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KNOWLEDGE MANAGEMENT CATALYSTS IN TERTIARY INSTITUTIONS

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ABSTRACT

Knowledge Management (KM) has become a prerequisite to institutional performance to the extent that its adoption is now a tool for institutional competition amongst tertiary institutions in Nigeria. However, it has failed to achieve organizational objectives in some instances because underlining contributory elements to effective KM implementation are not being adequately considered. Although many factors have been traced to this failure, most of them are yet to be empirically tested and are therefore not generally acceptable. This study recognizes KM enabling capability and KM strategy capability as success factors to KM, and adopt a survey over 10 Nigerian universities to empirically test their contributions. SPSS software was employed for demographic data analysis over frequency count and percentage score, while the hypotheses were analyzed with Pearson correlation and multiple linear regression. The results show a positive linear relationship between the elements of KM enabler, KM strategy and KM success confirming KM enablers and KM strategy as positive contributors and catalysts to KM success in Nigeria South West tertiary institutions.
Keywords: *Enabler capability, Knowledge management, KM Success, Process capability, Strategy capability*

1. INTRODUCTION

In this era of knowledge economy, knowledge has become a very powerful tool to organisations that desire to outshine its contemporary. Knowledge resources are expected to be channelled towards the organisational objectives especially in tertiary institutions. Knowledge management (KM) practice occurs unconsciously in tertiary institution [1] where lots of knowledge generated are to be utilised for institutional growth [2]. KM is the process of creating, sharing and applying knowledge possessed by institutions to achieve its goals and objectives. Some researchers such as Oliva [3] and Chen & Fong [4] link successful KM to innovation, efficiency and effectiveness in organisational performance. Just as Ansari et al. [5] believed that failure in KM practice could cause an organisation to miss its objectives.

Ogunbanwo et al. [6] discovered that KM maturity in Nigerian universities was in level 2 going by Frid's KM model scale. Hence, majority of developing countries are still lacking behind [7] despite the fact that KM practice is highly essential for quality education and research. This study therefore aims at investigating the factors responsible for successful implementation of KM in the south west Nigerian institutions.

It shall be guided with seven hypotheses and this primary research question, "What are the factors responsible for a successful implementation of KM?"

1.1. Problem Statement

Knowledge is a strength, power and valuable asset of an organisation [8]–[10] that. Thus, according to Howell & Annansingh [11] its important cannot be push aside as it gives competitive advantages. Unconsciously institutions being citadel of knowledge engaged daily in knowledge activities. This knowledge can easily vanish if not properly managed. Institution need proper KM implementation in their daily activities for competitive advantage and decision making.

Some researchers [8], [12], [13] have identified needs for KM implementation in universities. Tertiary institution were urged by Fattahiyan, Hoveida, Siadat and Talebi [14] to invest on KM by developing a knowledge capability that will aids effective flow of information and knowledge within the institution. Ramakrishnan and Yasin [15] stated that institution can increase its

performance and productivity by making a KM supporting system available.

Despite this advantages of KM some institutions in developing countries such as Nigeria are still struggling with KM implementation [16], [17] due to lack of KM capabilities [18]. Hence, this study aims at empirically investigating those factors that typically aid successful implementation of KM in Nigeria tertiary institutions. This is to guide educational sector in preventing their intellectual assets from decaying by fostering the sharing of innovative practice, promoting knowledge flow and avoiding duplication [11].

1.2. Research Question and Hypothesis

The primary research question for this study is "What are the factors responsible for the successful implementation of KM?"

Being guided by the literature reviewed, leadership, people, organisation process, technology infrastructure, planning, policy and funding are recognised as variables and used to formulate the research hypotheses.

2. LITERATURE REVIEW

2.1. KM Success

KM success is used interchangeably with KM *effectiveness* [19], and seen as a function of an improved communication, employee skills, and decision making, and enhanced collaboration and productivity [20]. It is a stronghold of every organisation because it serves as an essential ingredient for competitive advantage [21]. However, organisations are required to factor in a lot of contributing factors to achieve a success in KM [5]. Some of these factors have been proposed by researchers.

Omotayo [21] presented people, process and technology as key critical factors for KM success but the factors were not verified empirically. Attallah, Athab, & Abed [22] proposed culture, Systematic processes, strategy, ICT infrastructure, and rewards but the model was also not tested empirically and therefore not generally acceptable. Similarly, Ansari et al. [5] defined their own KM success factors as organizational culture, human resources, strategy, ICT infrastructure and leadership but also failed to carry out the empirical test.

Literatures reviewed contradict each other as different factors were recognized as success factors, and which this study found conflicting. The success factors were also not verified nor tested. This study therefore, groups the knowledge activities under just one umbrella tagged Knowledge capabilities (KC) in order to empirically test the contributions of the KC on KM success.

2.2. Knowledge Capabilities (KCP)

Bharadwaj, Chauhan, & Raman [20] regarded KC as a knowledge asset or resource possessed or acquired by an organisation. Abdullah [23] and Alaarj [24] however viewed it as a knowledge process and knowledge enabler while Akturka [25] and Chang [26] see it as a strategy. Knowledge capability may therefore be viewed from the three dimensions - process capability, enabler capability and strategy capability.

2.2.1. Process capabilities (PC)

Process capability is vital for KM effectiveness as it converts individual knowledge to institutional or organisational knowledge that may be shared and utilized within the institution. [27]. Table 1 summarises various components proposed by different researchers which suggests that there are no specific components for KM process. Hence, this study aligns with the most generally accepted components which includes knowledge capture (acquisition & creation), sharing, storing and reuse, and empirically determine their contributions to KM success.

Table 1: KM Process

S/N	Author	KM Process Elements
1	Tongsamsi, K., & Tongsamsi, I. [28]	Acquisition, conversion, dissemination and application
2	Ha, S., Lo, M., & Wang, Y. [29]	Acquisition, conversion, application and protection
3	Ojo, A. [18]	Identification, storage, sharing, application, and evaluation
4	Shih, W., & Tsai, C. [30]	Acquisitions, sharing, storage and applications
6	Alaarj, S., Abidin-mohamed, Z., Salwa, U., & Ahmad, B.[24]	Sharing, utilization and acquisition
6	Abdullah, M. N., Hashim, M. A., & Ali, N. [31]	Sharing, creation and application)
7	Sharma & Kaur (2016)[10]	Knowledge Acquisition, Knowledge Conversion and Sharing, Knowledge Application and Storage,

		Knowledge Protection and safety
8	Fattahiyan, S., Hoveida, R., Siadat, S. A., & Talebi, H.	Acquisition, conversion, application, and protection
9	Alsalim, M. S., & Mohamed, N. Y.	Generation, storage, dissemination and application.
10	Chang, T., & Chuang, S.	Choice, access, storage and sharing

2.2.2. Enabler capabilities (EC)

KM enablers is also regarded as KM pillars or KM infrastructure. There is no precise components for enabler capability as different elements were being offered by different researchers (table 2). The most recognised and accepted elements - technology infrastructure, organisation process (culture & structure) and people - were adopted as components of EC in this study. Leadership was also considered as an element despite the fact that it is not generally accepted due to the instability in the national political and economic state.

Table 2: KM Enablers

S/N	Author	Enablers
1	Chu (2016)[32].	People, Processes and technologies
2	Naser, Al Shobaki, & Amuna (2016)[33]	Processes, KM leadership, People, KM Outcomes, Knowledge Process
3	Sharma & Kaur (2016)[10]	Organizational Culture, Organizational Structure, Human Resource and Technological Support
4	Shih & Tsai (2016)[30]	Structures, cultures and information technology support
5	Attallah, Athab, & Abed (2015)[22]	Strategy, culture, ICT infrastructure, Systematic processes, and rewards. Discussion
6	Bharadwaj et al. (2015)[20]	Infrastructure, structure, and culture
7	Majin et al. (2015)[34]	Organizational culture, organizational structure, employee and Information technology
8	Makambe & Pellissier (2015)[35]	Organizational structure, corporate culture, information technology, people and strategies
9	Ganesh, Mohapatra, & Nagarajan (2014)[36]	Technology, Leadership, process, and organisation
10	Ho, Hsieh, & Hung (2014)[37]	organizational structure and culture

2.2.3. Strategy capabilities (SC)

A strategy is a careful plan or policies put in place to regulate and administer knowledge resources towards attaining organizational aims. According to Oluikpe [38] supporting business strategy with KM strategy can lead to increase in knowledge flow among staff within the organisation. Thus, formulating of strategic plan and policy is essential for proper management of knowledge resource in the organisation [39], [40]. Despite the importance of KM, organisations are yet to identify the appropriate method to implement KM strategy [41].

Literatures reviewed so far do not recognise funding as a measurement factor. However, considering the economic situations of developing countries like Nigeria, funding cannot be overlooked. According to Ohiorenoya & Eboreime [42] funding is a stronghold to a successful KM implementation especially in tertiary institutions. Funding should therefore be considered as KM strategy capabilities along with strategic policy and planning.

3. THEORETICAL MODEL AND HYPOTHESES

Figure 1 presents the study framework showcasing the influence of the enabler capabilities (Organisation process, leadership, people, & technology infrastructure) and strategy capabilities (planning, policy & funding) on KM implementation.

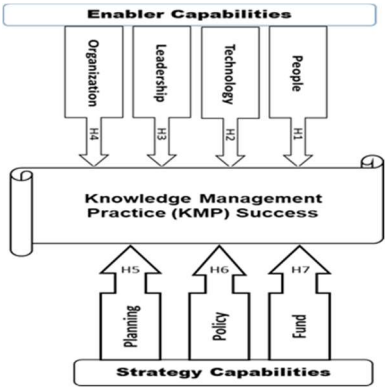

Figure 1 Research Framework

The research questions are guided with the following formulated hypotheses:

H1: Enabler Capability - People has positive effect on KM success in the tertiary institutions.

According to Ganesh et al. [36] it is the responsibility of people to use their skills, ability and expertise to produce or generate new ideas and concept. Hypothesis 1 is therefore developed to examine the contribution of people as an independent variable to KM success - dependent variable.

H2: Enabler Capability – ICT Infrastructure has positive effect on a successful implementation of KM.

ICT infrastructure helps to improve the workforce productivity, learning and teaching [43], [44]. Hypothesis 2 tested the contribution of technology infrastructure to knowledge effectiveness. Technology infrastructure is independent variable here and KM success is dependent.

H3: Enabler Capability - Leadership has positive effect on KM success in tertiary institutions.

Support of leadership has been highlighted as promoting KM practice in an organisation [45], [46]. Hypothesis 3 tests the contribution of leadership to KM success in tertiary institutions. Thus, leadership and KM success are respectively tagged as independent and dependent variables.

H4: Enabler Capability - Organisation has positive effect on KM success

In this case, organisation is considered an independent variable and KM success is dependent. The influence of organisation on KM implementation is tested by then hypothesis because organisation processes enable individuals to improve on their knowledge [36].

H5: KM Strategy Capability - Policy has positive effect on KM success in tertiary institutions.

Policy is considered independent in this hypothesis and KM success is an independent variable. The influence of policy on KM success is tested as KM strategy policy formulation helps to accomplish success in organisation KM [39].

H6 KM Strategy Capability - Planning has positive effect on KM success

KM strategy and KM success are independent and dependent variables respectively. KM strategy is indispensably significant to learning and organizational improvements [40].

H7 KM Strategy Capability - Fund has positive effect on KM success in tertiary institutions.

Fund is taken as independent variable and KM success is dependent. Therefore, H7 is much suitable to determine the impact of fund on a successful KM implementation.

4. METHODOLOGY

This section discusses how this study was conducted and the research instruments adopted.

4.1. Sampling Method.

Both probability and non-probability research techniques were adopted. Stratified sampling was adopted as the probability technique to select 11 tertiary institutions from 46 accredited universities in southwest Nigeria while purposive sampling was adopted as the non-probability technique to select 50 respondents from selected universities. The total population considered for this study is 550 (50 x 11), but only 456 responded and participated.

4.2. Instrument Used

Survey and structured questionnaire were used as the research instrument and Likert scaling was adopted as the measurement scale for the structured questionnaire. The scores range from 1 to 4 with strongly disagreed assigned to 1, disagreed 2, agreed 3 and 4 assigned to strongly agreed. The research instrument was validated using reliability test of Cronbach's alpha as depicted in Table 3 and 4.

4.3. Data Analysis

Both descriptive and inferential statistical tools are engaged. Data were analysed with the IBM Statistical Programme for Social Sciences. In which case, demographic data were analysed using percentage score and frequency count. Pearson Correlations and linear regression were the inferential statistical tools used to analyse the hypotheses.

The following guidelines helps to determine whether hypothesis is accepted or rejected.

Rule 1 If the p value is greater than 0.05 (p<0.05), accept the null hypothesis

Rule 2 If the p value is less than 0.05 (p>0.05), accept the alternate hypothesis

Rule 3 0.00<R<0.33 indicates a weak relationship

Rule 4 0.34<R<0.66 indicates a moderate relationship

Rule 5 0.67<R<1.0 indicates a strong relationship

Rule 6 + sign signifies a positive relationship

Rule 7 - sign signifies a negative relationship

5. RESULTS AND FINDINGS

This section presented the result of the analysis conducted.

5.1. Reliability Test

The reliability test results OF Cronbach's alpha for all items tested for enabler capability and strategy capability is higher than 0.7 as depicted on table 3. This validate the research instrument as valid and reliable.

Table 3: Coefficients Reliability Statistics

Conceptual Name	Cronbach's alpha	No. of Items
People (PE)	.986	4
Technology Infrastructure (TI)	.987	4
Organisation Structure (OS)	.991	4
Policy (PO)	.838	3
Planning (PL)	.856	3
Funding (FD)	.870	3
KM Success (KMS)	.995	4

5.2. Demographic Characteristics of the Respondents

Table 4 and figure 2 show that private universities have the highest percentage of respondents with the federal universities having the lowest. Also the table 5 and figure 3 reveals that undergraduate is of a highest percentage while PhD has the lowest.

Table 4: Demographic Characteristics of the Respondents

		Freq.	%
Institution	**Private**	206	45
	State	150	33
	Federal	100	22
Qualification	Undergraduate	288	63
	Bachelor's Degree	40	9
	Master's Degree	87	19
	PhD	41	9

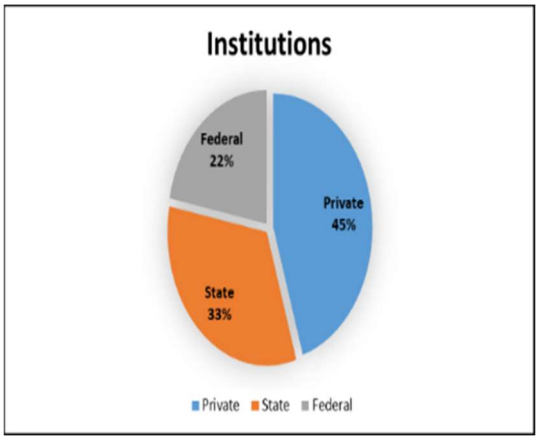

Figure 2: Ownership of the Institution

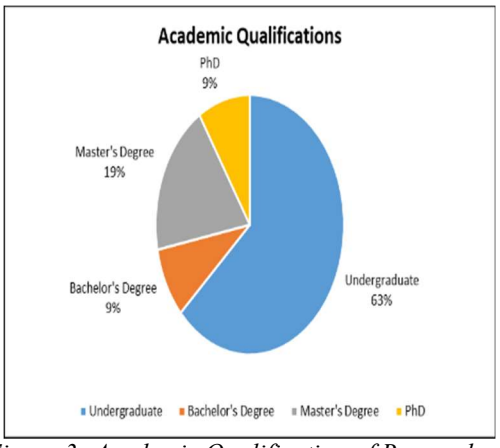

Figure 3: Academic Qualification of Respondents

5.3. Test of Hypotheses and Discussion

5.3.1. Test of hypotheses results

Table 5 is a correlation of the enabler capabilities elements and KM success while table 6 only confirms the correlation between the KM

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success and strategy capabilities. The regression analysis result for all variables is on table 7.

Hypothesis 1: Table 7 reveals the correlation coefficient r as 0.903 and adjusted R^2 as 0.832 indicating a strong relationship between people and KM success. The table also shows the F-ratio for the data as 1956.597 which is statistically significant at $p < .001$ implying that People has statistical significant influence on KM success. It also reflects the impact level of independent variable on dependent variable with predictor coefficient (β value = 0.893) and t = 44.233 @ p <0.001. This result shows that independent variable (people) has a great impact on dependent variable (KM success), and that people contribute positively to KM success in Nigerian institutions. Hence, the alternate hypothesis is accepted and null hypothesis rejected. People as an element of enabler capability is therefore significantly related to KM implementation success.

Hypothesis 2: From the table 7, the correlation coefficient r equals 0.916 and adjusted R^2 equals 0.839 which indicate a strong relationship between KM success and ICT infrastructure. Similarly, F-ratio = 2314.328 at $p < .001$ thereby confirming the technology infrastructure significance on a successful KM implementation. β value = 0.839 with t = 33.659 @ p <0.001 suggests a positive influence of technology infrastructure on KM success. The alternate hypothesis is therefore accepted while the null hypothesis rejected. ICT infrastructure, an enabler capability is significantly related to a successful KM implementation in the Nigerian tertiary institutions.

Hypothesis 3: It is noted on the table 7 that leadership has a strong relationship with KM success with correlation coefficient r = 0.912 and adjusted R^2 equals 0.832. The table shows F – ratio as F = 2201.757 with $p < .001$, clearly indicating that leadership has influence on KM success. β value shows the level of effect of independent variable over the dependent variable with β value = 0.902 and t = 46.923 @ p <0.001. This shows that leadership as an independent variable is highly effective on KM success - dependent variable.

Table 5: Result of The Correlations Matrix for Enabler Capability

		LE	PE	TI	OP	KMS
LE	Pearson Correlation	1	.981**	.961**	.966**	.912**
	Sig. (2-tailed)		.0001	.0001	.0001	.0001
PE	Pearson Correlation	.981**	1	.976**	.975**	.902**
	Sig. (2-tailed)	.0001		.0001	.0001	.0001
TI	Pearson Correlation	.961**	.976**	1	.989**	.916**
	Sig. (2-tailed)	.0001	.0001		.0001	.0001
OP	Pearson Correlation	.966**	.975**	.989**	1	.914**
	Sig. (2-tailed)	.0001	.0001	.0001		.0001
KMS	Pearson Correlation	.912**	.902**	.916**	.914**	1
	Sig. (2-tailed)	.0001	.0001	.0001	.0001	

**. Correlation is significant at 0.01 level (2-tailed).
b. Listwise N=445

Table 6: Result of the Correlations Matrix for Strategy Capability

		KMS	PO	PL	FD
KMS	Pearson Correlation	1	.833**	.848**	.821**
	Sig. (2-tailed)		.0001	.0001	.0001
PO	Pearson Correlation	.833**	1	.987**	.979**
	Sig. (2-tailed)	.0001		.0001	.0001
PL	Pearson Correlation	.848**	.987**	1	.962**
	Sig. (2-tailed)	.0001	.0001		.0001
FD	Pearson Correlation	.821**	.979**	.962**	1
	Sig. (2-tailed)	.0001	.0001	.0001	

**. Correlation is significant at 0.01 level (2-tailed).
b. Listwise N=445

Table 7: Regression Analysis Result for All the Hypotheses

Hypothesis	Variables	r	R^2	F	SIG (F)	β	t	SIG (t)
HI	PE	0.903	0.815	1956.597	0.001	0.893	48.107	0.001
H2	TI	0.916	0.839	2314.328	0.001	0.906	46.923	0.001
H3	LE	0.912	0.832	2201.757	0.001	0.902	44.233	0.001
H4	OP	0.914	0.836	2257.711	0.001	0.904	47.515	0.001
H5	PO	0.833	0.694	1006.394	0.001	0.824	31.724	0.001
H6	PL	0.848	0.719	1132.926	0.001	0.839	33.659	0.001
H7	FD	0.821	0.673	912.966	0.001	0.811	32.215	0.001

This study accepts alternate hypothesis to reject the null hypothesis, and concludes that leadership as an element of enabler capability is significantly related to KM success in the tertiary institutions. Therefore, leadership contributes positively to KM success in institutions.

Hypothesis 4: The correlation coefficient r = 0.914 and adjusted R^2 = 0.836 (Table 7) suggest a strong relationship between KM success and organisation process. Since the F-ratio = 2257.711 is statistically significant at $p < .001$, organisation process has statistically significant on KM success. Similarly, the table 7 presents the level of effect of independent variable on dependent variable as β value = 0.893 and t = 44.233 @ p <0.001 to confirm that organisation process (independent variable) truly has significant impacts on KM success (dependent variable). Alternate hypothesis is therefore accepted and null hypothesis rejected. Since people contributes positively to KM success in Nigerian institutions, this study admits that organisation process as an element of enabler capability is significantly related to successful KM implementation.

Hypothesis 5: This is narrated on table 7 where Policy show a moderate relationship with KM success at correlation coefficient r = 0.833 and adjusted R^2 equals 0.694, F = 1006.394 with $p < .001$. The predictor coefficient (β value) represents the level of effect of independent variable on dependent variable with β value = 0.824 and t equals 31.724 @ p <0.001. This shows that policy (independent variable) has a great impact on KM success (dependent variable). Hence, this study accepts the alternate hypothesis and rejects the null hypothesis rejected that policy as an element of strategy capability is significantly related to KM success in the tertiary institutions. Therefore, policy contributes positively to KM success in institutions.

Hypothesis 6: The correlation coefficient r equals 0.848 and adjusted R2 equals 0.719 on table 7 show a strong relationship between planning and KM success. F-ratio of 1132.926 at $p < .001$) also points to Planning (independent variable) having a significant impact on KM success (dependent variable) just as β value = 0.839 and t = 33.659 @ p <0.001. The alternate hypothesis is therefore accepted while the null hypothesis rejected. Thus, planning as strategy capability is significantly related and contribute positively to KM success in institution.

Hypothesis 7: Table 7 displaying the correlation coefficient r = 0.821 and adjusted R^2 = 0.673 is a good indication of a moderate relationship between fund and KM success. F-ratio of 912.966 at $p < .001$ also show a statistically significant influence of Fund on KM success. The level of effect of independent variable on dependent variable with β value = 0.811 and t = 32.215 at p <0.001. This equally suggests that fund (independent variable) is somehow impactful on KM success (dependent variable). The alternate hypothesis is therefore accepted while the null hypothesis rejected that Fund as an element of strategy capability is significantly related and contributes positively to successful KM implementation.

5.3.2. Discussion

Hypothesis 1: The findings is consistent with Ainissyifa [47] and Kamaruzzaman [48] that People is significantly related to KM success, and indeed add a positive contribution to a successful KM. People as EC of KM make use of expertise skills and competences, as well as special abilities and privileged information to generate new ideas, processes and innovation [49]. It is the most important to any organisational survival, and remains the knowledge manager, originator and custodians in every institution [44].

Hypothesis 2: The result is consistent with the findings of Alonderiene & Majauskaite [50] and Munir [51] where Leadership as an EC of KM has a positive contribution to KM success in tertiary institutions. Management direct involvement in KM activities is key to KM success [51].

Hypothesis 3: This confirms the positive contribution of Technology Infrastructure to KM success as earlier postulated by several researchers which includes Bharadwaj et al, Ainissyifa, Pérez-López & Alegre [20], [47], [52]. Necessary ICT tools must be available for an institution to

experience a smooth and successful implementation of KM [53].

Hypothesis 4: The results here agrees with [47] where organisation process is seen as a positive contributor to KM success. The success of KM rests on a process that boosts or enriches individuals for knowledge sharing, improvement and reuse towards achieving positive results at the right time [54].

Hypothesis 5: This results here reaffirm the claim of Mohajah [55] that policy is a KM strategy that gives positive contribution to KM success.

Hypothesis 6: In concurrence with Oluikpe (29) and Kim(47), planning is taken as a KM strategy that has positive contribution on the KM success of KM in tertiary institutions.

Hypothesis 7: This takes Fund as a KM strategy and agrees with Ohiorenoya & Eboreime [42] submission that it has a positive contribution to KM success.

6. CONCLUSION AND RECOMMENDATION

Literatures reviewed confirms that there are no generally acceptable components for knowledge capability as different authors come up with different list. This study therefore selected and proposed the elements commonly mentioned by many authors as the Components of Process Capability. This include: knowledge capturing, sharing, storing and reuse as process capability. Leadership, people, technology infrastructure and organisation process were the Enabler Capability component. Due to a wide knowledge gap discovered in the application of KM strategy in Nigerian south west institutions, this study proposed Fund as an additional components of strategy capability. Thus the components of strategy capability are planning, policy and fund.

The study designed some constructs to empirically examine the essence of the elements of both the enabler capability and strategy capability (planning, policy & funding) towards achieving successful KM. The two variables (enabler and strategy capabilities) have a significant and positive linear relationship with KM success thereby conforming with some past related works [5], [22], [56] that KM enablers and KM strategy contributes positively to the success of KM as improving enabling factors promotes KM practices in the organization.

Consequently, the enabler capabilities and strategy capability of KM as defined in this study are the catalysts of promotion that stimulate and sustain an effective implementation of KM in Nigeria tertiary institutions. KM capabilities are proposed from three perspectives but only two - enabler capability and strategy capability - were investigated. Further study is therefore recommended to possibly validate process capability as a catalyst to a successful KM implementation.

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