KNOWLEDGE MANAGEMENT STRATEGIES AND TECHNOLOGICAL INNOVATIVENESS OF MANUFACTURING COMPANIES IN EDO STATE, NIGERIA

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Abstract

This research paper studied the impact of knowledge management strategies on technological innovativeness of bottled water companies in Edo State, Nigeria. The specific objectives of this study were to examine effect of knowledge acquisition on administrative innovation, and the effect of knowledge utilization on administrative innovation. Survey research design was employed for this study, with a population of 192 employees from the six bottled water companies selected in Edo State, Nigeria. Total of 117 questionnaires were correctly filled and returned, data were collected with the help of administered questionnaires, while hypotheses analysis was done using correlation and multiple regression analysis. The findings revealed that knowledge acquisition and knowledge utilization both have positive impact on administrative innovation and on technical innovation. The researcher, however, concluded that knowledge management strategies have an impact on technological innovation. It was on this basis that the researchers recommended that organizations management should encourage innovative ideas that will improve administrative processes and product improvement.

Keywords: Knowledge management, knowledge acquisition, technological innovativeness, knowledge utilization.

1. Introduction

Knowledge management has over the years received increased attention in management research and management of organization around the world. It is been considered a new and influential method in strategic management science. Knowledge management strategy is a new tool for sustainable competitive advantage that empowers organizations around the world to redefine their business strategies. There is a set of researchers who claimed that knowledge management is the foundation of organizational innovation (Chen, Huang, & Hsiao, 2010; Lin, Che, & Ting, 2012; Lee, Leong, Hew, & Ooi, 2013).The manufacturing industry has played an important role in economic development and it is an indication that a country has a strong economy. It promotes the success and competitiveness of a country's economy (Ojo & Ololade, 2013; Amakom, 2012). Kor and Maden (2013)

suggested that efficiently used knowledge is not only an important intellectual property, but also a useful tool for organizations to compete effectively at higher levels of market competition.

2. Statement of the Problem

The demand for high-quality and competitive products has continued to attract the attention of researchers and corporate executives both at local and international level. Numerous academic research works have been conducted to determine whether knowledge management can enhance technological innovation (Waribugo, Ofoegbu & Akpan, 2016; and Kor & Maden, 2013).In addition to the perceived effects of knowledge management on technological innovation, there are studies with conflicting views on the subject (Mageswari, Sivasubramanian & Dath, 2015; Ferraresi, Quandt, Santos,& Frega, 2012). This disagreement between researchers, management executives and the inability of manufacturing companies to innovatively develop high quality products and better administrative practices that can compete with the product of similar companies around the world has been a major concern to researchers, management executives, and government at all level. These diverse perspectives and mix results among researchers requires urgent attention to proffers measures that will address and remedy the negative effects these diverse perspectives has on manufacturing companies around the world. This study was designed to examine if knowledge management practices of bottled water manufacturing companies could improve technological innovativeness for greater efficiency.

3. Research Objectives

The main objective of this study was to determine the impact of knowledge management strategies on technological innovativeness of manufacturing companies in Edo State, Nigeria. The specific objectives are stated below;

i. To determine the relationship between knowledge acquisition and administrative innovation of bottled water companies in Edo State.
ii. To ascertain the relationship between knowledge acquisition and technical innovation of bottled water companies in Edo State.
iii. To determine the relationship between knowledge utilization and administrative innovation of bottled water companies in Edo State.
iv. To ascertain the relationship between knowledge acquisition and technical innovation of bottled water companies in Edo State.

4. Research Hypotheses

The researcher made the following null hypotheses to guide this study;

H_{o1}: There is no significant relationship between knowledge acquisition and administrative innovation of bottled water companies in Edo State.

H_{o2}: There is no significant relationship between knowledge acquisition and technical innovation of bottled water companies in Edo State.

H_{o3}: There is no significant relationship between knowledge utilization and administrative innovation of bottled water companies in Edo State.

H_{o4}: There is no relationship between knowledge acquisition and technical innovation of bottled water companies in Edo State.

Review of Related Literature

Knowledge Management

Knowledge management practicing organizations have the capacity to provide everything it needs to create, distribute, preserve, and use knowledge information as needed (Ngoc-Tan & Gregar, 2018). Darroch (2003) argued that knowledge management process consists of knowledge utilization, knowledge acquisition and knowledge dissemination. Frost (2014) argued that knowledge management is primarily about identifying the right employees at the right time. Proper knowledge management in an organization may not be difficult, but without the proper policies and strategies, it can be a daunting task that could ultimately destroy an entire organization (Waribugo, Ofoegbu & Akpan, 2016). Knowledge management is the effective use of human knowledge in an organization as a strategic tool to developing a competitive business strategy (Alavi & Leidner, 2001; Carneiro, 2000). Kaba and Ramaiah (2017) believe that knowledge management is the effective use and implementation of knowledge development process. Within business management and knowledge management, two types of knowledge are usually defined, namely explicit and tacit knowledge. The first refers to codified knowledge, such that is found in documents, while the latter refers to non-codified and are often personal/experience-based knowledge.

Knowledge Acquisition

Knowledge acquisition is the process by which knowledge can be acquired either through learning, training and development. Huber (1991) described knowledge acquisition as the process by which knowledge is acquired. Similarly, Kraaijenbrink, Spender and Groen (2010) described knowledge acquisition as a process by which knowledge is transmitted from a source to company employees through a sub processes, such as written form, physical objects, people, collaboration between source and recipient, courses, and outsourcing. Knowledge acquisition is related to the use of either existing improved knowledge or acquiring a new set of improved knowledge (Lin, 2007). Acquiring knowledge within and outside the organization, each member organization can enhance its ability to transform current knowledge into new knowledge and generate new knowledge (Yli-Renkoet, Autio, & Sapienza, 2001; Chen & Huang, 2009).

Knowledge Utilization

Knowledge utilization is important in product management as it is related to improving performance, productivity enhancement and capacity building

(Alashwal, Abdul-Rahman & Radzi, 2014). Knowledge utilization is considered to lead to modified and improved operations, which ensure improved efficiency when performing tasks (Kalling, 2003). Chen and Mohamed (2010) argued that knowledge utilization can lead to the production of a product that has a significant impact on business performance. Knowledge is successfully utilized or applied to improve product quality. Therefore, this study assumes that competence plays a key role in the process of knowledge utilization.

Technological Innovativeness

Technological innovativeness of product quality is essential for sustainable competition in a modern business environment. Innovativeness is the use of knowledge to positively transform and control the human / business environment (Williams, 2018). Technology involves the use of tools, materials, techniques, power supply to make life better or enjoyable, more efficient and productive. Technological innovation is inherent in science, and the process is technologically driven (Letangule & Letting, (2012). This process consists of several factors affecting an organization's internal capabilities, its networks and its technological learning capacity, which is influenced by its internal and external environment. Technological innovations are new product innovations or process innovations that have been brought to market to enhance customers' satisfaction. The product or process is innovative if it meets specified objectives of the manufacturing organization.

Administrative Innovation

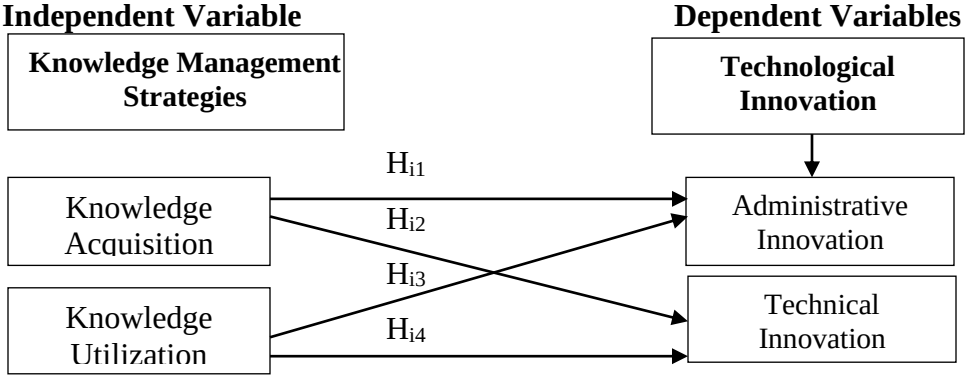
Liao, Fei, and Liu (2008) defined administrative innovation as a new processes, policies in organizational forms, and innovative operation with terms of planning, staffing, organizing, management, leading, and service. Damanpour (1991) also held the same view that administrative innovation comprises of organizational structure and administrative processes related to an organization's activities and its management. Subramanian and Youndt (2005) shared a view in which they emphasized that administrative innovation is one of the key element of organizational innovation which is referred to a new improved human resource development programmes, management system, and administrative process. Meanwhile, Yamin, Mavondo, Gunasekaran, and Sarros, (1997) argued that administrative innovation improves management systems, skills enhancement, work redesign and work systems, and changes in incentives. It is considered an important tool that organizations should use to maintain competitiveness, uncertainty and volatile business environment.

Technical Innovation

Subramanian and Nilakanta (1996) argued that technical innovation is about embracing new ideas related to new products or services or introducing new things to an organization's service, operations or production process. Liao et al., (2008) also believes that technical innovation is the innovation with respect to products, services, and manufacturing facilities. Technical innovation affects all routines, operations and processes of an organization in terms of process, product or service (Ngoc-Tan & Gregar, 2018). In so doing, it has a positive impact on the speed and nature of production, as well as the quality of production. Therefore, technical innovation will encourage a company to promote competitive advantage, gain managerial excellence, improve administrative advantage, improve management performance, and business sustainability. It has becomes an important tool in helping organizations gain a competitive advantage in a red sea business environment.

Conceptual Model

The researcher's model shows the correlation between independent variables (Knowledge Acquisition and Knowledge Utilization) and dependent variables (Administrative Innovation and Technical Innovation) of the research figure below. Knowledge management strategies and technological innovativeness are expected to demonstrate the degree of interaction between the independent variables and the dependent variable.



Source: Researcher's Conceptual Model for the study variables

Theoretical Framework

Techno-centric Theory

Techno-centric theory focuses on the process of designing technology and technological capabilities that facilitate the flow of knowledge and information storage (Polanyi, 1967). This view is based on Polanyi Michael theory he proposed in 1967.Knowledge management covers the impacts of business process, human resources, production, and knowledge sharing

technology in a manufacturing sector. Knowledge management strategies refer to a company's choices to invest in specific practices to bring about change. The change that many companies wants is improved income and profits, and the retention of highly skilled employees. There are many knowledge management strategies a company can use to facilitate the efficient flow of knowledge sharing and to enhance a culture of knowledge sharing and management.

Empirical Review

In the empirical review the researcher examines the following variables; innovativeness, performance, knowledge management, tacit knowledge, knowledge sharing effectiveness, knowledge acquisition effectiveness, knowledge application effectiveness administrative innovation, process innovation, product innovation, knowledge acquisition and process innovation.

Guillermo, Gregorio and Klaus (2019) examined the influence of strategic knowledge management on organizational innovativeness and performance. Data were collected from a sample containing127 Southern Brazilian companies and PLS-SEM was used to test the hypotheses. Research shows the level of effectiveness and efficiency of each knowledge management strategies. The findings allow management team in Brazil to identify results that have a strong influence on performance and innovativeness. The results show that Brazilian companies focus on information of knowledge management, and that there are other opportunities to improve performance if they focus more on tacit knowledge.

Ngoc-Tan and Gregar (2018) examined the relationship between knowledge management and innovation in Vietnam higher education institutions. The research results were based on survey data collected in 2017 from 30 public universities located in 3 regions of Vietnam. Structural Equation Modelling (SEM) was used to explore the hypothetical relationships between knowledge management on innovation. Research has found that knowledge management greatly impact technological innovation on universities and that not all aspects of knowledge management are directly related to administrative innovation.

Waribugo, Ofoegbu and Akpan (2016) examined the impact of knowledge management on product innovation of manufacturing companies in Nigeria. A sample size of 95 was used from a population of 125 employees selected from 5 companies in Port Harcourt. 70 copies of the questionnaire were duly completed and data analyzed using multiple regression with the help of SPSS version 21. The finding was that the entire dimension of knowledge management contributes product innovation of the companies. However, it was pointed out that knowledge acquisition has a significant impact on product development.

Byukusenge, Munene and Ratajczak-Mrozek (2017) examined the impact of innovation on knowledge management and SMEs business performance in Rwanda. The study used a cross-sectional survey design to collect data from a 250 SME sample and used bootstrap method to perform mediation analysis. The findings revealed that innovation mediates between knowledge management and SME performance.

Tan and Nasurdin (2010) examined the relationships between knowledge management effectiveness (knowledge sharing effectiveness, knowledge application effectiveness and knowledge acquisition effectiveness) on technological innovation (product innovation and process innovation). Survey data was used for a sample of 171 major production companies in Malaysia. Regression results have shown that knowledge acquisition effectiveness is closely related to product innovations. On the other hand, knowledge management effectiveness was found to be unrelated to the process innovation.

Kor and Maden (2013) examined the relationship between effective knowledge management processes and innovation in organizations, and also highlighted the effect of innovation mediation in terms of knowledge management process and innovations. Survey data was used for 103 participants in Turkey. Research findings show that knowledge management processes are closely linked to innovation, which also develops innovativeness in organizations.

Palacios, Gil and Garrigos (2009) examined the impact of introducing knowledge management programmes on the development of innovation distinctive competences, using two knowledge intensive industries. The relationships of the proposed hypotheses were tested in a study of 222 companies in the Spanish biotechnology and telecommunications industries. It was established that a conceptual delimitation of knowledge management has a directive system through a set of principles and practices.

Knowledge Gap

After careful consideration of the various empirical studies, the researcher established that the decomposed independent and dependent variables in this study had not been tested in any bottled water companies in Nigeria. The results also showed a mix result from the findings.

Methodology

Research Design

The study adopted a survey research design that would draw data from the 39 bottled water production companies in Edo State. Two companies were selected from each the three senatorial district in Edo State. The purpose was to collect information on the various variables (Onyeizugbe, 2013).

Population of the Study

The population of this study consisted of employees of six randomly selected bottled watercompanies in Edo state,using of Table of Random Numbers.

Table 1: Population Distribution

S/N	Company	Senatorial District	Population
1	Big Joe Ventures Ltd	Edo South	31
2	Notre Dame Industrial Company Limited	Edo South	51
3	Oda Thermoframe Limited	Edo Central	29
4	Rocky Waters Limited	Edo Central	23
5	Shamac Table Water Enterprises	Edo North	26
6	Gatamitech Nigeria Limited	Edo North	31
Total			**191**

Source: Field Survey, 2021formHuman resource departments of the various companies.

Sample Size and Sampling Technique

The Taro Yamane formula ($n = N/1 + N (e)^2$) was used to determine the sample size of the respondent 129,while bowley's distribution method ($Nh = n (nh)/N$) was used to distribute questionnaire to the various bottled water companies.

Instrument of Data Collection

The questionnaires were administered directly in hard copies to the sample sizeon a five-point Likert Scale and was coded as follows; Strongly Disagree (SD) 1, Disagree (D) 2, Uncertain (U) 3, Strongly Agree (AD) 4 and Agree (A) 5. The questionnaire was developed in accordance with the research objectives of this study.

Validity of the Instrument

Validity is the degree to which the instrument measures what it intends to measure. Content and face validity test was obtained from senior lecturers in the department of business administration, Shaka Polytechnic, Benin City.

Reliability Test

The reliability of the items was based on Cronbach's Alpha research instrument reliability test. The Cronbach's Alpha reliability test measures the consistency of the instrument used. Ten (10) questionnaires were re-administered after two weeks. The results of the reliable Cronbach/Coefficient Alpha value were0.872, 0.919, 0.889 and 0.906 for knowledge acquisition, knowledge utilization, administrative innovation and technical innovation

respectively, which means that 87.2%, 91.9%, 88.9% and 90.6% of the variables in their scores are reliable.(See second table)

Method of Data Analysis

One hundred and twenty nine (129) questionnaires were answered from respondents, only 119 were correctly completed and taken from the respondent, representing 92.25% questionnaires returned. Spearman Rank Correlation and Multiple Regression analysis were used to analyze the data collected using Statistical Package for Social Sciences (SPSS) version 20. Likert-type scale was used to measure their responses on a 5 – point scale ranging from 5 = Strongly Agree to 1 = Strongly Disagree. The specification of the multiple regression model are as follows:

$Y=\beta_0 +\beta_1 X_1 + \beta_2 X_2+\varepsilon$

Where; Y = Knowledge Acquisition or Knowledge Utilization, X_1 =Administrative Innovation, X_2 = Technical Innovation, ε= Error terms.

Data Presentation, Analysis and Discussion

Test of Hypotheses

Decision Rule

Where P < 0.05 = Reject the null hypothesis, and P > 0.05 = Accept the null hypothesis

Table 2: C**orrelation of the various variables tested**

Correlations

		Cronbach's Alpha	Mean	Std. Deviation	KA	KU	AI	TI
KA	Pearson Correlation	0.872	3.4664	0.81558	1	0.497**	0.697**	0.607**
	Sig. (2-tailed)					0.000	0.000	0.000
	N				119	119	119	119
KU	Pearson Correlation	0.919	3.4811	0.76272	0.497**	1	0.569**	0.549**
	Sig. (2-tailed)				0.000		0.000	0.000
	N				119	119	119	119
AI	Pearson Correlation	0.889	3.4790	0.84847	0.697**	0.569**	1	0.867**
	Sig. (2-tailed)				0.000	0.000		0.000
	N				119	119	119	119
TI	Pearson Correlation	0.906	3.4706	0.85319	0.607**	0.549**	0.867**	1
	Sig. (2-tailed)				0.000	0.000	0.000	
	N				119	119	119	119

**. Correlation is significant at the 0.01 level (2-tailed).

The results of the analysis (Table 2) revealed that there is a link between knowledge management and technological innovation in bottled water companies. The correlation values between KA and AI was0.697**, KA and TI was 0.607**, KU and AI was 0.569**, and between KU and TI was

0.549**, where all the P = 0.000 (P < 0.05) indicating a strong correlation between the variables. The mean values for the various variables were high, and the std. deviation shows the level of variation from the mean values. This means that knowledge management can be considered statistically relevant in demonstrating the interplay between technological innovations in a manufacturing industry. Therefore, all the null hypotheses were rejected, while the alternate hypotheses were all accepted. The result of this study is in line with the findings of Guillermo, Gregorio and Klaus (2019), Ngoc-Tan and Gregar (2018), Byukusenge, Munene and Ratajczak-Mrozek (2017),and Waribugo, Ofoegbu and Akpan (2016)which states that knowledge management is a necessary tool for technological innovation in manufacturing companies.

Table 3aand 3b: Model Summary

Model Summary 3a (AI)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.843[a]	0.652	0.644	0.57301

a. Predictors: (Constant), KU, KA

From the model summary in table 3a, it shows that knowledge management explains (0.652) 65.2% of the variability of administrative innovation. The finding is consistent with the findings of Waribugo, Ofoegbu and Akpan, (2016)which states that the dimensions of knowledge management impact on product innovation of companies.

Model Summary 3b (IT)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.871[a]	0.650	0.640	0.63837

a. Predictors: (Constant), KU, KA

From the model summary in table 3a, it has shown that knowledge management account for (0.650) 65% of the variability of technical innovation. The finding is consistent with Waribugo, Ofoegbu and Akpan (2016), and as well as the findings of Tan and Nasurdin (2010) which states that the dimensions of knowledge management impact on product innovation of an organizations.

Table 4aand 4b Fitness of the Model

ANOVA[b] 4a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.860	2	23.430	71.359	0.000[a]
	Residual	38.088	116	0.328		
	Total	84.947	118			

ANOVA[b] 4a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.860	2	23.430	71.359	0.000[a]
	Residual	38.088	116	0.328		
	Total	84.947	118			

a. Predictors: (Constant), KU, KA

b. Dependent Variable: AI

Table 4a shows that administrative innovation is statistically significantly in predicting knowledge acquisition, knowledge utilization needed in bottled water companies, $F(2, 116) = 71.359$, $p < 0.05$ this means that the regression model is a good fit for the data. The finding are consistent with Kor and Maden, (2013) which show that knowledge management processes are positively related to innovativeness, which also enhances innovations in organizations.

ANOVA[b] 4b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.625	2	19.312	47.390	0.000[a]
	Residual	47.272	116	0.408		
	Total	85.897	118			

a. Predictors: (Constant), KU, KA

b. Dependent Variable: TI

Table 4b shows that the technical innovation strongly predict knowledge acquisition, knowledge utilization required in the manufacturing companies, $F(2, 116) = 47.390$, $p < .0005$ this means that the regression model was a good fit for the data. The finding is consistent with Kor and Maden (2013) which show that knowledge management processes is closely related to innovativeness, which in turn enhances organizational innovation.

Table 5a and 5b: Multiple Regression Analysis for AI and TI variables

Table 5a: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.351	0.274		3.278	0.000
	KA	0.572	0.075	0.550	7.678	0.000
	KU	0.329	0.080	0.296	4.126	0.000

a. Dependent Variable: AI

$Y=\beta_0 +\beta_1 X_1 + \beta_2 X_2+\varepsilon$

$Y = 2.351 + 0.572 + 0.329$

From the table equation findings, which indicate that knowledge acquisition and knowledge utilization variables were held consistent, administrative innovation was at 2.351. An increase in knowledge acquisition will lead to an increase administrative innovation by 0.572. An increase in knowledge utilization will lead to an upsurge in administrative innovation by 0.329. All variables were significant as P-values were at statistical significance of 0.000, 0.000 and 0.000 respectively. The result from the multiple regression analysis of table 5a shows the result of administrative innovation (AI) on knowledge acquisition (KA) and knowledge utilization (KU). Knowledge acquisition was ($\beta = 0.550$, $P < 0.01$) and knowledge utilization ($\beta = 0.296$, $P < 0.01$) showed a positive effect on administrative innovation. These findings are consistent with Ngoc-Tan and Gregar (2018), as well as Byukusenge, Munene and Ratajczak-Mrozek (2017) which show a positive relationship between knowledge management and innovation.

Table 5b:Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.582	0.306		3.905	0.000
	KA	0.464	0.083	0.443	5.583	0.000
	KU	0.368	0.089	0.329	4.145	0.000

a. Dependent Variable: TI

$Y=\beta_0 +\beta_1 X_1 + \beta_2 X_2+\varepsilon$
$Y = 2.582 + 0.464 + 0.368$

From the table, which indicate that knowledge acquisition and knowledge utilization variables were held consistent, technical innovation was at 2.582. An increase in knowledge acquisition will lead to a rise in technical innovation by 0.464. An increase in knowledge utilization will lead to an upsurge in technical innovation by 0.368. All variables were significant as P values were at statistical significance of 0.000, 0.000 and 0.000 respectively. The multiple regression analysis on table 5b shows the effect of administrative innovation (AI) on knowledge acquisition (KA) and technical innovation (TI). Knowledge acquisition was ($\beta = 0.443$, $P < 0.01$) and knowledge utilization ($\beta = 0.329$, $P < 0.01$) showed a positive effect on technical innovation. The findings are in line with Ngoc-Tan and Gregar (2018), as well as Byukusenge, Munene and Ratajczak-Mrozek (2017) which show a positive relationship between knowledge management and innovation.

Findings

The result of this study revealed that knowledge management has an impact on technological innovativeness of bottled water companies in Edo state. The specific findings are mentioned below;

i. Knowledge acquisition has a positive relationship with administrative innovation of bottled water companies in Edo State.
ii. Knowledge acquisition was positively related to technical innovation of bottled water companies in Edo State.
iii. Knowledge utilization has a positive impact on administrative innovation of bottled water companies in Edo State.
iv. Knowledge acquisition has a positive connection with technical innovation of bottled water companies in Edo State.

Conclusion

The study investigated and analyzed the impact of knowledge management and technological innovativeness of bottled water companies in Edo State, Nigeria. The research was based on techno-centric theory. A conceptual model was developed by the researcher to explain the various variables used in the study. The empirical results revealed that knowledge management is strongly associated with technological innovativeness, which was in contrasting view of Mageswari, Sivasubramanian, & Dath, 2015; Ferraresi, Quandt, Santos, & Frega, 2012 findings. Based on the findings, the result showed that knowledge acquisition has the highest positive impact on administrative innovation, while knowledge utilization and technical innovation has the lowest relationship from the examined variables. However, it was concluded that knowledge management and technological innovation were positively related.

Recommendation

The following recommendations are based on the findings of the study:

i. Innovative ideas should be encouraged and publicly rewarded to encourage other employees to be innovative.
ii. The management of these organizations must take practical steps to find the right blend of intellectual to improve efficiency of their administration and production processes through innovativeness.
iii. Management needs to build the right structure for their work processes based on the latest technology available worldwide to improve their knowledge acquisition processes
iv. Employees should be encouraged to innovate in improving productivity processes in an organization..
v. There should be regular evaluation of staff skills in the use of new technologies.

Limitation of the study

This research has some limitations due to the research design and selected companies, which leave room for further research.

i. First, the researcher chooses to examine knowledge management and technological innovativeness of bottled water companies in Edo state alone.

ii. Second, the study was limited to two dependent variables (administrative innovation and technical Innovation) and two independent variables (knowledge acquisition and knowledge utilization).

Suggestion for Further Studies

i. A comparative study of knowledge management and technological innovation between industries other than bottled water companies or bottled water companies in various countries could be of interest to future researchers.
ii. The research conducted was a survey research design certainly may have some limitations. Time-series data of a longitudinal would allow researchers to have better understanding of a causal relationship between knowledge management and technological innovation.

Contribution to Knowledge

The following are the contributions to knowledge;

i. This research paper has contributed to the body of knowledge by solving the problem of knowledge management and technological innovation of bottled water companies in Edo state, Nigeria.
ii. The researcher developed a conceptual model that demonstrates the relationship between knowledge management and technological innovation in manufacturing companies to guide researchers understanding.

References

Alashwal, A., Abdul-Rahman, H., & Radzi, J. (2014). Knowledge utilization in construction projects: A conceptual framework. Knowledge Management International Conference, 12-15.

Alavi, M. & Leidner, D. E. (2001). Knowledge management and knowledge managementSystems: Conceptual foundations and research Issues, *MIS Quarterly,* 25(1), 107- 136.

Amakom, U. (2012). Manufactured exports in Sub-Saharan African economies: Econometric tests for the learning by exporting hypothesis. *American International Journal of Contemporary Research,* 2(4), 195-206.

Byukusenge, E., Munene, J. C., & Ratajczak-Mrozek M. (2017). Knowledge management and business performance: Does innovation matter?Cogent Business & Management, 4(1), 8-15.

Carneiro, A. (2000). How does knowledge management influence innovation and competitiveness? *Journal of knowledge management*, 4(2), 87-98.

Chen, C. J., & Huang, J. W. (2009). Strategic human resource practices and innovation performance: The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), 104-114.

Chen, L., & Mohamed, S. (2010). The strategic importance of tacit knowledge management activities in construction. *Construction Innovation*, 10(2), 138-163.

Chen, C. J., Huang, J. W., & Hsiao, Y. C. (2010). Knowledge management and innovativeness: The role of organizational climate and structure. *International Journal of Manpower,* 31(8), 848-870

Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, 34(3), 555-590.

Ferraresi, A., Quandt, C., Santos, S., & Frega, J. (2012). Knowledge management and strategic orientation: leveraging innovativeness and performance. *Journal of knowledge management,* 5(1), 688-701.

Frost, A. (2014). A Synthesis of Knowledge Management Failure Factors, retrieved from: http//www.knowledge management-tools.net.

Guillermo, D., Gregorio, V.& Klaus, N. (2019). studied the influence of strategic knowledge management on firm innovativeness and performance. Brazil Business Review, 16(3), 18-27.

Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science, 2*(1), 88–115. https://doi.org/10.1287/orsc.2.1.88

Kalling, T. (2003). Knowledge management and the occasional links with performance. *Journal of Knowledge Management,* 7(3), 67-81.

Kor, B. & Maden, C. (2013). The relationship between knowledge management and innovation in Turkish service and high-tech firms.*International Journal of Business and Social Science,* 4(4), 293-304.

Kraaijenbrink, J., Spender, J. C., & Groen, A. J. (2010). The resource-based view: A review and assessment of its critiques. *Journal of Management, 36*, 349–372.

Lee, V. H., Leong, L. Y., Hew, T. S., & Ooi, K. B. (2013). Knowledge management: a key determinant in advancing technological innovation?*Journal of Knowledge Management,* 17(6), 848-872.

Letangule, S. L.,& Letting, N. K. (2012).Technological innovation and corporate performance. *International Journal of Management and Business Studies*, 2(3), 66-73.

Liao, S. H., Fei, W. C., & Liu, C. T. (2008). Relationships between knowledge inertia, organizational learning and organization innovation. *Technovation Journal*, 28(4), 183-195.

Lin, H. F. (2007). Knowledge sharing and firm innovation capability: an empirical study. *International Journal of Manpower*, 28(3/4), 315-332.

Lin, R. J., Che, R. H., & Ting, C. Y. (2012). Turning knowledge management into innovation in the high-tech industry. *Industrial Management & Data Systems*, 112(1), 42-63

Mageswari, S. U., Sivasubramanian, C., & Dath, T. S. (2015). Knowledge management enablers, processes and innovation in small manufacturing firms: a structural equation modeling approach. *IUP Journal of Knowledge Management*, 13(1), 33.

Ngoc-Tan, N., & Gregar, A. (2018). Impacts of knowledge management on innovation in higher education institutions: An empirical evidence from Vietnam. *Economics and Sociology,* 11(3), 301-320. doi:10.14254/2071- 789X.2018/11-3/18.

Ojo, A. S. & Ololade, O. F. (2013). An assessment of the Nigerian manufacturing sector in the era of globalization. *American Journal of Social and Management Sciences,* 5(1), 27-32.

Palacios, D., Gil, I., & Garrigos, F. (2009). The impact of knowledge management on innovation and entrepreneurship in the biotechnology and telecommunications industries. *Small Business Economics*, 32(1), 291–301.

Polanyi, M. (1967). *The Tacit Dimension*. London: Routledge & Kegan Paul.

Subramanian, A., & Nilakanta, S. (1996). Organizational innovativeness: Exploring the relationship between organizational determinants of innovation, types of innovations, and measures of organizational performance. *Omega*, 24(6), 631-647.

Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, 48(3), 450-463.

Tan, C. L., & Nasurdin, A. M. (2010). Knowledge Management Effectiveness and Technological Innovation: An Empirical Study in the Malaysian Manufacturing Industry. *Journal of Mobile Technologies, Knowledge and Society,* 20(10), 13-26.

Waribugo, S., Ofoegbu, C. W. &Akpan, E. E. (2016). The impact of knowledge management on product innovation of manufacturing firms in Nigeria.*Journal of Information and Knowledge Management*, 6(6), 78-87.

William, J. a. J. (1998). *Oxford English dictionary*. United Kingdom: Oxford University Press.

Yamin, S., Mavondo, F., Gunasekaran, A., & Sarros, J. C. (1997). A study of competitive strategy, organizational innovation and organizational performance among Australian manufacturing companies. *International Journal of Production Economics*, 52(1-2), 161- 172.

Yli-Renko, H., Autio, E., & Sapienza, H. J. (2001). Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms.*Strategic Management Journal,* 22(6-7), 587-613.