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ORGANIZATIONAL LEARNING AS A MEDIATOR OF THE INFLUENCE OF TACIT KNOWLEDGE ON COMPETITIVE ADVANTAGE: LEARNING FROM ICT SERVICE PROVIDERS IN NAIROBI

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Abstract

This study sought to determine how tacit knowledge interplays with organizational learning to enhance the competiveness of ICT content service providers in Nairobi. Many scholars, building on the resource- and knowledge-based theories of strategic management theory, have postulated that tacit knowledge is a valuable source of competitive advantage. However, there appear to be no empirical studies that have explicitly tested this theory in the Kenyan context. The current theory fills this gap. The study followed a post-positivist critical realism philosophical orientation and used a cross-sectional survey design approach. Accordingly, data was elicited from study participants using a self-administered survey instrument. The population for the study was the ICT content service providers licensed by the Communications Authority of Kenya (CAK), a fertile ground for ICT knowledge creation and dissemination. Out of the target population of 197 ICT content service providers licensed by the CAK, 135 firms provided valid responses to the survey. The study showed that organizational learning was a strong mediator of the influence of tacit knowledge on competitive advantage. The study is an additional building block in strategic management theories that show the importance of continuous enhancement of the productive knowledge of individuals as a driver of competitive advantage for an organization, particularly the Knowledge-Based View and Organizational Learning Theory. The insights from the study will motivate policy makers and strategic management practitioners to embrace and promote tacit knowledge and organizational learning practices in their respective organizations.

Keywords: Knowledge Based View, Organization Learning Theory, Resource Based View

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1. Introduction

Scholarly literature on the theory and practice of strategic management revolves around the actions of firms operating in an environment of scarce resources and how these actions enable them to gain competitive advantage (Awino, 2013; Awino, Muchara, Ogutu & Oeba, 2012). The important role of the tacit knowledge possessed by individual organization members in the creation of competitive advantage is growing (Campbell & Armstrong, 2013; Guyo, 2012; Kamukama, 2013). There are two broad categories of knowledge, explicit and tacit. An individual working in an organization may have technical skills that include the detailed steps of performing a particular task, including knowledge of the technology required to perform that task. These detailed process steps may be codified into a manual (explicit knowledge), but the nuances of how to execute the tasks most effectively are in most instances undocumented and constitute the tacit knowledge that the individual possesses (Insch, McIntyre, Dawley, 2008).

Tacit knowledge and explicit knowledge exist on the same spectrum and complement each other (Holden & Glisby, 2010; Nishihara, Matsunaga, Nonaka, & Yokomichi, 2018; Polanyi, 1984). When organizational members interact with one another, they convert existing tacit knowledge into new tacit knowledge, and through organizational learning processes the tacit knowledge contributes towards organizational performance improvement and competiveness (Nonaka & Krogh, 2009; Nzuve & Omolo, 2012; Ding, Xue and Yuan, 2015). Organizational learning occurs when an organization develops new knowledge from the experiences of its individual members. It can also be viewed as the change that occurs in accumulated knowledge of an organization as the organization gains experience. It takes place through individuals (Argote, 1999; Argyris & Schön, 1978; Nonaka, 1994; Namada, 2013; Nzuve & Omolo, 2012).

According to Porter (2008), a firm enjoys competitive advantage in an industry when it does different activities than its competitors, or when the firm does the same activities differently in order to create value. In the ICT sector, for example, some firms use system lock-in to gain competitive advantage. For example, the Microsoft Corporation (Microsoft) has partnered with hardware companies, notably Intel, whose products are required to be compatible with the Microsoft Windows operating system, thereby locking in Intel and its numerous customers, whilst at the same time locking out many Microsoft competitors (Rhodes, n.d).

The current study examines the mediation of organizational learning on the influence of tacit knowledge on competitive knowledge in the Kenya Information Communication and Technology (ICT) industry. The industry is critical to the Kenyan government's objective of achieving rapid modernization and growth of the economy (Communications Authority of Kenya, 2015). The specific study domain is the content service providers sub-sector of the ICT industry in Nairobi.

2. Materials

The key strategic management theories that underlie the current study are the Resource Based View, the Knowledge

Based View, and Organizational Learning Theory. Competitive advantage is a relative notion and is embedded in the three theories in different ways. It refers to superior performance of a firm relative to its peers in an industry. It is also dependent on the contextual setting under consideration (Nonaka, 1994; Nonaka & Krogh, 2009; Raduan, Jegak, Haslinda & Alimin, 2009; Teece, Pisano & Shuen, 1997).

According to the Resource Based View, a firm is in essence a mixture of different types of capabilities and resources that can be leveraged into competitive advantage if they are valuable, rare, inimitable, and are not substitutable (VRIN) (Wernerfelt, 1984). This theory originates from ideas regarding the growth of firms propounded by Edith Penrose more than 50 years ago (Penrose, 1959). It was introduced in mainstream strategic management theory by Birger Wernerfelt in the 1980's (Wernerfelt, 1984). It was subsequently popularized by other eminent strategic management scholars in the 1990's such as Barney (1991), Prahalad and Hamel (1990). Examining competitive advantage using the Resource Based View allows a firm to understand the relative importance of its capabilities and internal resources as drivers of competitiveness (Barney, 1991; Awino, 2013).

For many years, the value creation process in a firm was viewed from the economic lens of factors of production, capital, land and labor. However, this perspective has reduced in importance. Knowledge has become a more decisive factor. Further, because knowledge, especially tacit knowledge possessed by individuals in a firm, is complex and inimitable, it has gained prominence as an important driver of organizational performance and competiveness (Cheruiyot, Jagongo & Owino, 2012; Curado & Bontis, 2006; Low & Ho, 2015; Nonaka & Krogh, 2009; Polanyi, 1984), the primary focus of the current study.

The Organizational Learning Theory is based on the view that learning within an organization takes place at both the individual and the organizational levels. Individuals in the organization create knowledge which gets entrenched into organizational processes and enhances organizational performance (Argote, 1999, Namada, 2013; Serrat, 2017). The basic ideas of the Organizational Learning Theory can be traced back to the work of Cyert and March (1963).

A key postulate of the current study is that organizational learning is a mediator of the influence of tacit knowledge on competitive advantage. The study uses four indicators of organizational learning to test this hypothesis. These are information systems used to facilitate organizational learning. The frameworks that exist in an organization for promoting consensus. The mechanisms for institutionalization of knowledge. Finally, the forms of management that exist in the organization that promote an organizational learning culture.

Tacit knowledge is still not fully understood, yet there appears to be a recognition that it is a powerful resource that can significantly contribute to positive organizational performance (Holden & Glisby, 2010). Its lack of codifiability means that it cannot be easily appropriated by competitors and can therefore create sustained competitive advantage (Holden

& Glisby, 2010; Lecuona & Reitzig, 2014; Ranucci & Souder, 2015). These views are echoed by Ding, et al (2015) who further point out that the transfer of tacit knowledge is dependent on the willingness of the transferor which is itself a function of the mutual trust between the transferor and transferee. Citing Nonaka and Takeuchi (1995), Holden and Glisby (2010) point out that the true essence of the success of Japanese firms in the late twentieth century was their skillfulness in creating and nurturing tacit knowledge, and harnessing it in such a way that it became difficult for others to copy what these Japanese firms were doing. This enabled the Japanese firms to outmaneuver firms in the western countries.

In-depth case studies of five leading German companies based in Stuttgart to determine, *inter-alia*, lessons that could be learnt in terms of transit knowledge sharing by new product development teams, found that tacit knowledge emerged and was shared during post-project reviews. This meant that paying closer attention to such reviews and improving their robustness facilitated effective tacit knowledge sharing (Goffin, Koners, Baxter & van der Hoven, 2010). Although not expressly stated, it could be inferred that improvements in new product development activities, would ultimately have translated into introduction of new products by the five companies that would have in turn given the firms a competitive edge in the industry.

Knowledge creation in an organization occurs through a continuous cycle involving transformation of tacit into explicit knowledge and vice versa. Whilst individuals are the ones who create new knowledge, the knowledge is amplified by the organization (Nonaka, 1994; Tsoukas, 2009). According to Tsoukas (2009), new knowledge in an organization is created when participants engage in constructive dialogue. The new knowledge is created when individuals are able to draw new distinctions regarding a task at hand. By taking distance from customary and unreflective ways of acting, what Hardimos (2009) calls "distantiation", participants draw new distinctions through a process of conceptual combination, conceptual expansion and conceptual re-framing, which when accepted constitutes new organizational knowledge.

Ndegwa (2015) conducted a study focusing on 100 Kenyan companies that had been categorized by KPMG and Nation Media Group as the top performing medium-sized companies in Kenya. The study included testing of the interplay between organizational learning, knowledge sharing, and organizational performance. Knowledge, in this context included both explicit and tacit knowledge. The measures of organizational performance included "customer satisfaction", one of the indicators of the relative competitiveness of a firm (Awino, 2010). Ndegwa found that organizational learning explained only 3.1% (R^2 = .031) of the variation in "customer satisfaction" in the top 100 medium-sized companies. Further, the effect was not statistically significant since the calculated p value was .597, which was above the .05 threshold for statistical significance. In other words, organizational learning did not have a significant effect on one of the indicators of relative competitiveness, namely "customer satisfaction". This was a surprising result as it contradicted other similar studies (Al-Nsour, 2011; Namada,

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2013; Nambula, 2015). The current study provides new insights that affirm findings of the previous studies.

3. Methods and Results

The research followed a post-positivist critical realism philosophical orientations and use a cross-sectional survey. Accordingly, quantitative data was elicited from study participants using a self-administered survey instrument. The key research variables were evaluated using proxy indicators of each variable, with an allowance for measurement errors, in line with the post-positivist critical realism paradigm.

The population for the study was 197 ICT content service providers based in Nairobi licensed by the Communications Authority of Kenya (2015). The list of these firms was extracted from the register of Unified Licensing Framework Licensees obtained from the Communications Authority of Kenya. Data was collected from three managers from each of the firms under study namely, the Strategic Planning Manager, the ICT Manager, and the Human Resources Manager. In instances where these positions were not in existence or the managers were unavailable, feedback to the survey was solicited from other managers holding different titles but performing equally senior functions in the organization.

The research hypotheses that were tested in the primary study are as follows:

H_{01}: Organizational learning does not mediate the influence of tacit knowledge on competitive advantage

H_1: Organizational learning mediates influence of tacit knowledge on competitive advantage

The relationship between the study variables are shown in Figure 1. Each of the three primary study variables (tacit knowledge, organizational learning, and competitive advantage) are shown with their respective first order variables. The indicators of the first order variables are also reflected.

The study adopted the tacit knowledge operationalization approach and proxy indicators in the Rashid, Hassan & Al-Oqaily (2015) and Yang and Farn (2010) studies, with minor modifications to suit the context of the current study. Operationalization of the competitive advantage construct followed the approach used by Awino (2013) because it was succinct and covered the key aspects of competitive advantage construct namely, customer satisfaction, growth in the customer base, and retention of skilled employees - relative to competitors. Operationalization of the organizational learning construct relied on the work of Lloria & Moren-Luzon (2014), and incorporated insights from Namada (2013) too. The indicators included information systems used for knowledge transmission and storage, and employee engagement.

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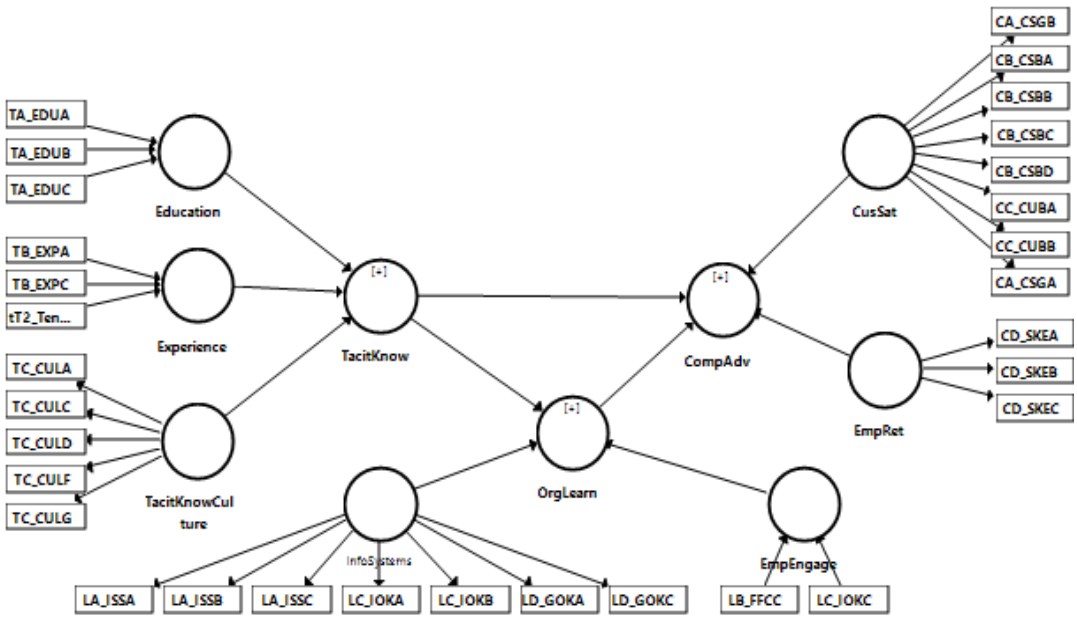

Legend

Education	
TA_EDUA	Educational background
TA_EDUB	Education and experience relative to others
TA_EDUC	Link of education with job effectiveness
Experience	
TB_EXPA	Ability to acquire experience or know-how from other group members
TA_EDUB	Link of education to job effectiveness
TB_EXPC	Importance of experience in job performance
tT2_Tenure	Length of time worked in the organization (years)
Tacit Knowledge Culture	
TC_CULA	Learning problem solving from others
TC_CULB	Knowledge sharing amongst groups
TC_CULC	Individual willingness to share knowledge
TC_CULD	Knowledge sharing is a routine for all
TC_CULE	Cooperation in information sharing
TC_CULF	Knowledge sharing is seen as a strength and knowledge hoarding as a weakness

TC_CULG	Good intra-team communication and knowledge sharing

Customer Satisfaction

CA_CSGA	Customer satisfaction with the products and services of the firm
CA_CSGB	Perception of company company's products as better than those of competitors
CB_CSBA	Customer satisfaction with billing of purchases
CB_CSBB	Better service in billing for products than competitors
CB_CSBC	Customer satisfaction with delivery time of products and services
CB_CSBD	Better delivery times of products and services than competitors
CC_CUBA	Steady growth in customer base
CC_CUBB	Growth in customer base faster than competitors

Attraction and Retention of Skilled Employees

CD_SKEA	Ability to attract skilled employees
CD_SKEB	Ability to retain skilled employees
CD_SKEC	Rarely losing skilled employees to competitors

Information Systems

LA_ISSA	Existence of files and databases that facilitate effective job performance
LA_ISSB	Existence of formal mechanisms for best practice sharing
LA_ISSC	Existence of information systems that facilitate
LC_IOKA	Firm's procedures and processes are documented
LC_IOKB	Firm's databases allow experiences and knowledge to be stored and used at a later date
LD_GOKA	Employees readily embrace change

LD_Employee Engagement

LB_FFCC	Lessons learned from one group are shared by other groups
LC_IOKC	Suggestions from employees are frequently incorporated into the company's processes, products or services

***Figure 1*. Latent variable structural model**

Source: Primary research data, 2018

The pertinent statistics of the model generated from the SmartPLS analysis tool are shown in Table 1. The t-statistics for the loadings and weights of the constructs were all above the 1.96 threshold (2-tailed). The p-values were all significant too at the .05 level. The SRMR ratio for the estimated model was .13 which was below the threshold of .80, indicating a good fit for the model (Kenny, 2015).

Table 1. T-Statistics and P-Values of Model Factor Loadings and Weights

Factor loadings and weights	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T Statistics (|O/STDEV|)	P values
Factor Loadings:					
Competitive Advantage					
CA_CSGA <- CusSat	.787	.784	.038	20.875	.000
CA_CSGB <- CusSat	.688	.688	.049	13.991	.000
CB_CSBA <- CusSat	.756	.755	.040	18.742	.000
CB_CSBB <- CusSat	.598	.595	.066	9.048	.000
CB_CSBC <- CusSat	.616	.615	.060	10.314	.000
CB_CSBD <- CusSat	.674	.676	.045	15.067	.000
CC_CUBA <- CusSat	.733	.732	.044	16.796	.000
CC_CUBB <- CusSat	.658	.658	.051	13.020	.000
CD_SKEA <- EmpRet	.837	.837	.032	26.537	.000
CD_SKEB <- EmpRet	.851	.850	.032	26.448	.000
CD_SKEC <- EmpRet	.770	.767	*.056*	*13.835*	.000
Organizational Learning					
LA_ISSA <- InfoSystems	.817	.815	*.031*	26.481	.000
LA_ISSB <- InfoSystems	.748	.747	*.040*	18.820	.000
LA_ISSC <- InfoSystems	.693	.691	*.054*	12.909	.000
LC_IOKA <- InfoSystems	.725	.724	*.039*	18.374	.000

LC_IOKB <- InfoSystems	.639	.638	*.056*	11.303	.000
LD_GOKA <- InfoSystems	.708	.706	*.047*	15.040	.000
LD_GOKC <- InfoSystems	.640	.640	*.050*	12.835	.000
Tacit Knowledge					
TC_CULA <- TacitKnowCulture	.697	.699	*.058*	11.969	.000
TC_CULC <- TacitKnowCulture	.644	.639	*.067*	9.586	.000
TC_CULD <- TacitKnowCulture	.556	.548	*.092*	6.032	.000
TC_CULF <- TacitKnowCulture	.625	.620	*.078*	8.033	.000
TC_CULG <- TacitKnowCulture	.615	.613	*.077*	7.993	.000
tT2_Tenure <- TacitKnow	.433	.430	*.100*	4.330	.000
tT2_Tenure -> Experience	.500	.494	*.108*	4.619	.000
Weights:					
Organizational Learning					
LB_FFCC -> EmpEngage	.589	.586	*.163*	3.616	.000
LC_IOKC -> EmpEngage	.660	.646	*.146*	4.509	.000
Tacit Knowledge					
TA_EDUA -> Education	.668	.640	*.154*	4.336	.000
TA_EDUB -> Education	.383	.362	*.175*	2.189	.029
TA_EDUC -> Education	.479	.470	*.188*	2.550	.011

TB_EXPA -> Experience	.649	.644	*.065*	9.970	.000
TB_EXPC -> Experience	.422	.422	*.076*	5.557	.000

Source: Primary research data, 2018

Four of the seven reflective indicators of information systems had loadings of more than .7 (p-value = .000, α = .05 level of significance), and t-statistics that were well above the threshold of 1.96 (2-tailed). These metrics showed that the indicators were strong representations of the "information systems" first order construct of organizational learning. The weights for the two formative indicators of "employee engagement" were also almost equally balanced. They were also statistically significant at the .05 level and a t-statistic threshold of 1.96 (2-tailed) (LB_FFCC std. beta = .589, p-value = .000, t-statistic = 3.616; LC_IOKC std. beta = .660, p-value = .000, t-statistic = 4.509). The "information systems" construct had the largest contribution to the organization learning latent construct (weight = .905, p-value = .000, t-statistic = 32.012) as contrasted with "employee engagement" (weight = .208, p-value = .000, t-statistic = 7.168) (Table 2).

Table 2. Weights of First Order Factors of Organization Learning Construct

Formative first order construct of Organization Learning	Weights	T Statistics (|O/STDEV|)	P Values
Information Systems	.905	32.012	.000
Employee Engagement	.208	7.168	.000

Source: Primary research data, 2018

The mediation of organizational learning (OGL) on the influence of tacit knowledge (TKW) on competitive (CAD) was tested using the SmartPLS tool using a two stage approach (Ringle, Wende & Becker, 2015). Firstly, the indicators of the first order constructs (Education, Experience, and TacitKnowledgeCulture; CusSat, EmpRet, InfSystems and EmpEngage) in the path model were used to obtain factor scores for the second order constructs (TKW, OGL and CAD). Secondly, a new path model was generated using these factor scores as indicators of TKW, OGL and CAD (Figure 2).

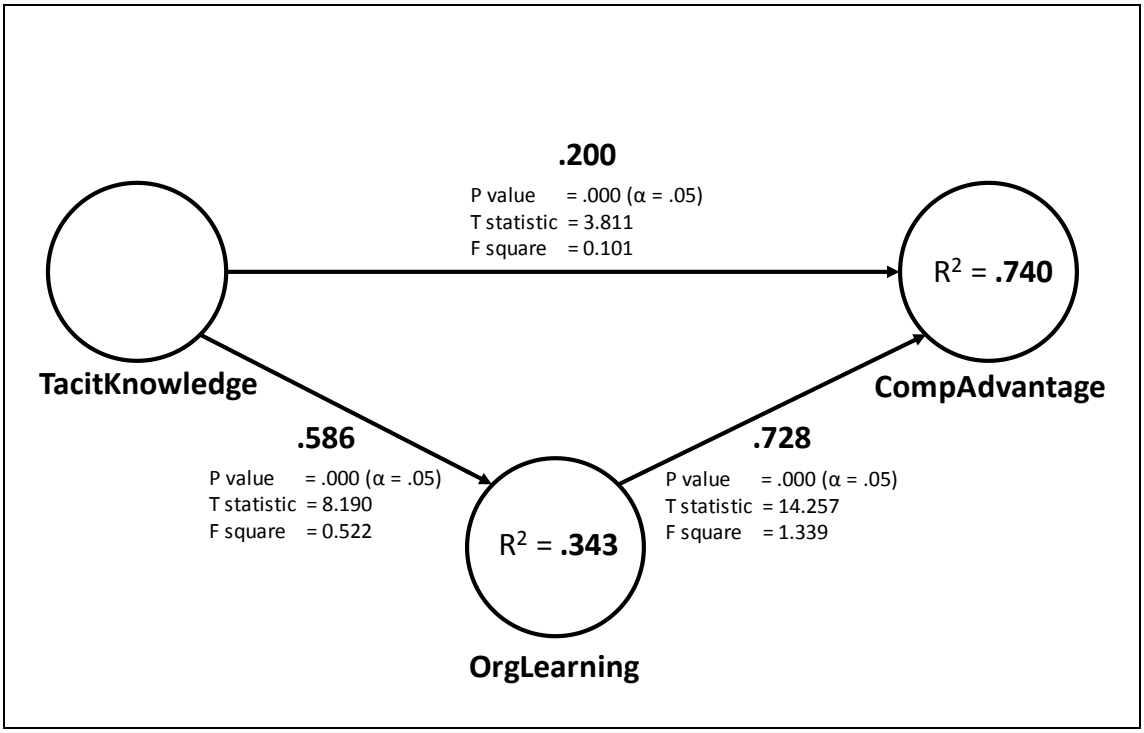

***Figure 2*. Overall path model showing the three primary variables of the study**

Note. Numbers inside ellipses are R^2; numbers on the arrows are standardized coefficients.

Source: Primary research data, 2018

The PLS algorithm was run in SmartPLS to obtain metrics of the indirect and direct relationships between the latent variables. A bootstrapping procedure using the PLS bootstrapping algorithm was run in SmartPLS using 5,000 sub-samples in order to obtain metrics to show the level of statistical significance. Table 4 shows the pertinent statistical indicators generated from SmartPLS.

Table 4. Indicators of the Relationships Between TKW, OGL, and CAD

Description	Path Model	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Path Coefficients	OGL -> CAD	.728	.725	.051	13.706	.000
	TKW -> CAD	.200	.203	.052	3.680	.000
	TKW -> OGL	.586	.582	.072	8.301	.000
Total Effects	OGL -> CAD	.728	.725	.051	13.706	.000
	TKW -> CAD	.626	.624	.065	9.657	.000
	TKW -> OGL	.586	.582	.072	8.301	.000
Specific Indirect effects	TKW -> OGL -> CAD	.426	.421	.054	8.109	.000
R Square	CAD	.740	.741	.041	18.557	.000
	OGL	.343	.344	.082	4.252	.000
f-Square	OGL -> CAD	1.339	1.378	.377	3.457	.001
	TKW -> CAD	0.101	0.109	.057	1.885	.059
	TKW -> OGL	0.522	0.549	.201	2.611	.009
HTMT	OGL -> CAD	.845	.844	.028	29.873	.000
	TKW -> CAD	.626	.624	.065	9.657	.000
	TKW -> OGL	.586	.582	.072	8.301	.000

Note. TKW = Tacit Knowledge; OGL = Organizational Learning; CAD = Competitive Advantage; HTMT = Heterotrait-Monotrait Ratio

Source: Primary research data, 2018

The specific indirect effect of OGL on the influence of TKW on CAD was .426 (p-value = .000 and t-statistic = 7.904). This indirect effect was statistically significant at the $\alpha = .05$ level and 1.96 threshold for t-statistic (2-tailed). Accordingly, the null hypothesis ($\mathbf{H_{01}}$) was rejected and the alternative hypothesis ($\mathbf{H_1}$) that organizational learning has a mediating effect on the influence of tacit knowledge on competitive advantage accepted.

4. Conclusion

The objectives of the study were accomplished. The findings clearly showed that that organizational learning had a mediating effect on the relationship between tacit knowledge and competitive advantage. This went towards increasing

the pool of empirical evidence supporting the Knowledge Based View and the Organizational Learning Theory.

The findings of the study resonated well with the postulates around the dynamic knowledge creation process (Nonaka, 1994). A process that involves the interchange of explicit and tacit knowledge. The continuous amplification of this knowledge into organizational knowledge subsequently manifesting itself in the behavior of individuals as they express their thoughts, viewpoints and interests; culminating in an enhancement of a firm's competitiveness (Nonaka, 1994; Nonaka & Krogh, 2009).

The research findings were also partly consistent with prior empirical studies, notably studies by Argote (1999), Namada (2013), Ryan & O'Connor (2012), and Al-Nsour (2011). The study by Al-Nsour (2011), for instance, showed that in the Jordanian banking industry, organizational learning supported the development of intellectual capital which in turn contributed towards creating sustainable competitive advantage. The study by Namada (2013), focusing on 40 firms in the Export Processing Zone in Kenya (EPZ), established that there was a positive correlation between organizational learning and non-financial performance measures, including market performance and the firms' competitiveness.

5. Implications of the Study

The study offers empirical evidence showing the inter-relationship between tacit knowledge, organizational learning and competitive advantage, an additional building block in the Knowledge-Based View and Organization Learning Theory. In particular, the study demonstrates that competitive advantage is created through the productive knowledge of individuals that comes about from continuous learning and on-the-job experience. This is consistent with ideas articulated by Kogut and Zander (1995) and Castro, Lopez-Saez and Delgado-Verde (2011).

A key insight from the study is that the mere possession of tacit knowledge is not sufficient to drive a sizeable effect on competitive advantage. An additional mediating mechanism is required in order to unleash the potential embedded in tacit knowledge. This is a useful contribution to other resource-based theories of strategic management which consider tacit knowledge and organizational learning as important strategic resources of an organization.

The study should encourage policy makers, primarily in the ICT sector, to develop policies that leverage the influence of tacit knowledge and organization learning on competitive advantage. This should include policies that promote an organizational learning culture. The policies should also encompass best practice sharing, employee participation in the development of the organization's processes, products or services, as well as other organizational development interventions aimed at promoting on-going organizational learning.

The study is expected to motivate practitioners of strategic management too, particularly in the highly competitive ICT sector. The study sheds light on how tacit knowledge is created and coalesces into distinctive capabilities through organization learning processes; and how this translates into competitive advantage.

This insight should help the strategic planning practitioners develop strategic plans that contain initiatives for enhancing individual and collective organizational learning.

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