

Full-Length Research

Knowledge acquisition, creation and employees' performance of mining firms: a case of Northern Nigeria

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ABSTRACT: This study assessed the link between knowledge acquisition, creation and the performance of employees: a case study of Northern Nigeria. The cross-sectional research design was adopted and questionnaire was the major instrument of data collection, which was administered to one hundred and fifty-four (154) employees of three (3) selected mining firms in Northern Nigeria. Both descriptive (simple percentages, mean, and standard deviation) and inferential (simple regression) statistical techniques were employed in analyzing the data obtained in the field survey. Findings revealed that knowledge acquisition positively and significantly affect the performance of mining firms' employees; however, the study found that knowledge creation negatively and significantly affects employees' performance. Given the findings, it was recommended among others that management of mining firms should put more efforts in structuring and/or constructing an information framework that will improve and support job and employees' performance. Again, firm management should institute a system of mentoring group interaction that will help boost mentor-mentee relationship among employees and also encourage staff meetings, team building section and project management team.

Keywords: Knowledge acquisition; Knowledge creation; Employees performance; Innovation
JEL Classification: D83; O31; M19

INTRODUCTION

The advent of knowledge-based economy has placed more emphasis and increased awareness on the need to effectively manage knowledge. This need according to Gakuo and Rotich (2017) stem from the fact that knowledge management is a vital ingredient for organizations seeking to ensure competitive advantage as well as sustainable employees' performance. Nevertheless, some organizations barely establish knowledge-based systems and even more worrisome, they hardly apply knowledge management practices in their business processes. Omotayo (2015) and AIMulhim (2020) noted that organizations no longer compete solely based on financial capital and strength, rather knowledge is the new competitive advantage in the business domain. In fact, the gross domestic product (GDP) growth rate is now determined, amongst other factors, by quantum and quality of knowledge stock harnessed and applied in the production process in sectors of the economy. This stance is reinforced by the widespread maxim that knowledge is power; given this claim, it can

be thought that the management of knowledge is the key to power.

Over the years, there were concerns about creating, acquiring, sharing and improving the re-use of knowledge; it is only in the last decade and half that a distinct field termed 'knowledge management' emerged in the business domain (Castaneda and Cuellar, 2020; Huie, Cassaberry and Rivera, 2020; Kremer et al., 2019; Phong et al., 2018; Simiyu and Walhaka, 2015; Zwain et al., 2012). Notably, countless number of organizations have now benefited immensely from adoption of knowledge creation, acquisition and sharing, as it has been proven to improve organizations' performance and make them remain viable in turbulent environment (Gakuo and and Rotich, 2017). Knowledge is of little usefulness except it is acquired and shared (Ismail and Yusuf, 2010; AIMulhim, 2017), and to promote knowledge creation, acquiring and sharing, understanding of what motivates organizations' members to share knowledge is vital (Chigada, 2014; Wang and Hou, 2015; Podrug et al.,

2017; Song et al., 2017; Kipkosgei et al., 2020). This perspective is supported by Block and Kin as cited in Durojaye and Tiamiyus (2016) who noted that expected reward is one of the factors affecting knowledge sharing attitude.

In Nigeria mining sector, to obtain sustainable competitive advantage, improved performance, and quality service, miners need to acquire and share both explicit and tacit knowledge from trusted sources. Janus (2016); Andrews and Smits (2018) consider that knowledge management practices will not be effective if it is the work of only one individual or organizational unit. Each individual and organizational unit must have clear roles and responsibilities assigned for acquiring, creating, sharing and protecting of knowledge.

Interestingly, quite a number of studies have shown that knowledge management contributes to sustainable performance of banks, manufacturing and construction firms (Usman, 2017; Kit and Abu, 2017; Waribugo and Ofoegbu, 2016; Omotayo, 2015; and Chigada, 2014), however, there has been no studies on knowledge management practices of mining firms in Northern Nigeria, particularly in area of knowledge management practices measures like knowledge acquisition and creation. Consequently, this study seeks to assess the effects of knowledge acquisition and creation on the performance of mining firms' employees in Northern Nigeria. The remaining part of this study is sectioned into: Review of Related Literature; Research Methods; Results and Discussions; Conclusion and Recommendations.

Knowledge acquisition and creation

Getting information is a knowledge management practice associated with the acquisition of knowledge. Knowledge sharing words such as achieve, seek-after, produce, develop, catch, and coordinate are used to describe the process of knowledge acquisition (Phong et al., 2018; Kipkosgei et al., 2020). Knowledge acquisition is aided by the creation of new knowledge in order to learn old information. Development necessitates a combination of effort and a high level of ability in recognizing and obtaining new knowledge (Dalkir, 2005). According to Darroch (2003), knowledge acquisition is captured by six (6) factors: valuing employees' attitudes and opinions and encouraging up-skilling; being market focused by actively obtaining customer/industry information; being sensitive to information about changes in the marketplace; employing and retaining a large number of people trained in science, engineering, or mathematics; and employing and retaining a large number of people trained in science, engineering, or mathematics.

Remarkably, several factors describe knowledge creation and acquisition: market information around the organization; knowledge on-the-job using techniques such as quality circles, case notes, mentoring and

coaching to create, acquire and share knowledge using technologies like teleconferencing, videoconferencing and groupware (Castaneda and Cuellar, 2020). Nonaka (1994); AlMulhim (2020) opined that knowledge acquisition and creation occur when individuals engage in practical activities through participation in social practices, under the guidance of individuals who are more experienced than them.

Moreover, the importance of a mentor in an organization, who has a lot of tacit knowledge and who guides the newcomer in learning this tacit knowledge via a practice is vital (Chigada, 2014; Andrews and Smits 2018; Huie *et al.*, 2020). Again, knowledge created and acquired from diverse assets inside and outside an organization is ineffective in the event that they are not it converted into a gainful practicable structure.

Employees' performance

Most organizations whether profit or non-profit oriented government or private, big or small agree at least in principle that employees' performance management is important for success. Organizational performance has been defined in different way; Hassan and Al-Hakim (2011); Pitt and Tucker (2008) see employees' performance as a vital sign of an organization, showing how well employees' activities within a process or the outputs of a process achieve a specific goal. AlMulhim (2017) sees employees performance as a process of assessing progress towards achieving pre-determined goals, including information on the efficiency by which resources are transformed into goods and services, quality of outputs and outcomes, and effectiveness of organizational objectives. Hassan and Al-Hakim (2011) in their study maintained that employees' performance is the integration between organizational knowledge and innovation competence to achieve positive goals that have been identified previously.

Previous studies suggest that knowledge creation and acquisition positively affect organizational performance (Huie *et al.*, 2020; AlMulhim, 2017; Usman, 2017; Kit and Abu, 2017; Waribugo and Ofoegbu, 2016); however, whether this is the case for mining firms in Northern Nigeria, has been an issue not deeply researched in management literature. Thus, this study seeks to fill the gap in literature and hypothesized as follows:

Ho₁: Knowledge acquisition has no significant link with employees' performance

Ho₂: Knowledge creation has no significant link with employees' performance

Theoretical framework

The theoretical framework of this study is centered on Organizational Knowledge Conversion (OKC) theory

proposed by Nonaka (2011). Organizational Knowledge Conversion views the interacting processes of tacit and explicit as vital features in knowledge management. OKC identifies socialization, internalization and combination as modes of interaction facilitating knowledge management in an organization. In the view of AlMulhim (2020), Huie *et al.*(2020) knowledge conversion from one form to another result in retention of knowledge in organization system. The central idea of Nonaka (2011) model is all about how the organizations can acquire, create, share and convert knowledge from one type to another and how organizations' managers know how to transform these created, acquired, shared and converted knowledge in achieving superior organizational performance (Andrews and Smits, 2018). Cong and Dandya (2010) agree that collaboration between created and acquire serve as engines of organizational growth and performance.

Empirical studies

There are numerous studies on knowledge management and organizational performance in Nigeria and the world; however, there have been no studies that had focused on mining firms in Northern Nigeria, particularly in using knowledge management practices measures such as knowledge acquisition and creation. Usman (2017) examined the impact of knowledge management on performance of deposit money banks in Nigeria. The study found that knowledge creation has a significant and negative relationship with employees' performance. Similarly, Kit and Abu (2017) analyzed the impact of knowledge management on technological innovation on electrical and elective industry in Malaysia. Findings indicate a significant relationship between knowledge management and technological innovation.

Khana and Poundel (2017) explored knowledge management practice and their impact on meeting value in Jordanian commercial banks. The result shows that knowledge management contribute positively to the improve performances by creating value. Al-Hawamdeh (2017) research aim at investigating the effect of intelligent use of knowledge management and its application on creating values for selected commercial banks in Jordan. The researcher reaches sets of results that knowledge management practices such as knowledge acquisition, creation, sharing and protection create the right value for the selected banks. Peter *et al.* (2016) anecdotal studies on knowledge management and business performance an interview study spanning 222 informants in 38 countries was launch to collect data on KM expert views concerning the future research needs of the knowledge management field. The findings of their study are that the value contribution of knowledge management requires more research despite expert agreeing the complexities involved in solving this challenge. Omotayo (2015) assessed knowledge

management as an importance tools in an organization management. The result shown that creating, managing, sharing, and utilizing knowledge effectively is vital for an organization to take full advantage of the value of knowledge. More recently, some studies (Andrews and Smits, 2018; AlMulhim, 2020; Huie, *et al.*, 2020) suggest a significant link between knowledge management and employees' performance.

METHODOLOGY

This study adopts the cross-sectional survey design as noted by Asika (2012).The choice of cross-sectional survey design was based on the fact that the study population and sample are divided in different locations within Northern Nigeria. Thus, one possible way of reaching out to them is via the adoption of cross-sectional survey design. Again, another justification of this method is premised on the fact that cross sectional survey design involves gathering data about a target population from an analysis of a sample and generalizing the findings obtained from analysis of the sample to the entire population (Sadiq, 2010).

The study population consists of top management, middle management, low management and non-management staff of three (3) selected mining firms in Northern Nigeria. The study population comprised of Vinco Collins Mineral Limited (95), Greenfield Metals Limited (75) and Collins Energy Limited (80), totaling two hundred and fifty (250) employees.

Given the study population, a normal confidence level of 95% and error tolerance of 5% was used. Hence, the sample size was determined using Taro-Yamane's formula, resulting to one hundred and fifty-four (154) employees. A stratified sampling method was adopted in dividing Northern Nigeria into three (3) strata (north central, north-west and north-east). In addition, simple random sampling method was then adopted to give every unit in the population a chance of being selected.

To give a proper representation to the designated mining firms, the proportionality formula was adopted. Consequently, fifty-nine (59) employees were sampled from Vinco Collins Mineral Limited, forty-six (46) from Green Field Metals Limited and forty-nine (49) from Collins Energy Limited. The instrument used for data gathering is structured questionnaire, which was divided into two sections: 'A' and 'B'. Specifically, all questions in section 'A' are bio-data of respondents while section 'B' comprised of all constructs (knowledge creation, acquisition and employees performance) and their items.

In the design of questionnaire, five (5) point Likert scale was adopted (strongly agree - SA), agree - A, undecided - UN, disagree - D and strongly disagree - SD). To test for reliability of the instrument, a test-retest method was adopted; this was done by administering thirty (30) copies of questionnaire to some mining firms that do not form

part of this study. The sample questionnaire was re-administered after a period of three (3) weeks. The reliability coefficient was tested using the Cronbach alpha and it falls under the threshold of 0.89.

In this study, knowledge management (KM) dimensions are the independent variables and employees' performance dimension (EMPP) is the dependent variable. The study adopted two (3) knowledge management dimensions: Knowledge Acquisition (KAQ) and Knowledge Creation (KCR), and employees' performance dimension Innovation (INO). On the basis of this, a simple regression statistical technique was adopted and model specified as follows:

$$Empp = f(kaq, kcr) \quad (1)$$

Where: $empp$ = employees' performance (measured by innovation); kaq = Knowledge acquisition; kcr = Knowledge creation; on the basis of eq. 1, eqs.2-3 are expressed as follows:

$$empp = \alpha_0 + \beta_1 kaq + \mu_t \quad (2)$$

$$empp = \alpha_0 + \beta_1 kcr + \mu_t \quad (3)$$

Where: α_0 , β_1 = Regression coefficients; μ_t = Error term. Each of two knowledge management process had 2 descriptive statements; these were weighted and the sum of weights represented each of the processes while innovation was used to measure employees' performance. A-priori expectation is such that the independent will significantly affect the dependent. For each of the questions contained in the questionnaire, percentages, frequencies, mean and standard deviation were computed. Besides, mean responses of questionnaire items (section B) were presented; a mean benchmark of 2.50 was set. Thus, a mean below 2.50 invalidate a particular questionnaire items while a mean above 2.50 validates that particular questionnaire items. Also, test of research hypotheses was based on simple regression results and analysis was done with the aid of STATA 13.0 statistical package.

RESULTS AND DISCUSSION

Data presented in (Table 1) are the demographic variables of one hundred and fifty-four (154) employees of selected mining firms in Northern-Nigeria (north central, north-west and north-east). The mining firms sampled were Vincon Collins Limited 59(38.3%), Green Filed Metals Limited 46(29.9%) and Collins Energy Limited 49(31.8%). The result revealed that 136(88.31%) and 18(11.69%) of the respondents' were males and females respectively. The data showed that 68(44.16%) and 67(43.51%) were within the age groups of 20-30 years and 30-40 years respectively while only 19(12.34%) were within the age group of 40 years and

above. On the marital status of the respondents, it was observed that 54(35.06%) and 92(59.74%) of the respondents were single and married respectively while 3(1.95%) and 4(2.60%) were divorced and are widowed; only 1(0.65%) of the respondent were separated. Furthermore, it was found that 5(3.25%) and 24(15.58%) of the respondents have obtained PhD and M.Sc. degrees respectively while 104(67.53%) and 13(8.44%) have obtained B.Sc./HND and NCE/OND degrees respectively; also, only 8(5.19%) are holders of WASSCE/GCE. The study revealed that 44(28.57%) and 40(25.97%) of the respondents are in personnel/administration and finance departments respectively while 31(20.12%) and 27(17.53%) in production and technical departments respectively. Only 8(5.19%) were sampled from sales department. On the years worked with firm, 75(48.05%) and 65(42.21%) of the respondents have worked with their organizations for below 5 years and 5-10 years respectively while 15(9.74%) have worked for above 10 years. The results above clearly suggest a widespread administration of the research instrument to employees who may be knowledgeable in areas of knowledge creation and acquisition and employees performance. Table 2 showed the questions on knowledge acquisition (kaq) among selected mining firms in Northern-Nigeria. The result revealed that all four (4) items on kaq scored above 2.50 cut-off point of mean; an indication that all kaq items are essential knowledge acquisition elements in appraising employees' performance. This was supported by the grand mean of 2.55 and standard deviation of 1.32; thus a large extent, kaq is practiced by the sampled mining firms in Northern Nigeria. Table 3 showed the questions on knowledge creation (kcr) among selected mining firms employees in Northern-Nigeria. The result revealed that all six (6) items on kcr scored above 2.50 cut-off point of mean; an indication that all the items on kcr are vital knowledge creation items in assessing employees performance. This was supported by the grand mean of 2.56 and standard deviation of 1.62; hence, to a large extent, kcr is practiced by the sampled mining firms in Northern Nigeria. Table 4 showed the mean response on employees' performance ($empp$) among selected mining firms' employees in Northern-Nigeria. The result revealed that all four (4) items on $empp$ scored above 2.50 cut-off point of mean. Impliedly, all items on organizational performance ($orgp$) are influenced by knowledge creation and acquisition. This was further supported by the grand mean of 2.54 and standard deviation of 1.12; thus, to a large extent, the sampled firms are innovative due to knowledge creation and acquisition practices.

The result of the relationship between knowledge acquisition (kaq) and employees' performance (measured by innovation) is presented in (Table 5). The R-squared is 0.9751 suggesting that 97.51% of the dependent variable has been explained by the independent variable; this is a good fit since the unexplained variation is just 2.49.

Table 1: Demographic characteristics of respondents showing knowledge creation (*kcr*), knowledge acquisition (*kaq*), and employees' performance (*emp*) of selected mining firms in Northern Nigeria.

Variables	Respondents	Frequency N=154	Percentage (%)
Organizations	Vinco Collins Ltd	59	38.3%
	Green Field Ltd.	46	29.9%
	Collins Energy Ltd.	49	31.8%
	Total	154	100%
Gender	Male	136	88.31%
	Female	18	11.69%
	Total	154	100%
Age Group	20-30years	68	44.16%
	30-40years	67	43.51%
	40years and above	19	12.34%
	Total	154	100%
Marital Status	Single	54	35.06%
	Married	92	59.74%
	Divorced	3	1.95%
	Widowed	4	2.60%
	Separated	1	0.65%
	Total	154	100%
Academic Qualification	PhD	5	3.25%
	M.Sc.	24	15.58%
	B.Sc./HND	104	67.53%
	NCE/OND	13	8.44%
	WASSCE/GCE	8	5.19%
	Total	154	100%
Department	Personnel/Admin	44	28.57%
	Finance	40	25.97%
	Production	31	20.12%
	Technical	27	17.53%
	Sales	12	7.79%
	Total	154	100%
Years Worked	Below 5years	75	48.05%
	5-10years	65	42.21%
	Above 10years	15	9.74%
	Total	154	100%

Source: Field Work, 2021

Table 2: Mean response of knowledge acquisition (*kaq*).

S/N	Items	Mean	Std. Dev.
1	Knowledge is need in the mining firm	2.55	1.67
2	Knowledge is not needed in the mining firm	2.52	1.18
3	Knowledge acquisition improves mining firm employees performance	2.59	1.26
4	Knowledge acquisition do not improve mining firms employees performance	2.54	1.19
	GRAND MEAN/STD. DEV.	2.55	1.32

Source: Field Work, 2021

In addition, the f-value (160.69) with p-value of $0.0000 < 0.05$ is an indication that there is significant relationship between knowledge acquisition employees performance; this led to the rejection of the null hypothesis and acceptance of the alternate hypothesis that knowledge acquisition has significant relationship with employees performance and is positive. The result corroborates in part with the findings of Usman, (2017); Omotayo, (2015) and Chigada, (2014).The result of the relationship

between knowledge creation (*kcr*) and employees' performance (measured by innovation) is presented in (Table 6). The R squared is 0.9744 suggesting that 97.44% of the dependent variable has been explained by the independent variable; this is a good fit since the unexplained variation is just 2.56. Furthermore, the f-value (124.98) with p-value of $0.0000 < 0.05$ indicates that there is significant relationship between knowledge creation and employees performance; this led to the

Table 3: Mean response of knowledge creation (*kcr*).

S/N	Items	Mean	Std. Dev.
1	Information use lead to knowledge creation	2.54	1.19
2	Information use do not lead to knowledge creation	2.50	1.06
3	Information shared lead to knowledge creation	2.61	1.13
4	Information shared do not lead to knowledge creation	2.55	1.02
5	Knowledge creation improve job performance	2.51	1.00
6	Knowledge creation improve job performance	2.57	1.08
GRAND MEAN/STD. DEV.		2.56	1.62

Source: *Field Work, 2021*

Table 4: Mean response of employees performance (*empp*).

S/N	Items	Mean	Std. Dev.
1	Knowledge acquisition improves product innovation	2.50	1.06
2	Knowledge sharing improves product innovation	2.61	1.33
3	Knowledge creation improves product innovation	2.55	1.02
4	Knowledge protection improves product innovation	2.52	1.08
GRAND MEAN/STD. DEV.		2.54	1.12

Source: *Field Work, 2021*

Table 5: Simple regression result for knowledge acquisition (*kaq*) and organizational performance (*empp*).

Empp	Coef.	Std. Error	T	P>/t/	[95% Conf. Interval]
kaq	0.05567	0.01938	2.87	0.005	.01737 .09396
_cons	0.02253	0.16012	0.14	0.888	-.29388 .33895
Number of Obs. =	154			F (1, 152) =	160.69
Prob. > F =	0.0000			R-squared =	0.9751
Root MSE =	.57612			Adj. R-squared =	0.9743

Source: *Field Work, 2021*

Table 6: Simple regression result for knowledge creation (*kcr*) and employees' performance (*empp*).

Empp	Coef.	Std. Error	T	P>/t/	[95% Conf. Interval]
Kcr	-0.19133	0.10132	-2.89	0.005	-.39154 .00890
_cons	0.29787	0.13808	2.16	0.033	.025010 .57072
Number of Obs. =	154			F (1, 152) =	124.98
Prob. > F =	0.0000			R-squared =	0.9744
Root MSE =	.58496			Adj. R-squared =	0.9735

Source: *Field Work, 2021*

rejection of the null hypothesis and acceptance of alternate hypothesis that knowledge creation has a significant relationship with employees performance and is negative. This result agrees in part with the findings of Usman, (2017); and Chigada, (2014).

Conclusion and recommendations

In recent times, most businesses have continuously focused on the concept of knowledge management, and have recognized knowledge as an essential resource, since it cannot be readily replicated by rival or competing organizations. No doubt, one of the consequences of globalization is the emergence of knowledge-based economies where much importance has been placed on

effective management of human capital to ensure that workers continue to create the right value for the economy. Thus, organizations no longer compete solely on financial capital and/or strength, rather knowledge is the new competitive advantage amongst businesses. The result of the study suggests that there is a significant relationship between measures of knowledge management (knowledge creation and acquisition) and the performance of the selected mining firms' employees in Northern Nigeria. Based on the findings, it was recommended that management of mining firms should ensure that efforts are made to structure and/or construct an information framework that will ensure that relevant and current information that will improve and support job schedules/performance are sought/acquired and effectively managed. Again, management of firms should

institute a system of mentoring group interaction that will help boost mentor-mentee relationship among employees and also encourage staff meetings, team building section and project management team. Given that knowledge creation and acquisition has proved to have significant effect on employees performance, efforts must be made by management of mining firms to institute a system of effective repositories, where information about present and previous landslides within the organization are kept for easy access and guidance in the future.

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