

Full Length Research Paper

Codified knowledge, knowledge resources, design, application and implications on effectiveness in institutions of higher education in Kenya

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Received 27 April, 2020; Accepted 1 December, 2020

Effective knowledge management in institutions of higher education is critical for sustainable strategic competitive advantage. However, little information is available on how knowledge management enhances internal effectiveness in institutions of higher education. Despite the high investment in Information Communication Technology and staff development among institutions of higher education little progress has been made in Knowledge Management practices. Challenges in institutions of higher education exist in converting tacit knowledge into explicit knowledge to enhance internal effectiveness. Codification and validation processes can be lengthy and may imply an investment by an institution which may hamper the efficiency and effectiveness of formal knowledge protection methods. This paper analyzed the mediating effect of knowledge resources, design and application in the relationship between codification strategy and internal institutional effectiveness in one public and one private university in Kenya. The objectives were to analyze the influence of codification strategy on internal effectiveness in institutions of higher education, the mediating role of Knowledge resources, design and application in the relationship between codification strategy and internal institutional effectiveness. Purposive and simple random sampling procedures were used to select the study area and respondents (246), respectively. The Process Macro Model 8 was used in data analysis. The results indicated a strong direct positive relationship between the codification strategy and internal institutional effectiveness. The indirect serial mediation was significant for the private University and partially significant for the public university. The study concludes that serial mediation was full in the private university but not in the public university. The study recommends institutions of higher education to choose appropriate knowledge management strategies.

Key words: Codification, higher education institutions, internal effectiveness, knowledge management.

INTRODUCTION

Knowledge management in institutions of higher education is critical to their internal and external effectiveness. In any nation, higher education is needed

to improve the nation's competitiveness to face the globalization in all fields. Effective management and use of knowledge resources is thus required to realize

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organizational goals (Rees and Protheroe, 2009).

Knowledge management strategy implementation in an organization emphasizes knowledge codification, storage of information and knowledge sharing using information technology network, software and documents. With reference to institutions of higher education, it is designed to cater for work-force knowledge needs and to capture transactional knowledge. Codification knowledge management strategy is the conversion from tacit to codified knowledge which can be shared (Nonaka and Takeuchi, 1995). Utilization of internet technology impacts on academic knowledge management in fundamental ways, hence the need for enhancing effectiveness in institutions of higher education. Universities are the main formal means of creating, disseminating and transferring knowledge, which is core to the growth of a global economy.

Knowledge is stored in a knowledge repository so that other projects and individuals in the organization can use the same material for their own projects. The codification strategy is computer oriented and emphasizes preparation of knowledge and storage in databases, so that people working in the organization can easily retrieve it. According to Hansen et al. (1999), codification and personalization strategies are alternative ways by which organizations can develop their knowledge management strategies. Codification uses the loop through externalization, combination and internalization. With codification, the human resources approach will be concerned with training people in groups and through computer-based distance learning. It is described as a people-to-documents strategy (Larses and Adamsson, 2004).

Codification strategies are heavily based on technology and use large databases to prepare and store knowledge. They are thus, aligned with the organization's business strategy, focused on efficiency, cost saving and cost leadership. Information technology use in the codification strategy has higher ranks (Nouri et al., 2013) and the goal is to connect people with reusable knowledge hence, the need for the Institutions of Higher Education (IHE) to invest heavily in Information Technology (IT).

Studies conducted on knowledge management in institutions of higher education point to a complex situation with respect to knowledge management and organizational effectiveness. According to Raja (2008), knowledge management strategies in universities hindered the efficient sharing and reuse of knowledge. This to a great extent could affect internal effectiveness of these institutions. In instances where knowledge management practices in universities were at a basic or rudimentary state, it may thus hinder these institutions from effectively leveraging their knowledge (Kabilwa, 2018). Considerable skill development and capacity building of the library professionals in institutions of higher education has been undertaken (Hoq and Akter,

2012). Interestingly, this has not translated in enhanced knowledge management in these institutions. According to Kimilel and Kemoni (2015), the development of an Institutional Repository (IR) was at its initial stage and the existing organizational culture does not encourage knowledge sharing in Moi University. In the recent years, institutional effectiveness has become a topic of growing interest in the field of human service organizations. Scientists and scholars believe that effectiveness is the key to all organizational analysis and so, many organizations have concentrated on building up the capabilities of its members in order to perform in dynamic environments. Accountability and institutional effectiveness are expected from universities in its daily operations (Skolits and Graybeal, 2007). The concept of effective organization and good corporate governance has much in common and has received considerable attention in the recent years (Tajomavno, 2009).

Knowledge generation is one of the core functions of institutions of higher education. However, it is little understood in terms of how the various knowledge management strategies enhance the utilization of codified knowledge to bring about internal effectiveness in these institutions. Studies on the relationship between strategic knowledge management and organizational effectiveness are limited in the developing context (Subramanian and Nilakanta, 1996). Strategic knowledge management and internal organisational effective initiatives in many organizations in general, and in universities in particular, have failed to deliver the much-needed benefits. Despite the high investment in Information Communication Technology (ICT) and staff development, little progress has been made towards improved knowledge management in institutions of higher education. Other problems faced by institutions of higher education include, the transformation from classical education to knowledge for which solutions and their innovation must be found (Smokotin et al., 2014).

Knowledge management strategies and internal organisational efficiency

Strategic knowledge management practices constitute an integral input in gaining internal organizational effectiveness. Effectiveness can be achieved through determining linkages between goals, people and pedagogy in institutions of higher education. The gap between knowledge management technologies and learning process initiatives, as well as lack of internal promotional activities on how knowledge management can enhance higher education processes, are at present a hindrance to better integration in institutions of higher education (Omona, Weide and Lubega, 2011). Knowledge sharing practices had a positive and significant effect on performance in organisations in Kenya where the management information systems were used (Maganga

and Guyo, 2017). The study established that knowledge management practices have a strong and positive effect on organizational performance (Ongus et al., 2016). Lack of effective knowledge management practices influenced the state of KM at University of Eldoret.

Challenges in institutions of higher education exist in converting tacit knowledge into explicit knowledge to enhance internal effectiveness. Codification and validation processes can be lengthy and may imply an investment by an institution a fact that may hamper the efficiency and effectiveness of formal knowledge protection methods (Byma and Leiponen, 2006). Successful Knowledge Management depends on every individual accepting their role as a 'knowledge citizen' whose value proposition to the organization is the extent to which an individual is engaged in the entire knowledge cycle (United and Development, 2017).

Organisations employing knowledge management strategies of codification and personalization reflect higher levels of new service development knowledge (Storey and Kahn, 2013). Codification thus gives permanence to knowledge that may otherwise exist only inside an individual's mind. It represents or embeds knowledge in forms that can be shared, stored, combined, and manipulated in a variety of ways in an organisation (Selangor, 2010). The aim of codification is, therefore, to put organizational knowledge into a form that makes it accessible to those who need it. Codification of knowledge has typically been in the form of formal, lengthy reports and guidance notes for which the impact is unknown. With good knowledge management driver in place, organizations are assured of good knowledge which can be translated into enhanced productivity for organizational effectiveness (Islam et al, 2008; Gholami et al., 2013). Better data management strengthens the use of benchmarking as a tool for driving efficiency in institutions of higher education (Universities UK, 2011). Essentially, codification strategies should clearly be aligned to the organization's business strategy, focusing on efficiency, cost saving and cost leadership.

Consequently, formal methods imply a codification and disclosure of the knowledge in an organization (Gallini, 2002). To codify the relevant knowledge in the application process, organizations require employees with relevant skills and competencies. The propensity to use formal knowledge protection methods varies greatly between organizations and is closely related to their participation in Research and Development activities. Some studies have shown a positive relationship between codification strategy and internal effectiveness while others have shown non-existence of the relationship (Tajeddini, 2011). Current research articulates the position that strategic knowledge management and organizational effectiveness can be brought together, both theoretically and practically, in order to achieve an understanding of their interdependence and application. Current literature suggests Knowledge Management (KM) is still emerging

in developing countries and has not been fully implemented (Ogunbanwo et al., 2019). Other studies suggest that knowledge management practices has highly been adopted in government ministries in Kenya, despite the need to adopt an integrated knowledge sharing systems to facilitate the KM process sharing strategies (Maganga and Guyo, 2017). A study conducted at Mbeya University of Science and Technology in Tanzania shows that staff were not explicitly aware of KM practices neither were there adequate knowledge management initiatives in place such as knowledge sharing (Charles and Nawe, 2017). Previous studies show that knowledge management practices identified were knowledge capture and acquisition, knowledge sharing, and knowledge management policies and strategies. Knowledge management practices have a strong and positive effect on organizational performance (Ongus et al., 2016).

Serial mediation process

A serial mediation process was adopted in this study owing to the linkages present in the knowledge management process. The serial mediation hypothesis is a causal path linking the mediators (Knowledge Resources, Design, Application), with a specified direction flow (Charalambous et al., 2019). The mediator function of a third variable represents a mechanism through which the independent variable influences the dependent variable (Baron and Kenny, 1986). In this study, the mediation is serial in the sense that at every subsequent stage there is an influence enhanced towards the criterion variable. Previously, mediation was tested using ANOVA which provides a limited test of a mediational hypothesis hence, three regression models were estimated especially for one mediator (Baron and Kenny, 1986). This scenario led to Hayes (2013) developing the process macro model which is a regression based approach to testing mediation, with several models developed. In this paper, the process Macro model 8 was applied (Hayes, 2013).

Conceptual mediation model

The conceptual mediation model for the study is presented in Figure 1. It was conceptualized based on a mediation process Macro model 8 of Hayes (2013). The predictor variable in this model is codification strategy while the three mediators are knowledge resources, design and application. The three mediators fulfilled the following conditions: (a) variations in levels of the independent variable significantly account for variations in the presumed mediator (that is, Path a1, a2, a3, d21, d31, d32), (b) variations in the mediators significantly account for variations in the dependent variable (that is,

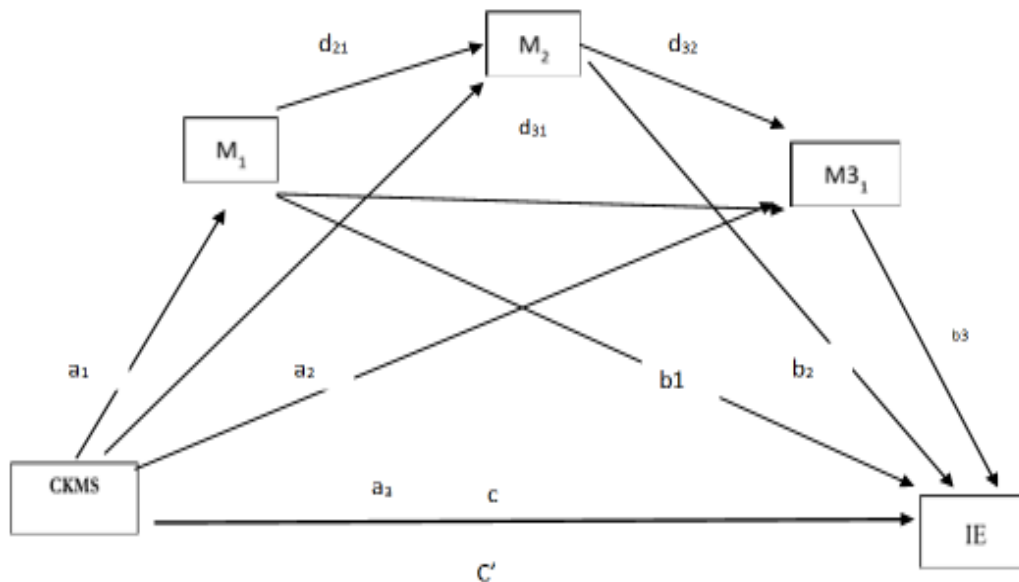


Figure 1. Serial multiple mediation conceptual model.

Path b1, b2 and b3). The outcome variable is internal organizational effectiveness.

METHODOLOGY

Study area

The study was undertaken in two universities in the rift valley region, Kenya. The study area was purposively selected owing to the development in the use of information communication technology in the private and public institutions of higher education in the region. The two institutions of higher education are located in Nakuru town, Kenya.

Research design

A survey design was used in this study owing to non-manipulation of variables. The dependent variable was internal organisational effectiveness while the independent variable was codification strategy. The study had three mediators: knowledge resources, knowledge design and knowledge application. The study employed a cross-sectional design (Singleton and Straits, 2010; Zhou et al., 2018). Data collection instruments were questionnaires. Data was collected from staff members of the two universities (deans, heads of departments, lecturers, administrators and post graduate students) on the variables in the study.

Participants

The institutions of higher education under study are located in the former Rift valley province, currently Nakuru County. Egerton University (Public University) is among the oldest institution of higher learning in Kenya, while Kabarak University is private, sharing the same clientele group. Egerton University had a target population of 600 members while Kabarak University 450 members. The study sample was 246 respondents comprising 123 from Egerton University and 123 from Kabarak University. The units of

analysis were postgraduate students, lecturers, administrators, heads of departments and deans. The researcher(s) utilized stratified sampling and systematic random sampling techniques to select the respondents in the study. The institutions of higher education were stratified into public and private universities. Further stratification was done as per the departments under the different schools in the two universities. Stratification assisted in the identification of respondents in the study (Creswell, 2009).

Data collection and instruments

Primary data was collected using a questionnaire on codification strategies, knowledge resources, knowledge design, knowledge application and institutional effectiveness. The data collected were measured on a nominal, ordinal scale and ration scales. The main data collection instrument was a questionnaire. Good reliability is indicated by a coefficient >0.8 , so the researcher(s) achieved reliability within this level. Consistency was checked using Cronbach's alpha test and it achieved a score of above 0.7 as the threshold (Polit and Beck, 2010). This suggests that the tool was highly reliable in measuring the indicators in the study. Face and content validity were undertaken in the study.

Data analysis

Data collected in this study was analyzed using descriptive statistical methods. Structural equation modeling was applied to determine the direct and indirect effects of the codification strategy on organizational effectiveness and the indirect effects through the serial mediators (Kline, 2015). The mediation Process Macro model 8 of Hayes (2013) which is regression based was used to analyse the data in this study.

RESULTS

The relationship among the research variables was determined using Pearson correlation analysis. In Table 1,

Table 1. Descriptive statistics and Pearson correlation coefficient values regarding study variables.

Variable	Mean	SD	α	1	2	3	4	5
1.Internal efficiency	4.0877	0.72650	0.896				
2.Knowledge design	4.0908	0.69678	0.854	0.661**			
3.Knowledge resources	4.0879	0.70951	0.866	0.620**	0.855**		
4.Knowledge application	3.9329	0.73493	0.914	0.456**	0.597**	0.522**	
5.Codification	4.1115	0.69509	0.865	0.649**	0.803**	0.776**	0.559**

N=246, **p<0.01.

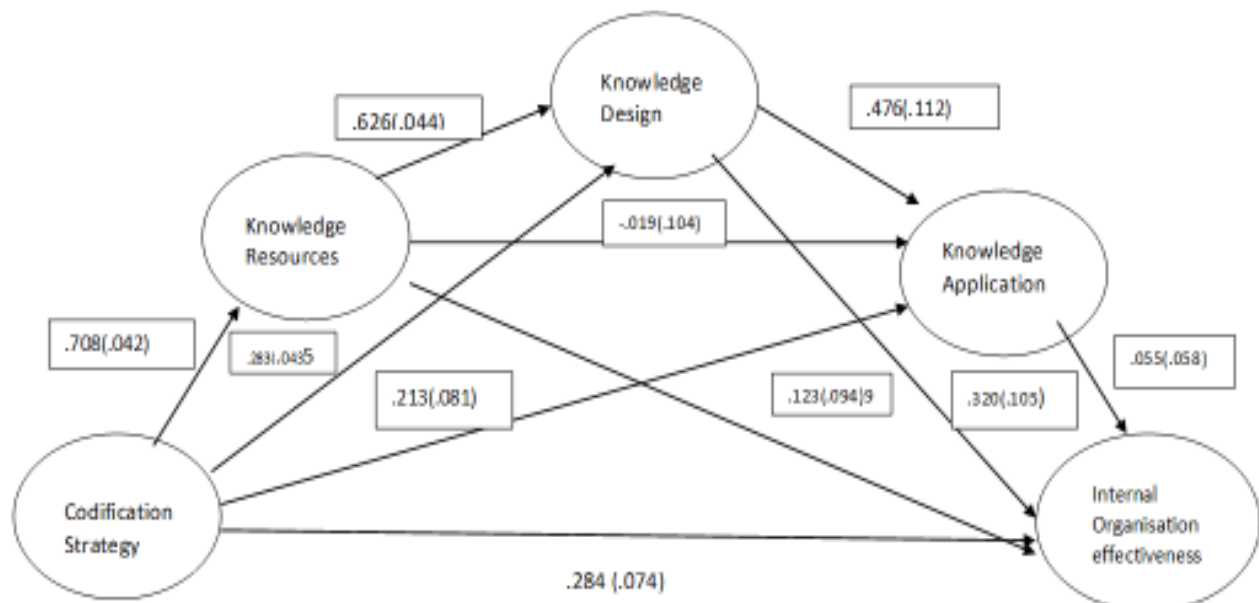


Figure 2. Path diagram illustrating direct and casual paths linking codification strategy with internal organization effectiveness in Egerton and Kabarak universities.

we present the findings on reliability coefficients and descriptive statistics.

The results in Table 1 indicate high means on the respective variables. The reliability coefficients show high values which is a demonstration of the reliability of the data collection instruments. The results further indicate that a positive statistically significant relationship was found between knowledge resources, design, and application. A positive statistically significant relationship was also found between codification and knowledge resources, application, design and internal organizational efficiency.

To determine the serial-multiple mediation of knowledge resources, design and application in the relationship between codification strategy and internal organizational effectiveness, a regression-based approach as recommended by Hayes (2013) was used.

The obtained findings are presented in Figures 2 to 4 and Table 2, respectively. The results in Figure 2 were combined for the two universities while in Figure 3 the

results are for Egerton University and in Figure 4 are for Kabarak University.

The findings on the direct and indirect paths as presented in Table 2 show that the combined universities had significant direct effects on all paths except knowledge resources and application with internal organization effectiveness. The indirect effects are also presented in Table 2. Egerton University had significant direct paths on codification with knowledge resources and design. The significant effects of knowledge application and internal organization effectiveness were also observed in the findings. Egerton University (Table 3) had significant effects on the same paths as the combined data, while Kabarak University (Table 4) had significant effects on paths a_1b_1 and $a_1d_{21}d_{32}b_3$, respectively. Kabarak University had statistically significant effects on codification with knowledge resources and design. In addition, knowledge resources with internal organizational effectiveness were found to be significant.

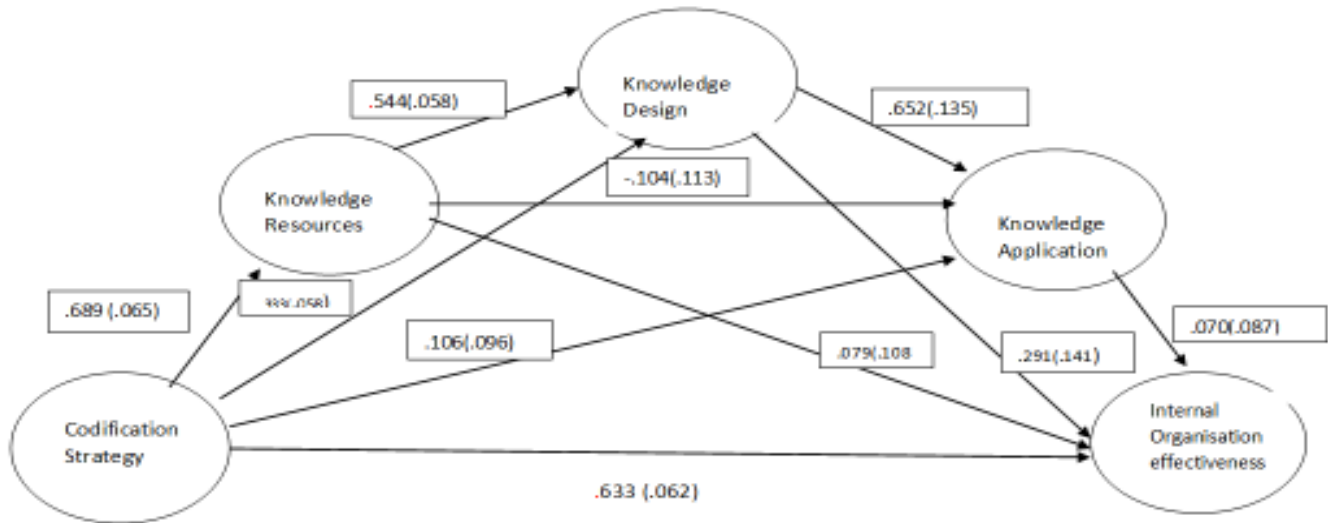


Figure 3. Path diagram illustrating direct and casual paths linking codification strategy with internal organization effectiveness in Egerton University.

Table 2. Path coefficients, indirect effects, and 95% bias-corrected confidence interval predicting internal organizational efficiency for Egerton and Kabarak combined.

Path	Effect	Boot LLCI	Boot ULCI	SE	t	p-value
Total effect (c)	0.633					
Direct effect (c)	0.284					
a ₁	0.708	0.624	0.791	0.042	16.686	0.000
a ₂	0.283	0.199	0.367	0.043	6.618	0.000
a ₃	0.213	-0.053	0.372	0.081	2.620	0.009
b ₁	0.123	-0.062	0.308	0.094	1.312	0.308
b ₂	0.320	0.114	0.526	0.105	3.059	0.002
b ₃	0.055	-0.059	0.169	0.058	0.946	0.345
Indirect effects						
Total indirect effect	0.349					
a ₁ b ₁	0.087	-0.028	0.276	0.076		
a ₂ b ₂	0.142	0.056	0.259	0.051		
a ₃ b ₃	-0.001	-0.014	0.007	0.006		
a ₁ d ₂ b ₂	0.012	-0.003	0.038	0.010		
a ₁ d ₃ b ₃	0.090	0.017	0.231	0.053		
a ₂ d ₃ b ₃	0.007	-0.001	0.026	0.007		
a ₁ d ₂ d ₃ b ₃	0.012	-0.003	0.051	0.013		

The casual order impacted on the strength of the relationship between mediators for the combined universities as presented in Figure 2.

For example, the regression path coefficient for knowledge resources to knowledge design 0.544 (CI= 0.540 to 0.713) was significant, the coefficient of knowledge resources to knowledge application (-0.019 (CI=-0.224 to 0.187) was insignificant. Finally, knowledge

design to knowledge application 0.476 (CI=0.255 to 0.697) was significant.

Results obtained on the casual order on the strength of the relationship between mediators, in Egerton University are presented in Figure 3, for example, the regression path coefficient for knowledge resources to knowledge design 0.544 (CI= 0.429 to 0.659) was significant, while the coefficient of knowledge resources to knowledge

Table 3. Path coefficients, indirect effects, and 95% bias-corrected confidence interval predicting internal organizational efficiency for Egerton University.

Path	Effect	Boot LLCI	Boot ULCI	SE	t	p-value
Total effect (c)	0.633					
Direct effect (c')	0.338					
a ₁	0.689	0.561	0.818	0.065	10.617	0.000
a ₂	0.333	0.219	0.447	0.058	5.784	0.000
a ₃	0.106	-0.085	0.297	0.096	1.102	0.273
b ₁	0.079	-0.135	0.293	0.108	.731	0.466
b ₂	0.291	0.012	0.570	0.141	2.065	0.041
b ₃	0.070	0.155	0.521	0.092	3.655	0.000
Indirect effects						
Total indirect effect	0.295	0.117	0.508	0.128		
a ₁ b ₁	0.055	-0.062	0.253	0.105		
a ₂ b ₂	0.109	0.011	0.262	0.081		
a ₃ b ₃	0.005	-0.044	0.004	0.012		
a ₁ d ₂₁ b ₂	0.017	-0.009	0.072	0.025		
a ₁ d ₃₁ b ₃	0.097	0.006	0.282	0.092		
a ₂ d ₃₂ b ₃	0.015	-0.003	0.065	0.022		
a ₁ d ₂₁ d ₃₂ b ₃	0.007	-0.006	0.067	0.022		

Table 4. Path coefficients, indirect effects, and 95% bias-corrected confidence interval predicting internal organisational efficiency for Kabarak University.

Path	Effect	Boot LLCI	Boot ULCI	SE	t	p-value
Total effect (c)						
Direct effect (c')	0.167	-0.078	0.411	0.123		
a ₁	0.726	0.624	0.827	0.051	14.200	0.000
a ₂	0.130	0.004	0.256	0.064	2.047	0.043
a ₃	0.098	-0.295	0.490	0.198	0.493	0.623
b ₁	0.454	0.064	0.845	0.197	2.304	0.023
b ₂	0.191	-0.147	0.530	0.171	1.119	0.265
b ₃	0.007	-0.149	0.164	0.079	0.095	0.925
Indirect effects						
Total indirect effect	0.478	0.179	0.698	0.125		
a ₁ b ₁	0.330	0.040	0.963	0.231		
a ₂ b ₂	0.119	-0.204	0.386	0.151		
a ₃ b ₃	0.002	-0.038	0.051	0.023		
a ₁ d ₂₁ b ₂	0.000	-0.017	0.031	0.011		
a ₁ d ₃₁ b ₃	0.025	-0.005	0.225	0.064		
a ₂ d ₃₂ b ₃	0.000	-0.003	0.012	0.004		
a ₁ d ₂₁ d ₃₂ b ₃	0.002	0.028	0.058	0.021		

application was -0.104 (CI= -0.328 to 0.120) not significant. Finally, knowledge design to knowledge application 0.652 (CI= 0.385 to 0.920) was significant.

Results obtained on the casual order on the strength of the relationship between mediators, in Kabarak University

are presented in Figure 4.

For example, the regression path coefficient for knowledge resources to knowledge design 0.858 (CI= 0.721 to 0.995) was significant, while the coefficient of knowledge resources to knowledge application 0.328

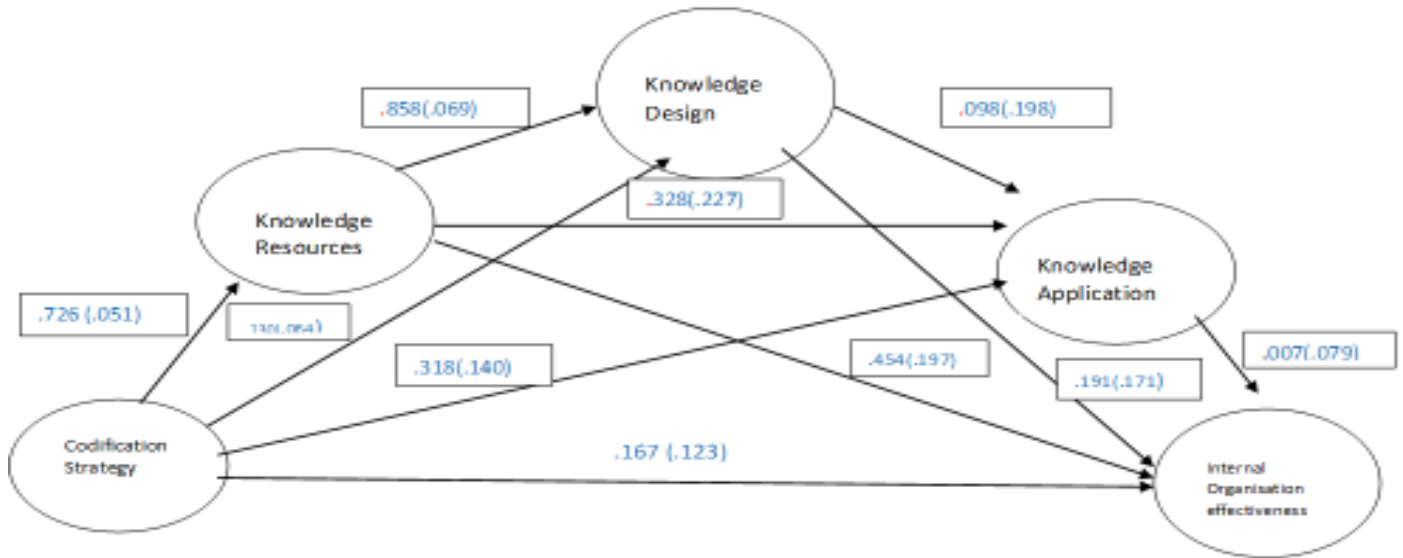


Figure 4. Path diagram illustrating direct and casual paths linking codification strategy with internal organization effectiveness in Kabarak University.

(CI= -0.122 to 0.777) was not significant. Finally, knowledge design to knowledge application 0.098 (CI= -0.295 to 0.490) was also not significant.

DISCUSSION

The results for the private and public universities combined had significant effects on path a_2b_2 and $a_1d_3b_3$, respectively. Some studies have shown a positive relationship between codification strategy and internal organizational effectiveness, while others have shown non-existence of the relationship (Gopalakrishnan and Damanpour, 2000; Li and Lin, 2006; Tajeddini, 2011). Organizations employing knowledge management strategies of codification and personalization reflect higher levels of new service development knowledge (Storey and Kahn, 2013).

The findings in this paper support earlier findings on the status of knowledge management practices in universities as compared to government ministries (Ogunbanwo et al., 2019; Maganga and Guyo, 2017; Charles and Nawe, 2017). Constraints to knowledge management practices could be attributed to inadequate knowledge sharing resources such as information technology, the design of knowledge management systems and the competitive behavior in knowledge sharing in application. In order to enhance the knowledge management practices in institutions of higher education, appropriate policies are required to facilitate the process of institutional effectiveness (Ongus et al., 2016).

Kabarak University had statistically significant effects on codification with knowledge resources and design and was found to be significant. This implies that knowledge

management practices were more efficient in the private university as compared to the public university. In Egerton University, the main challenge in knowledge management seems to arise in the manner in which knowledge is applied. In Kabarak University, it seems there was a greater aspect of integration of knowledge management practices as an efficiency tool for cost containment as compared to the public university where resources are guaranteed from the exchequer.

Conclusion

The study concludes that direct effects of codification and knowledge resources, design and application were significant except for the individual universities which did not have significant effects on design. The relationship between the mediators and internal organization effectiveness were mixed, as the combined had a statistically significant relationship between knowledge design with internal organization effectiveness while public university had a statistically significant relationship between application and internal organization effectiveness. The private university on the other hand had statistically significant relationships between knowledge resources and internal organization effectiveness. The effects on the direct paths were of a mixed nature as evidenced by the forgoing findings. The public university and the combined indirect effects were similar in the study (a_2b_2 and $a_1d_3b_3$).

The private university had statistically significant relationships between codified knowledge and internal organizational effectiveness. The private university had a full mediation suggesting that codification strategy was

fully mediated by knowledge resources, knowledge design and knowledge application resulting in institutional effectiveness. This provides a great opportunity for learning from the best practices in the private university on the knowledge management strategies for the attainment of institutional effectiveness.

LIMITATIONS TO THE STUDY

The study focused only on two institutions of higher education, in the public and private sector. The sample size for the study was relatively small and hence could have affected the results. The study was cross sectional because the long term effects that could have been captured in a longitudinal study were missed out. Future studies should therefore consider adopting longitudinal studies.

PRACTICAL AND POLICY IMPLICATIONS

The study identifies institutions of higher education differentials (public and private) in knowledge resource use, design and application on internal organisation effectiveness. There is need for a coherent policy framework to guide Institutions of Higher Educational in knowledge resource use in order to realise internal institutional effectiveness. Policies should be developed to encourage institutions of higher education to benchmark their knowledge management practices in order to benefit from the best practices.

Future studies on knowledge management should consider mediation and moderation processes. Future studies could also consider the specific knowledge application areas.

ACKNOWLEDGEMENTS

The authors thank Egerton and Kabarak universities for allowing the study to be undertaken. They also acknowledge all the respondents who participated in the study.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Baron RM, Kenny DA (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology* 51(6):1173-1182.
- Byma J, Leiponen A (2006). Can't block, must run: Small firms and appropriability (No. 1055). ETLA Discussion Papers.
- Charalambous A, Giannakopoulou M, Bozas E, Paikousis L (2019). Parallel and serial mediation analysis between pain, anxiety, depression, fatigue and nausea, vomiting and retching within a randomised controlled trial in patients with breast and prostate cancer. *BMJ* 9(1):1-10.
- Charles W, Nawe J (2017). Knowledge Management (KM) Practices in Institutions of Higher Learning in Tanzania with Reference to Mbeya University of Science and Technology. *University of Dar es Salaam Library Journal* 12(1):48-65.
- Creswell JW (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3 ed.). Sage, Thousand Oaks, CA.
- Gallini NT (2002). The Economics of Patents: Lessons from Recent U.S. Patent Reform. *Journal of Economic Perspectives* 16(2):131-155.
- Gholami MH, Asli MN, Nazari S, Noruzi A (2013). Investigating the Influence of Knowledge Management Practices on Organizational Performance: An Empirical Study 10(2):205-216.
- Gopalakrishnan S, Damanpour F (2000). The impact of organizational context on innovation adoption in commercial banks. *IEEE Transactions in Engineering Management* 47:1-13.
- Hansen M, Nohria N, Tierney T (1999). What's your strategy for managing knowledge? *Harvard Business Review* 77(2):106-116.
- Hayes AF (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Hoq KM, Akter R (2012). Knowledge management in universities: Role of knowledge workers. *Bangladesh Journal of Library and Information Science* 2(1):92-102.
- Kabilwa S (2018). Knowledge Management Practices in Zambian Higher Education: An Exploratory Study of Three Public Universities. Stellenbosch University.
- Kimile N, Kemoni HN (2015). Knowledge Management Practices at Moi University, Kenya Nancy. Available at: <http://41.89.101.166:8080/xmlui/handle/123456789/2541>
- Kline RB (2015). *Principles and practice of structural equation modeling*. Guilford publications.
- Larses O, Adamsson N (2004). Drivers for model-based development of mechatronic systems. *Dubrovnik*, pp. 1-6.
- Li S, Lin B (2006). Accessing information sharing and information quality in supply chain management. *Decision Support Systems* 42(3):1641-1656.
- Maganga JJ, Guyo WW (2017). Knowledge Management practices and performance of national Government Ministries in Kenya. *Business and Change Management* 4(4):528-554.
- Islam MZ, Mahtab H, Ahmad ZA (2008). The role of knowledge management practices on organizational context and organizational effectiveness. *ABAC Journal* 28(1):42-53.
- Nonaka I, Takeuchi H (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University press.
- Nouri R, Moshabaki A, Raissi S, Javadinia Y, Branch ST (2013). The Influence of the Personalization and Codification Strategies on Successful Knowledge Management Case Study National Iranian Oil Company. *Research Journal of Applied Sciences, Engineering and Technology* 6(6):989-996.
- Ogunbanwo AS, Okesola JO, Buckley S (2019). Knowledge management awareness assessment in Nigerian tertiary institutions. *F1000Research* 8.
- Omona W, van der Weide T, Lubega JT (2011). Knowledge management technologies and higher education processes: approach to integration for performance improvement. *ork for Knowledge Management Using ICT*. P 69.
- Ongus RW, Aming'a NN, Nyamboga CM, Okello G (2016). Knowledge Management Practices and Organizational Performance in Selected Campuses of Kisii University, Kenya. *Journal of Information Management* 53(5):349-358.
- Polit DF, Beck CT (2010). *Essentials of Nursing Research: Appraising Evidence for Nursing Practice* (7 ed.). Philadelphia: Wolters Kluwer Health / Lippincott Williams & Wilkin.
- Raja SRK (2008). *The Relationship of Knowledge Management Practices, Competencies and the Organizational Performance of Government Departments in Malaysia*: World Academy of Science,

- Engineering and Technology.
- Rees SJ, Protheroe H (2009). Value, Kaizen and Knowledge Management: Developing a Knowledge Management Strategy for Southampton Solent. *The Electronic Journal of Knowledge Management* 7(1):135-144.
- Selangor UP (2010). Tacit Knowledge Codification Marzanah A. Jabar, Fatimah Sidi and Mohd Hasan Selamat Department of Information System. *Faculty of Science Computer and Information Technology* 6(10):1170-1176.
- Singleton RA, Straits BC (2010). *Approaches to social research* (5 ed.). New York: Oxford University Press.
- Skolits GJ, Graybeal S (2007). Community college institutional effectiveness: Perspectives of campus stakeholders. *Community College Review* 34(4):302-323.
- Smokotin VM, Petrova GI, Gural SK (2014). Theoretical principles for knowledge management in the research university. *Procedia-Social and Behavioral Sciences* 154:229-232.
- Storey C, Kahn KB (2013). The role of knowledge management strategies and task knowledge in stimulating service innovation. *Journal of Service Research* 13(4):397-410.
- 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.
- Tajeddini K (2011). The effects of innovativeness on effectiveness and efficiency. *Education, Business and Society: Contemporary Middle Eastern Issues* 4(1):6-18.
- Tajomavno GA (2009). Characteristics of effective organization. In *A Paper Delivered at a workshop on Enhancing Organization Change Lagos*.
- United C, Development N (2017). UNDP knowledge management strategy framework.
- Universities UK (2011). Efficiency and effectiveness in higher education: A report by the Universities UK Efficiency and Modernisation Task Group.
- Zhou J, Yang Y, Qiu X, Yang X, Pan H, Ban B, Qiao Z, Wang L, Wang W (2018). Serial multiple mediation of organizational commitment and job burnout in the relationship between psychological capital and anxiety in Chinese female nurses: A cross-sectional questionnaire survey. *International Journal of Nursing Studies* 83:75-82.