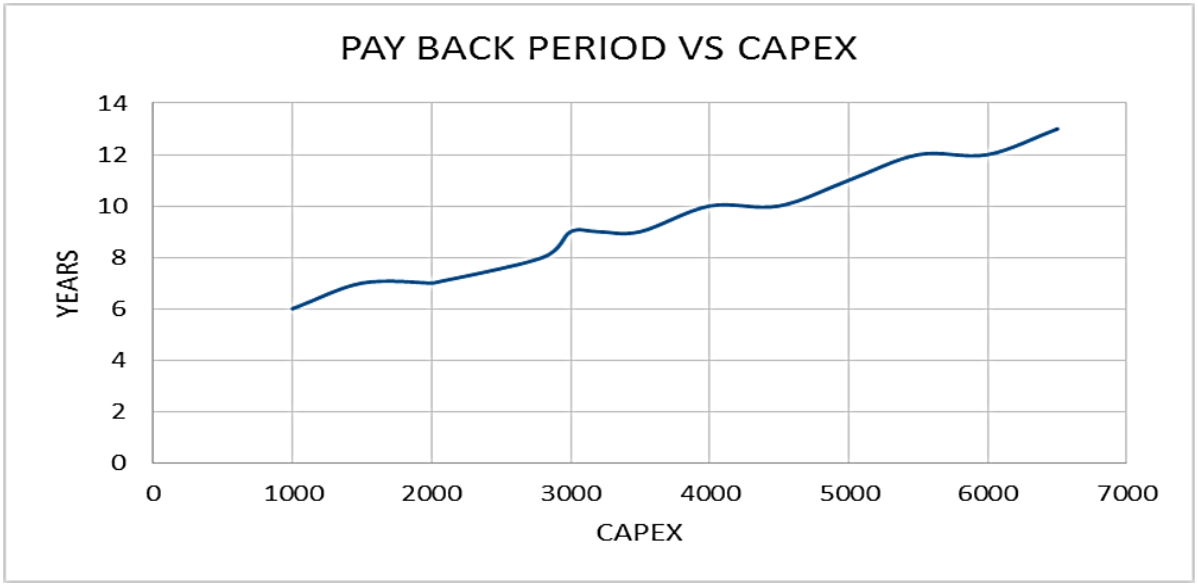

Figure 9: PAYBACKK Vs. CAPEX

Figure below analysis the sensitivity of PIR to CAPEX. PIR drops as more amount of CAPEX is spent.

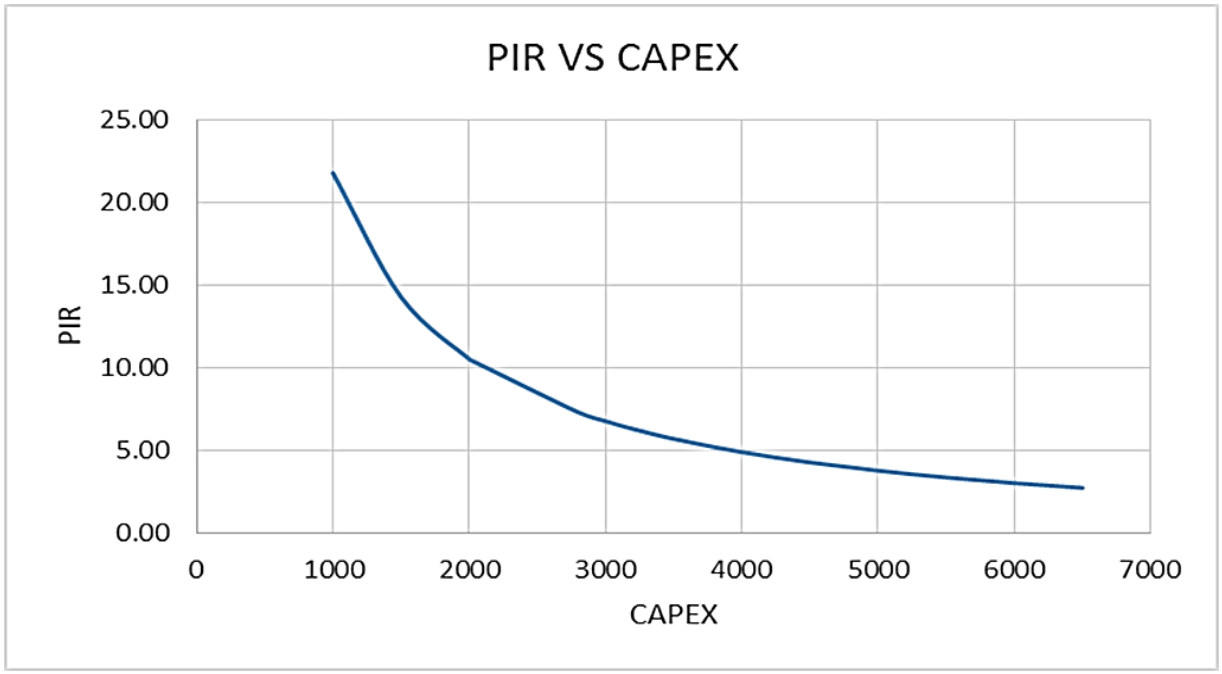

Figure 10: PIR Vs CAPEX

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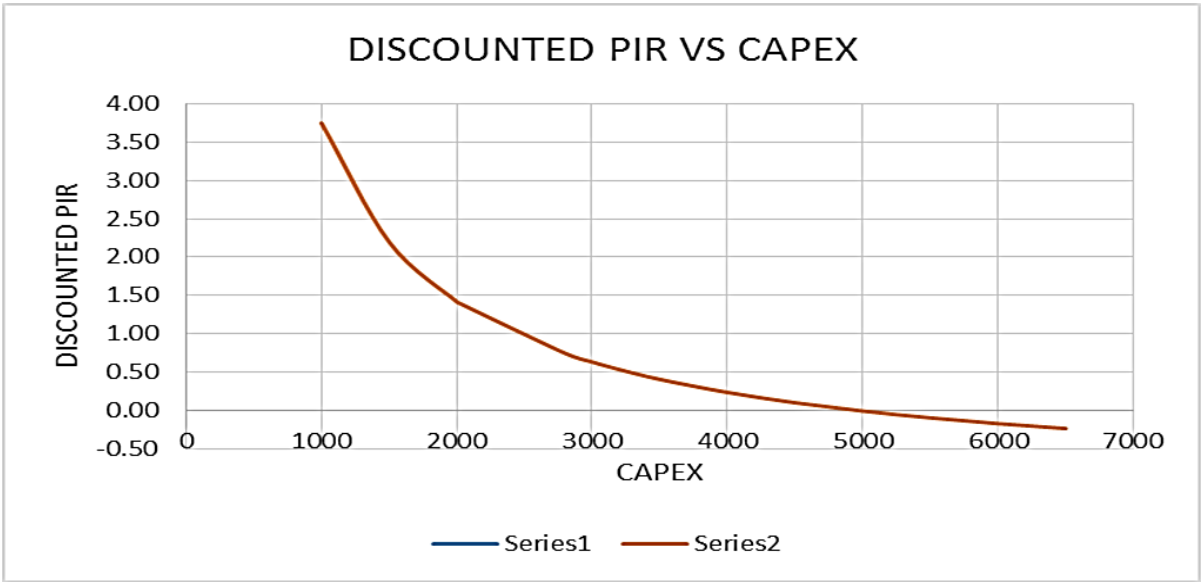

Figure 11: DPIR VS CAPEX

RISK ANALYSIS

Assumptions for Input Parameters for the Risk Analysis

The input parameters that are prone to uncertainties include the

i. Initial Capital Investment

ii. The Operating Expense (Fixed and Variable)

iii. The Cost Escalation Rate

It is assumed that transportation cost per unit volume, tax rates, and Amortization are parameters that must be established beforehand and may not be subject to market distortions.

Initial Investment Cost

A triangular distribution is assumed for the behaviour of the initial investment cost. The initial investment costs include facilities (pipeline, compressors, meters, etc.) and installation costs. The most likely cost (highest probability) is the static value used in the model, i.e., $2,009.68MM.

The minimum cost is assumed to be $1,000 MM, while the maximum cost is $6,500 MM. According to the @risk result in Figure 4.2.1, the 5th percentile is $1,080.74, while the 95th percentile is $6,389.69MM. The cost spike may arise from delay, sabotage or vandalization, inflation, and political crisis.

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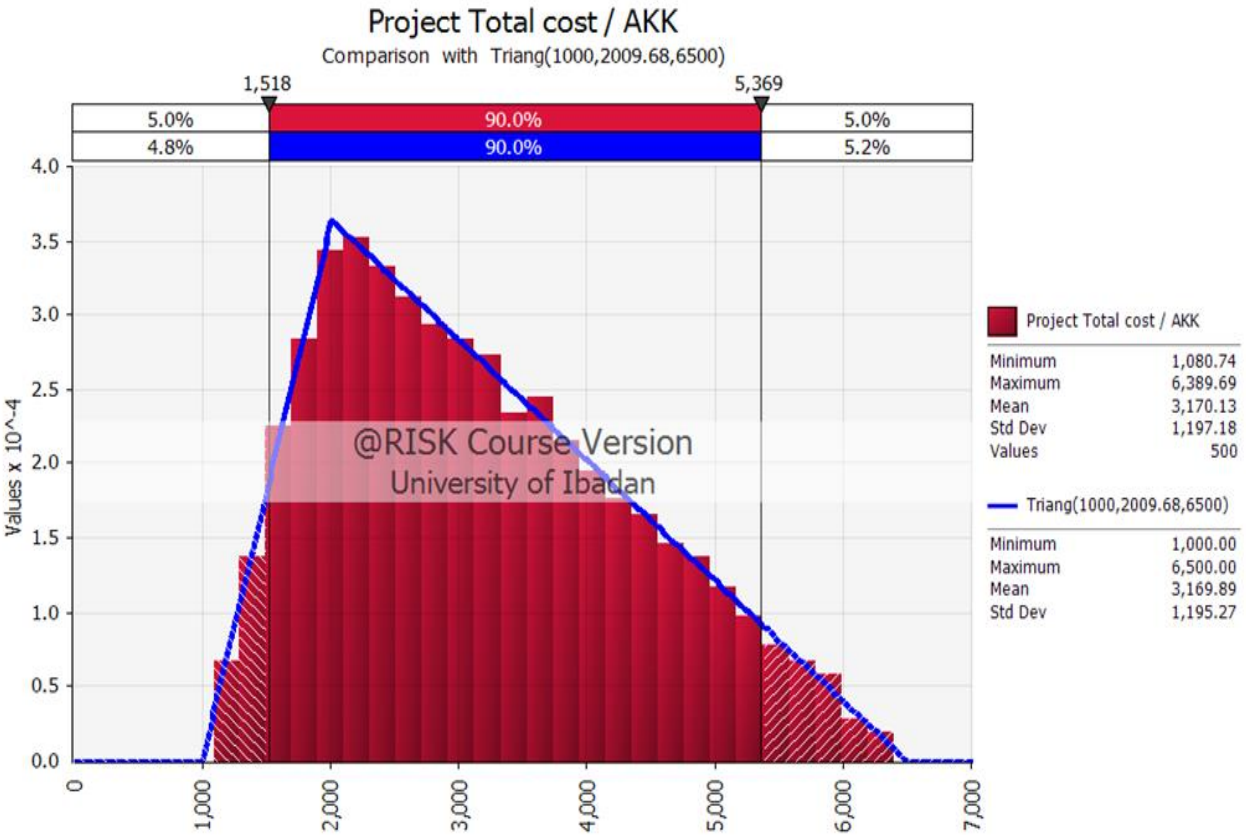

Figure 12: Probability Density Curve for the Initial Investment Cost

The Operating Expense (Fixed and Variable)

The operating expense is another uncertain variable prone to distortion by market factors. The normal distribution is assumed for this. The mean is $16.08MM, 0.8% of initial CAPEX, while the Standard deviation is approximately $1.61MM.

The fixed OPEX cost is not tied to gas movement as it is expended irrespective of whether gas is being transported or not. However, this proportion may increase or reduce depending on the prevailing market factors. From figure 4.2.2, the minimum and maximum fixed operating costs are $11.06MM and $1.61MM, respectively.

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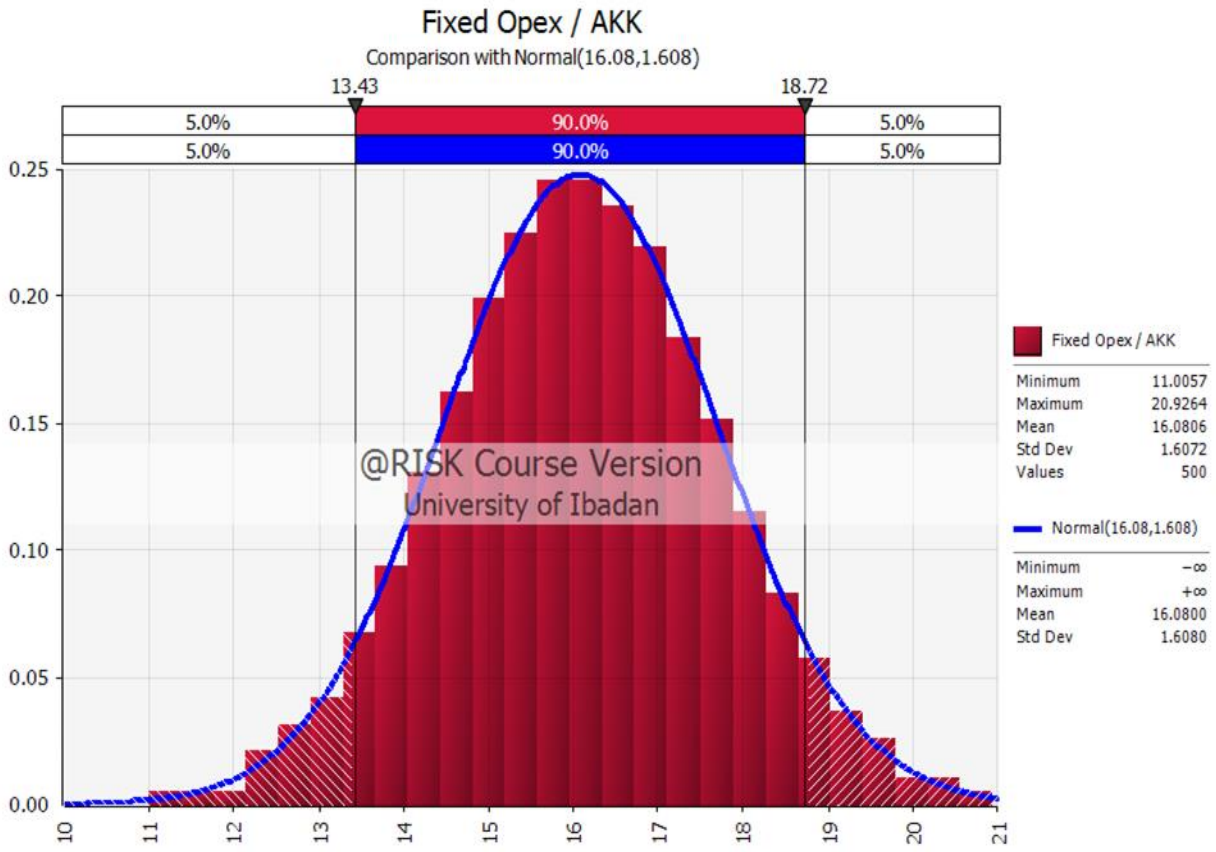

Figure 13: Probability Density Curve for Fixed Operating Cost

The variable OPEX, on the other hand, is assumed to be 1.2% of the initial investment cost and prone to uncertainties. A normal distribution with a mean of $24.12MM and a standard deviation of $2.412MM is also assumed for the variable OPEX. The minimum and maximum variable costs are $17.15MM and $31.73MM.

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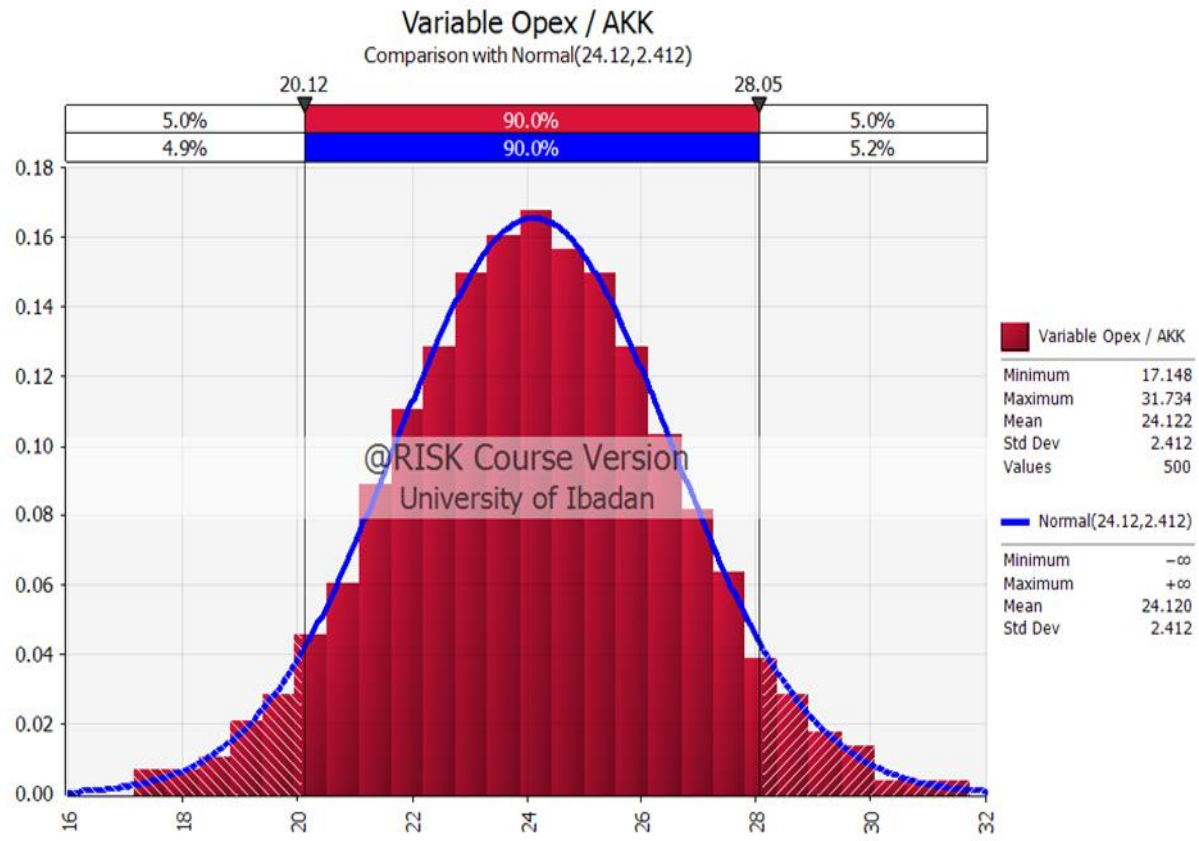

Figure 14: Probability Density Curve for Variable Operating Cost

Cost Escalator

The cost escalator is an input variable that may also be subject to distortions. The assumption of 2% may be conservative or optimistic. Hence, we assume uniform distribution with minimum and maximum value of 1.5% and 4.0%.

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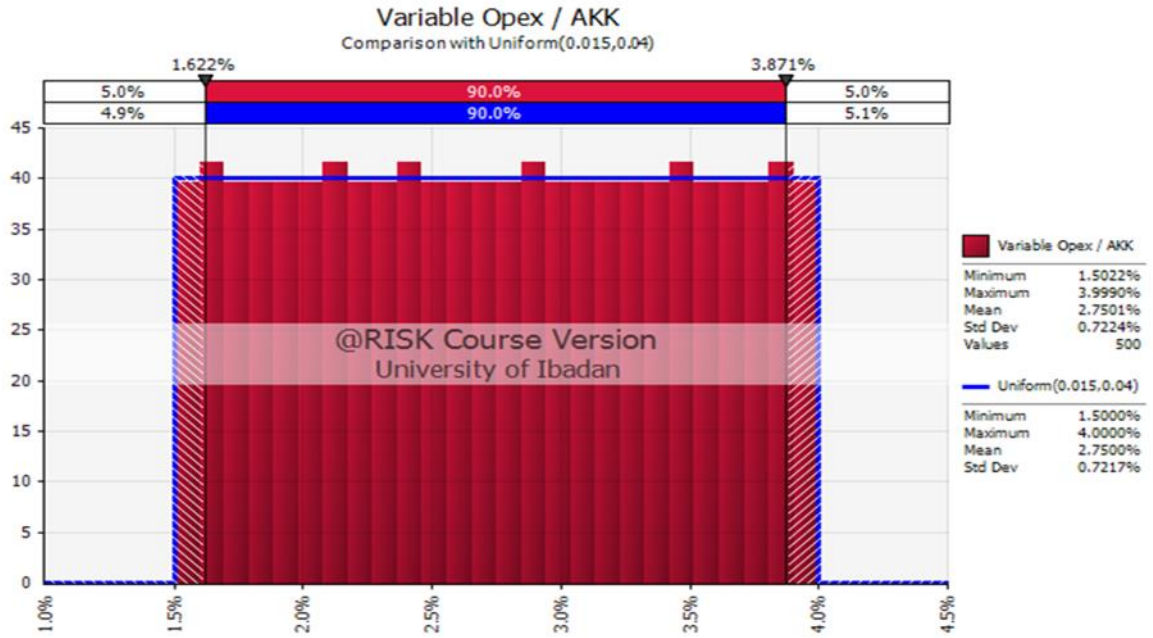

Table 15: Probability Density Curve for Variable Cost Escalator.

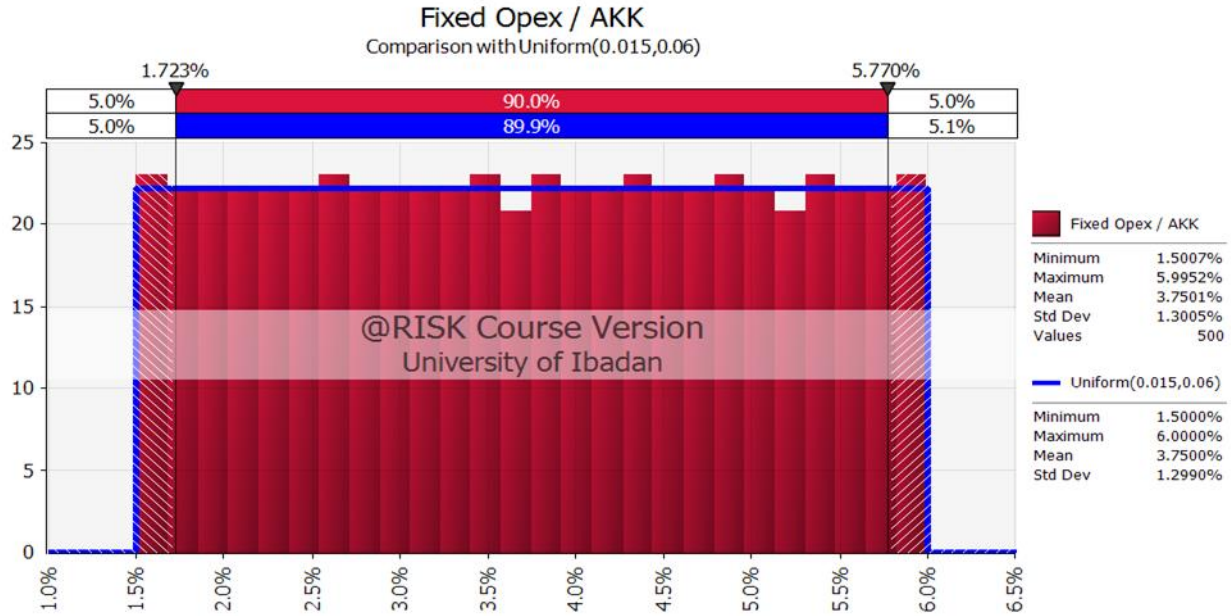

Figure 14: Probability Density Curve for Fixed Cost Escalator.

Risk Analysis Result

Net Present Value: Risk Analysis is performed on the NPV at the computed Weighted Average Cost of Capital.

Probability Density Histogram

The probability density histogram presents the probabilities of having a value less than a point of reference or a range of values. From figure 4.2.5, the NPV at the computed Weighted

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Average Cost of Capital (WACC) indicates a sizable probability of negative NPV, which is 58.1%.

There is also only a 36.9% chance of having a positive NPV ($0-$826 MM). This is expected because of the large range of CAPEX ($1000 MM to $6,500 MM) used.

Tornado Graph-Change in Output mean

The Tornado Diagram indicates the driver for NPV, which is the initial investment. From figure 4.2.6, the initial cost of capital is the greatest determinant of NPV. Other uncertain input parameters, such as fixed and variable OPEX, have less impact on the value of the project.

Spider Plot

The spider plot displays the mean value of the NPV against the cumulative percentiles of the input variables.

The steep trend shown by the percentiles of the initial investment cost indicates that it plays an important role in determining the project's overall value. Other input variables show an even trend and are not likely to impact the value of the project.

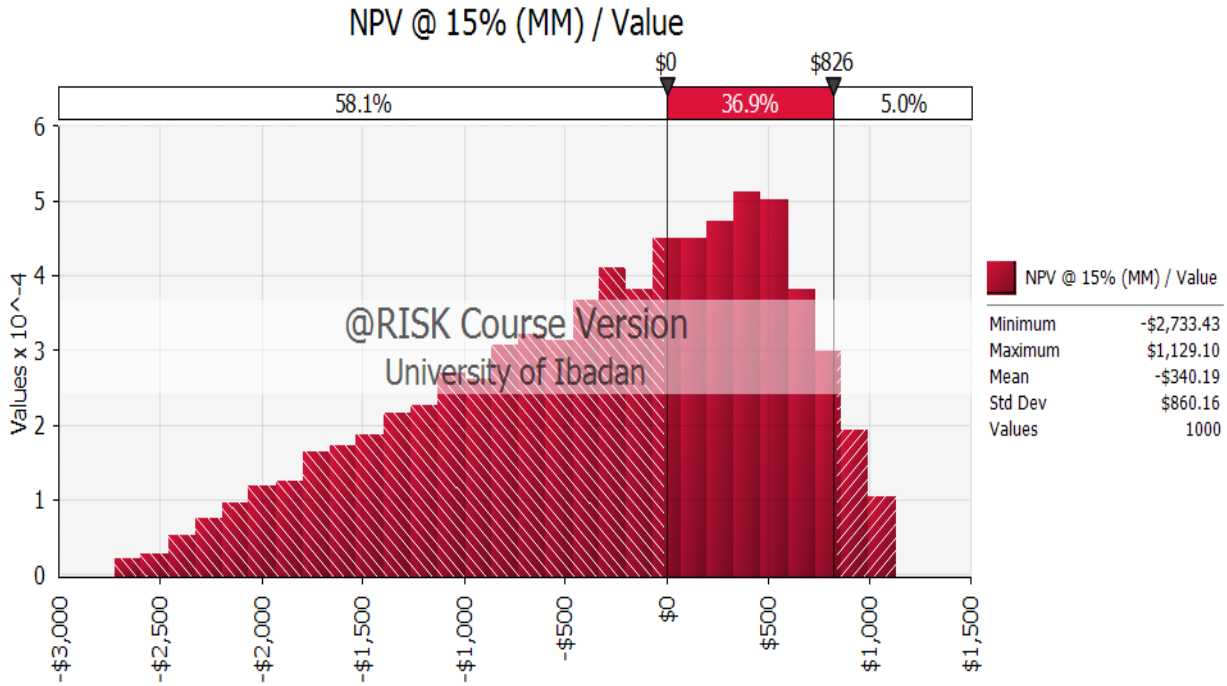

Figure 15: Probability Density Histogram of NPV @ 15%

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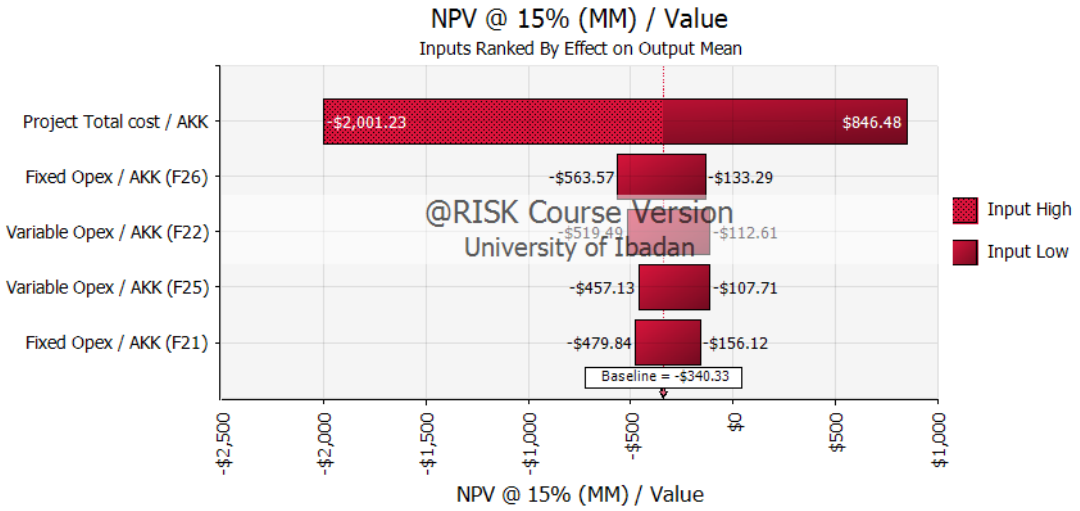

Figure 16: Tornado Graph-Change in NPV mean

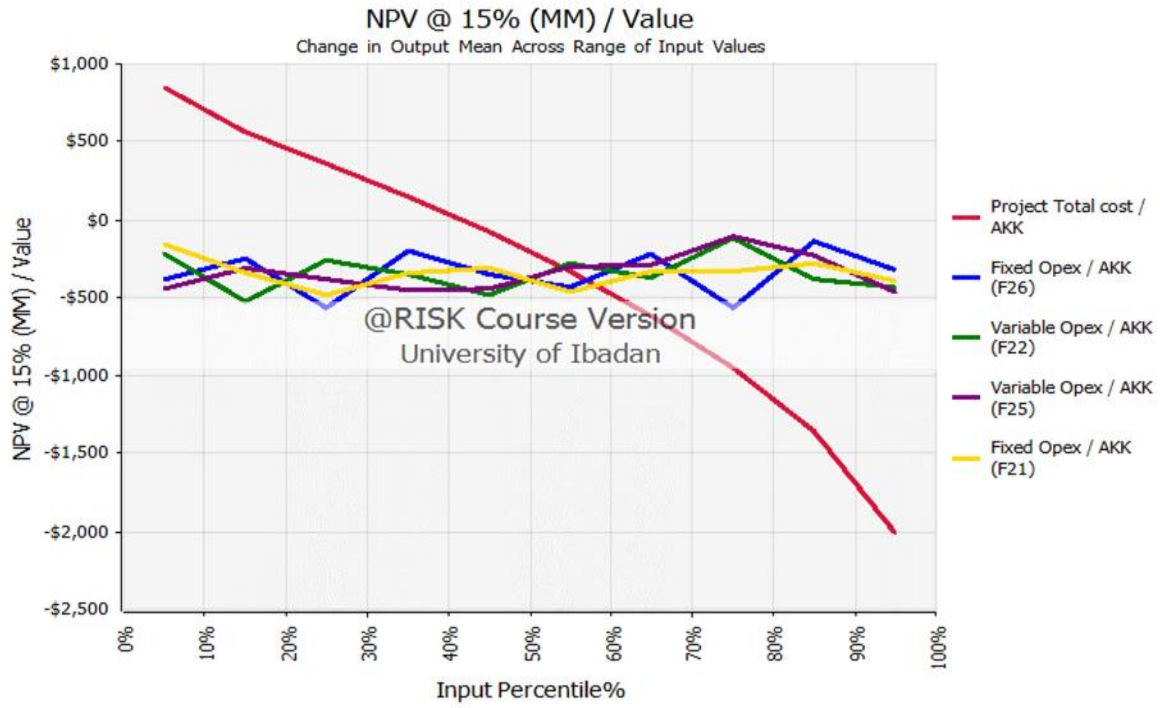

Figure 17: Spider Plot

Internal Rate of Return (IRR)

For a good project IRR must be greater than the WACC. The probability that IRR will be less than 15% is 58.3% which is quite sizeable.

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Conversely, there is 36.7% that IRR will lie between the lowest tolerable limit (15.00%) and the highest limit (20.31%).

The Tornado diagram and the Spider Plot for the IRR also indicate that CAPEX is the major determining factor for the rate of return.

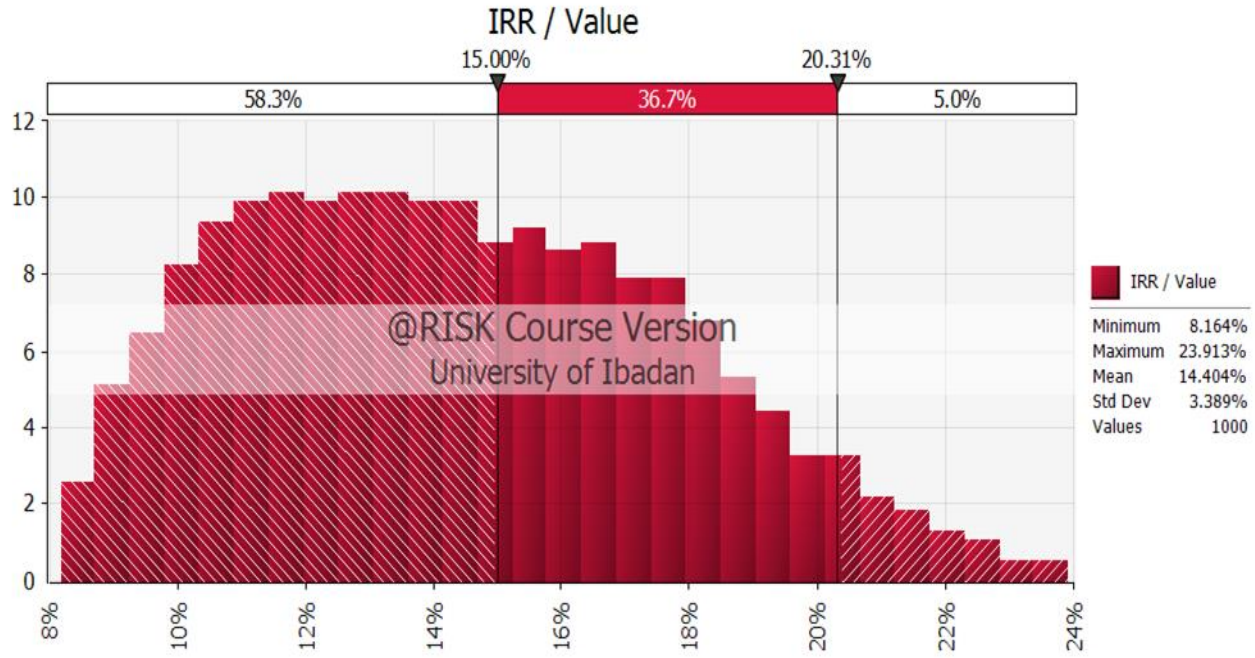

Figure 18: Probability Density Histogram for IRR

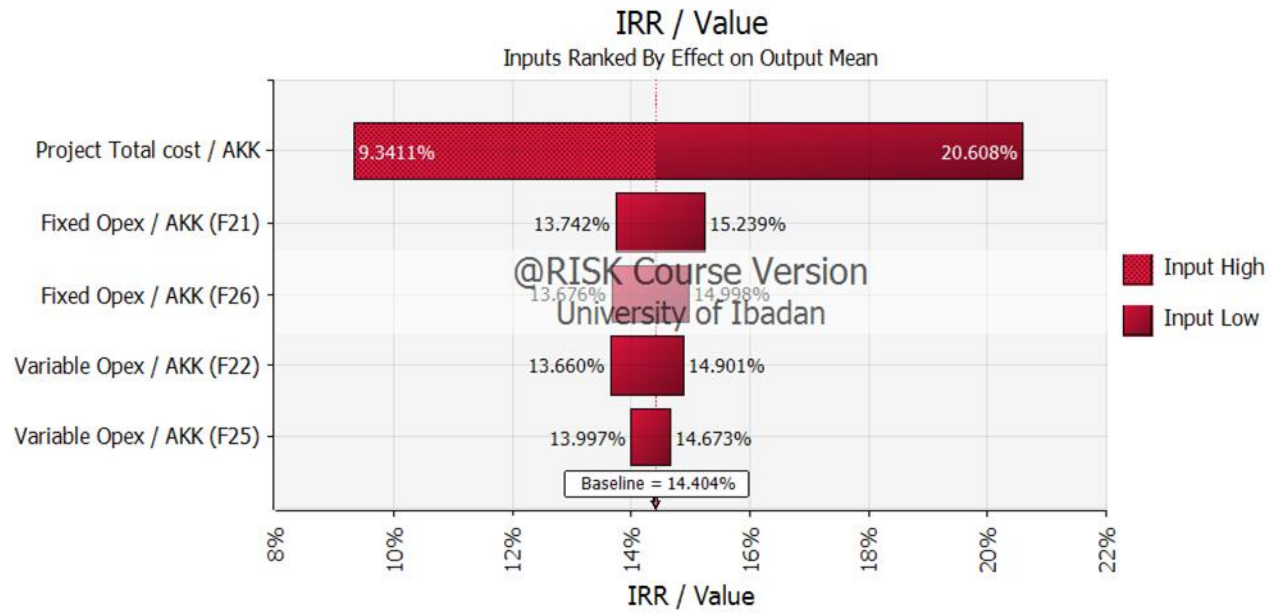

Figure 19: Tornado Graph-Change in IRR

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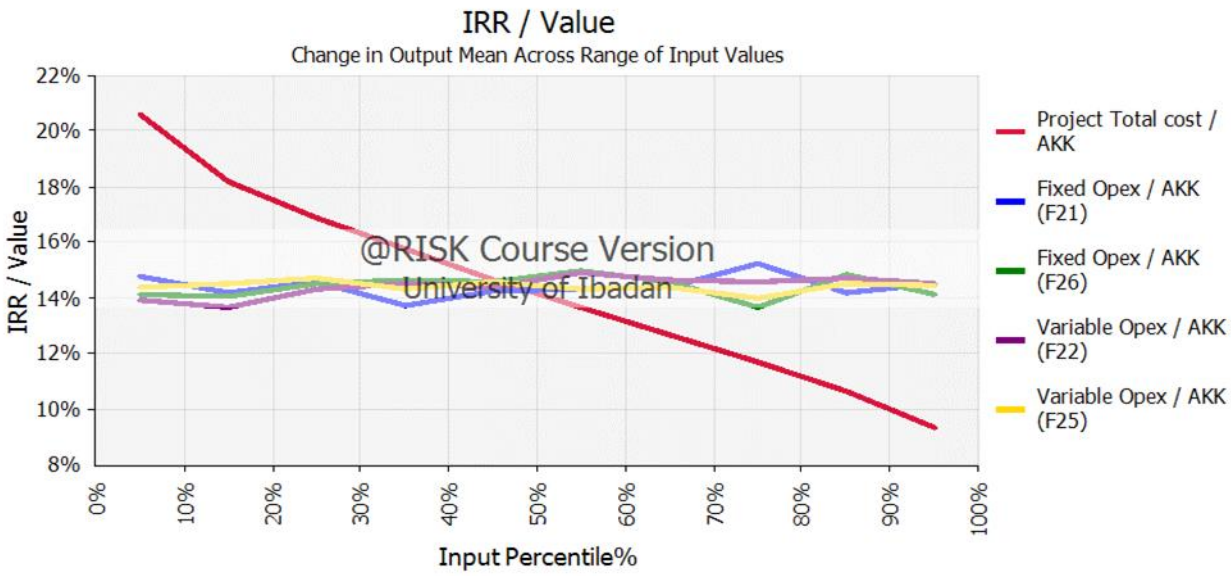

Figure 20: Spider Plot

Pay out Period

The mean pay out period is 8.84yrs. There is a 0% chance that the pay-out period is less than 5.65- that is the investor should not expect the project to yield any profit before this time

Tornado Plot

The Tornado plot indicates that the project's fixed cost contributes the highest as an input variable.

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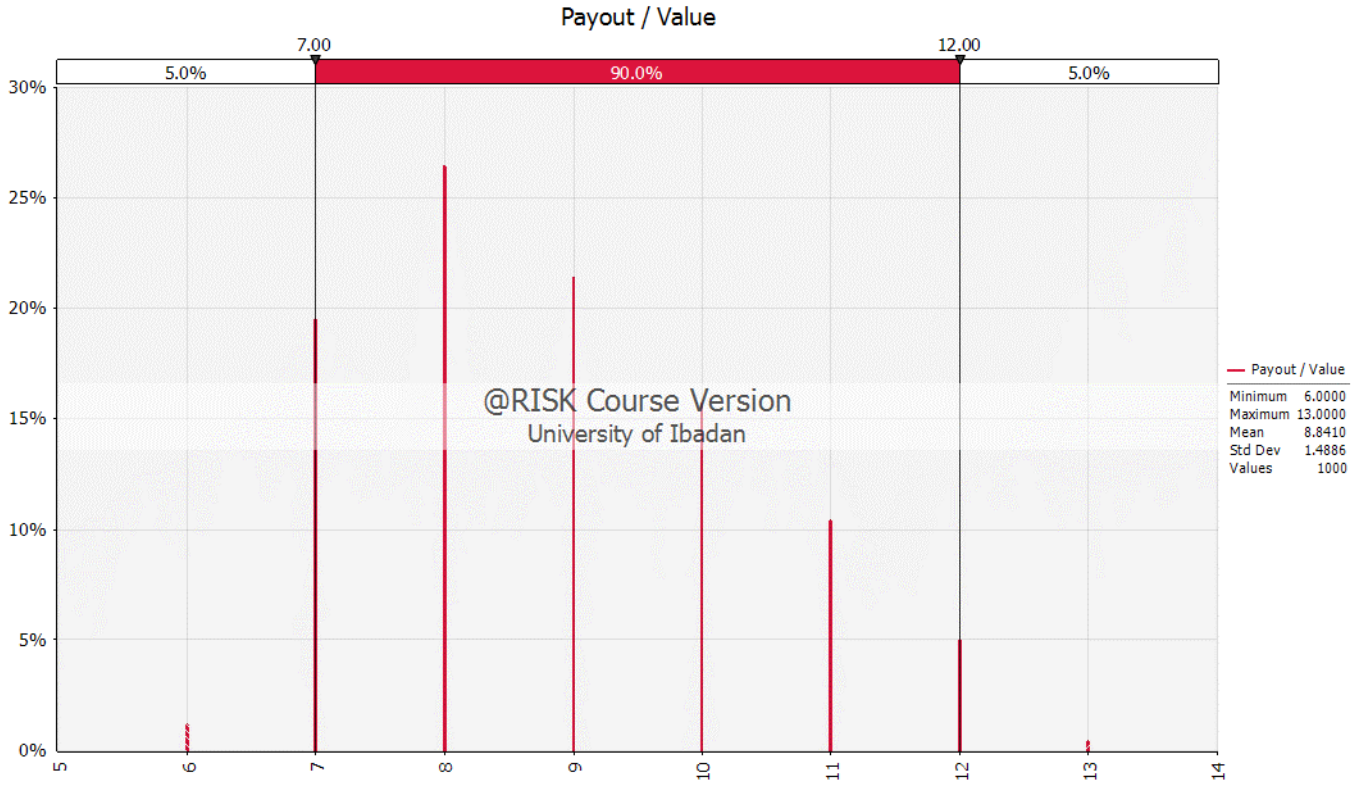

Figure 21: Probability Density Histogram for Pay-out Period

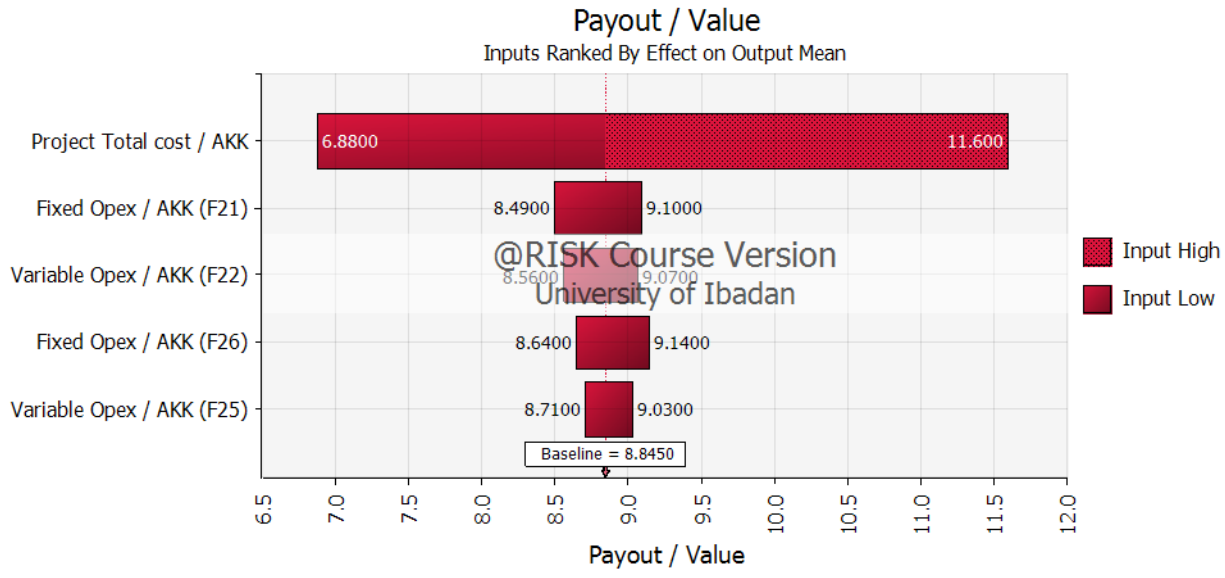

Figure 22: Tornado Graph-Change in Pay-out Period Mean

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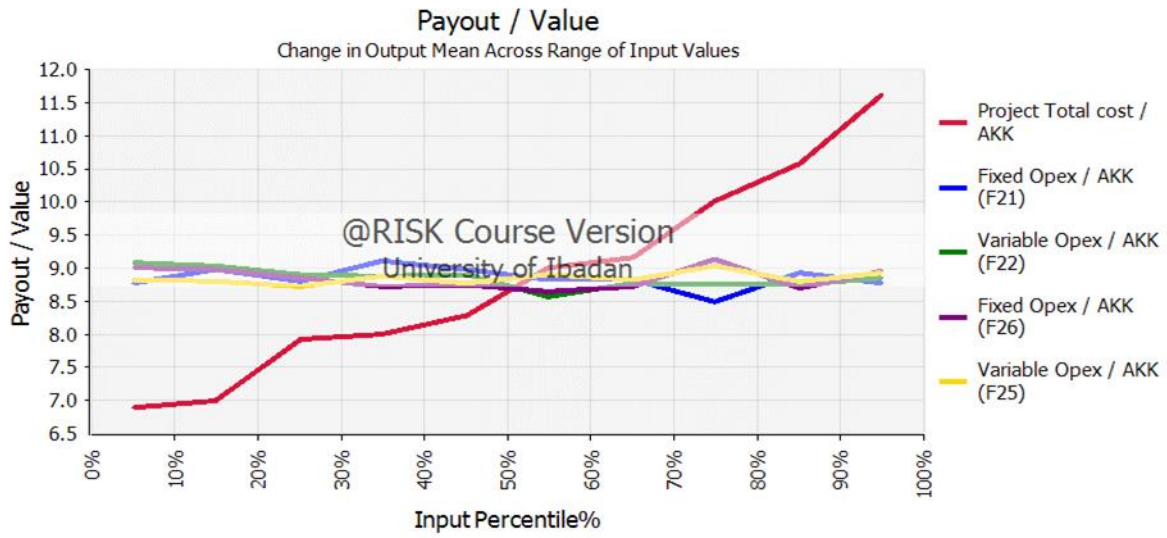

Figure 23: Spider Plot

Discounted Profit-Investment Ratio (PIR)

The project has a chance of 36.7% above the accepted value of 0, making the project worthwhile.

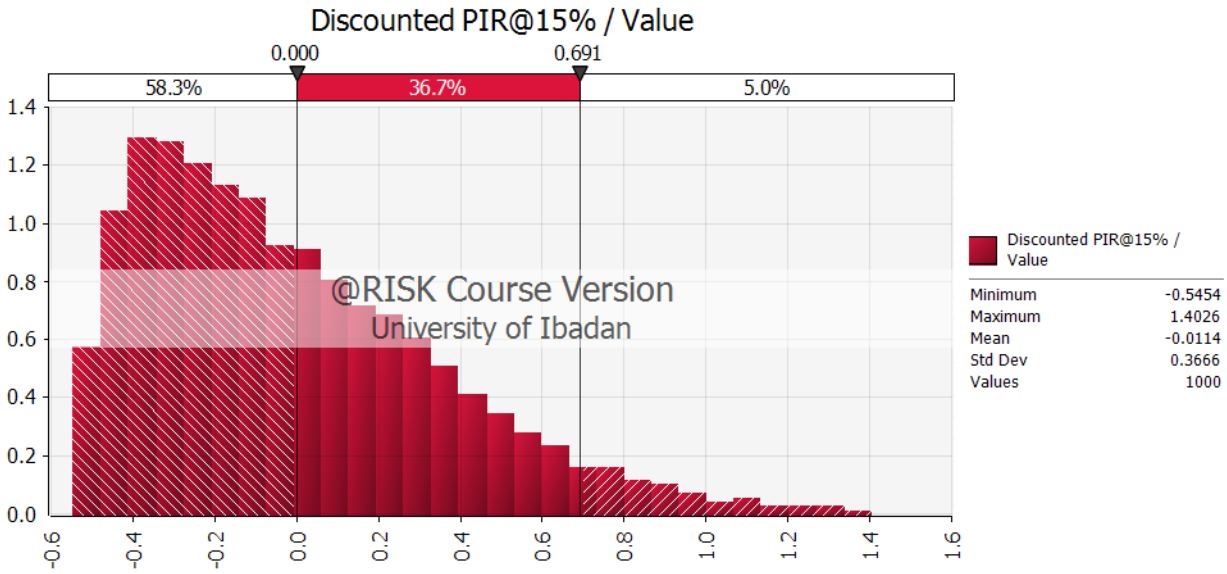

Figure 24: Probability Density Histogram for PIR

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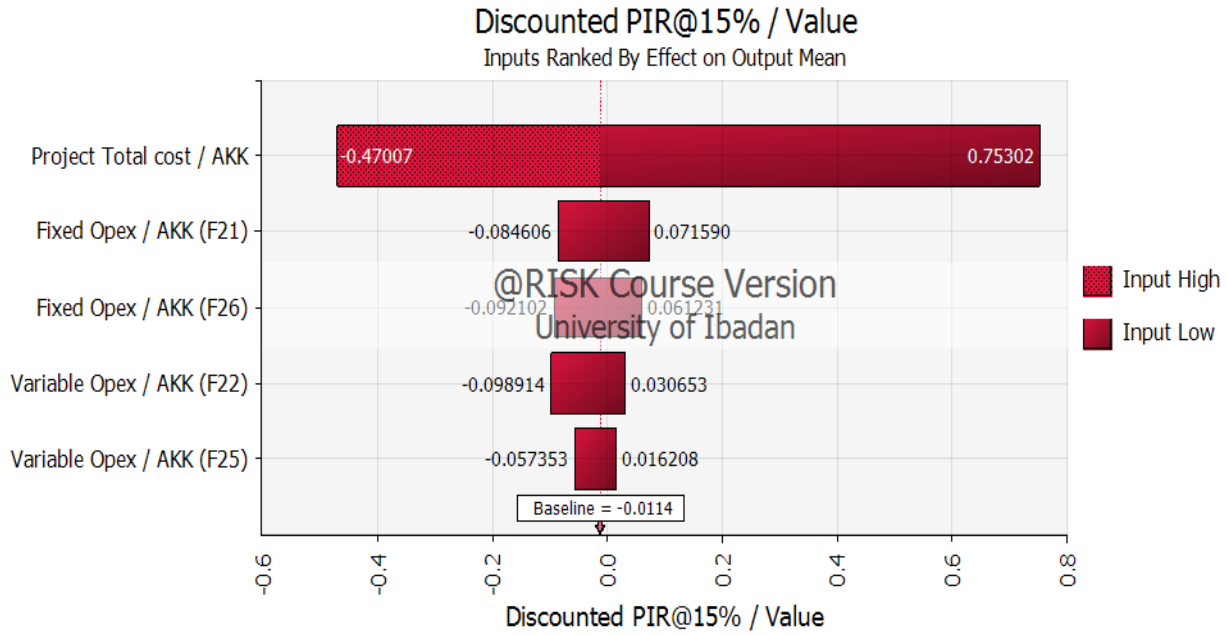

Figure 25: Tornado Graph-Change in PIR Mean

Figure 4.23: Spider Plot for Discounted PIR

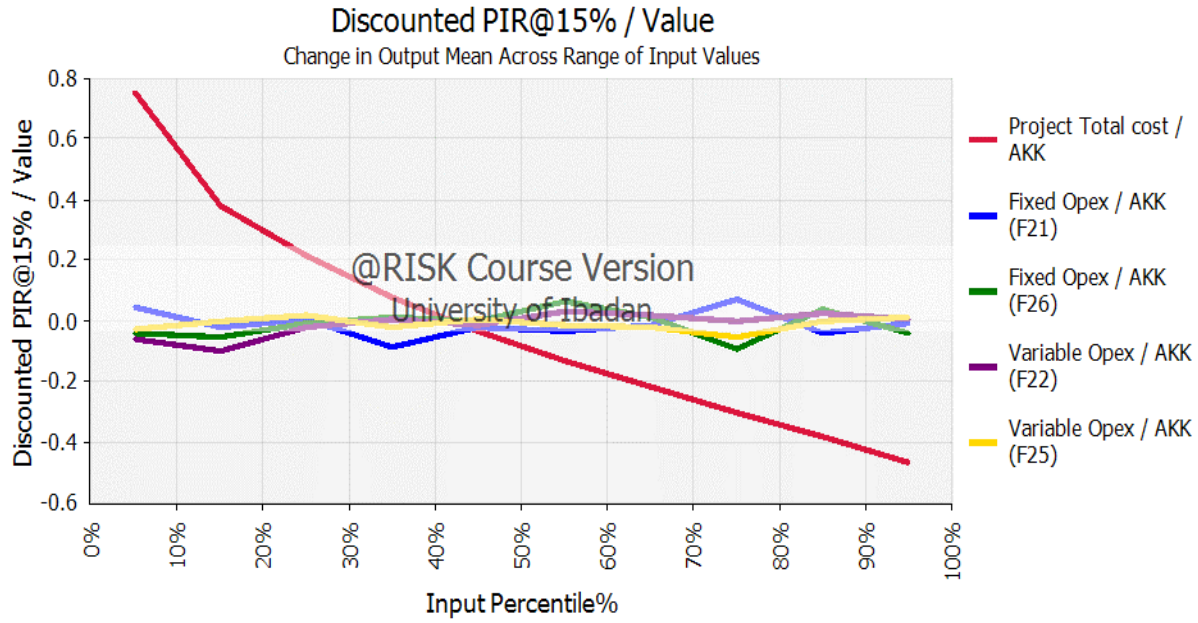

Figure 26: Spider Plot for Discounted PIR

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SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The research broadly studied how Nigeria can utilize its natural gas reserves to stimulate demand and thereby derive economic advantage and address its energy demand concerns within its territory. One of the vital projects that are key to achieving this objective of increased gas utilisation, as contained in the gas master plan, was identified to be the Ajaokuta-Kaduna-Kano gas pipeline. Consequently, this study analysed the costs and benefits of Akk on the scale of total investment costs, gas delivery as well as costs and benefits using NPV, IRR, and Payback period. In determining the costs and benefits of the gas pipeline route, first, the capital structure comprising of debt and equity and the cost of capital of the gas pipeline were estimated. Followed by an estimation of investment cost comprising of gas pipeline material cost, pipe coating, and wrapping cost, cost of constructing the compressor stations, gas delivery, and labour cost using models adjusted for inflation and already existing in the literature. The overall profitability of the proposed gas pipeline project was then analysed using the NPV, IRR, and payback period methods. The research found that AKK is indeed profitable.

Conclusion

The Ajaokuta- Kaduna-Kano pipelines have a positive NPV of approximately $484.40 million for forty years of operation. This averaged around $12.11 million present value of operating net cash flows per annum. This means that the business cash flow can meet up with all the operating costs and still return a positive profit. This also means that the present value of the future cash inflows is higher than the present value of the current and future cash outflows by $484.40 million. Its internal rate of return was estimated to be 17.70%, which is higher than the discount rate for forty years. This means this business's investment return can be up to 17.7%. The investors can aim higher investment return of up to 17.7% as the business only breaks even when the investment return is at 17.7%. This means the business can be well-preferred compared to other potential investments, which could offer lower IRR. The IRR is much higher than the discount rate, which means the business will not be tight by allowing investment return at the calculated discount rate and can even give higher investment return than the discount rate. The AKK investment also has a discounted payback period of seven years. These indicate that the AKK is highly viable.

Recommendation

Based on the findings from this study the following recommendations were made:

(1) The AKK gas pipeline is viable; the Government or investors should consider investing in the transmission system. It is also recommended that other possible route options should be developed; this will further expand the domestic gas market and also enables the spread potentials of gas development.

(2) Since AKK is sensitive to CAPEX, efforts should be concentrated on reducing such costs to make investments less vulnerable.

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(3) The AKK is also sensitive to the peak flow of gas; therefore, gas markets need to be secured to operate profitably at a high flow rate. Government should also ensure relative peace in the Niger Delta region as this will increase the availability factor of AKK.

(4) The regulatory framework in the Nigerian gas sector should strengthen and be more market-driven as this will minimize the prevalent uncertainties and accelerate investment decisions for development projects.

(5) Probability analysis should be carried out alongside deterministic economic analysis to give insight into the economic risks associated with gas development projects.

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SERVICE QUALITY AND CUSTOMER SATISFACTION OF HOTELS IN PORT HARCOURT, RIVERS STATE

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ABSTRACT: *The study examined the relationship between service quality and customer satisfaction of hotels in Rivers State. The study adopted descriptive survey research design. The population of the study comprised all customers of registered hotels in Rivers State. This implies that the study population is infinite in nature. A sample size of three hundred and eighty-four (384) was adopted. The various hypotheses formulated were tested using Pearson Product Moment Correlation (PPMC). The results of the analysis confirmed that all the dimensions of service quality (assurance and service responsiveness) were found to have a positive and significant relationship with customer satisfaction as measured by customers' loyalty and referrals. It is therefore concluded that the aim of service quality is to optimize customer satisfaction through gaining the loyalty of the current customers in a multi-channel environment and ensuring they are completely satisfied. In line with the conclusion, the study recommends that the hotel staff and employees should be well cultured and trained to provide prompt services to their guest when called upon to do so, as service responsiveness is seen as a major tool for guaranteeing customer referral behaviour.*

KEYWORDS: Service quality, service assurance, service responsiveness and customer satisfaction.

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INTRODUCTION

Customer satisfaction has progressively become a crucial indicator to assess performance and an indispensable constituent for organizational success. Managing a business to optimize customer satisfaction is a strategic imperative for many businesses since the cost of inadequate service quality may have more negative consequences on businesses. Quality is the keyword for survival of organisations in the global economy (Rahaman, 2011). Delivering excellent service is a winning strategy for any business. Quality service sustains customers' confidence and is essential for a competitive advantage. Quality in most services occurs during service delivery, usually in an interaction between the customer and contact personnel of the service firm (Muhammad et al., 2014). Service quality, which has been conceptualized as an overall assessment of service by the customers, is a key decision criterion in service evaluation by the customers. The success behind superior service is to understand and respond to customers' expectations. This is because customers compare perceptions to expectations when judging the quality of a firm's service offering.

Souca and Voss (2011) asserted that the components of services are often described in four unique characteristics: intangibility, inseparability, heterogeneity, and perishability, which make services different from physical products and hard to evaluate. Services are said to be intangible because they cannot be seen, tasted, felt, heard, or smelled before they are purchased. They are performance rather than objects. It means that services are more like a process than a thing, more a performance than a physical object, and are experienced rather than consumed. On the other hand, inseparability of services refers to a situation in which services are produced and consumed simultaneously.

Businesses rely on customers to maintain their establishment. Quality customer service is a mechanism by which loyal customers are acquired and these customers become effective through word of mouth advertisers of the company's products and services. Hayward (2015) highlighted that service quality (SQ), in its contemporary conceptualisation, is a comparison of perceived expectations (E) of a service with perceived performance (P), giving rise to the equation SQ=P-E. This conceptualisation of service quality has its origins in the expectancy-disconfirmation paradigm. A business with high service quality will meet or exceed customer expectations whilst remaining economically competitive. Improvements in service quality may be achieved by improving operational processes, identifying problems quickly and systematically, establishing valid and reliable service performance measures, and measuring customer satisfaction and other performance outcomes.

Service quality and customer satisfaction are indeed independent but are closely related so that a rise in one is likely to result in an increase in the other (Kumar, 2009). Indeed, several studies in the past which have focused on service quality in the banking sector, telecom industries and aviation sector gap still exist in the area of service quality and customer satisfaction in hospitality industries in Port Harcourt Metropolis; this created a need for this research.

Statement of the Problem

Most customers who patronize hotels complain of experiencing significant service failures arising from unclean rooms, cockroach infested rooms, faulty elevators, malfunctioning intercom, inadequate power supply, unfriendly staff, poorly prepared food, etc. which they

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attribute to lack of expertise of employees and management in providing quality and reliable services to their teeming customers, thereby living their customers unhappy and ill-motivated to make further patronage as they feel that they have been denied value for their money (Kumar, 2009; Lim, 2018). It is very important for these hotels to embrace and encourage customer complaints and use it as a strategy to provide better service and train its employees. However, Sousa and Voss (2015) noted that when service fails, a certain level of angry emotion will arise. It is therefore important that the employees are able to curb their emotions to avoid an escalation of the failure and the loss of customer loyalty and negative word of mouth.

Conceptual Framework

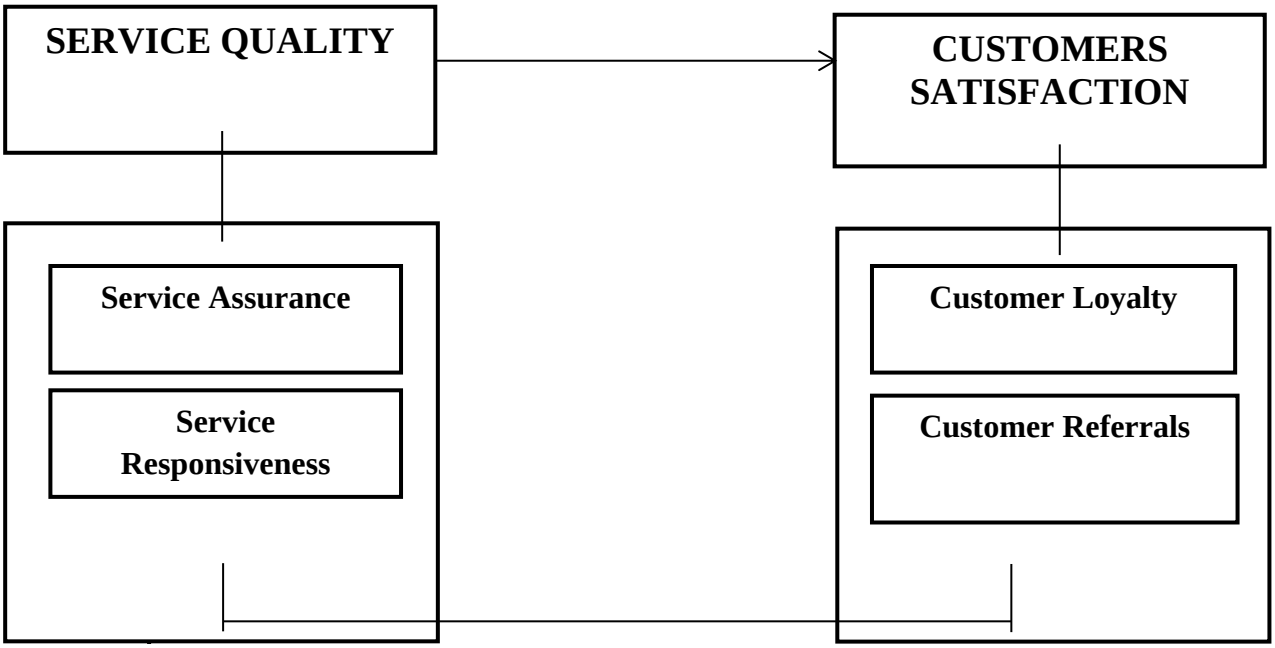

Fig. 1.1: Conceptual framework of service quality and customer satisfaction

Source: Parasuraman et al. (1983)

Aim and Objectives of the Study

The aim of the study was to determine the relationship between service quality and customer satisfaction of hotels in Rivers State. The study was guided by the following specific objectives:

a) To establish the extent to which service assurance relates with customer loyalty of hotels in Rivers State.

b) To examine the extent to which service assurance relates with customer referrals of hotels in Rivers State.

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c) To investigate the extent to which service responsiveness relates with customer loyalty of hotels in Rivers State.

d) To examine the extent to which service responsiveness relates with customer referrals of hotels in Rivers State.

Research Questions

The following research questions were developed to guide this study:

a) To what extent does service reliability relate with customer loyalty of hotels in Rivers State?

b) To what extent does service responsiveness relate with customer referral of hotels in Rivers State?

c) To what extent does service assurance relate with customer loyalty of hotels in Rivers State?

d) To what extent does service assurance relate with customer referral of hotels in Rivers State?

Research Hypotheses

The following hypotheses were formulated to guide the study:

Ho_1: There is no significant relationship between service responsiveness and customer loyalty of hotels in Rivers State.

Ho_2: There is no significant relationship between service responsiveness and customer referrals of hotels in Rivers State.

Ho_3: There is no significant relationship between service assurance and customer loyalty of hotels in Rivers State.

Ho_4: There is no significant relationship between service assurance and customer referrals of hotels in Rivers State.

REVIEW OF RELATED LITERATURE

Theoretical Review

This study is underpinned by the theory of Reasoned Action (1960) by Martin Fishbein and Icek Ajzen.

This theory was created by Martin Fishbein and IcekAjzen in the late 1960s. The Theory of Reasoned Action centers its analysis on the importance of attitude in the decision-making process. The core of the theory posits that consumers act on a behavior based on their intention to create or receive a particular outcome. In this analysis, consumers are rational actors who choose to act in their best interests. Furthermore, customers evaluate alternatives by comparing various brands and this evaluation is mainly based on the functional and

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psychological benefits they offer. This implies that an organization needs to grasp the benefits customers seek and also find out other brands customers consider. After evaluation is done, the customer is set to decide on his or her choice, and it must be noted that this decision does not necessarily lead to purchasing; hence, organizations use different techniques to ensure actual purchase. The last stage a consumer goes through is the after buying assessment which enables the buyer to compare the goods or services they purchased and product features such as brand, price and quality. At this stage, customers compare their expectations to the perceived value, thus influencing the decision to continue purchasing the good or not. It is worth noting that availability of information on products greatly affects this decision (Maclnnis, 2014).

Marketers can learn several lessons from the Theory of Reasoned Action. First, when marketing a product to consumers, marketers must associate a purchase with a positive result, and that result must be specific. Marketers must understand that long lags between initial intention and the completion of the action allows consumers plenty of time to talk themselves out of a purchase or question the outcome of the purchase.

Concept of Service Quality

Service quality is considered one of the important factors contributing to the overall profitability of firms. This importance is explained by two core functions. First, service quality is one of the few factors that plays a vital role in differentiating services and providing service firms to gain competitive advantage by attracting more customers and contributing to the market share. Second, service quality is regarded as a key factor to retain customers (Venetis & Ghauri, 2004).

There was plenty of research conducted regarding ‘quality’ in the past two decades; however, it is important to note that there are quite a lot of different conceptualizations of quality (Holbrook, 1994). With respect to marketing and economics, quality is often understood as relying on the properties and features of the product. With regard to operations, management quality is viewed as having two main properties, “fitness of use (it refers to whether the product or service does what it is supposed to do and possesses features that meet the needs of customers) and reliability (it represents to what extent the product is free from deficiencies)” (Wang & Lo, 2002). The service literature defines quality as “the overall assessment” (Parasuraman *et al*., 1988). The traditional definition of service quality measures the difference between customers’ expectations and perceptions of service (Grönroos, 1984; Parasuraman et al., 1988).

Zeithaml et., al., (1990) designed the service quality model (SERVQUAL); it has five dimensions to measure the service quality: reliability, responsiveness, assurance, empathy and tangibleness. This model is commonly used as a diagnostic tool to measure customer service and perceived satisfaction. Reliability is the capacity of the company to deliver its promises in time. Responsiveness relates to what extent customers perceive service providers’ ability to solve their issues timely. Assurance defines the sense of trust among customers delivered by the service providers’ employees. Empathy refers to care and importance given to each customer, to understand his or her needs and preferences and to articulate them. Tangibility is the presence of facilities, personnel and communication tools used by the organization to offer services (Parasuraman et al., 1988).

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Service Responsiveness and Customer Satisfaction

According to Ding (2017), responsiveness is one of the service quality factors that is applied by organizations such as hotels to improve their customer satisfaction. It is defined as the interests expressed in giving brief administration to clients when needed. Moreover, it is established that eagerness or status of representatives to give the wanted customers benefit without wasting time also affects positively the level of customer loyalty (Alkhawaldeh & Eneizan, 2018; Kumar & Kumar, 2017). Customers who have become accustomed to the immediacy of the internet have little patience with companies or representatives who do not respond quickly. Being responsive and accessible is key when you want to be known for excellent customer service (MacGillivray, 2016). Charles-Davies (2018) observed that responsiveness is a major hallmark for guaranteeing customer referral behavior. A customer who is well attended to will no doubt be a worthy positive advocate of the company. They will most likely narrate their good experience to family, friends and cronies when the need arises. In fact, Kheng et al. (2012) found a positive relationship between responsiveness and customer satisfaction.

Service Assurance and Customer Satisfaction

Paul (2016) characterized assurance as the learning and great behavior or affectionateness of managers and employees. Moreover, it is likewise considered because the capability of workers with the help to motivate belief and certainty will firmly assure customers' loyalty (Alsakarneh, 2018; Kumar & Kumar, 2017). That is why Bolton and Drew (1991) suggested "service quality has significant effects on customer loyalty." Service assurance is very important in any business; it enables them to gain the trust and confidence of the customers. This is a way of preventing mistakes or defects in manufactured products and avoiding problems when delivering solutions or services to customers. With this they are able to get the full satisfaction of their clients and to encourage repeated patronage. Service assurance guarantees customer satisfaction and helps to eliminate complaints. To gain customer confidence and to achieve customer satisfaction, the firm must be able to assure the customers of reliable services. Good customer service requires quality service and timely response to complaints with the best corrective and preventive action to fulfill customers' demand.

Empirical Review

Anams (2019) conducted a study to investigate the effect of Service Failure Recovery Strategies and Firms Survival of Hospitality Industries in Port Harcourt Metropolis. The study adopted descriptive research design. The population of the study is the customers of Novotel and Swiss Spirit Hotel & Suit in Port Harcourt Metropolis. Two hotels were selected purposively while a random sample size of 384 customers from both hotels was chosen to take part in the study. Data was collected by the use of questionnaire. Three research questions were posed and three hypotheses were tested. Data was analyzed using mean and standard deviation while chi-square (x^2) was used to test the stated hypotheses at 0.05 level of significance. Findings revealed that sincere apology and assurance influences customer loyalty in Novotel and Swiss Spirit Hotel & Suit situated in Port Harcourt Metropolis to a very high extent. Findings also revealed that compensation and quick response also influences customer satisfaction in Novotel and Swiss Spirit Hotel & Suit situated in Port Harcourt Metropolis to a high extent, while complaints and feedback management always

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lead to customer retention in Novotel and Swiss Spirit Hotel & Suit situated in Port Harcourt Metropolis to a very high extent. The study concluded that there is a significant positive relationship between service failure recovery strategies and firms' survival of hospitality industries in Port Harcourt Metropolis.

In yet another study by Renner and Ezekiel-Hart (2022) who investigated the relationship between service quality delivery and customer patronage of deposit money banks in Port Harcourt, Rivers State. The population of the study comprised 22 registered deposit money banks in Rivers State through the Central Bank of Nigeria. Given a population of 22 banks, which is less than thirty (30), the study adopted a census approach and undertook a study of the entire 22 banks with a focus on the. To generate data for the study, two hundred and twenty (220) copies of questionnaires were given to the twenty-two registered banks in the frame of ten (10) copies per bank. The data collected for this study were analyzed through descriptive and inferential statistics. The Spearman Rank Order Correlation Technique was employed to test the various hypotheses formulated through the aid of Statistical Package for Social Sciences (SPSS). The result of the findings showed a significant relationship between service quality delivery and customer patronage of deposit money banks in Port Harcourt. The study therefore concluded that effective service quality delivery is a panacea for customer patronage. The study recommended that deposit money banks in Nigeria, particularly those in Rivers State, should be responsive in terms of their service delivery as it would enhance customer patronage.

Charles-Davies (2018) investigated the impact of product quality and customer brand loyalty in Port Harcourt. The selected products for the survey included refrigerator (Samsung brand), generator (Sumec brand) and television set (LG brand). The study adopted descriptive research design. A sample size of 384 persons was randomly selected while 293 questionnaires were successfully retrieved and used for the analysis. Three research questions were posed and three hypotheses were tested. Data was analyzed using SPSS version 21 to analyse the mean and standard deviation while t-test statistics was used to test the stated hypothesis at 0.05 level of significance. Findings revealed that product durability positively impacts on customers' purchase behavior to a high extent. Product performance positively impacts on brand referral to a high extent. Brands that have aesthetic designs are easily associated to a high extent.

Methodology

The study adopted descriptive survey research design. The population of the study comprised all customers of registered hotels in Rivers State (**Source:** Rivers State Tourism Development Agency, RSTDA, 2019. www.rstda.com.ng). This implies that the study population is infinite in nature. A sample size of three hundred and eighty-four (384) was adopted. The various hypotheses formulated were tested using Pearson Product Moment Correlation (PPMC) at 0.05 level of significance.

Data Analysis and Presentation

In this section, the data obtained in the questionnaire were presented in tables and interpreted. A total of three hundred and eighty-four (384) copies of the questionnaire were administered to the respondents (supervisors and receptionists) of hotels in Port Harcourt.

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Questionnaire Distribution and Retrieval

Questionnaire Distribution	Questionnaire Retrieval	Useful Questionnaire	Not Useful
384	368	358	10

Source: Survey Data, 2022.

The table above shows the order in which copies of the questionnaire were administered to the respondents (supervisors and receptionist) of hotels in Port Harcourt and their collection rate. From the table, out of the 384 copies of the questionnaire administered to the respondents, 368 copies were retrieved and 358 copies were used for the study.

Bivariate Analyses

Hypothesis 1

Ho_1: There is no significant relationship between service responsiveness and customer loyalty of hotels in Rivers State.

Computation of Relationship Between Service Responsiveness and Customer Loyalty of Hotels in Rivers State

Variables	∑X	∑X²	DF	r-cal	r-crit	Dec	∑Y	∑Y²	∑XY
Service Responsiveness	949	33566							
		356							
Customer Loyalty			30577	0.93	0.1946	Reject	580	40966	
		p >0.05		*significant		N = **358**			

The calculated r was 0.93 and the critical value of r was 0.1946. This means that the calculated r is statistically significant at p > 0.05, since it is greater than the critical value of r. Therefore, the hypothesis (Ho_1) is rejected and the conclusion is that there is a significant relationship between service responsiveness and customer loyalty of hotels in Rivers State.

Hypothesis 2

Ho_2: There is no significant relationship between service responsiveness and customer referrals of hotels in Rivers State.

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Computation of Relationship Between Service Responsiveness and Customer Referrals of Hotels in Rivers State

Variables	∑X ∑Y	∑X² ∑Y²	DF ∑XY	r-cal	r-crit	Dec
Service Responsiveness	70840980					
			356			
Customer Loyalty	896	33098	32004	0.86	0.1946	Reject
	p >0.05		*significant		N = **358**	

Table 4.8 above shows that the calculated r was 0.86 and critical value of r was 0.1946. This shows that the calculated r is statically significant at p > 0.05, since it is greater than the critical value of r. The hypothesis (Ho_2) is therefore rejected (that is, not accepted) and the conclusion is that there is a significant positive strong relationship between service responsiveness and customer referrals of hotels in Rivers State.

Hypothesis 3

Ho_3: There is no significant relationship between service assurance and customer loyalty of hotels in Rivers State.

Computation of Relationship Between Service Assurance and Customer Loyalty of Hotels in Rivers State

Variables	∑X ∑Y	∑X² ∑Y²	DF ∑XY	r-cal	r-crit	Dec
Service Assurance	916	23024				
			356			
Customer Loyalty	757	37450	32176	0.60	0.1946	Reject
	p >0.05		*significant		N = **358**	

In Table 4.10, the calculated r was 0.60 and the critical value of r was 0.1946. This means that the calculated r is statistically significant at p > 0.05, since it is greater than the critical

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value of r. Therefore, the hypothesis (Ho_3) is rejected and the conclusion is that there is a significant relationship between service assurance and customer loyalty of hotels in Rivers State.

Hypothesis 4

Ho_4: There is no significant relationship between service assurance and customer referrals of hotels in Rivers State.

Computation of Relationship Between Service Assurance and Customer Referral of Hotels in Rivers State

Variables	**∑X**	**∑X²**	**DF**	**r-cal**	**r-crit**	**Dec**	**∑Y**	**∑Y²**	**∑XY**
Service Assurance	85437434	356	32700	0.87	0.1946	Reject	752	37082	

p >0.05 *significant N = **358**

In Table 4.5, the calculated r was 0.87 and the critical value of r was 0.1946. This means that the calculated r is statistically significant at p > 0.05, since it is greater than the critical value of r. Therefore, the hypothesis (Ho_4) is rejected and the conclusion is that there is a significant relationship between service assurance and customer referral in hotels in Rivers State.

DISCUSSION OF FINDINGS

Service Responsiveness and Customer Referrals

The analysis revealed that there is a significant relationship between service responsiveness and customer referrals of hotels. The grand mean of 2.56 is an indication that service responsiveness has a significant relationship with customer referrals of hotels in Rivers State. The result is in conformity with Reynolds (2019) who observed that serving people is the foremost activity in hospitality, and being expertly served is the reasonable expectation of hotel guests. However, MacGillivray (2016) submitted that being responsive and accessible is key when you want to be known for excellent customer service. He affirmed that responsiveness is a major hallmark for guaranteeing customer referral behavior.

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Service Assurance and Repeated Patronage

There is a significant relationship between service assurance on customer loyalty, customer referral and customer repeated purchase in hotels in Rivers State. The result of the analysis shows that r-calculated = 0.60, 0.87, 0.79 > r-critical = 0.1946 at 0.05 level of significance. This finding is in line with the study of Camarero and Carrero (2007) who asserted that perceived service assurance seems to be positively related to customers' likelihood of making repeated patronage and it increases their attitudes toward the service provider.

CONCLUSION

The empirical results of this study confirmed that all the dimensions of service quality (assurance and service responsiveness) were found to be significant predictors of customer satisfaction as measured by customer loyalty and referrals. Since all the dimensions of service quality are significant predictors of customer satisfaction, it is therefore concluded that the aim of service quality is to optimize the customer satisfaction through gaining the loyalty of the current customers in a multi-channel environment and ensure they are completely satisfied.

RECOMMENDATIONS

Based on the findings of this study and the conclusion made, the following recommendations are put forward:

1. The hotel staff and employees should be well cultured and trained to provide prompt services to their guests when called upon to do so as service responsiveness is seen as a major tool for guaranteeing customer referral behavior.
2. Since there are many hotels in the market providing the same or similar services, it is very important not only to attract but also to keep the customers in the long run through service assurance; this will help to stimulate customers' repeated patronage behaviour.

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EFFECT OF COMPUTERIZED ACCOUNTING SYSTEM ON ORGANISATIONAL PERFORMANCE OF OIL AND GAS FIRMS IN PORT HARCOURT, NIGERIA

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ABSTRACT: *The study examined the effect of a computerized accounting system (CAS) on the organisational performance of oil and gas firms in Port-Harcourt, Nigeria. The study adopts the survey research design. The survey enabled the researcher to obtain information from respondents about practices, situations or views via questionnaires. The population comprised of hundred staff of five randomly selected Oil and Gas firms in Port Harcourt, Rivers State with a capital base of above 500 million. The unit of focus was personnel in the Accounting/Finance and the IT/ICT Department of the respective companies. The study is based on primary data obtained from a structured questionnaire administered to respondents. The reliability of the instrument was measured using Cronbach's alpha. The data were analysed using descriptive and inferential statistics. The hypotheses were tested using simple linear regression. The results showed a positive significant effect of accounting software usage on accountability, productivity, and cost control in oil and gas firms. Based on this the study recommends the use of electronic mediums and other alternative channels (such as cloud computing frameworks) for storing financial information to ensure the safeguarding of such information and prevent data loss. The deployment of CAS in functional departments to boost the efficiency of service delivery in addition to linkage to the overall organisational ICT framework can enable the speedy generation of internal and external financial reports.*

KEYWORDS: Computerized Accounting System, Organisational Performance, Oil and Gas, Nigeria

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INTRODUCTION

The rapid advancement in Information and Computer Technologies (ICTs) has transformed and become central to contemporary societies. Presently, no aspect of human endeavour vis-a-vis sciences, arts, administration, crafts, commerce, medicine, accounting, etc. does not make use of ICT in its day-to-day operation. ICT refers to "the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numeric information by a micro-electronics-based combination of computing and telecommunications devices" (Kyeremeh, Prempeh, & Afful-Forson, 2019). ICT is a term that stresses the role of unified communications and the integration of telecommunications (Telephone lines and Wireless signals), computers as well as necessary enterprise software, middleware, storage and audiovisual systems, which enable users to access, store, transmit and manipulate information (Murray, 2011). Information technology comprises hardware and software, IT controls frameworks, and the human resources and skills required to develop, use and control these products and processes, to generate information to support decision making, operations, and organization strategies. It has transformed the way organisations perform their daily tasks (Lim, 2013).

Computers and other digital technologies have improved corporate relationships (Taiwo & Agwu, 2016); increased corporate and office productivity (Lim, 2013; Taiwo & Agwu, 2016); enabled research via collaboration (Lim, 2013); and, increased value creation across organizations (Taiwo & Agwu, 2016). It revolutionised the way organisations conduct their daily activities, providing vital information for planning, organizing, directing, leading, and controlling organisational activities (Ganyam & Ivungu, 2019). In addition, it also affected the manner accountants perform their duties enabling them to provide quality information for improved decision-making (Dandago & Rufai, 2014). Such advancements led to the development of Computerised Accounting Systems (CAS). A CAS is an accounting information system that processes financial transactions and events as per Generally Accepted Accounting Principles (GAAP) to produce reports with the assistance of computers or automated devices (Kingi, 2013). In a computerised accounting system, the framework of storage and processing of data is called the *operating environment* and consists of both hardware and software.

With a particular emphasis on accounting information systems, ICT led to the involvement of computers in performing accounting functions in organisations and the creation of accounting software packages. Nowadays any organisation that wants to stay competitive and survive a turbulent environment must do so with due consideration of ICT (Akanbi & Adewoye, 2018).

Performance is often used to measure the success of a business entity. Organisational performance is a measure of the change in the state of an organization or the outcomes that result from management decisions and the execution of those decisions by members of the organisation (Carton & Hofer, 2006). Organisational performance is multidimensional in nature; however, despite the diversity of performance measures, the common categorization is to divide performance into financial and non-financial performance (Combs, Crook, & Shook, 2005). Presently, CAS are been used to augment accounting functions (Taiwo, 2016). CAS has several benefits over manual systems such as speed, accuracy, reliability, backup, and flexibility, among others.

Nigeria remains the largest oil producer in Africa with an estimated production of 2.28 million barrels a day (ranking 13th in the world). The Nigerian oil and gas sector has been the mainstay

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in the economy, accounting for over 70% of its revenue. A vast number of oil and gas firms are located in Port Harcourt, the capital of Rivers State in Nigeria. It is located in the south-south geopolitical zone, also referred to as the Niger Delta region. However, a recurring theme among researchers has been whether the utilisation of CAS has over time improved operational efficiency and business performance. The problems tackled in this study are as follows; Firstly, while extant studies have been conducted in Nigeria on Accounting Information Systems (AIS) in general; little research has specifically addressed its impact in the Oil and Gas sector. Akanbi and Adewoye (2018), Akesinro and Adetoso (2016), Dandago and Rufai (2014), Agbim (2013) focus on Deposit Money Banks; Ironkwe and Nwaiwu (2018) focus on manufacturing companies; Amahalu, Abiahu, and Obi (2017) sampled two Microfinance Banks (MFBs); Taiwo and Agwu (2016), Taiwo (2016) used a sample from Covenant University; Akande (2016) utilised a sample of SMEs; and, Onaolapo and Odetayo (2012) selected construction companies.

This forms the milieu upon which the study is set out to examine the effect of computerized accounting systems on the organisational performance of oil and gas firms. Against this backdrop, the study examines the effect of a computerized accounting system on the organisational performances of oil and gas firms in Port Harcourt. Studies have shown differing views on the merits/demerits of using computerized accounting systems and also industry variation with respect to organisational performance (Amahalu, Abiahu, & Obi, 2017).

Secondly, the literature on the effect of CAS focuses on differential aspects of organisational performance, such as the effect of CAS on payroll accounting (Alfred, 2014); CAS on external audit functions (Okoye & Oghoghomeh, 2011); and, CAS on service delivery (Okoye & Gbegi, 2012). The study focus on three aspects of organisational performance, namely accountability, productivity and cost control in the firms.

Objective of the Study

The main objective of the study is to examine the effect of computerized accounting systems on the organisational performance of oil and gas firms in Port-Harcourt, Nigeria. The study specifically examines the following:

1. To ascertain the effect of accounting software usage on the accountability of oil and gas firms.

2. To determine the effect of accounting software usage on the productivity of oil and gas firms.

3. To evaluate the effect of accounting software usage on cost control in oil and gas firms.

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LITERATURE REVIEW

Conceptual Review

Computerised Accounting System (CAS)

A Computerised Accounting System (CAS) is a formal synergy between the computer, accounting and system. An accounting system is "a formal system for identifying, measuring, accumulating, analyzing, preparing, interpreting and communicating financial information of a particular entity to a particular group" (Ama, 2004). They emerged from advancements in information systems. Typical examples of information systems include management information system (MIS), transaction processing system (TPS), office automation system (OAS), decision support system (DSS), executive information system (EIS), expert system (ES) and accounting information system (AIS) (Al-Mamary, Shamsuddin, Hamid, & Aziati, 2014). The CAS assists in collecting and recording data and information regarding events that have an economic impact on organizations and facilitates its communication to internal and external stakeholders (Ganyam & Ivungu, 2019; Olusola, Olugbenga, Zacchaeus, & Oluwagbemiga, 2013). The fusion of ICT with accounting functions led to the creation of CAS. A CAS is an accounting information system that processes financial transactions and events as per Generally Accepted Accounting Principles (GAAP) to produce reports with the assistance of computers or automated devices (Kingi, 2013).

CAS is the application of computer-based software to input, process, store, and output accounting information (Sugut, 2014). Amviko (2011) opined that CAS involves the computerization of accounting information systems established to facilitate managerial decision-making. Marivic (2009) describes a CAS as a method or scheme for recording, organising, summarising, analysing, interpreting and communicating financial transactions of an entity to stakeholders via the use of computers and computer-based systems. This system uses specialized machines called calculators and computers in gathering information. Technically it is often referred to as Electronic Data Processing (EDP) System (Ama, 2004). They allow financial statements to be created from information stored in the database (Amahalu, Abiahu, & Obi, 2017).

Computer-based transaction system helps disseminate routine and critical business information speedily and efficiently (Lim, 2013). The use of IT applications changed various stakeholders' expectations to the need for access to more frequent and detailed accounting information and data, rather than periodical aggregated financial reports. Presently, CAS are responsible for analysing and monitoring the financial condition of companies, preparation of documents necessary for tax purposes, and providing information to support many other organizational functions such as production, marketing, human resource management, and strategic planning. The functions of CAS include (Taiwo & Agwu, 2016): effective collection and storage of data; classification of financial information; summarizing and interpretation of financial information to external users.

Accounting software is an integral part of the computerised accounting system. Accounting software is a class of computer programs that perform accounting operations (Ware, 2015). It is application software that records and processes accounting transactions within functional modules such as accounts payable, accounts receivable, payroll, and trial balance (Ware, 2015). They vary from small accounting software systems, such as Myob and QuickBooks, to large

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accounting software systems usually integrated with enterprise-wide software, such as Enterprise Resource Planning (ERP) systems, and Systems Applications and Products (SAP). The three basic types of commercial accounting information system software. These are turnkey systems, backbone systems, and vendor-supported systems. Turnkey systems are finished and tested systems. They are ready for implementation in the business process. Examples are Enterprise Resource Planning (ERP) systems, Oracle and SAP. Backbone Systems consist of basic system structures on which to build. In this approach, the primary logic is preprogrammed and the vendor will be the one to design the user interface that suits the client's needs. Vendor-supported systems are customized systems, in which, the software vendor designs, implements and maintains the system for its client.

Organisational Performance

Organisational performance is a measure of the change in the state of an organization or the outcomes that result from management decisions and the execution of those decisions by members of the organisation (Carton & Hofer, 2006). According to Carton (2004), organisational performance is based on the premise of using human, physical, and capital resources to achieve a shared purpose. The organisational performance comprises the actual output or results of an organisation as measured against its intended outputs (or goals and objectives). According to Richard, Devinney, Yip, and Johnson (2009) organisational performance encompasses three specific areas of firm outcomes: financial performance (profits, return on assets, return on investment, etc.), product market performance (sales, market share, etc.); and shareholder return (total shareholder return, economic value added). They further observed that firm performance can also be measured based on subjective indicators such as customer satisfaction, employee satisfaction, and social and environmental performance (Richard, Devinney, Yip, & Johnson, 2009). The study focuses on three aspects of organisational performance: accountability, productivity, and cost control in oil and gas firms.

Computerised Accounting System (CAS) and Organisational Performance

Studies have illustrated that the CAS has several benefits for numerous organisational functions. For instance, Okoye and Oghoghomeh (2011) demonstrated their usefulness in external audit functions. According to Sugut (2014), it eases auditing and has better access to required information such as cheque numbers, payments, and other transactions which helps reduce the time needed to provide this type of information and documentation during auditing. Computerization saves time on transactions leading to higher financial reporting quality. CAS facilitates an efficient information flow which enhances managerial decision-making. Therefore, it speeds up routine business transactions, timeliness, quick analysis, accuracy and reporting (Sugut, 2014). Agbim (2013) found that CAS enables the management to monitor the financial performance of all segments of a business because of the availability of a broad range of detailed reports at a short interval. Amviko (2011) found that CAS is positively associated with improved business performance. In Nigeria, Agbim (2013) from a survey dataset find that CAS improved business turnover and profitability. This was supported by Onaolapo and Odetayo (2012) in Nigeria who showed that CAS has a significant positive effect on organisational effectiveness.

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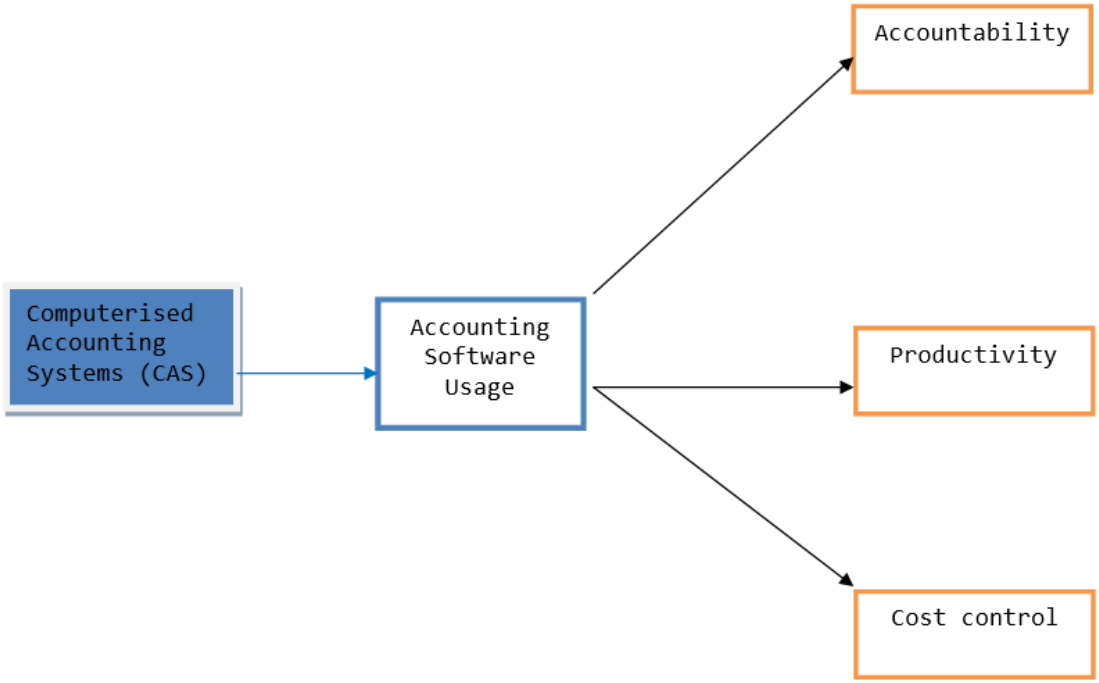

Figure 1: Conceptual Framework

Source: Author's Conceptualisation (2021)

Theoretical Framework

The study is anchored on the *diffusion of innovation* theory and the *technology acceptance model.*

Diffusion of Innovation (DOI) Theory

This theory was developed by E. M. Rogers, a communication theorist at the University of New Mexico, in 1962. According to Rogers (2003) innovation refers to the introduction of any "idea, practice or object that is perceived to be new". Innovation has two parts, the first is "the generation of an idea or invention" and the second is "the conversion of that new idea or invention into a business or other useful application" (Rogers, 2003). The theory identifies five characteristics of innovations which affect their diffusion: *relative advantage* (the extent to which technology offers improvements over currently available tools), *compatibility* (its consistency with social practices and norms among its users), *complexity* (its ease of use or learning), *trialability* (the opportunity to try an innovation before committing to use it), and *observability* (the extent to which the technology's outputs and its gains are clear to see). These five factors influence the adoption of innovation to a different extent among five different adopter categories. The criterion for the categorization is *innovativeness*. This is defined as the degree to which an individual is relatively early in adopting a new idea than

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other members of a social system (Rogers & Shoemaker, 1971). The five categories are the innovators, often the first to try a new idea. The early adopters, often occupy leadership roles and embrace change as a part of life. Early majority, often jump the wagon after observing whether such innovation is worthwhile. The fourth is the late majority, they are sceptical of change. They often follow the majority of success stories. The final group is the laggards, i.e., they are the most conservative of all. They are often hesitant and even resistant to change.

Technology Acceptance Model (TAM)

The TAM was originally proposed by Davis in 1986. This model forecasts a user's acceptance and usage of ICT in an organisational setting (Akanbi & Adewoye, 2018). TAM deals with perceptions as opposed to real usage, the model suggests that users, the key factors that influence their decision on how, where and when they will use it (Davis, 1989). The model suggests that when users are presented with a new technology, two specific factors influence their decision about how and when they will use it (Alfred, 2014). The two factors are; perceived usefulness (PU), and perceived ease-of-use (PEOU) (Davis, 1989). According to Davis (1989), Perceived Usefulness (PU) is the degree to which a person believes that using a particular system will lead to improved performance; and, Perceived Ease-of-Use (PEoU) is the degree to which a person believes that using a particular system would result to improved productivity.

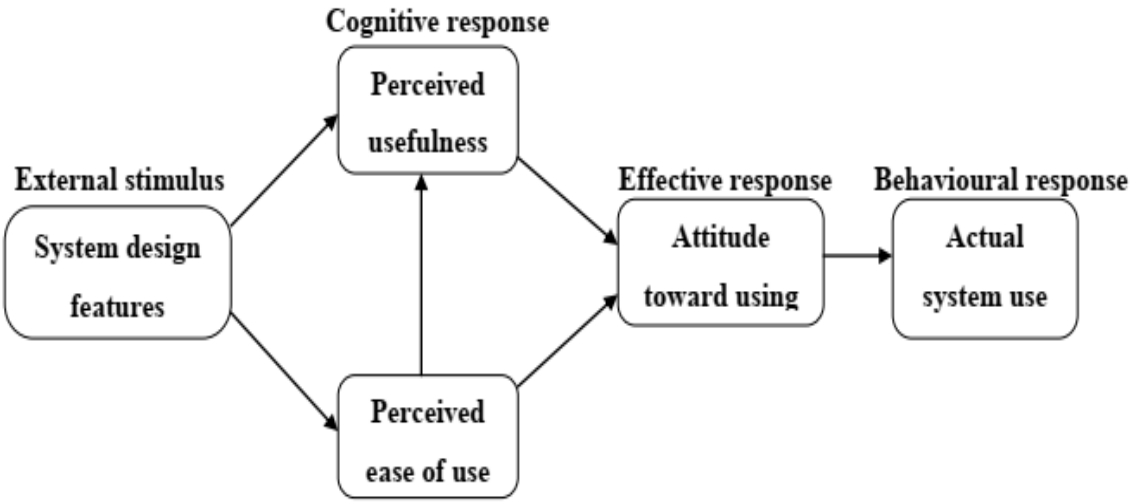

Figure 2: Technology Acceptance Model

Source: Davis (1993)

Empirical Review

Masanja (2019) investigated 'The impact of computerized accounting system on the financial performance for selected private companies in Arusha, Tanzania'. The study adopted the descriptive and exploratory research design. The sample comprised of 61employees in the accounting and financial department from 10 randomly selected private companies located in the Arusha region. The study is based on primary data; obtained from questionnaires. The data

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were analysed using descriptive and Pearson correlation coefficients. The results showed that cost and management support were significant factors affecting the adoption of CAS. The correlation results showed a significant positive relationship between these two factors (cost and management support) and financial performance.

Kyeremeh, Prempeh, and Afful Forson (2019) conducted a study titled 'Effect of information communication and technology (ICT) on the performance of financial institutions (A case study of Barclays Bank, Sunyani Branch)'. The study adopted both exploratory and descriptive research designs. The study relied on primary data which was collected using structured questionnaires. The sample comprised 50 respondents (i.e., 8 staff members and 48 customers) of Barclays Bank drawn using purposive and systematic sampling techniques. The data were analysed using descriptive statistics. The results revealed that ICT has a positive effect on performance from improved customer service delivery.

Akanbi and Adewoye (2018) investigated the 'Effects of accounting information system adoption on the financial performance of the commercial banks in Nigeria'. The study adopts the survey research design. The sample comprised 80 respondents randomly selected from commercial banks in the Lekki Peninsula Area of Lagos State, Nigeria. The study relied on primary data from questionnaires; and secondary data from financial reports from 2007 to 2017. The results were analysed using the linear regression technique. The results showed that Accounting Information System (AIS) adoption has a significant positive impact on gross profit margin, net operating profit, return on capital employed and return on total assets with $\alpha<0.05$.

Ironkwe and Nwaiwu (2018) examined the effect of the 'Accounting information system on financial and non-financial measures of companies in Nigeria'. The sample comprised 16 companies. The study relied on both primary and secondary data. The primary data were obtained from questionnaires; while, the secondary data was obtained from annual reports from 2011 to 2014. The data were analysed using multiple linear regression techniques. The results showed that the CAS had a positive significant effect on the financial and non-financial indicators of companies.

Borhan and Nafees (2018) conducted a study titled 'Effect of accounting information system on financial performance: A study of selected real estate companies in Jordan'. The study employed a survey research design. The study relied on primary data collected via questionnaires administered to 175 employees from 5 companies in Jordan. The data were analysed using the linear regression technique. The results revealed that there is a significant impact of CAS on financial performance.

Kashif (2018) evaluated the 'Impact of accounting information system on the financial performance of selected FMCG companies'. The study adopts the survey research design. The sample comprised 400 respondents from the selected companies in India. The study relied on primary data obtained from questionnaires. The data were analysed using a simple linear regression technique. The results showed that there is a significant impact of CAS on financial performance.

Rehab (2018) undertook a study titled 'The impact of accounting information systems on organisational performance: The context of Saudi's SMEs'. The sample comprised 137 small and medium enterprises (SMEs) in Saudi Arabia. The study relied on primary data collected

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via questionnaires. The data were analysed using smart partial least squares and validated the hypotheses. The results showed that AIS has a significant impact on organisational performance; and, specifically on cost reduction, improving quality and effective decision making.

Borhan and Bader (2018) investigated 'The Impact of accounting information system on the profitability of Jordanian Banks'. The study adopts the survey research design. The study relied on primary data collected through self-administered questionnaires from 206 employees in Jordanian banks. The data were analysed using the linear regression technique. The results showed that there is a significant impact of CAS on the profitability of banks.

Peter, Kamau, and Ombui (2018) examined the 'Effects of computerized accounting system on the performance of small medium enterprises: A case of the business community in Bomet County'. The study adopted the descriptive survey research design. The sample comprised 254 respondents in Bomet County using a stratified random sampling technique. The study relied on primary data; obtained from questionnaires administered to the respondents. The data were analysed using descriptive statistics and regression analysis. The results revealed that CAS (i.e., QuickBooks, sage, pastel and tally accounting systems) significantly improved SMEs' performance.

Khan (2017) investigated the 'Impact of accounting information system on the organizational performance: A case study of Procter and Gamble. The study adopted the descriptive survey research design. The sample comprised 174 employees of P&G Limited. The study relied on primary data obtained from self-administered questionnaires. The data were analysed using linear regression analysis. The results revealed a significant impact of CAS on organisational performance (i.e., marketing, job, and financial performance).

Amahalu, Abiahu, and Obi (2017) conducted a study titled 'Comparative analysis of computerized accounting system and manual accounting system of quoted Microfinance Banks (MFBs) in Nigeria'. The study adopted the ex-post facto research design. The sample comprised two Microfinance Banks (MFBs). The study relied on secondary data obtained from annual reports and accounts from 2006 to 2015. The data were analysed using paired sample t-test. The results showed that CAS had a positive effect on ROA, NPM, and ROE.

Akesinro and Adetoso (2016) undertook a study titled 'The effects of computerized accounting system on the performance of banks in Nigeria'. The study adopted a survey research design and a convenience sampling technique was used. The sample comprised 50 respondents from 3 Deposit Money Banks (DMBs) in Nigeria. The study relied on primary data; which were analysed using correlation analysis. The results showed that a computerized accounting system had a significant positive effect on a bank's profitability and customer patronage.

Taiwo and Agwu (2016) undertook a study titled 'Effect of ICT on accounting information system and organizational performance'. The study used the survey research design. The study relied on primary data obtained from a sample of 20 staff in financial services and related accounting departments at Covenant University. The data were analysed using Pearson's correlation via the aid of SPSS. The results showed a significant positive relationship between ICT and accounting system; and, a significant positive relationship between ICT and organisational performance.

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Taiwo (2016) evaluated the 'Effect of ICT on accounting information system and organisational performance: The application of ICT on accounting information system'. The sample comprised 20 staff from the financial and accounting departments at Covenant University. The study relied on secondary data. The data were analysed using Pearson's correlation technique. The results showed a significant positive relationship between ICT and accounting system; and, a significant positive relationship between ICT and organizational performance.

Ali, Bakar, and Omar (2016) conducted a study titled 'The critical success factors of accounting information system (AIS) and its impact on organizational performance of Jordanian commercial banks'. They surveyed 273 respondents in the Jordanian banking sector. The study relied on primary data collected via a structured questionnaire. The data were analysed using with PLS-SEM technique. The results revealed that service quality, information quality and system quality are significant AIS success factors for increasing organizational performance.

METHODOLOGY

Research Design

The study adopts the descriptive survey research design. This research design allows researchers to gather information, summarize, present, and interpret it for clarification (Peter, Kamau, & Ombui, 2018). The choice of survey research design is based on the fact that surveys enable a researcher to obtain data about practices, situations or views at one point in time through questionnaires or interviews. The population of the study was drawn from five randomly selected Oil and Gas firms in Port Harcourt, Rivers State with a capital base of above 500 million. The unit of focus in the firms is the Accounting/Finance and the IT/ICT Department of the respective companies. The distribution of respondents that fall in the two categories which constitute the population is above 100. The study employed a purposive sampling method and selected fifty staff of the five Oil and Gas firms. The participants in this study were accounting/finance and information technology personnel in Oil and Gas firms.

Table 1: The distribution of respondents across firms

S/No	Sector	Accountants	ICT Experts
1	Nigerian National Petroleum Corporation	10	10
2	Shell Nigeria	10	10
3	Total Nigeria	10	10
4	Schlumberger	10	10
5	Chevron Oil Nigeria Ltd	10	10
	Total	**50**	**50**

Source: Field Survey (2021)

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Sources of Data

The study relied on primary data obtained from a structured questionnaire administered to respondents. Primary data refers to data an investigator originates for the inquiry at hand. The study utilised a structured questionnaire. A questionnaire is a "formalized set of questions for eliciting information" (Agbim, 2013). The questionnaire was designed using both nominal and interval scales. The nominal scale was used for bio-data collection while the interval scale was used for questions on the issue to be addressed in the study. The interval scale was structured in a Likert scale form and weighting given to each point in the scale as follows: Strongly Agree (SA) = 5 points; Agree (A) = 4 points; Strongly Disagree (SD) = 1 points; Disagree (D) = 2 point; Undecided (UD) = 3 points. The questionnaire consisted of 17 items arranged as follows: Questions 1-5 focused on the usage of accounting software; Questions 6-9 focused on the accountability construct; Questions 10-13 focused on the productivity measure; while Questions 14-17 addressed an issue related to cost control. The reliability of the instrument was calculated using Cronbach's alpha coefficients to assess the reliability of multiple-item constructs.

Methods of Data Analysis

The study employs both descriptive and inferential statistical techniques. The descriptive statistics include the mean, median, standard deviation, minimum, and maximum values. The hypotheses were tested using simple linear regression. Simple linear regression analyses the relationship between a dependent variable and one independent variable by estimating coefficients for the equation on a straight line. The goodness of fit of the model is evaluated using the Coefficient of Determination (R-squared). The analyses were conducted using the Statistical Package for Social Sciences (SPSS) Ver. 22 statistical software.

Model Specification

The following models were used to examine the relationship between the independent and dependent variables of the oil and gas firms:

Acc = f (acs) …… (1)
Pro = f (acs) …… (2)
Cco = f (acs) …… (3)

Equations 1-3 can be written econometrically as presented in equations 4-6 as follows:

$Acc = \eta_0 + \eta_1 acs + \varepsilon_{t.....}$ (4)
$Pro = \eta_0 + \eta_1 acs + \varepsilon_{t.....}$ (5)
$CCo = \eta_0 + \eta_1 acs + \varepsilon_{t.....}$ (6)

Where:

Acc	=	Accountability
Pro	=	Productivity
Cco	=	Cost Control
Acs	=	Accounting Software Usage
η_0	=	Constant or Intercept
η_1	=	Coefficient to be estimated
ε_t	=	Error term

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Data Analysis

A total of eighty-nine (89) were fully completed and returned. This represents an approximate eighty-nine (89%) success rate. The total number of invalid questionnaires was eight (8) and partly completed questionnaires were three (3). The summary of the demographic information of the respondents is shown below:

Table 2: Demographic information of the respondents

Demographic profile		**Frequency**	**Percentage (%)**
Age:	25-35	29	32.58
	36-45	37	41.57
	45 & above	23	25.85
		89	100
Gender:	Male	57	64.04
	Female	32	35.96
		89	100
Highest Educational Qualification:	WAEC/NECO/NABTEB	-	-
	Diploma	-	-
	Bachelor Degree (HND, BSc, BA, etc.)	61	68.54
	Post-graduate (PGD, MSc, PhD)	28	31.46
		89	100
Years of work experience:	5 years	11	12.36
	6 – 10 years	33	37.08
	11 – 15 years	27	30.34
	16 & above	18	20.22
		89	100

Source: Field Survey (September 2021)

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The reliability of the instrument was tested using Cronbach Alpha (α), which is a measure of the internal consistency of a scale.

Table 3: Reliability statistics

	Cronbach's Alpha **(α)**	N of Items
Accounting Software Usage	.701	5
Accountability	.627	4
Productivity	.633	4
Cost Control	.711	4

Source: SPSS Ver. 22

The questionnaire consisted of four subscales, the accounting software usage subscale consisted of 5 items (Questions 1-5) the Cronbach Alpha value was .701; the accountability subscale consisted of 4 items (Questions 6-9) the Cronbach Alpha value was .627; the productivity subscale consisted of 4 items (Questions 10-13) the Cronbach Alpha value was .633; and, the cost control subscale consisted of 4 items (Questions 14-17) the Cronbach Alpha value was .711. The subscales showed high-reliability scores; thus, indicating a high level of internal consistency of the instrument.

Descriptive Statistics

Table 4: Descriptive statistics (Mean and Standard Deviation)

	N	Min.	Max.	Mean	Std. Deviation
The organisation adopts the use of computerised accounting systems to process its financial transactions	89	1	5	4.63	.774
Employees are trained regularly on the use of accounting software in the organisation	89	1	5	4.56	.783
ICT is implemented at all levels/functional departments within the organisation	89	1	5	4.57	.865
Computerised accounting systems facilitate internal report generation for management decision	89	2	5	4.19	.672
The use of computerised accounting systems has facilitated the real-time monitoring and processing of financial transactions	89	1	5	4.06	.934
The use of electronic mediums for storing financial information has improved accountability within the organisation	89	3	5	4.53	.524
A computerised accounting environment enables the systematic monitoring of activities	89	1	5	3.40	1.268

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The computerised accounting system has reduced the incidence of data loss from the physical destruction of manual accounting records	89	1	4	2.22	.926
The computerised accounting system has improved the reliability of financial reports	89	2	5	3.35	1.159
By decreasing the amount of time needed for processing transactions, the computerised accounting system has made more efficient our processes	89	1	5	4.73	.579
Computerised accounting systems facilitate the speedy generation of reports	89	1	5	4.57	.810
The use of accounting software has expanded the skill-set of the employees	89	3	5	4.70	.611
Computerised accounting software is highly efficient at performing repetitive tasks	89	3	5	4.20	.643
The computerised accounting systems can handle large volumes of transactions with minimal errors	89	2	5	4.08	.907
The computerised accounting systems provide real-time valid information useful for monitoring costs along the production lines and managerial decisions	89	1	5	4.52	.624
The computerised accounting system plays a key role in supply chain management and inventory tracking	89	3	5	4.75	.459
A computerised accounting system has a significant impact on financial management	89	1	5	4.51	.943
Valid N (listwise)	89				

Source: SPSS Ver. 22

Table 4 above shows the computed descriptive statistics of the questionnaire items used in the study. N shows the number of respondents that responded to a particular item, Min. shows the least observed value on a five-point *Likert* scale by the respondents to a particular item, Max. implies the maximum observed value on a five-point *Likert* scale by the respondents to a particular item. The mean is a measure of central tendency, the average value of the accounting software usage subscale (Questions 1-5) was 4.402; the average value of the accountability subscale (Questions 6-9) was 3.375; the average value of the productivity subscale (Questions 10-13) was 4.55; and, the average value of the cost control subscale (Questions 14-17) was 4.465. Thus, on average, all the subscales showed a mean score above 3.00.

Test of Hypotheses

The three (3) key hypotheses developed for the study were tested using simple linear regression; the results are shown below:

Analysis of Hypothesis One:

H_1: There is a significant effect of accounting software usage on the accountability of oil and gas firms.

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Table 5: Model summary of hypothesis one

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.202[a]	.041	.030	2.07979

a. Predictors: (Constant), Accounting Software Usage

Source: SPSS Ver. 22

The Table above shows information pertaining to the model summary. The model showed an R squared value of .041; this explains the proportion of variance in the dependent variable explained by the independent variable. The Adjusted R squared value of 0.030 implies that accounting software usage explains about 3% of accountability in oil and gas firms.

Table 6: ANOVA[a] output of hypothesis one

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.927	1	15.927	3.682	.058[b]
	Residual	376.320	87	4.326		
	Total	392.247	88			

a. Dependent Variable: Accountability

b. Predictors: (Constant), Accounting Software Usage

Source: SPSS Ver. 22

The Table above shows the F-statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) which is used to check the statistical significance of the model. The F-statistic value of 3.682 (p = .058); thus, the p-value is less than .05 therefore the hypothesis that all the regression coefficients are zero is rejected.

Table 7: Model Coefficients[a] of hypothesis one

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.204	2.253		4.086	.000
	Accounting Software Usage	.195	.102	.202	1.919	.058

a. Dependent Variable: Accountability
Source: SPSS Ver. 22

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The Table above shows the value of the coefficients of the model. The t-statistic of our variable of interest (Accounting Software Usage) is 1.919 (p=.058), this confirms that the variable has a positive and statistically significant effect; the alternate hypothesis is accepted and null rejected. Thus, there is a significant effect of accounting software usage on the accountability of oil and gas firms.

Analysis of Hypothesis Two:

H_1: There is a significant effect of accounting software usage on the productivity of oil and gas firms.

Table 8: Model summary of hypothesis two

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.382[a]	.146	.136	1.34556

a. Predictors: (Constant), Accounting Software Usage

Source: SPSS Ver. 22

The Table above shows information pertaining to the model summary. The model showed an R squared value of .146; this explains the proportion of variance in the dependent variable explained by the independent variable. The Adjusted R squared value of 0.136 implies that accounting software usage explains about 13.6% of productivity in oil and gas firms.

Table 9: ANOVAa output of hypothesis two

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.843	1	26.843	14.826	.000[b]
	Residual	157.517	87	1.811		
	Total	184.360	88			

a. Dependent Variable: Productivity

b. Predictors: (Constant), Accounting Software Usage

Source: SPSS Ver. 22

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The Table above shows the F-statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) which is used to check the statistical significance of the model. The F-statistic value of 14.826 (p = .000); thus, since the p-value is less than .05 therefore the hypothesis that all the regression coefficients are zero is rejected.

Table 10: Model Coefficients[a] of hypothesis two

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	12.618	1.457		8.658	.000
Accounting Software Usage	.254	.066	.382	3.850	.000

a. Dependent Variable: Productivity

Source: SPSS Ver. 22

The Table above shows the value of the coefficients of the model. The t-statistic of our variable of interest (Accounting Software Usage) is: 3.850 (p=.000), this confirms that the variable has a positive and statistically significant effect; the alternate hypothesis is accepted and null rejected. Thus, there is a significant effect of accounting software usage on the productivity of oil and gas firms.

Analysis of Hypothesis Three:

H_1: Accounting software usage affects cost control in oil and gas firms.

Table 11: Model summary of hypothesis three

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.348[a]	.121	.111	1.51456

a. Predictors: (Constant), Accounting Software Usage

Source: SPSS Ver. 22

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The Table above shows information pertaining to the model summary. The model showed an R squared value of .121; this explains the proportion of variance in the dependent variable explained by the independent variable. The Adjusted R squared value of 0.111 implies that accounting software usage explains about 11.1% of cost control in oil and gas firms.

Table 12: ANOVAa output of hypothesis three

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.531	1	27.531	12.002	.001[b]
	Residual	199.570	87	2.294		
	Total	227.101	88			

a. Dependent Variable: Cost Control

b. Predictors: (Constant), Accounting Software Usage

Source: SPSS Ver. 22

The Table above shows the F-statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) which is used to check the statistical significance of the model. The F-statistic value of 12.002 (p = .001); thus, since the p-value is less than .05 therefore the hypothesis that all the regression coefficients are zero is rejected.

Table 13: Model Coefficients[a] of hypothesis three

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	12.198	1.640		7.436	.000
Accounting Software Usage	.257	.074	.348	3.464	.000

a. Dependent Variable: Cost Control

Source: SPSS Ver. 25

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The Table above shows the value of the coefficients of the model. The t-statistic of our variable of interest (Accounting Software Usage) is 3.464 (p=.000), this confirms that the variable has a positive and statistically significant effect; the alternate hypothesis is accepted and null rejected. Thus, accounting software usage affects cost control in oil and gas firms.

DISCUSSION OF FINDINGS

The study broadly investigated the effect of a CAS on organisational performance. Generally, the results are all suggestive of a positive effect of CAS on organisational performance. This is consistent with the study by Khan (2017) using Procter and Gamble as a case study which revealed a significant impact of accounting information systems on overall organisational performance (i.e., marketing, job, and financial performance). Also, studies by Taiwo and Agwu (2016), and Taiwo (2016) using a sample drawn from Covenant University, Nigeria showed a significant positive relationship between ICT and the accounting system; and, a significant positive relationship between ICT and organisational performance. Using a sample of selected construction companies the study by Onaolapo and Odetayo (2012) showed a significant positive effect of accounting information systems on organizational effectiveness.

The *first hypothesis* showed a significant positive effect of accounting software usage on the accountability of oil and gas firms. The study by Ironkwe and Nwaiwu (2018) showed that accounting information systems had a significant positive effect on both financial and non-financial indicators of companies.

The *second hypothesis* revealed a statistically significant positive effect of accounting software usage on the productivity of oil and gas firms. The study by Kyeremeh, Prempeh, and Afful Forson (2019) found a positive effect of ICT on performance from improved customer service delivery. Another study by Akanbi and Adewoye (2018) using a sample of commercial banks in Lagos State, Nigeria and linear regression showed that the adoption of Accounting Information System (AIS) had a significant positive impact on gross profit margin, net operating profit, return on capital employed and return on total assets. Other studies include studies by Borhan and Nafees (2018) in Jordan which revealed a significant impact of accounting information systems on financial performance; Kashif (2018) in India found a significant impact of accounting information systems on financial performance; Borhan and Bader (2018) on a sample of Jordanian Banks found a significant impact of accounting information system on profitability. Amahalu, Abiahu, and Obi (2017) from a sample of quoted Microfinance Banks (MFBs) in Nigeria showed that computerized accounting systems had a positive effect on ROA, NPM, and ROE. Akesinro and Adetoso (2016) also found that CAS had a significant positive effect on a bank's profitability and customer patronage.

Interestingly, the study by Peter, Kamau, and Ombui (2018) on a sample of SMEs in Bomet County revealed that CAS (i.e., QuickBooks, sage, pastel and tally accounting systems) significantly improve SMEs' performance. Another study by Akande (2016) in South Western, Nigeria revealed a significant positive relationship between CAS and entrepreneur performance. Using a sample of SMEs in Iran Mehdi, Mahmoud, Mostafa, and Ebadollah (2015) found that implementation of AIS was positively associated with performance, productivity, and profitability (measured by P/E ratio and Tobin’s Q).

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Other studies have also shown support for the use of CAS in organisations; such as Ware (2015), Boateng (2015), and Agbim (2013) found support for the use of computers in keeping accounting records; Boateng (2015) showed that benefits of CAS outweigh its associated challenges; Sugut (2014) showed that CAS had a significant positive effect on financial reporting quality; and, Amviko (2011) found a positive association between CAS and timely financial reporting.

The *third hypothesis* showed that accounting software usage positively affects cost control in oil and gas firms. This corroborates the study by Masanja (2019) on a sample of selected private companies in Arusha, Tanzania. The correlation results showed a significant positive relationship between cost and management support with financial performance. The study by Rehab (2018) on a sample of SMEs in Saudi and smart partial least squares showed that AIS had a significant impact on organizational performance; and, specifically on cost reduction, improving quality and effective decision making. Similar results were also documented by Yose and Choga (2016) in Zimbabwe who found that CAS reduces errors, saves time, and minimises operational costs. The study by Dandago and Rufai (2014) on a sample of banks from the Nigerian banking industry showed that accounting information technology improved banks' performance by reducing operational costs and by facilitating transactions among customers within the same or different networks.

Conclusion and Recommendations

The study concludes that CAS plays a role in the organisational performance of oil and gas firms in Port-Harcourt, Nigeria. The rapid development in information and communication technology caused a tremendous change in financial accounting practices across several organisations (i.e., both product and service sectors). Thus, several computer hardware and software were deployed as analytical tools in several organisations. The study focuses on accounting software used as an aid in the analytical process and its consequent effect on accountability, productivity and cost control among oil and gas firms in Port-Harcourt, Nigeria. The study adopts the survey research design to elicit the views of respondents by administering a questionnaire. The sample was drawn from oil and gas firms located in Port-Harcourt. The empirical results revealed a positive statistically significant effect of accounting software usage on accountability, productivity and cost control. However, the effect of accounting software usage on the accountability of oil and gas firms was significant at 10%. Based on this, the recommendations that managers in oil and gas firms:

1. The use of electronic mediums and other alternative channels (such as cloud computing frameworks) for storing financial information ensures the safeguarding of such information and the prevention of data loss. In addition, the computerisation of the accounting process enables the real-time monitoring of transactions to improve accountability within the organisation;

2. The deployment of computerised accounting systems in functional departments to boost the efficiency of service delivery. This becomes needful following the large voluminous transactions that can be processed using personal computers compared to manual systems. In addition, the linkage of the system to the overall organisational ICT framework can enable the speedy generation of internal and external financial reports. However, the organisation should ensure the regular training of its employees and also the prevention of such cyber security attacks; and,

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3. The computerised accounting systems can enable automation of highly repetitive tasks thus enabling the firm cut down costs. In addition, the real-time monitoring of costs along production lines enables managerial decisions and inventory tracking. Lastly, the deployment of a computerised accounting system plays a significant role in resource monitoring, fixed assets and financial management.

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VALIDATING THE RELEVANCE OF RELIGION AND CULTURE IN MIGRANT ENTREPRENEUR INTENTION

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ABSTRACT: *Though not large in number but a considerable quantity of scholars has taken time to dig into the effects and impact of religion and culture on economic development and by of importance entrepreneurial choice and intention (EI), but quite a little is somewhat known on the fundamental impact of religion on how it affects migrants in entrepreneurial intention or choice in their new or current location. The researchers of this paper have hereby used this work to examine and assess the impact of how religion affects migrants when attempting to make entrepreneurial choice or intention. From the pool of hundreds of respondents in the conducted research among migrants across different continents asking how their religion has played an impact on their entrepreneurial choice or intention. This work did expose that religion is a fundamental consideration and that it forms the basis for migrants when deciding on entrepreneurial choice or intention. High among respondents were Muslims and Christians, while not leaving out faithfuls from other religions such as Hindu, Jews and Buddhist. It was emphatic among majority that religion takes effect and impacts their decision to be an entrepreneur; therefore, it can be concluded from finding as analyzed with empirical verification that for migrants in their new or current location that religion impacts, affects and influences entrepreneurial decision, also that there is a link between entrepreneurial choice or intention and whatever faith practiced. The researcher makes use of primary data in investigating the impact of religion on migrant entrepreneurship using SPSS version 20.0 in analyzing data obtained from respondents.*

KEYWORDS: Belief, Entrepreneur, Migrant, Religion. Entrepreneur Intention.

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INTRODUCTION

Entrepreneurship as a study among researchers has generated numerous interests in the academic circle. Gartner (1990) who opined that there is never a single unified or acceptable meaning to entrepreneurship due to the fact that it differs according to each individual in the field. In support of Gartner's position, stating that there is no single unified definition of entrepreneurship, there exists a list of analyzed position to entrepreneurship by different scholars; some categorically justify entrepreneurship as risk engaging capacity (Macko & Tyszka, 2009) while some scholars are of the opinion that entrepreneurship is the ability to build an organization (Pahuja, 2015). Another group says that it is a leadership function, innovative function and innovative ability (Dabic & Potocan, 2012). This justifies that entrepreneurship is multi-leveled, without a singular or unified definition identifiable and acceptable generally.

Entrepreneurial intention is a thought process and action expended as a precursor to carry out entrepreneurship or entrepreneurial activities. According to Mohammad Ismail et al. (2009), entrepreneur intention is incomplete when an individual with all the potential to be an entrepreneur does not transition into entrepreneurship. Investigating entrepreneurial intention among migrants is fundamental as it sets the foundation for understanding motivating factors for migrants seeking better economic conditions and positions in their new abode. Religion or faith, as the case may be, are our drivers of societal values, while our values are molding blocks for attitudes which also motivate basic intentions without overlooking entrepreneurial intentions (Dodd & Seaman 1998; Rehan et al., 2019) in relative terms, values and faith, and religion plays outstanding roles in either encouraging or even, worst of it, discouraging entrepreneurship and entrepreneurs (Carswell & Roland 2007; Dana 2009). Entrepreneurship is both positively or negatively influenced by religion and it offers a considerable but underused lens that aids in understanding the activities and mechanisms influencing entrepreneurship (Farmaki A., Altinay L., Christou P. & Kenebayeva A., 2020).

Migrants contribute to the economic development and growth of their new communities in many ways; these migrants bring to bear the earned skills and knowledge from their previous environment to aid positive development in host communities and countries. The contemporary form of entrepreneurship amongst migrants has evolved way beyond basic and traditional tribal setting small scale business and has metamorphosed into more elaborate fields and ingenious innovative sectors. Most migrants are more economically restless than natives; this thus drives the motive for business ownership and entrepreneurial intentions for the sole purpose of economic integration into the new society. Risk taking and self-efficacy are seen as determinants for engaging in entrepreneurship among migrants, according to Welsh et al. (2021). This group of researchers further opined that migrants' entrepreneurial intention is a derivative of tolerance for risk and self-efficacy with a considerable desire for self-employment.

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LITERATURE REVIEW

Entrepreneurship Among Migrants

The nature of entrepreneurship implies several images and meanings. Understanding the definitions of an entrepreneur, Inegbenebor and Igbinomwanhia (2011) define an entrepreneur as a person who has possession of an enterprise or venture, and assumes significant accountability for the inherent risks and the outcome of the enterprise. Individual entrepreneurs are perceived as risk-takers who are eager to create market opportunities and who impact economic and social systems through their innovative actions. Nowadays, the term of entrepreneurs is used for labeling a heterogeneous population which includes individuals with different motivations for starting businesses (Jayawarna et al., 2013; Shane et al., 2012). Previous research on migrants has shown that they have a greater propensity to engage in entrepreneurial activities and that they are more likely to identify opportunities than their non-migrant peers (Vendor, 2016). Also, immigrants are found to have unique personality characteristics, such as openness to experience which leads to a different perception of the world (Bolivar-Cruz A., Batista-Canino, & R.M.; Hormiga, 2014).

While not wishing to argue that any one factor can be isolated from the others, we would note that economic development in advanced regions has long been associated with international migration, even if the nature and function of immigration has changed over time. Northern and Western European countries, for instance, were already receiving immigrants from former colonial areas, as well as predominantly male, unskilled workers from Mediterranean regions, from the 1950s up to the mid-1970s, that is, before the forces of economic restructuring gained momentum (Jan Rath, 2016). Entrepreneurs and entrepreneurship are more often associated with small and medium scale enterprises. This is because the vast majority of enterprises in which the entrepreneur plays a visible role are small and medium scale enterprises (Andrew, Julius & Ishola, 2017)

Entrepreneurship has been recognized all over the world as a catalyst for development in any economy. Entrepreneurship, in developing countries in particular, is being seriously advocated because it provides employment, creates productivity, facilitates the adoption of technology, etc. In general, we consider that entrepreneurship is tightly linked to the character of the entrepreneur. Researchers consider the “entrepreneur” as an individual with different qualifications: risk taker, innovative, good manager, negotiator and so on. Consequently, when individuals are all different according to their gender, socio-cultural background or their education, we can observe a difference in the motivations for entrepreneurship and/or a difference in skills or behaviours. In general, each society is composed of different social and cultural groups. Some authors then talk about diversity or variety. This variety could be evaluated along the dimensions of race, ethnicity, gender, sexual orientation, socio-economic status, age, physical abilities, religious beliefs, political beliefs, or other ideologies (Baycan-Levent et al., 2003). For others, diversity includes visible characteristics such as nationality, ethnicity, gender and age, and also invisible characteristics such as creativity, beliefs and tastes

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(Hampen-Turner et al., 2010). We can finally add the handicap as a diversity factor when this population could undergo a discriminating behaviour in some societies.

Religion in Entrepreneurship Business Among Migrants

Most extant discussions of entrepreneurship and religion focus on the role of individual religious affiliation and orientation. Religiosity continues to demonstrate potential for impact across widespread areas of human life. There is a range of reasons why the search for associations between measures of religious affiliation and socio-economic development may be elusive. Trends in religious belief and activity across the globe are not uniform, and causal processes between religion and indicators of socio-economic development appear more complex than initially assumed (Andrew, 2016).

According to Beckford (2003), in terms of perceived social acceptability, religion plays a potential role as an imparter of values and societal norms. Religious identities are socially constructed, encompassing wider cultural and social considerations, and cannot be confined to the individual. As a starting point, it should be noted that sociologists of religion are not concerned with whether particular religious views or positions are true or correct; their concern is with the study of religion as a vehicle through which individuals interpret a wide variety of phenomena and are able to ascribe meaning or value to those phenomena (Beckford, 2003).

Culture shock

The term culture generally refers to a complex set of values, norms, beliefs, attitudes, customs, systems and artifacts which are handed down from generation to generation through the process of socialization and which influence how individuals see the world and how they behave in it. In a business context, it can be easy to underestimate the degree to which a person's perceptions, attitudes and behaviour can be shaped by cultural influences, some of which may be relatively enduring (e.g., certain 'core' values and beliefs) while others may be more open to change (i.e., secondary beliefs and values). In the United States, for example, American citizens in LA believe in the right of individuals to bear arms and this is enshrined in the US Constitution. The buying and selling of handguns and rifles are thus acceptable within American society despite the fact that they are frequently used in violent crimes including robbery and murder. In other countries, trade in such weapons tends to be seen as highly questionable by most people and it is usually heavily regulated by the government to certain types of weapons for use in acceptable pursuits such as hunting or rifle shooting. Cultural differences such as this can, of course, apply not only to the kinds of goods and services that are consumed (e.g., eating horsemeat in France is acceptable but not in Nigeria) but also to other aspects of both the production and consumption process, and this can have important implications on an organization’s behaviour.

In spite of globalization, the differences between countries in terms of products, services and customer preferences are still vast, and some scholars even argue that they are increasing (De Mooij & Hofstede, 2002). Relocating to a different culture is an intense experience. The variety of new information can be challenging, as familiar behavioral and cognitive scripts suddenly

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do not fit the new environment. In fact, the first encounter with a new culture generates such a flood of information that it is often perceived as overwhelming and stressful (Furnham & Bochner, 1986). Tellingly, the first scholars of cross-cultural studies labeled this experience as "culture shock" (Oberg, 1960).

METHODOLOGY AND DATA ANALYSIS

This section reviews the research design, method of data procedure and data collection. This research has made use of primary data in the form of questionnaires using Microsoft forms sent via email and other social media platforms spread across the globe Europe, North America and Africa with a good number of respondents as migrant entrepreneurs in their current location. For the lack of capacity of reaching the sample population, this research has decided to use a sample size that is within reach of 200 with a total of 150 responses.

Data Analysis

Table 1: Frequency Table for Religious Belief
What is your Religious Belief?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Christian	53	34.6	34.6	34.6
	Buddhist	4	2.6	2.6	37.3
	Hindu	3	2.0	2.0	39.2
	Jewish	20	13.1	13.1	52.3
	Muslim	73	47.7	47.7	100.0
	Total	153	100.0	100.0	

The frequency distribution of participants' religious views is shown in Table 1. Christians comprise 34.6 percent of the population, while Buddhist's account for 2.6 percent, Hindus for 2.0 percent, Jews for 13.1 percent, and Muslims for 47.7%. The members of the Muslim faith constitute the majority of the respondents.

Table 2: Are You an Entrepreneur or Business Owner?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	87	56.9	56.9	56.9
	No	66	43.1	43.1	100.0
	Total	153	100.0	100.0	

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Table 2 conforms with our objective in search of respondents who are entrepreneurs and business owners. Eighty-seven of respondents which represent 59.9 percent confirm that they are business owners and entrepreneurs in their new location. On the other hand, 66 respondents which in percentage is 43.1 gave NO as their answer to the question if they are entrepreneurs or business owners.

Table 3: Does Your Religion/Faith Affect Your Job/Business As an Immigrant Entrepreneur/Business Owner?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	105	68.6	68.6	68.6
	No	48	31.4	31.4	100.0
	Total	153	100.0	100.0	

The above table showcases the frequency distribution of migrants whose religion affects their choice of business or entrepreneurship. By this table, it connotes that 68.6 percent of respondents confirm the position that religion plays a significant role in their choice of business as migrant entrepreneurs, while 31.4 percent feel otherwise.

Table 4: Are you a Migrant?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	97	63.4	63.4	63.4
	No	56	36.6	36.6	100.0
	Total	153	100.0	100.0	

Table 3 displays the population of international migrants among respondents. The frequency number of 97 representing 63.4 percent of the respondents confirmed their status as international migrants, while the opposite number which represents 36.6 percent of the respondent indicated otherwise. This confirms that more than half of the respondents—approximately 64 percent—are international migrants.

FINDINGS

Findings reveal that religion affects a migrant's choice of business as an entrepreneur. In a study by Abdullahi and Suleiman (2015), their research findings show that religion has a significant impact on entrepreneurial intention. Based on our research, either as a migrant or living in your place of natural birth, religion impacts your choice of entrepreneurial decision and intention. Audretsch et al. (2007) found out that religion shapes entrepreneurial decision,

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with particular focus on Islam and Christianity, to be conducive to entrepreneurship. They went further in their paper on religion and entrepreneurship to say that empirical evidence based on their work suggests that both religion and tradition have strong influence on entrepreneurship and economic behavior. This corroborates our findings that religion impacts and influences migrant entrepreneurial choice, decision and intention.

CONCLUSION

From the research reviews, the majority of the respondents believed that religion has a strong influence on migrant entrepreneurship. This implies that the more religious an individual migrant is, the less likely they are to become an entrepreneur outside their birth country. It is not far-fetched to connote from research observation that an individual's religion comes to fore in taking entrepreneurial decisions for economic empowerment. This finding joins the list of researchers and scholars with comparable and related findings to the subject matter of religion and entrepreneurial decisions. The likes of De Noble; Galbraith et al. (2007); Galbraith and Galbraith (2007), David B, Werner Boente & Jagannadha Pawan Tamvada (2007); Valliere (2008); Roomi (2009); Garba *et al*. (2013) and Abdullahi and Suleiman (2015) also concluded in their works that religion both impacts and affects entrepreneurial choice and intention. The research concludes by stating that religious belief affects migrant entrepreneurs.

RECOMMENDATION

Based on the revelation from this research, the researcher can equivocally recommend that religious leaders should help aid and play a strong role and path/part in migrant entrepreneurial decisions or choice. The recommendation goes further to implore sovereign governments to partner with religious groups in engineering migrant entrepreneurial choices. Further research should consider migrant culture (culture shock) and language and its effect and impact in taking entrepreneurship decisions or choices as this is not considered in this particular paper.

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PSYCHOLOGICAL CONTRACT VIOLATION AND WORKPLACE DEVIANCE: THE MEDIATING EFFECT OF TURNOVER INTENTION

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ABSTRACT: *This study analyzed the mediating effect of turnover intention (TI) on the relationship between psychological contract violation (PCV) and workplace deviance (WPD), the effects of PCV on TI, and TI on WPD. Explanatory research design was used employing stratified random sampling techniques to collect data from 443 employees of Agriculture and Food Authority Directorates in Kenya. Self-administered structured questionnaires anchored on 7-point Likert scale were used to collect data. Reliability and validity of the research instrument were tested using Cronbach Alpha and Factor Analysis respectively. Regression based Hayes Process Macro model 4 was used to test the mediation effect. The results of the study showed a negative but significant mediation effect of TI on the relationship between PCV and WPD. In addition, the study established that PCV has an influence on TI, and TI also influences WPD. The findings of the study accentuate the need for the human resource managers in public organizations to delve into the problem of turnover intention and come up with appropriate mitigation strategies, so as to reduce the drawback of workplace deviance. This study contributes to the theoretical knowledge base of WPD by including TI as a mediator. It also adds into the literature of psychological contract and the social exchange theories.*

KEYWORDS: Workplace Deviance, Turnover Intention and Psychological Contract Violation.

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INTRODUCTION

Concept of Workplace Deviance (WPD)

The past ten years have witnessed firms increase their interest in the unethical behaviour displayed within their organizations. Large corporations including WorldCom, Tyco, and Enron have engendered public attention to the ultimate threats of discreditable business practices (Appelbaum & Dequire, 2005). Subsequently, employee deviance affiliated to withholding effort, maltreatment of coworkers, and theft, is a critical concern for most organizations (O'Neill et al., 2011).

Deviant behaviours within the workplace are proving to be the motive behind the noteworthy disquiet within organizations throughout the world (Restubog S. et al., 2010). An Australian national poll reported that approximately 35% of employees had been abused verbally by fellow workers, whereas around 31% of staff members had reported verbal abuse by their direct supervisor (Mayhew C. & Chappell D., 2001). The United States Chamber of Commerce estimates that 33% to 75% of all employees have participated in one or more divergent behaviours such as sabotage, fraud, vandalism, and theft, while 75% of all personnel steal at the least of once (Harper D., 1990; Shulman, 2005), and about 95% of all firms grapple with theft by employees (Case, 2000). Legal or illegal, deviant behaviour breaches the general social norms (Mohamed & Agwa, 2018). Organizations suffer enormous costs because of workplace deviance which may threaten their existence (Hussain & Sia, 2017).

The Concept of Psychological Contract Violation (PCV)

The psychological contracts, according to Nadim et al. (2019), are sets of 'expectations' or 'promises' that are swapped between factions within an employment relationship. The expectations of the employee spark certain feelings regarding the organization that may be positive to motivate Job performance (Rahman et al., 2017), work engagement (Guo & Zhu, 2018; Rai & Agarwal, 2017), or may be negative such as employee turnover or workplace deviance (Nadim et al., 2019).

The psychological contract, according to Rousseau (2001), represents a substantial basis for comprehending employment relationships. It depicts the integral beliefs that involve the promises and obligations established between the employee and the employer (Rousseau, 1995). According to Sonnenberg et al. (2011), the contracts may include the fundamental norms of life within the organization including good and supportive work environment, courtesy, job security, open and direct communication, candid and fair treatment, and respect, just to mention but a few. The violation or breach of the psychological contract is perceived by the employees when the organization fails to honour these promises (Morrison & Robinson, 1997).

Undesirable effects have been witnessed on employees feeling that their psychological contract had been violated. The term violation portrays an experience of strong emotions encompassing deep psychological distress and betrayal, feelings of resentment, anger, wrongful harm and injustice (Rosseau, 1989). Violation is seen to supersede the ordinary cognizance of a broken promise to the discernment of an organizational failure to accomplish an obligation without experiencing the strong affective reaction allied with the term violation (Morrison & Robinson, 1997). The unique nature of psychological contracts and the perpetual changes in the business environment have made violation and breach common (Robinson & Morrison, 2000), or even unavoidable incidents (Low & Bordia, 2011; Kiewitz, Restubog, Zagenczyk, & Hochwarter, 2009) in the contemporary organizations.

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Treatment with dignity, respect and fairness in a professional and social interaction is an employee's implied belief in a give-and-take implementation of organization goals (Parzefall & Salin, 2010). According to Hobfoll (2001), fairness, respect and dignity are regarded as valuable resources within an organization, the loss of which triggers negative emotions (Kiazad et al., 2014). This resultant emotional distress from psychological contract violation is likely to overstrain the little remaining psychological resources (Robinson & Morrison, 2000), and make them vulnerable to additional resource loss (Hobfoll, 2001; Deng et al., 2017). Studies have revealed that in the struggle to reduce the violation of psychological contract, the remaining cognitive and psychological resources are drained by the employees (Hobfoll & Shirom, 2001). These employees would be lacking in the resources to engage in suitable behaviours and thereby amplify withdrawal coping mechanisms. This hypothetical loss of resources instigates employees' withdrawal from the custom as a way to safeguard the remaining resources.

The Concept of Turnover Intention (TI)

Turnover intention is "a conscious and deliberate wilfulness to leave the organization (Tett & Meyer, 1993). Turnover intention is key to any organization since it can forecast the actual employee turnover (Kivimäki et al., 2007; Steel & Ovalle, 1984). Not all turnover intentions necessarily lead to employees leaving the organization (Griffeth et al., 2000; Jiang et al., 2012). This has led to more studies seeking answers why employees express the intent to leave but remain within the organization (Hom, Mitchell, Lee, & Griffeth, 2012). Studies have observed that an alternative to turnover from the organization is workplace deviance (Liu & Eberly, 2014). The employees with the intention to leave but are not leaving have been associated with counterproductive behaviours at work and branded "trapped stayers" (Hom et al., 2012).

Studies have linked workplace deviance with high intensity of turnover intentions (Salin & Notelaers, 2017). The exposure to negative actions at the place of work prepares the ground for turnover intention that may ultimately result in the real turnover (Griffeth et al., 2000; Kivimäki et al., 2007; Jiang et al., 2012). Turnovers, whether intended or actualized have cost organizations, thereby stressing the need to understand the motivating factors (Salin & Notelaers, 2017). This study realised the presence of trapped stayers in the Agriculture and Food Directorates.

Studies indicate that exchange norms influence new employees' behaviour while those that have been in employment longer have stabilized their relations with their organizations and are likely steered by lasting commitments between the two parties (Rousseau, 1995; Wright & Bonett, 2002). The mutual relations therefore between work engagement, psychological contract and turnover intention are purported to be stronger for short tenured employees.

Studies in the past suggest that psychological contracts impact work productivity (Zhao et al., 2007). With this respect, a fulfilled employee responds with higher work engagement and lower intentions to leave the organization, as explained by the Social Exchange Theory (Blau, 1964), and the Norm of Reciprocity (Gouldner, 1960). These theories propose that reciprocal obligations are established with every act of exchange by the associating parties. This signifies that employee perception of employer's contract fulfilment translates to positive job attitudes and work conduct. Greater contract fulfilment is therefore expected to result in elevated work engagement and reduced turnover intention (Turnley, Bolino, Lester, & Bloodgood, 2003).

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LITERATURE REVIEW

Psychological Contract Violation and Workplace Deviance

Studies have demonstrated a substantial link between Psychological Contract Violation and Workplace Deviance confirming the earlier studies by Uhl-Bien & Maslyn (2003), Bordia et al (2008) and Su-Fen and Jei-Chen (2008). When an employee perceives a violation, he or she may relegate positive behaviours such as organizational citizenship and even display bad behaviours (such as employee deviance) to achieve cognitive balance with the organizational command. When promises made to employees are not met, they feel violated and driven by revenge may engage in organizational deviance. Anchored on these studies, the first hypothesis of this study states:

H01: Psychological contract violation has no significant effects on workplace deviance.

Psychological Contract Violation and Turnover Intention.

A number of studies have established that psychological contract violations can create negative work attitudes and turnover (Santhanam, et al., 2017; Arain et al., 2012; Bordia et al., 2008; Zhao, et al. 2007 and Raja, et al., 2004). The contrary has also been found to be true, according to Parzefall and Hakamen (2010), supposed psychological contract fulfilment led to reduced turnover intentions.

According to Zhao et al. (2007), turnover intentions designate a person's prejudiced likelihood of leaving his or her organisation and his/her psychological connection to it. Leaving is inspired by negative work events (Lum, et al.,1998, and Appollis, 2010). Turnover is increased by Psychological contract breaches, according to Turnley and Feldman (1999). A study by Dulac *et al.*, (2008) accounts that psychological contract violation commences with an employee assessing the importance of events within an organization, for his/her own wellbeing. The subsequent interpretation of the situation with regard to individual wellbeing is an emotional step preceding the feelings of violation. The study therefore hypothesizes as:

H02: Psychological contract violation has no significant influence on turnover intention.

Turnover Intention and Workplace Deviance

An employee with intentions to quit from the organization have the notion that they will no longer be subjected to organizational sanctions or supervisory abuse for their deviant reactions to violations instigated by the organization (Tepper et al., 2007). The violated employees have no fear for discipline or retaliation following their deviant acts, and are expected to be more deviant in the workplace. On the contrary, workers whose intentions to leave are lower feel dependent on their employing organization and therefore have the impression that they will lose more if they engage in deviance at work. These employees with reduced intentions to quit have less incidences of workplace deviance (Tepper et al 2009). As a result, the third hypothesis of this study states:

H03: Turnover intention has no significant effect on workplace deviance.

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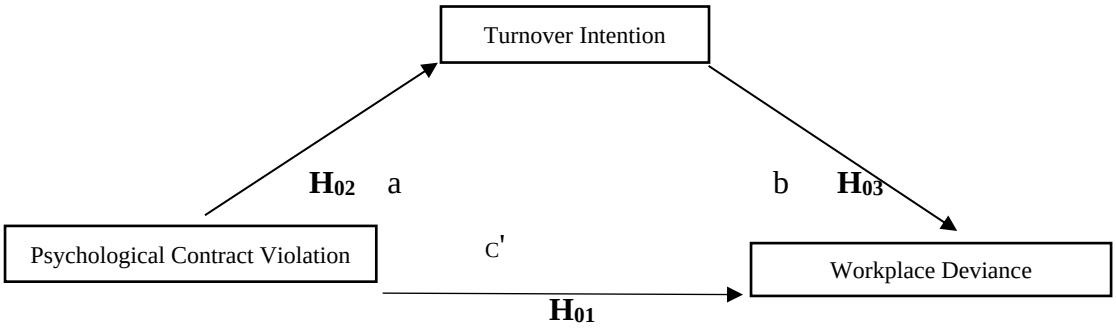
Mediating Role of Turnover Intention

Previous studies have cited the possibility of turnover intentions being intensified by psychological contract violation, and can gauge the employee's psychological attachment to the organization (Zhao et al., 2007; Lum et al., 1998). A negative relationship has been reported between commitment, an element of relationship quality and turnover (Nair N. & Vohra N., 2012; Mathieu & Zajac, 1990; Meyer et al., 2002). There is scarce literature however in the mediation of turnover intention on the relationship between workplace deviance and psychological contract violation. This leads to the fourth hypothesis of this study:

H04: Turnover intention has no significant mediating effect on the relationship between psychological contract violation and workplace deviance.

Conceptual Model

Figure 1 illustrates the relationships between the variables and the paths that were tested in data analysis. It is adopted and modified from Model 4 of Hayes (2018).



H04: a*b

Figure 1: Conceptual Model

Source: Survey Data

MEASUREMENT OF VARIABLES

Workplace Deviance (Dependent Variable)

The scales developed by Bennett and Robinson (2000) were used to measure workplace deviance variables. It measured how frequently a respondent was involved in activities that can be harmful to fellow employees and to the organization, using a 7-point Likert scale. Nineteen (19) items in total were used in measuring workplace deviance as shown below.

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Workplace Deviance Measurement Items

Organizational Deviance Items

The organizational deviance was measured using several items stated as: Taken merchandise from work without permission; Spent too much time fantasizing or daydreaming instead of working; Falsified a receipt to get more money for work related expenses; and Taken an additional or longer break than is acceptable at your workplace. More items are: Came in late to work without permission; Littered your work environment; Neglected to follow your manager's instructions; and Intentionally worked slower than you could have worked. The last four items are: Discussed confidential company information with an unauthorized person; Used an illegal drug or consumed alcohol on the job; Put little effort into your work; and Dragged out work in order to get overtime.

Interpersonal Deviance Items

Seven items measured interpersonal deviance as follows: Made fun of someone at work; Said something hurtful to someone at work; Made an offensive ethnic, religious, or racial remark at work; and Cursed at someone at work. More items are: Played a mean prank on someone at work; Acted rudely toward someone at work; and Publicly embarrassed someone at work, a scale developed by Bennett and Robinson (2000).

Psychological Contract Violation (Independent Variable)

The Psychological Contract violation variable was measured using a four-item scale by Robinson and Morrison (2000). A 7-point Likert scale varying from 'strongly disagree' to 'strongly agree' was used in answering the four items. These items are: 'I feel a great deal of anger toward my organization'; 'I feel betrayed by my organization'; 'I feel extremely frustrated by how I have been treated by my organization'; and lastly, 'I feel that my organization has violated the contract between us.' The alpha coefficient for this scale was $\alpha = .95$, corresponding that of Robinson and Morrison (2000) whose value was $\alpha = .94$.

Turnover Intention (Mediator)

The measurement of the turnover intention variable was done by the use of a 3-item scale established by Camman et al. (1979). The Cronbach alpha coefficient in the Camman et al. (1979) study was 0.77. The scale items are: I often think of leaving the organization; If I could choose again, I would choose to work for the current organization; and It is very possible that I will look for a new job next year.

Control Variables

The choice of control variables of this study was informed by previous studies. Age, gender, employment status, tenure and education were controlled. Hershcovis et al. (2007), Aquino et al. (2006), and Spielberger (1996) in their varied studies provided the indication that males are inclined to display explicit irate reactions more often than their female counterparts, hence the need to control for gender. The social psychological literature suggests that the prevalence of aggression at the workplace was common among younger employees compared to the older ones, who are less inclined to negative disruptive behaviours; therefore, age in years was controlled. According to Berry et al. (2007), Carstensen (1992), Geen (1990), age progression is complemented by increasing emotional maturity and reduced negative reactions. Tenure was

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part of the control variables since evidence denotes an association between tenure and antisocial behavior at work (Robinson & O'Leary-Kelly, 1998). The perception of full-time and part-time employees differed on the exhibited exchange relationships (Gakovic & Tetrick, 2003); therefore, the employment status was controlled. Sociological studies show that lack of education is connected with engagement in criminal activities (Douglas & Martinko, 2001; Campbell & Muncer, 1990), therefore stressing the need to control education.

A single item was used to measure gender ('What is your gender?'). Tenure was captured through the number of years one has worked in the organization, and respondents were requested to specify their job grade and employment status.

RESEARCH METHODOLOGY

This study utilized explanatory research design using stratified and systematic random sampling methods to collect data from 443 out of 738 employees within the Agriculture and Food Directorates of Kenya, as indicated in Table 1 below. The nine directorates were used as clusters within which sampling was done across the country. Structured questionnaires that were self-administered based on a 7-point Likert scale were used in data collection. Cronbach Alpha and Factor Analysis were used to test reliability and validity respectively. Data transformation was performed using the items that were loading onto one construct. An average score of the items measuring each construct was calculated and used for the final correlation and multiple regression analysis. Hayes Process Macro through hierarchical regression models were used to analyze data and test hypotheses as follows:

H_{01}: Psychological contract violation has no effects on workplace deviance.

$$WPD = C_0 + ß_1Cv + ß_2PCV + Ɛ_Y$$

H_{02}: Psychological contract violation does not influence turnover intention.

$$TI = C_0 + ß_1Cv + ß_2PCV + Ɛ_m$$

H_{03}: Turnover intention does not lead to workplace deviance.

$$WPD = C_0 + ß_1Cv + ß_2PCV + ß_3TI + Ɛ_y$$

H_{04}: Turnover intention does not mediate the relationship between psychological contract violation and workplace deviance.

$$M = a_1 \times b_1 \quad \text{or} \quad M = C - C'$$

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RESULTS

Response Rate and Demographic Profile of Respondents

The targeted sample of the study was 468 respondents. The results in Table 1 show that 443 were achieved. After preliminary screening and data cleaning, 415 questionnaires were used for further analysis. Twenty-eight (28) questionnaires were excluded listwise from data analysis, 21 were defective and a further 7 were found to be outliers.

Table 1: Questionnaires Collected

Item Description	Number of Questionnaires	Percentage
Fully Completed Questionnaires	422	90.1%
Defective Questionnaires	21	4.4%
Outliers	7	1.5%
Total Collected	443	94.6%
Total used for Analysis	415	93.6%

Source: Research Data

Table 2 shows the details of target population, sample size and the response rate of the different directorates as captured by the study.

Table 2: Target Population, Sample Size and Response Rate

SR. NO	DIRECTORATE	POPULATION	SAMPLE	RESPONDENTS	PERCENTAGE
1.	Food crops directorate	10	10	7	70%
2.	Horticultural crops directorate	182	101	99	98%
3.	Tea directorate	50	42	39	92%
4.	Coffee directorate	52	43	39	90%
5.	Sugar directorate	111	75	72	96%
6.	Nuts and oil crops directorate	32	29	26	89%
7.	Fibre crops directorate	70	34	31	91%
8.	Pyrethrum and other industrial crops directorate	201	107	105	98%
9.	Commodities fund	30	27	25	92%
	TOTAL	**738**	**468**	**443**	**94%**

Source: *Survey Data*

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Tests of Normality

All assumptions underlying regression analysis were tested. Normality was tested by using skewness and kurtosis, Shapiro Wilks test, as well as bootstrapping. The tests of normal distribution of data involved the inspection of values of skewness and kurtosis (Table 3). Linearity was tested using correlations among variables. The variance inflation factor (VIF) index was used to test multicollinearity while homoscedasticity was tested using skewness and kurtosis. The results in Table 2 below indicate that all assumptions were met by the study.

Table 3: Tests of Normality

	Collinearity Statistics.		Shapiro W. Statistic	Significa(p) Shapiro W	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Dev Statistic	**Skewness**		**Kurtosis**	
	Tolerance	VIF							Statistic	Std. Error	Statistic	Std. Error
WPD	.578	1.730	.885	.000	19.00	112.00	43.1588	18.13583	1.313	.119	1.495	.237
PCV	.571	1.752	.957	.000	4.00	28.00	14.3507	6.23874	-.011	.119	-1.123	.237
TI	.517	1.935	.970	.000	3.00	21.00	12.5261	3.96996	-.248	.119	-.752	.237

Source: *Survey Data*

Descriptive Statistics

The results in Table 4 show the means, standard deviations, reliability and correlations of the three variables of the study. Turnover intention had the highest mean of 4.1880 with a standard deviation of 1.29867, while workplace deviance had the lowest mean at 2.2586 with a standard Deviation of .92775. The reliability statistics of all the variables met the threshold of □□= .7 (Pallant, 2011), with the highest being WPD at □ = .946 and lowest being TI with □□= .714. The correlation results showed that workplace deviance correlated with TI (r = -.122*) but had a negative insignificant association with PCV (r = -.017).

Table 4: Means, Standard Deviations, Reliability and Correlation Results

	Mean	SD	Reliability	Correlations WPD	PCVIOLAN	TURNOVINTNT
WPD	2.2586	.92775	.946	1		
PCVIOLATION	3.5794	1.54186	.925	-.017	1	
TURNOVINTNT	4.1880	1.29867	.714	-.122*	.635**	1

Source: *Survey Data*

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Testing Mediation

The mediation analysis was guided by the procedures by Hayes (2013; 2018), applying Hayes Process Macro model 4. Figure 1 illustrates the paths tested. Path a, b shows the indirect effect of PCV on WPD and is labeled a*b in Figure 1. Testing mediation was done according to the steps outlined by Preacher and Hayes (2004). The first step was to predict the effect of the independent variable (psychological contract violation) on the mediating variable (turnover intention) whose result was (ß = .5382, p = .0000, CI = .4715 to .6050). The second step was to estimate the effect of the intervening variable on the dependent variable, workplace deviance (ß = -.1307, p = .0036, CI = -.2183 to -.0430) while controlling for the influence of mediator variable, which was later tested using model 59 (ß = .1041, p = .0033, CI = .0348 to .1734). The final step was bootstrapping and sampling distribution of the indirect effect, generating a confidence interval which includes an empirically produced bootstrapped sampling distribution. Table 5 shows the details of the results.

Table 5: Mediation Analysis

	Turnover Intention					**Work Place Deviance**			
	B	*SE*	**P**			*B*	*SE*	**P**	
Antecedent				**BC Bootstrap 95% CI**	Consequent				**BC Bootstrap 95% CI**
	-.0058	.0601	.9238	[-.1240 .1125]	to		.0543	.7220	[-.0874 to .1261]
		.0417	.6588	[-.0636 .1005]	to	.0193	.0377	.0005	[-.2055 to -.0573]
	.0184	.0738	.7911	[-.1255 .1646]	to	-.1314	.0666	.1940	[-.0443 to .2176]
	.0196								
Age									
Education						.0867			
Length of									
X (PCV)	.5382	.0340	.0000	[.4715 .6050]	to				
M (TI)	-	-	-			-.1307	.0446	.0036	[-.2183 to -.0430]
Constant						2.9159	.2528	.0000	[2.4189 to 3.4128]

N = 415

Source: *Survey Data*

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The resultant tests of indirect effect of psychological contract violation on workplace deviance through turnover intention are at ß = -.0703, SE = .0270 and CI = [-.1257 to -.0200], as shown in Table 6. These results indicate that there is a mediating effect of TI on the relationship between PCV and WPD. As a consequence of the findings, H_{04} of this study that states, "Turnover intention does not mediate the relationship between psychological contract violation and workplace deviance" is rejected.

Table 6: Indirect Effect of PCV on WPD through Turnover Intention

	Indirect effects of Psychological Contract Violation (PCV) on ORG Workplace Deviance		
Mediator	*B*	*SE*	Bootstrap 95% *CI*
Turnover Intention	-.0703	.0270	[-.1257 to -.0200]

N = 415a

Source: *Survey Data*

SUMMARY OF RESEARCH HYPOTHESES AND RESULTS

A summary of the research hypotheses of the study is tabulated in Table 6 below. The synopsis of hypothesis to hypothesis based on the analytical model and the test statistic applied, the actual results realized, the interpretation of the results and the final verdict in the hypothesis is presented in Table 7 below. All the four null hypotheses were rejected.

Table 7: Summary of Research Hypotheses and Results

	Hypothesis Statement	**Analytical Model and Test Statistic**	**Actual Results**	**Interpretation**	**Verdict**
H_{01}	Psychological Contract Violation has no effects on Workplace Deviance	• Regression • Beta Values • P Values • Process Macro Model 59	• ß = .1041 • P <0.05, p = .0033, • CI = [.0348 to .1734]	• PCV has effects on WPD	• Reject the **H_0**
H_{02}	Psychological contract violation does not influence Turnover Intention.	• Regression • Beta Values • P Values • Process Macro Model 4	• ß = .5382 • P <0.05, p = .0000, • CI = (.4715 to .6050)	• PCV influences TI.	• Reject the **H_0**
H_{03}	Turnover Intention does not lead to	• Regression • Beta Values • P Values	• ß = -.1307 • P <0.05 p = .0036	• TI leads to WPD	• Reject the **H_0**

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	Workplace Deviance.	• Process Macro Model 4	• CI = (-.2183 to -.0430)		
H_{04}	Turnover intention does not mediate the relationship between Psychological Contract Violation and Workplace Deviance.	• Process Macro Model 4 • Beta Coefficients (ß Values) • Confidence Intervals	• ß = -.0703, • CI = [-.1257 to -.0200], • SE = .0270	• TI mediates the relationship between PCV and WPD.	• Reject the **H_0**

Source: *Survey Data*

DISCUSSION

The purpose of this study was to determine the mediation of turnover intention on the relationships between PCV and WPD. The initial step was to determine the effects of psychological contract violation on workplace deviance, followed by the effects of psychological contract violation on turnover intention. The third step was to establish how turnover intention affected workplace deviance, and finally ascertain the mediating effects of turnover intention on the relationships between PCV and WPD.

H01: The study found that PCV has effects on WPD. The expectations by employees may prompt varied positive or negative feelings towards the organization, such as workplace deviance (Nadim et al., 2019). The findings of H01 of this study demonstrated the effects that psychological contract violation has on workplace deviance, in agreement with previous studies. Increasingly, research has shown that psychological contract violation is viewed by employees as losing valuable resources at work, leading to strong negative emotions (Kiazad et al., 2014).

H02: The findings of H02 of this study show that there is a relationship between psychological contract violation and turnover intention. This agrees with a previous study by Arshad (2016), where psychological contract violation was found to be positively related to turnover intention. These results additionally correspond with the work of Zhao et al. (2007) and Lum et al. (1998) that turnover intentions can be intensified by psychological contract violation.

H03: The findings of the third hypothesis of this study, the effects of turnover intention on workplace deviance, showed significance. A study by Rizvi et al., (2017) showed similar results that determined a direct relationship between turnover intention and workplace deviance.

H04: The findings of the fourth hypothesis determined that turnover intention mediated the relationship between psychological contract violation and workplace deviance. This furthered the work by Tepper et al. (2007; 2009), which appreciated the role played by turnover intention on workplace deviance. Previous studies have established a relationship between psychological contract violation and turnover intention (Shahnawaz & Goswami, 2011).

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THEORETICAL AND MANAGERIAL IMPLICATIONS

This empirical study contributed to the literature in several ways. The first contribution is on methodological literature, through the choice of the mediation model 4 by Hayes (2013; 2018). This allowed testing the relationships of three variables all at once. Their interaction gave a clearer picture of the web of interrelations within the organization. The findings revealed that a lot beyond the three variables is in play in the decision to resort to deviant behavior.

The second contribution was on the literature in the fields of psychological contract violation, turnover intention, and workplace deviance. The study revealed new insights that the effect of psychological contract violation on workplace deviance is mediated by turnover intention in the Kenyan public sector.

The study findings were supported by the anchoring theories: psychological contract (Argyris, 1962) and social exchange (Blau, 1964) thereby asserting these theories. The theories postulate the psychological contract built by the employees when they join the organization and their expected reciprocation from the organization, a situation that was confirmed by the study.

The levels of turnover intention in organizations require a close observation. This study established that turnover intention can be triggered by several factors and therefore the probable causes and their solutions need to be carefully established.

This study also established that the root causes of workplace deviance may be exclusive to the affected organization. It is therefore essential that every organization determines the genesis of the problem in order to get a suitable solution. Misdiagnosis of the problem can be costly to the organization.

The findings of this study advise on the reality of psychological contract violation and word of caution on the handling of change in an organization, such as the restructuring that occurred in Agriculture and Food Authority Directorates and by extension, the public sector in Kenya.

CONCLUSION

This study offers a significant research model that aids the understanding of the role of turnover intention in the psychological contract violation and workplace deviance in the public sector. On the basis of these results, it has been elucidated that turnover intention is a powerful driver of workplace deviance. The study further determined that the interaction between turnover intention, psychological contract violation and workplace deviance determine employees' behaviors at work.

FUTURE RESEARCH

The use of longitudinal research designs may give a better view of all the variables, given the advantage of time.

This study collected data from the public sector and suggests that the same study be replicated in the private sector for better understanding of the dynamics of the private sector.

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The research tools have advanced over time and can accommodate multiple variables and a large number of respondents, which is favorable for mediation. This study therefore recommends an increased population and sample size to enhance the sensitivity of the mediation model.

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EMPLOYEE COMPETENCE: THE BUSINESS SUSTAINABILITY DRIVER IN THE RIVERS STATE BANKING SECTOR

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ABSTRACT: *This study examines employee competence and business sustainability in the banking sector in Rivers State. Frequency of business failure is a common concern for industrial management scholars in Nigeria. Given that this study was anchored on the social exchange theory, a cross-sectional survey design was adopted across the employees of the banks operating in Rivers State, Nigeria. An appropriate sample was taken from the 420 permanent staff of the targeted banks. Leveraging on the Krejcie and Morgan sampling determination table, 201 sampled respondents were derived. The data collected using the 4-point Likert scale closed-ended questionnaire were analyzed with the aid of the Pearson Product Moment Correlation Statistical statistics and presented using SPSS 20.0 version for ease of clarity. The findings of the study revealed the positive correlation significance of the tested dimensions of employee competence and sustainability of the banking business in Rivers State. Conclusions were drawn that established the importance of the communication, adaptation, empathy, social relations and technical skills as well as the moderating effect of work environment on employee competence and banking sector sustainability in Rivers State, Nigeria. The study therefore made recommendations based on its findings.*

KEYWORDS: Communication, Competence, Social Relations, Adaptation, Technical Skills, Work Environment, Business Sustainability.

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INTRODUCTION

The integration of the world economies into a global village in the face of ever-increasing ICT coupled with the challenges posed by the depressed economy and the increased competition from other nations' banks necessitated the need for employee competence. The problem of this study originated from the fact that banks in Nigeria are faced with a myriad of problems related to employee competence and business. For instance, ninety-seven percent of banks in this country do not allow employees to have required employees' competency (Okoseimiema & Continue, 2019). In fact, if an employee develops a personal ambition for further training or self-development, the banks would rather tell the employee to tender a resignation before embarking on such developmental studies. That is why employees hardly stay for a long time in the banks; once they find any opportunity that is better, they switch immediately. The issue of how to get employees engaged in their work has over time become more challenging to most firms. Robertson-Smith and Markwick (2009) stated that engagement levels of workers vary according to varying biographical and personality characteristics. They noted that younger staff may be positive when they just join the firm; however, they become quickly disengaged and highly extraverted. Lack of engagement poses several problems to the firm.

Low engagement leads to high employee competency which costs the company in terms of resource development and hence reduces the firm's global competitiveness. The dynamic nature of humans has made them to have the desire to work in different workplaces, hence discouraging the idea of remaining in one organization for a lifetime. It is well noted that one in every four staff wants to jump ship in the next few years. When employees leave the firm continuously as a result of low engagement, such put the organization in a bad light. Therefore, this study seeks to examine how communication skills, competence, social skills, adaptations for employee growth, technical skills, and social relations for job rotations can help enhance business sustainability in the banking industry in Nigeria. Also, it is largely acknowledged that sustainability has to be considered in an organization's corporate strategic development (Chang *et al*., 2018; Brömer *et al.,* 2019). According to Schaltegger (2011) and Sharabati(2018), it is well known that sustainability promotes economic prosperity, and increased social welfare and environmental protection. In achieving sustainability, an organization can influence not only its financial performance, but also its reputation (Fatma *et al.,* 2015; Agyemang & Ansong, 2017), and innovation (Shin *et al.,* 2018). It is crucial for organizations to strive for sustainability because it provides the best ways to improve the lives of people everywhere. However, many organizations still face challenges to achieve sustainability (Abbasi & Nilsson, 2012; Merriman *et al.*, 2016).

Like other forms of employee retention, Allen *et al.* (2010) revealed that employee turnover has negative effects on organizational operations; nonetheless, it has been indicated that reducing employee turnover could lead to sales growth and increased employee morale. However, there is no particular method to calculate actual costs of acquiring the needed employee competency. This study therefore addresses critical questions regarding employee competency and business sustainability, which are current areas of interest based on today's economic competition. Companies cannot anymore compete purely by the superiority of their products due to the low barrier of replicability and so, it is increasingly becoming important to examine employee competency as a pillar for successful establishment, service organizations and software support in every traditional service-oriented establishment. However, previous studies have explored the role of organization's strategy, legal framework, industry norms, innovation, pollution prevention and the use of clean technologies to achieve business

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sustainability (Farooq *et al.,* 2019). Sometimes, most establishments paid little attention to the role of employees' competency in implementing and expanding business sustainability performance. According to Kucharska and Kowalczyk (2019), the employees are the organization. Therefore, the impact of employees' competency on the successful implementation of organizational sustainability should not be neglected (Harmon & Moolenkamp, 2012; Lee & Ha-Brookshire, 2018).

The role of employee's competency is very critical in achieving business sustainability through business expansion, policies, programs, and strategies that will bring about customers' patronage (Hobson & Essex, 2001). Several studies recently confirmed the significant and positive effect of employee satisfaction, employee engagement, and employee attitude on business outcomes (Anitha, 2014; Melián-González, 2016; Inuwa *et al.,* 2017; Smith & Bititci, 2017; Upadhyay & Awasthi, 2020). In addition, Ray (2020) argued that attitudes and perspectives towards sustainability aspects "are not seen as concerted efforts." This study goes in line with these studies and proposes that employees' competency plays a pivotal role in implementing and expanding sustainability policy adopted by banks. Some employees are open to adopting the latest sustainability solutions because they see the opportunities this policy offers in terms of expansion and customers' patronage. With a history dating back to July 1, 1959, Nigeria's banking sector is one of the largest and strongest economic sectors in Africa (*Toluwani, 2015*). Due to its high economic relevance and its exposure to increasing business sustainability requirements, the banking sector in Nigeria is considered as an empirical research field. There are many previous studies that have addressed the extent to which sustainability dimensions are applied in various Nigerian sectors, such as hotel industry (Al Qeed, 2015), mobile telecommunications and pharmaceutical industry (Sharabati, 2018). However, Nigerian academics and practitioners still have not enough insight on if the banking sector is moving toward sustainability or not, and how to improve business sustainability in such vital sector (Masa‟deh *et al*., 2018). It is against this background that this study investigates employee competence and business sustainability in the banking sectors in Rivers State.

LITERATURE/THEORETICAL UNDERPINING

It is assumed that competence (plural: competences) means a potential ability or a potential capability to function in a given situation while competency (plural: competencies) focuses on the actual performance in a situation. Thus, competences make employees capable of fulfilling their job responsibilities and their competencies make them perform their jobs as expected. In other words, competencies are determined by comparing where the employees are now with established performance standards developed in the work environment according to their roles and setting based on standard (template) competences; this means that an employee needs competence before he or she can expect to achieve competency (Stor, 2014). However, the competency models and profiles make the subject of interest in the following subheadings. The four clusters (Kunnanatt, 2008) are: The first cluster, which involves managing yourself, has to do with showing empathy, recognizes and responds to others' feelings and concerns, recognizes others' emotions, understands people's feelings, understands what people mean and understands underlying reasons for behavior; self-control recognizes and manages one's emotions and strong feelings under stress or when provoked, holds back, responds calmly, responds constructively, and calms others; self-confidence possesses confidence in one's

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ability to meet challenges and makes right decisions, acts independently, having confidence in one's ability, takes on challenges and to stands firm.

The second cluster involves managing your team: Developing others—helps others increase capabilities, maximize their potential or recognize options, expresses positive expectations, gives directions or makes helpful suggestions, develops people by providing specific feedback, and coaches. Holding people accountable—provides task focus and direction, ensures that others understand performance standards, provides task clarity, sets limits and boundaries, sets clear standards for high performance, and takes corrective measures to ensure compliance. Team leadership—creates an environment in which people can work together to meet organizational goals, keeps people informed, promotes a team's effectiveness, motivates and energizes the team, and aligns the team with the organization.

The third cluster involves managing the work: Results orientation—focuses on improving performance, meeting goals, and producing results, tracks performance, improves work processes, sets measurable challenging goals, makes cost/benefit analysis; initiative—sees opportunities and acts on them, takes action, and acts decisively; proactive—takes a long-term view; problem solving—identifies problems and tests alternative solutions to achieve the best outcome, objectively identifies problems, recognizes patterns, analyzes and tests alternatives, and creates solutions.

The fourth cluster involves managing collaboratively: Influencing others—persuades, convinces, or influences others to change their viewpoint or accept a desired course of action, uses direct persuasion, uses several methods of direct persuasion, calculates impact of actions or words, and uses complex influence strategies. Fostering Teamwork—promotes cooperation and collaboration between individuals and groups, has positive expectations, encourages others, values others' input and expertise, promotes the team within the organization. According to Kulczyk (2014), each competency is defined in terms of four behavior levels. Level 1 is the most basic level of performance, while level 4 the most sophisticated one. For each competency, level 3 is defined as the *target level.* Level 3 behaviors typically define excellence in managers' jobs. Competences consist of a combination of cognitive, behavioral and affective elements required for effective performance of a real-world task or activity. A competence is defined as the holistic synthesis of these components.

From another (an external) perspective, a competence may again be divided in three aspects. A competent person is able to: demonstrate behavior in a specific context and at an adequate level of quality. However, deducing from the above, this study views employee competence under the following dimensions: communication skills, social relations, adaptation and technical skills. The study locates the frontiers of competences in a given and a take, meaning effort and reward and in so doing appreciates (Blau, 1964), whose view is frequently cited in discussions about social exchange that is given and take. He explained social exchanges as "voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others." Social exchange theorists have indirectly and directly referred to social exchange theory as the trade of effort and loyalty for tangible and socio-emotional benefits. In essence, social exchange theory (SET) is among the most influential conceptual paradigms for understanding workplace (Cropanzano & Mitchell, 2005). For decades, the concept of social exchange has been used by organizational researchers to explain the motivational basis behind employee behaviors and the formation of positive employee attitudes. One of the basic tenets of the social exchange theory is that relationships

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evolve over time into trusting, loyal, and mutual commitment and, to do so, rules or norms of exchange, which serve as the "guidelines" of exchange processes, must be obeyed by exchanging parties.

The foregoing definitions show that SET is a sequence of positive interactions which over a period of time generate openness, obligation and friendship between people in the social network. The degree to which employers treat their employees have a huge influence on how obligatory and committed the employees will become. The evolution of positive social exchanges is important because it results in steady organisational relationships that lead to employees' commitment in the workplace. In social exchange theory, employees who get a sense of support from their employers would reciprocate such support in terms of being committed to the goals of the organization. In other words, if employers carrybout their part of the contract well, their employees will be committed. Previous literature has shown that high perceived organizational support and its influence on employee wellbeing will lead to employee commitment and innovativeness. It is believed that high-quality social exchange relationships can engender beneficial consequence for the organization. This is in accordance with employees, who perceive a high level of organizational support or have a high quality exchange with their supervisor, feeling a sense of indebtedness and reciprocate the exchange partner by demonstrating affective commitment and supportive attitudes towards using new information systems (Wayne et al., 2002). This means, when employee perceive that organizations are being committed to them by ensuring workplace ergonomics are being placed properly to reduce hazards, stress and tension, making provisions for necessary technological tools that would ease work processes; and effectively communicate with them by using the appropriate medium and channels to avoid communication gap, ensuring clear cut of responsibilities, task allocation and ensuring employees are being motivated both psychologically and financially, there is the likelihood that such commitment from the organization will be reciprocated by the employee in increasing their commitment level in terms of achieving organizational goals and objectives.

Communication Skills: Communication skills are components of generic skills that have been identified as a focus at work place (Kementerian Pengajian Tinggi Malaysia, 2006). Although generic skills encompass several elements, this study focuses on communication skills. Communication skills are important especially during the process of seeking job. The new graduates would be tested on their communication during their job interviews. Therefore, banks and major organizations have to ensure that students are equipped with the ability to communicate clearly and effectively. Generally, communication can be defined as a process of exchanging information, from the person giving the information through verbal and non-verbal methods, to the person receiving the information. The most common method of communication is verbal, using a specific language where it is a two-way process, with feedback on the message received. Communication also involves the exchange of ideas, opinions and information with a specific objective. Apart from oral communication, information can also be exchanged using symbols or signage. Communication has also been defined as sharing and giving meaning occurring at the same time through symbolic interactions (Seiler & Beall, 2005). Communication has been said to start when a message or information is transferred from the sender (the speaker, writer) to the receiver (listener, reader) through an instrument or channel, and followed by the receiver giving feedback (coding and interpreting the information) (Seiler & Beall, 2005). Based on these definitions, elements of communication include the person

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giving the information, the information and feedback by the receiver, and the repetition of these processes creates knowledge development.

Social Relations: The quality of social relationships in the workplace matters for employee health and well-being. Evidence shows that positive social connections at work—supportive interactions, a sense of belonging, and effective teamwork—improve workers' well-being and can protect against harmful effects of workplace stress. Individual characteristics such as age, gender, race, and religion illustrate the personal characteristics thought to influence social relations, whereas situational characteristics such as roles, norms, organizations, and communities were identified as important external factors influencing social relations (Firas et al., 2021).

***Adaptation*:** Being adaptable at work simply means being able to respond quickly to changing ideas, responsibilities, expectations, trends, strategies and other processes. Being adaptable also means possessing soft skills like interpersonal, communication, creative thinking and problem-solving skills. Examples of adaptability in the workplace include being willing to adjust your plans in response to shifting strategic company priorities, new roles and responsibilities, new systems and technologies, process improvements and policy changes.

Technical Skills: Technical skills are the specialized knowledge and expertise required to perform specific tasks and use specific tools and programs in real world situations. Diverse technical skills are required in just about every field and industry, from IT and business administration to health care and education. Programming languages. According to Kulczyk (2014), some of the common technical skills include common operating systems, software proficiency, technical writing, project management and data analysis. A work environment is the setting, social features and physical conditions in which you perform your job. These elements can impact feelings of well-being, workplace relationships, collaboration, efficiency and employee health. Bank's culture is also part of a work environment. For instance, some companies have a formal culture and expect workers to dress in suitable work attires and follow strict protocols whereas others allow employees to dress more casually and grant them more freedom in the execution of their duties. In business, sustainability refers to doing business without negatively impacting the environment, community, or society as a whole. It is a business approach to creating long-term value by taking into consideration how a given organization operates in the ecological, social, and economic environments. Sustainability is built on the assumption that developing such strategies fosters company longevity. Business that is environmentally aware considers more than simply profits; it looks at its environment and society too. Businesses that do this are sustainable since they contribute in the health of the structures in which they operate, allowing them to thrive as an organization. The notion of sustainability is an applied business model that aims to create value from the perspectives of a given organization's operations in relation to the quality of its environmental impact. Developing such strategies is based on the perception that they will help firms stay in business. In the context of this study, business sustainability includes customers' patronage and expansion. A customer is defined as a person or thing that eats or uses something or a person who buys goods and services for personal consumption or use (Kenneth, Miebaka & Ezirim, 2015). Expansion is an attempt to expand or enlarge a company's business network to increase future profits. Expansion is essential for business. The primary function of expansion is to increase business growth and increase profits.

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METHODOLOGY

This is a descriptive study that adopts the cross sectional research design. The study focused attention on officers with job titles such as Regional Managers, Branch Managers, Operations Managers, and Heads of Units of 15 out of the 22 banks operating in Rivers State that were conveniently sampled. The sample for the study was made up of 201 staff; since the target population is a homogeneous type, the sample size for study was derived using the Krejcie and Morgan sample determination table. Thus, 201 employees were sampled from the 420 senior staff of the 15 banks covered in the study. The data gathered were analyzed using mean and standard derivation for the research questions while simple regression statistics was used in analyzing the research Hypotheses. This was tested at the 0.05 level of significance in order to arrive at an appropriate decision. Although for each item the mean score of 2.50 and above was considered acceptable, those below 2.50 were rejected. Criterions mean (cm) score of 2.50 was set as a standard for acceptance and rejected. Hence, the criterion mean (cm) was arrived and the Likert scale options were ranked:

VHE=4; HE =3; LE= 2; VLE=1.

$$= \frac{VHE + HE + LE + VLE}{4}$$

$$= \frac{4+3+2+1}{4} = 2.50$$

The decision rule was based on the mean score of 2.50 and above considered as the benchmark for acceptance, while any item with a mean score below 2.50 was rejected. The hypotheses were tested using Regression Analysis test statistic, specifically Pearson Product Moment correlation (PPMC), given by the formula:

$$r = \frac{N\sum XY - (\sum X)(\sum X)}{\sqrt{\left(N\sum X^2 - (\sum Y)^2\left(N\sum Y^2 - (\sum Y)^2\right)\right.}}$$

where

Y - represents the dependent variable

X - represents the independent variable

Degree of freedom (df) = n-2

Level of significance = 5%

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The Decision Rule

The null hypotheses (HO) for the study were considered to be accepted if r-calculated values are less than the r-critical values. Regression Analysis test statistic using the Pearson Product Moment correlation (PPMC) was used with the aid of statistical package for social science (SPSS) version 22 to test the null hypotheses formulated for the study at 0.05 alpha level of significance.

Scatter Plot Showing the Relationship between Variables under Consideration

According to Bryman and Bell (2001), scatter plot is one of the techniques used in representing data from bivariate frequency distributions in a graphical form. He further opined that scatter plot represents the dispersion of a set of data as well as a relationship between two variables, namely the dependent and independent. However, it is well noted that if the points represented in graphical form as shown below is in a straight line form, then they are said to be linearly correlated. Conversely, if the points are distributed evenly around a curve, they are said to be non-linearly correlated, otherwise called uncorrelated.

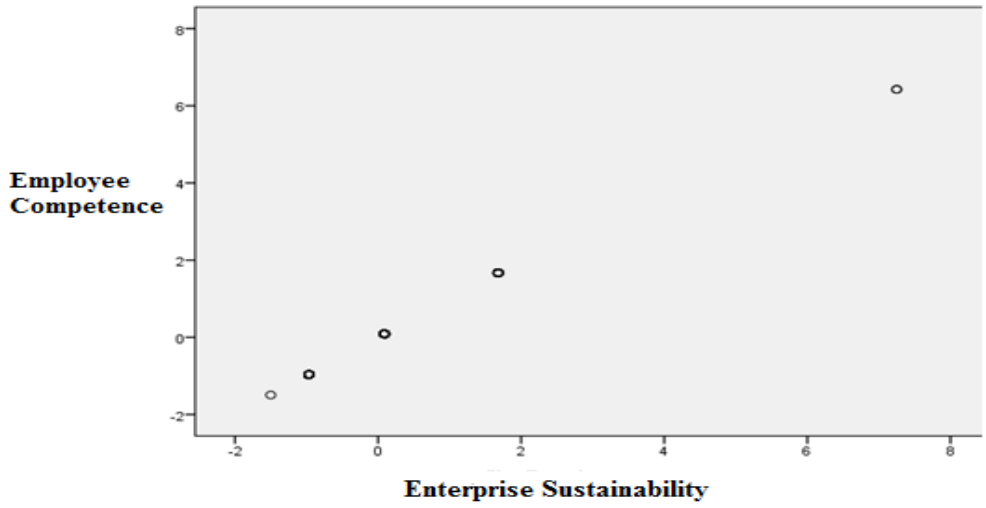

Figure 1: Positive Associations between Employee Competence and business Sustainability.

It is obvious from the pattern of the cases in the scatter plot sloping upwards from left to right is an indication of the fact there exists a linear and positive relationship between employee competence and business sustainability.

Testing of Hypotheses

In testing the hypotheses for this study, a number of decision rules were maintained in rejecting or accepting the study alternate hypotheses. They include: all the correlation coefficients r values that indicate the level of significance (* or **) as calculated using SPSS, * mean (0.01) and ** mean (0.05), and the hypotheses will accepted or rejected on the basis of this condition. When no significance is indicated in the coefficient (r) values, we reject alternate hypothesis.

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However, the study confident interval was set at the 0.05 (one tailed) level of significance of the test of statistical significance of the data used in the study. The Pearson Product Moment Correlation Coefficient statistics was calculated using the SPSS version 20 to establish the relationship among the empirical referents of the predictor variable and the measures of the criterion variable. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while +1.00 represents a perfect positive correlation. A value 0.00 represents a lack of correlation. In testing hypothesis 1–9, the following rules were upheld in accepting or rejecting the null hypotheses. All the coefficient values that indicate levels of significance (* or **) as calculated using SPSS were accepted and therefore, our null hypotheses were rejected. When no significance is indicated in the coefficient (r) value, we accept our null hypotheses. Our confidence interval was set at the 0.05 (two tailed) level of significance to test the statistical significance of the data in this study.

Table 1: Cronbach Alpha Reliability Coefficients of the Variable Measures

No. of items	Dimensions/moderating Variable	Numbers of items	Numbers of Case	Cronbach Alpha (α)
1.	Communication Skills	4	320	.970
2.	Social Relations	4	320	.989
3.	Adaptation	4	320	.969
4.	Technical Skills	4	320	.971
5.	Patronage	4	320	.970
6.	Expansion	4	320	.969
7.	Work Environment	4	320	.970

Source: SPSS Result (Version 20)

In addition to the correlation matrix obtained for the first research question, the table also extends to provide the result of the statistical test of significance (p-value), which makes it possible for the study to answer the question and further generalize its finding to the population of the study.

Table 2: Correlation Matrix for the Association Between Communication Skills and Business Sustainability in the Banking Sectors in Rivers State

			Comm Skills	Patronage	Expansion
Spearman's rho	Comm Skills	Correlation Coefficient	1.000	.900**	.976**
		Sig. (2-tailed)	.	.000	.000
		N	191	191	191
	Patronage	Correlation Coefficient	.900**	1.000	.971**

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		Sig. (2-tailed)	.000	.	.000
		N	191	191	191
	Expansion	Correlation Coefficient	.976**	.971**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	191	191	191

**. Correlation is significant at the 0.01 level (-tailed).

*. Correlation is significant at the 0.05 level (1-tailed)

The results in 2 indicate that there is a significant and positive association between communication skills and patronage, and communication skills and expansion. Communication skills significantly and positively correlate to patronage ($r = 0.900$, $p = 0.000<0.01$). Also, communication skills significantly and positively correlate to expansion ($r = 0.976$, $p = 0.000<0.01$). The association between communication skills and the measures of enterprise sustainability is found as significant and positive at the level of 0.01 significance. Sequel to the above results, the first set of hypotheses presumes the existence of a significant and positive association between communication skills and enterprise sustainability.

Table 3: Correlation Matrix for the Association Between Social Relations and Business Sustainability

			Social Relations	Patronage	Expansion
Spearman's rho	Social Relations	Correlation Coefficient	1.000	.958**	.900**
		Sig. (2-tailed)	.	.000	.000
		N	191	191	191
	Patronage	Correlation Coefficient	.958**	1.000	.971**
		Sig. (2-tailed)	.000	.	.000
		N	191	191	191
	Expansion	Correlation Coefficient	.900**	.971**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	191	191	191

**. Correlation is significant at the 0.01 level (-tailed).

*. Correlation is significant at the 0.05 level (1-tailed)

Source: *Research Data*

Table 2 above shows the results of the correlation matrix for the association between social relations and business sustainability, such as customers' patronage and expansions. The results show that social relation is significantly and positively associated to customers' patronage ($r = 0.958$, $p = 0.000<0.05$). Similarly, social relation is significantly and positively associated to

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expansion (r = 0. 900, p = 0.000<0.05). Therefore, it can be concluded there is an association between social relations and business sustainability. The second cluster of hypotheses presumes that there is a significant and positive association between social relations and business sustainability. This relationship is further hypothesized as thus:

Table 3: Correlation Matrix for the Association Between Adaptations and Business Sustainability

			Adaptations	Patronage	Expansion
Spearman's rho	Adaptations	Correlation Coefficient	1.000	1.000**	.882**
		Sig. (2-tailed)	.	.	.000
		N	191	191	191
	Patronage	Correlation Coefficient	1.000**	1.000	.882**
		Sig. (2-tailed)	.	.	.000
		N	191	191	191
	Expansion	Correlation Coefficient	.882**	.882**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	191	191	191

**. Correlation is significant at the 0.01 level (-tailed).

*. Correlation is significant at the 0.05 level (1-tailed)

Table 3 contains the results of the correlation matrix for the association between adaptation and business sustainability. Adaptation is significantly and positively correlated to customers' patronage (r = 1.000, p = 0.000<0.01), Similarly, adaptation is significantly and positively correlated with expansion (r = 0.882, p = 0.000<0.01). The relationship that exists between adaptation and all the two measures of business sustainability was shown to be significant and positive at the 0.01 significant levels.

Table 4: Correlation Matrix for the Association Between Avoidance and Organizational Health

		Technical Skills	Patronage	Expansion
Technical skills	Pearson Correlation	1	.217**	.503**
	Sig. (2-tailed)		.003	.000
	N	191	191	191
Patronage	Pearson Correlation	.217**	1	.416**
	Sig. (2-tailed)	.003		.000
	N	191	191	191

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Expansion	Pearson Correlation	.503**	.416**	1
	Sig. (2-tailed)	.000	.000	
	N	191	191	191

**. Correlation is significant at the 0.01 level (-tailed).

*. Correlation is significant at the 0.05 level (1-tailed)

Table 4 above reveals the result which shows that there is also a significant and positive association between technical skills and customers' patronage, technical skills and expansion. Technical skills are significantly and positively correlated to customers' patronage (r = 0.217, p = 0.000<0.01). Similarly, technical skills are significantly and positively correlated to expansion (r = 0.503, p = 0.000<0.01). By this, it can be inferred that these associations are significant at the 0.01 significance level.

Table 5: Showing Partial Correlation of the Moderating Effect of Work Environment on Employee Competence and Business Sustainability

			Work Environment	Employee Competence	Business Sustainability
Spearman's rho	Work Environment	Correlation Coefficient	1.000	.971**	.975**
		Sig. (2-tailed)	.	.000	.000
		N	191	191	191
	Employee Competence	Correlation Coefficient	.971**	1.000	.941**
		Sig. (2-tailed)	.000	.	.000
		N	191	191	191
	Business Sustainability	Correlation Coefficient	.975**	.941**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	191	191	191

**. Correlation is significant at the 0.01 level (-tailed).

*. Correlation is significant at the 0.05 level (1-tailed)

The result of the Spearman Rank Order Correlation Coefficient in Table 4.9 shows that there is a significant and positive moderating association between work environment and employee competence, and work environment and enterprise sustainability. Work environment is significantly and positively correlated to Employee Competence (r = 0.971, p = 0.000<0.01). Work environment is significantly and positively correlated to business sustainability (r = 0.975, p = 0.000<0.01). There is a positive moderating effect between work environment, employee competence and business sustainability at 0.01 level of significance.

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DISCUSSION OF FINDINGS

The results in Table 2 indicate that there is a significant and positive association between communication skills and patronage, and communication skills and expansion. The first and second hypotheses show that there is a positive and significant relationship communication skills, customers' patronage and expansions in the banking sectors in Rivers State, of which the significant is based on r = 0.900; p= 0.000<0.05, and r = 0.976, p = 0.000<0.05, both at 95% confidence interval leading to the rejection of the null hypothesis ($H_{0:1}$) and ($H_{0:2}$), stated in the study while we uphold the alternate and restated. Thus, there is a positive and significant relationship between communication skills, customers' patronage and expansion in the banking Sectors in Rivers State.

Table 3 shows the results of the correlation matrix for the association between social relations and business sustainability such as customers' patronage and expansions. The third and fourth hypotheses shows that there is a positive and significant relationship between social relations, customers' patronage and expansion in the Banking Sectors in Rivers State of which the significant is based on r = 0. .958, P = 0.000 < 0.05 and r = 0. 900, P = 0.000 < 0.05, both at 95% confidence interval leading to the rejection of the null hypothesis ($H_{0:3}$) and ($H_{0:4}$), stated in the study while will upheld the alternate and restated thus; Positive and Significant relationship between social relations, customers' patronage and expansion in the banking sectors in Rivers State.

Table 4 contains the results of the correlation matrix for the association between adaptations and business sustainability. The firth and six hypotheses shows that there is a positive and significant relationship between adaptations, customers' patronage and expansion in the banking sectors in Rivers State of which the significant is based on r = 1.000, p = 0.000<0.05 and r = 0.882, p = 0.000<0.05, both at 95% confidence interval leading to the rejection of the null hypothesis ($H_{0:5}$) and ($H_{0:6}$), stated in the study while will upheld the alternate and restated thus; there is a positive and significant relationship between adaptation, customers' patronage and expansion in the Banking Sectors in Rivers State.

Table 5 revealed the result which shows that there is also a significant and positive association between technical skills and customers' patronage, technical skills and expansion. The seventh and eight hypotheses show that there is a positive and significant relationship between technical skills, customers' patronage and expansion in the banking sectors in Rivers State of which the significance is based on r = 0.217, P= 0.000<0.01 and r = 0.503, P= 0.000<0.01, both at 95% confidence interval, leading to the rejection of the null hypothesis ($H_{0:5}$) and ($H_{0:6}$), stated in the study while upholding the alternate and restated thus: there is a positive and significant relationship between technical skills, customers' patronage and expansion in the banking sectors in Rivers State.

Hypothesis nine shows that there is a strong positive moderating effect between work environment and employee competence of which the significance is based on r = 0.971, p = 0.000<0.05 at 95% confidence interval. Looking at the zero correlation, we find that both work environment and employee competence are highly positively correlated with business sustainability. Removing the effect of this control variable reduces the correlation between the other two variables to be 0.26 and it is significant at $\alpha = 0.05$. Therefore, we reject the null hypothesis and conclude that there is a positive moderating effect between work environment, employee competence and business sustainability.

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IMPLICATIONS

This study contributes to the body of knowledge both in methodology, theory and practice. In order to derive more valuable and broader conclusions, the methodology adopted in this research involved the administration of questionnaires across selected banks in Rivers State, Nigeria to increase the generalizability of the results. This study, having empirically validated its purpose, which is to investigate the relationship between employee competence and enterprise sustainability in Banks in Rivers State, thus contributes to the existing body of knowledge. The study empirically validated the main drivers of employee competence—communication skills, social relation, adaptation and technical skills—as vital for customers' patronage and expansion of banks. The recommendations of this study are deduced from the empirical findings and conclusions drawn. There is a need for employees of banks to develop their communications skills as it is found to increase productivity, and reduce employee work stress, thereby attracting customers' patronage. Management of banks should maintain good communication among employees and customers as it enhances enterprise sustainability. Banks should train and retrain their employees on social relations with customers and their fellow staff as it enhances patronage and growth of the banks. The employee's technical skills should be maximized by the management for customers' patronage and expansion of the banks. The working environment should be favorable to enable employees to reciprocate the expectation of their employers as a key to enterprise sustainability.

CONCLUSION

A good employee's competence is an essential element for customers' patronage, excellence, expansion, and survival. This study confirmed that employee's competence is one of the most important factors that directly affect business sustainability performance. In literature, employee's competence is the main concern of multi field studies that have been executed during the past five decades worldwide. The results of a great majority of these studies have confirmed that employee's competence positively affects customers' patronage and expansions of banks in general, and on the implementation of its programs, policies, and strategies in particular. The results show that there is a significant relationship between communication skills, customers' patronage and expansion. Similarly, there is a significant relationship between social relations, customers' patronage and expansion in the banking sectors in Rivers State. Also, there is a significant relationship between adaptations, customers' patronage and expansion in the banking sectors in Rivers State. There is a significant relationship between technical skills, customers' patronage and expansion in the banking sectors in Rivers State, and a positive moderating effect between work environment, employee competence and business sustainability.

Suggestions for Further Research

The study has highlighted various relevant issues that the study did not exhaustively investigate, but which might be important for further research on employee competence to enhance business sustainability. First, the study only studied selected banks in Rivers State. There is a need to carry out further studies in other organizations in different industries and sectors in Nigeria like oil and gas, educational institutions, hospitals, hospitality, telecommunication, constructions and manufacturing, among others, and confirm whether the

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results will be the same. The study used a cross sectional survey research design, future research can be done over a year using longitudinal design and confirm whether the results will be consistent.

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