

Testing the interaction effect of knowledge management and creative climate towards organizational innovation: Evidence from parastatal organizations in Uganda

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Abstract

Extant literature shows that knowledge management needs the support of creative climate towards organizational innovation. However, existing studies have paid less attention regarding the interaction effect of knowledge management and creative climate on organizational innovation. This paper aims to clarify this relationship by examining the interaction effect of knowledge management and creative climate on organizational innovation in parastatal organizations in Uganda. This paper seeks to broaden the knowledge based innovation system domain by including the creative climate. This paper used an explanatory cross-sectional design where quantitative data were collected from 235 managers of 51 parastatals using a survey instrument. Data were aggregated to a parastatal level. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to test the interaction effect. This paper clarifies the interaction effect of knowledge management and creative climate towards organizational innovation. Knowledge management and creative climate independently rather than interactively enhance organizational innovation. The findings suggest that effective knowledge management practices and favorable creative climate are essential for organizational innovation. This paper suggests the adoption of an effective knowledge management system and a favorable creative climate as antecedents for organizational innovation. This paper makes a contribution on the question whether knowledge management interacts with creative climate to build organizational innovation, which seems to have been less studied.

Keywords: Knowledge management, creative climate, organization innovation, interaction effect, parastatal.

Introduction

Organizations operate under environmental pressure to provide competitive services in order to satisfy their stakeholders. In this regard, organizations whether public or private should reorganize business operations by designing new structures and processes as some of the means of sustaining the quality of service delivery (Gyemang & Emeagwali, 2020; Lerro, 2012). The purpose of organizational innovation is to create business value especially for private firms and public value for public organizations which leads to customer satisfaction. Organizations that continuously create value in service delivery are more likely to survive, and grow in a rapidly changing market.

In the current business environment, many parastatal organizations are encountered with a number of organizational challenges in doing business that affect service delivery (Gyemang & Emeagwali, 2020). Yet parastatal organizations play a fundamental role in society. For instance, they provide different services like; finance, health, education, foods and beverages that people require in life. Therefore, once parastatals fail in their roles, the livelihood of people in society gets affected. Then it is imperative that parastatal organizations redesign their structures, processes, and competences as a leeway to avert organizational death. According to Tarrant (2010), organizational threats can be mitigated by building adaptive capacity through organizational innovation to improve service delivery. In this regard, organizations should have capabilities to remain competitive and offer quality services consistently (e.g Alshanty & Emeagwali, 2019). The key question we raise in this study is: what capabilities are critical in driving organizational innovation?

Some scholars have advocated for the need of useful knowledge that can be used to redesign structures and processes for business competitiveness (Abdi & Senin, 2015). The knowledge management practices of; acquisition, creation, sharing, and memory are deemed important for organizational innovation (Nonaka, 2007; Slavkovic & Babic, 2013). Besides the role of knowledge management in organizational innovation, the creative climate is equally necessary for organizational innovation (Lerro, 2012; Rivera & Rivera, 2016). According to Hallwood (2014), organizations seeking to promote innovation need more than knowledge management practices. Indeed in the same vein, it has been argued that successful organizational innovation is supported by the creative climate (Amabile, 1997; Lin & Liu, 2012).

The question that arises out of this extant literature is the extent to which knowledge management interacts with the creative climate to explain changes in organizational innovation. Ismail (2006) found evidence that organizational innovation depends on both knowledge management and creative climate. However, these scholars did not examine the interaction effect of knowledge management and creative climate on organizational innovation. Yet according to Friedrich (1982), there is need to test for interaction of two or more variables whenever they appear in the same model. In the current study, we present empirical findings about the interaction effect of knowledge management and the creative climate on organizational innovation.

According to Tan and Nasurdin (2010), knowledge management plays a leading role in the design and implementation of novel organizational changes especially in product and process innovation. However, Tan and Nasurdin (2021)'s study scope did not cover structural innovation and perceived competence innovation which are examined in this study because they are critical indicators of organizational innovation. Similarly, Xu et al. (2010) reported that the way knowledge is managed determines the success of innovation in organizations. We note from this study that, given the changing customer needs, extensive competition and rapid technological change, organizational innovation requires the acquisition and application of both internal and external knowledge. This knowledge management can be more effective probably with the support of the creative climate, an inquiry which the current study sought to investigate.

Based on the theory of dynamic capabilities, knowledge resources of an organization built over time can be used to create and implement new organizational capabilities which are structures, processes, and competences that are of high strategic value. This implies that knowledge embedded in human and social capital is important in building organizational adaptability. Apparently, the contribution of knowledge resources on organizational innovation may require the interaction with a creative climate. In light of the research question, this paper tests the interaction effect of knowledge management and the creative climate on organizational innovation. The contribution of this paper is threefold: first, to test the association between knowledge management and organizational innovation in public organizations; second, to examine the association between creative climate and organizational innovation in public organizations and third, to analyse the interaction effect of knowledge management and the creative climate towards organizational innovation. The structure of this paper is as follows. First the paper covers theory and hypotheses, second is the method, next are the results, and lastly is the discussion, conclusion and implications.

Theory and Hypotheses

The Dynamic Capabilities Theory

This current study is informed by the theory of dynamic capabilities which is deemed relevant to explain organizational innovation phenomenon. This theory postulates that organizations can sustain their competitive preeminence within an ever-changing market environment through constant renewal, integration and reconfiguration of their present heterogeneous resources. Essentially, this is an act of organizational innovation (Teece et al., 1997). As such, organizations deliberately modify and reconfigure their existing resource base to generate more value-adding outcomes that meet the changing market expectations.

The re-creation and configuration of existing resources enable organizations to make both incremental and radical changes in products, processes, procedures, routines, systems, technologies, and people. Such innovations form part of the organisation's idiosyncratic dynamic capabilities that enhance competitiveness. Consequently, innovation becomes a pathway that facilitates an organisation's ability to respond rapidly to market dynamics (Denrell & Powell, 2016). Organizational innovation as a dynamic capability that enable organizations to cope with environmental dynamics (Eisenhardt & Martin, 2000).

Dynamic capabilities create organizational capabilities that enable the firm to produce goods and services effectively and efficiently. In the dynamic environment, competitive advantage rests on the ability to constantly develop organizational capabilities that form the basis for organizational effectiveness and efficiency. This requires managers to reconfigure organizational structures, processes and behaviour in order to create strong organizational capabilities (Teece et al., 1997).

Knowledge Management and Organizational Innovation

The dynamics of the present market environment necessitate organizations to become innovative in order to survive, grow and retain their competitive position. Organizational innovation involves the generation, acceptance and implementation of new ideas in products, processes, strategies, competences, structure, markets and organizational behaviour for the purpose of creating new value for stakeholders (Isaksen & Akkermans, 2011; Gyemang & Emeagwali, 2020).

Knowledge management involves the generation, integration and utilisation of information for innovation (Daud & Yusoff, 2010; Nonaka, 2007). In today's knowledge economy, knowledge is recognised as a strategic asset that drives organizational success. The effective management of organizational knowledge enables organizations to remain relevant and competitive within a changing market environment (Nonaka, 2007). Knowledge creating organizations normally put in place mechanisms that facilitate on-going acquisition, distribution, application, storage and transfer of valuable knowledge for innovation.

Organizations use this knowledge to effect changes in products, processes, competences, structures, technologies, strategies or administrative systems. These changes are made in congruency with the changing market needs (Alshanty & Emeagwali, 2019). Accordingly, literature shows that for an organisation to carry out successful innovation, it should strengthen its knowledge base.

Based on this literature review, we hypothesize that:

H1: Knowledge management will be significantly related to organizational innovation.

Creative Climate and Organizational Innovation

A creative climate describes a work atmosphere that supports creative thinking. This work atmosphere is essential for steering organizational innovation (Isaksen & Akkermans, 2011). The construct of creative thinking is distinct from innovation although the two constructs are theoretically related and commonly used interchangeably in management practice. Creative thinking concerns the generation and communication of meaningful new ideas whereas innovation goes beyond creative thinking to include the implementation and commercialization of the new ideas (Isaksen & Treffinger, 2004).

A creative climate manifests in form of positive leadership behaviour, availability of the required facilities, quality supervision, challenging targets, autonomy, work-group encouragement as well as a fair reward system (Amabile, 1997; Hsu & Fan, 2010). A supportive work environment inspires employees to engage in creative thinking that results into changes in existing products, processes, technologies systems, structures or business models (Lombardo & Roddy, 2010).

Organizations need to promote a creative work climate in order to become more innovative (Cangemi & Miller, 2007; Isaksen & Akkermans, 2011). A creative climate empowers employees to generate and experiment new ideas. Managers need to recognise and support idealization and experimentation as opportunities for learning to improve customer value (Klijn & Tomic, 2010; Tarrant, 2010). Thus, it is evident that organizational innovation has its foundation in a creative climate. Therefore, we hypothesize that:

H1: Creative climate will be significantly related to organizational innovation.

The Moderating Role of Creative Climate on the Relationship Between Knowledge Management and Organizational Innovation

The extant literature has scanty studies that have findings on the interaction effect of knowledge management and creative climate towards organizational innovation. However, literature reveals

some studies that have examined the construct of knowledge management, creative climate, organizational innovation and their interrelationships. For instance, a study by Gyemang and Emeagwali (2020) confirmed the existence of a positive relationship between knowledge management and organizational innovation.

Such findings suggested that organizations where new knowledge is continuously generated and shared among members are more likely to engage in innovative ways of doing business. Similarly, a study by Amabile (1997) provided evidence of a creative climate being a foundation for organizational innovation. The above studies shed light on the direct relationships between knowledge management, creative climate and organizational innovation. However, these studies remain silent on the extent to which knowledge management interacts with a creative climate to enhance organizational innovation.

Meanwhile the work of Chen et al. (2010) conducted in Taiwan industries tested for the moderation effect of innovation climate on the relationship between knowledge management and organizational innovation and found out that innovation climate did not moderate the relationship between knowledge management and organizational innovation. This calls for further investigation about the moderating role of creative climate in organizational studies. The interaction between knowledge management and creative climate is emphasized by other scholars when, they posit that using new knowledge resources, organizations can review their plans with the support of a creative climate (Baer et al., 2003). Basadur and Gelade (2006) argued that knowledge must be used to enhance organizational innovation especially with a supportive creative climate (Amabile, 1997). This implies an interaction conceptual relationship which these scholars did not test. Hence, we hypothesize that;

H3: Creative climate will moderate the relationship between knowledge management and organizational innovation.

Arising out of the literature review, we derived the model to guide our study as depicted in Figure 1.

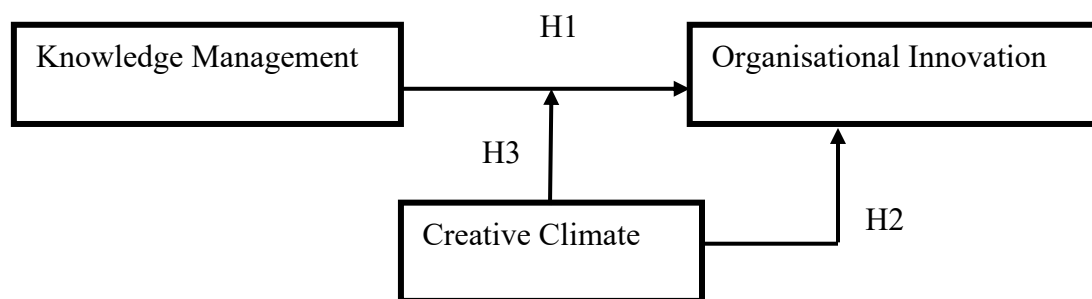


Figure 1: The Conceptual Model of the Role of KM on Organizational Innovation.

Methodology

This section presents the research design, population, sample, measures, and data management.

Research Design, Population, and Sample

This study used a quantitative survey design which was appropriate for generating statistics through multivariate analysis that explain the relationships between variables. The study population comprised of parastatal organizations in Uganda. Parastatal organizations play a vital role in public service delivery. Parastatals are formed to improve service delivery on behalf of government however, these government institutions have poor service delivery due to limited organization innovation (Muhairwe, 2010). In this study, majority (88.2%) of the organizations were fully owned by government while 11.8% were partially owned by government. Among the study organizations, majority (64.7%) had existed for over 15 years. The sample characteristics about the size of the organization show an even distribution of the size of the parastatal organizations whereby those that had less than 100 employees were 27.5%, 501 – 700 were 23.5%, 101 – 300 were 19.8 %, with 9.8% that had 301 – 500 employees. Most of the organizations in this study were from the finance sector (25.5%) and education sector (21.6%). Others were from the energy sector (11.8%), health, environment, and agriculture (5.9% each), tourism and telecommunication (3.9%). Parastatals in the transport sector were 7.8%. Parastatals in the miscellaneous sector which included cases of standardization and media, among others were also (7.8%). Reflecting on the characteristics of this sample, the Government of Uganda has set up different parastatals in different sectors to provide specific services. This study was done based on a sample of parastatal organizations. We randomly selected 62 out of 73 parastatal organizations in Uganda but 51 parastatals participated in the study. For the unit of inquiry who are the actual respondents, we targeted seven managers to respond to the survey instruments with a minimum response expectation of three respondents per organization. We contacted a total of 242 respondents from parastatal organizations. We distributed survey instruments to the respondents which they filled in a period of one-two weeks, after which survey instruments were collected.

Measures

We designed the measures of knowledge management, creative climate, and organizational innovation with reference to the extant literature from which we derived items for the survey instrument (see appendix).

Knowledge management

The measure of knowledge management as a concept is multidimensional (Nonaka, 2007). In this study, we measured knowledge management using the dimensions of; knowledge creation, knowledge acquisition, knowledge sharing, and knowledge storage because knowledge management is a multidimensional concept (Nonaka, 2007). We developed the scales to suit the study context. The sample items for this variable include; *we gain knowledge from consultancy reports, we employ people deemed to have the expertise we need*. The measurements were anchored on a five point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). We used PLS-SEM to test for reliability and validity of the measurement scale. The scale was found to have an acceptable composite reliability of 0.917 (Hair et al., 2019) (See Table 2). The

factor analysis extracted knowledge creation, knowledge acquisition, knowledge sharing, and knowledge storage as components of knowledge management in this study with an acceptable average variance extracted (AVE) ≥ 0.5 for each component (See Table 1) including knowledge management as the main variable which has an AVE of 0.535 confirming convergent validity (Hair et al., 2019). The item loadings for all the components were found to be within the acceptable threshold of ≥ 0.708 (Hair et al., 2019) (see Table 1).

Creative climate

This study adapted Amabile's (1997) '*KEYS: Assessing the Climate Creativity*' creative climate instrument which measures managers' perceptions about the support for creativity in the organisation. We reorganized the different KEYS dimensions of organizational encouragement, supervisory encouragement, work group support, freedom, sufficient resources, challenging work, into three major dimensions that include; organizational support, supervisory support and workgroup support in order to suit this current study. The sample items for this study include; *our organization rewards new ideas, in our organization, supervisors set creativity objectives*. The measurements were anchored on a five point Likert scale ranging from this is very untrue (1) to this is very true (5). We used PLS-SEM to test for reliability and validity of the measurement scale. The scale was found to have an acceptable composite reliability of 0.924 (Hair et al., 2019) (See Table 2). The factor analysis extracted supervisory support, work group support and organisational support as components of creative climate in this study with an acceptable average variance extracted (AVE) ≥ 0.5 for each component (See Table 1) including creative climate as the main variable which has an AVE of 0.527 confirming convergent validity (Hair et al., 2019). The item loadings for all the components were found to be within the acceptable threshold of ≥ 0.708 (Hair et al., 2019) (see Table 1).

Organizational innovation

According to OECD (2005), researchers can study organizational innovation in terms of process innovation, structural (strategic/administrative) innovation, and competence (behavioural) innovation. In this study, we used the dimensions of organizational innovation which include; structural innovation, process innovation, and perceived competence innovation due to their importance in developing organizational adaptive capacity (OECD, 2005). The sample items for the study include, *we improve our systems of handling organization risks, we redesign the flow of work by the use of information communication technology*. The measurements were anchored on a five point Likert scale ranging from strongly disagree (1) to strongly agree (5). We used PLS-SEM to test for reliability and validity of the measurement scale. The scale was found to have an acceptable composite reliability of 0.913 (Hair et al., 2019) (See Table 2). The factor analysis extracted perceived competence innovation, structural innovation and process innovation as components of organizational innovation in this study with an acceptable Average Variance Extracted (AVE) ≥ 0.5 for each component (See Table 1) including organizational innovation as the main variable which has an AVE of 0.600 confirming convergent validity (Hair et al., 2019). The item loadings for all the components were found to be within the acceptable threshold of ≥ 0.708 (Hair et al., 2019) (see Table 1). Furthermore, the results in Table 3 and Table 4 show that there is discriminant validity among the study variables and their dimensions. This is because the Heterotrait-Monotrait Ratio (HTMT) correlations are less than 0.9 for each inter-correlation (Hair

et al., 2019). Therefore, in this study knowledge management, creative climate and organizational innovation were treated as multidimensional variables. The dimensions were treated as formative in assessing the measurement model because theoretically the dimensions form the main variables. However, the indicators of the lower order constructs were treated as reflective because they reflect the dimensions of each main variable. Thus, the reflective-formative measurement model was adopted in this study (See Figure 2). The weights of the relationships between the dimensions and their main variables were found to be significant (See Table 5). This confirms that the dimensions form their main variables (Hair et al., 2019).

Table 1. Reliability and Convergent Validity

HOC	LOC	Item	Item Loading	α	rho_A	C.R.	AVE
Knowledge Management	Knowledge Acquisition	KA1	0.853	0.744	0.797	0.884	0.792
		KA2	0.926				
	Knowledge Creation	KC1	0.880	0.748	0.755	0.888	0.798
		KC4	0.907				
	Knowledge Sharing	KS2	0.776	0.649	0.647	0.810	0.588
		KS3	0.733				
		KS4	0.790				
	Knowledge Storage	KST1	0.908	0.930	0.931	0.950	0.827
		KST2	0.930				
		KST3	0.922				
		KST4	0.878				
Creative Climate	Supervisory Support	SS1	0.830	0.874	0.882	0.914	0.726
		SS2	0.921				
		SS3	0.838				
		SS5	0.815				
	Workgroup Support	WGS1	0.805	0.831	0.832	0.899	0.749
		WGS2	0.879				
		WGS4	0.910				
	Organisational Support	OS1	0.785	0.853	0.858	0.901	0.694
		OS3	0.854				
		OS4	0.841				
		OS7	0.850				
Organisational Innovation	Process Innovation	PI1	0.924	0.832	0.832	0.922	0.856
		PI2	0.926				
	Structural Innovation	SI1	0.931	0.810	0.828	0.913	0.839
		SI2	0.901				
	Perceived competence innovation	CI3	0.873	0.810	0.815	0.887	0.725
		CI5	0.864				
		CI6	0.815				

Note: Higher Order Construct (HOC); Lower Order Construct (LOC); Cronbach's Alpha (α); Composite Reliability (C.R.); Average Variance Extracted (AVE)

Table 2. Study Main Variable Reliability and Convergent Validity

Study main variables	α	rho_A	C.R.	AVE
Creative Climate	0.908	0.913	0.924	0.527
Organisational Innovation	0.888	0.891	0.913	0.600
Knowledge Management	0.896	0.924	0.917	0.535

Note: Cronbach's Alpha (α); Composite Reliability (C.R.); Average Variance Extracted (AVE)



Figure 2. Measurement Model Results from the PLS-SEM Analysis

Table 3. Discriminant Validity using Heterotrait-Monotrait Ratio (HTMT) for Reflective LOC

Lower Order Constructs (LOC)	1	2	3	4	5	6	7	8	9	10
Perceived competence innovation (1)										
Knowledge Acquisition (2)	0.486									
Knowledge Creation (3)	0.772	0.658								
Knowledge Sharing (4)	0.382	0.681	0.796							
Knowledge Storage (5)	0.844	0.615	0.832	0.633						
Organisational Support (6)	0.604	0.652	0.865	0.672	0.649					
Process Innovation (7)	0.792	0.410	0.849	0.589	0.846	0.750				
Structural Innovation (8)	0.774	0.551	0.657	0.558	0.741	0.605	0.716			
Supervisory Support (9)	0.647	0.780	0.712	0.455	0.600	0.805	0.606	0.797		
Workgroup Support (10)	0.717	0.730	0.693	0.696	0.720	0.494	0.487	0.771	0.710	

Table 4. Discriminant Validity using Heterotrait-Monotrait Ratio (HTMT) for HOC

Higher Order Constructs (HOC)	1	2	3
Knowledge Management (1)			
Creative Climate (2)	0.776		
Organisational Innovation (3)	0.809	0.752	

Table 5. Assessing the Significance of the Path Weights for the Formative LOC

Variable Paths	Weight	T Stat	P Values
Perceived Competence Innovation -> Organisational Innovation	0.469	12.647	0.000***
Process Innovation -> Organisational Innovation	0.346	11.799	0.000***
Structural Innovation -> Organisational Innovation	0.333	10.187	0.000***
Knowledge Acquisition -> Knowledge Management	0.180	3.921	0.000***
Knowledge Creation -> Knowledge Management	0.242	8.485	0.000***
Knowledge Sharing -> Knowledge Management	0.197	5.534	0.000***
Knowledge Storage -> Knowledge Management	0.571	10.683	0.000***
Organisational Support -> Creative Climate	0.231	6.580	0.000***
Supervisory Support -> Creative Climate	0.557	8.920	0.000***
Workgroup Support -> Creative Climate	0.383	7.630	0.000***

Note: Lower Order Constructs (LOC); ***p<0.001

Data Management

During the preliminary analysis, we examined the pattern of the missing values and a few (seven) cases that had missing values were discarded. After the analysis of missing values, we retained 235 units of inquiry usable cases that were later on aggregated into 51 cases according to the unit of analysis which was parastatal organization. For the purpose of data aggregation, parastatal organisations were coded 1-51 and the number of survey instruments from each parastatal organisation were accordingly entered. During data aggregation, we used “parastatal organisation” as the break variable and this created a new data set of 51 cases which was used to test both the measurement and structural models. The measurement model was used to test for reliability and validity of the study variables while the structural model was used to test the hypotheses. The

measurement and structural modeling was done using PLS-SEM in SmartPLS 3.3 software. SmartPLS Bootstrapping technique was used to run the structural model which generated t-values and p-values. The t-value ≥ 1.96 was considered to have a significant effect between the study variables. The main purpose of this study is to analyse the interaction effect of knowledge management and creative climate towards organizational innovation. There is an interaction effect if the contribution of the independent variable (knowledge management) on the dependent variable (organizational innovation) varies as a function of the changes in the moderator which is the creative climate in this current study.

SmartPLS centred the main effect variable (knowledge management) and the moderator (creative climate) by subtracting the mean from all the scores to get marginal mean scores in order to get the interaction term that can be used to test for interaction through path analysis. These variables were centred to minimize multicollinearity which is a common problem in the multiplicative process of generating the interaction term. This was done in line with other studies like Kaawaase et al. (2020) where they centred intellectual capital and professionalism to obtain the interaction term. While testing for the interaction effect, if the coefficient of the interaction term is significant, then the researcher would have proved the occurrence of interaction in the model (Jose, 2013). According to Jose (2013), the researcher must further plot interaction graphs using the Mod-graph to determine if the lines are not parallel in order to confirm interaction in the model. The following section presents the results of the study.

Results

In this section, we present our study results starting with the structural modeling results followed by the graphing results.

Table 6. Structural Model Results

Variable Paths	β	T Stat	P Values	VIF	f2
Creative Climate -> Organisational Innovation	0.313*	2.232	0.026	2.527	0.126
Knowledge Management -> Organisational Innovation	0.570** *	3.087	0.002	2.950	0.359
Moderating Effect 1 -> Organisational Innovation	0.004	0.037	0.970	1.538	0.000
Predictive Criteria	R2	Adj.R2	Q2		
Organisational Innovation	0.693	0.673	0.536		

*p<0.05, ***p<0.001

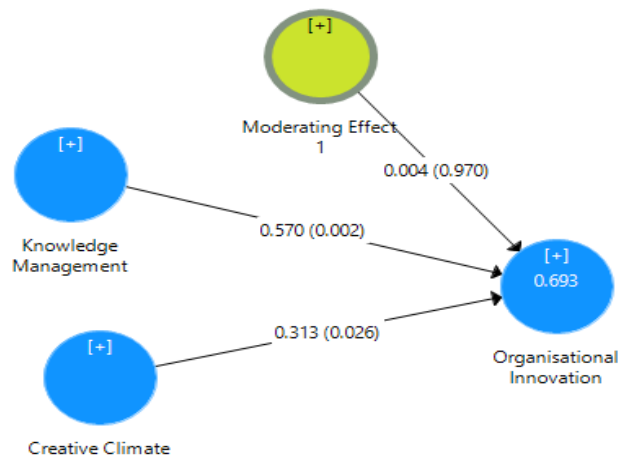


Figure 3. Results of the SmartPLS Structural Model

Knowledge Management and Organizational Innovation

The results in Table 6 show that knowledge management plays a significant role on organizational innovation ($t = 3.087$). This finding points to the fact that positive changes in knowledge management are positively associated with changes in organizational innovation. In this regard, we can state that when an organization improves the acquisition, creation, sharing of knowledge resources, this improvement may be related to better organizational innovation. Based on the results, H_1 which was stated that knowledge management will be significantly related to organizational innovation is supported.

Creative Climate and Organisation Innovation

The results from Table 6 further show that creative climate plays a significant role on organisation innovation ($t = 2.232$). The finding implies that positive changes in the creative climate of an organization are positively associated with changes in innovations carried out in the organization. The finding reveals empirical support for the extant literature that there is a positive relationship between creative climate and organizational innovation. This evidence seems to suggest that changes in the creative climate of organization can be related to positive changes of organizational innovation. Based on the results, H_2 which stated that creative climate will be significantly related to organizational innovation is supported.

Interaction Effect of Knowledge Management and Creative Climate on Organisational Innovation

The results in Table 6 show that the interaction effect of knowledge management and creative climate on organizational innovation is not significant ($t = 0.037$). Given that the interaction term is not significant, then it is clear that hypothesis H_3 which stated that creative climate will moderate the relationship between knowledge management and organizational innovation is rejected. Accordingly, we state that there is no significant interaction effect of knowledge management and creative climate on innovation. Therefore, it appears, the model used to examine the interaction effect is additive because as the results in Table 6 indicate, the contribution of knowledge management is independent of the contribution of creative climate towards the changes that occur

in organization innovation. The finding is contrary from the hypothesized non-additive model which we had thought that the contribution of knowledge management to organization innovation is supported by the variation in creative climate in the organization. In terms of effect size (f^2), the results in Table 6 show that knowledge management had a large effect on organisational innovation, creative climate had a medium effect while the interaction term had no effect based on the criteria that the effect size of > 0.35 is large, 0.15 is medium, whereas 0.02 is small (Cohen, 1988 as cited by Hair et al., 2019). From the results in Table 6 and Figure 3, we find that knowledge management (the main effects), creative climate (the moderator) and the interaction term account for 69.3% ($R^2 = 0.693$) of the overall variance explained in organizational innovation (the dependent variable). The R^2 ranges from zero to one, with higher values suggesting stronger predictive power. The R^2 values of 0.75, 0.5, and 0.25 can be considered substantial, moderate, and weak respectively (Hair et al., 2019). Accordingly, the predictive power of our model is moderate. The results in Table 6 further show that there is predictive relevance since Q^2 is greater than zero ($Q^2 = 0.536$) (Hair et al., 2019). The predictive relevance is generated through PLS blindfolding procedure which determines the quality of the structural model (Hair et al., 2019). The results in Table 6 also show that there is no threat of multicollinearity among the predictor variables since the values of the Variance Inflation Factors (VIF) are below three (Hair et al., 2019). In order to further test for the interaction effect, graphing was done and the results are presented in Figure 4.



Figure 4. The Interaction Effect of Knowledge Management and Creative Climate on Organizational Innovation

The results in Figure 4 still show that there is no interaction effect of knowledge management and creative climate on organizational innovation since the lines are parallel implying no interaction of the main effect with the moderator (Jose, 2013). Therefore, the changes in the levels of creative climate do not support the variation in knowledge management towards organizational innovation. The graphing results are in line with the structural model results that revealed a non-significant interaction term of knowledge management and creative climate. According to Jose (2013), an interaction occurs if the variation in the levels of the main effects is a function of the variation in the levels of the moderator in order to prove a conditional relationship of moderation. The results of this study did not support this conditional relationship since the lines are parallel which confirms that creative climate is not a moderator of the relationship between knowledge management and organizational innovation. Based on the above results, the following section presents the discussion of these results.

Discussion

The main purpose of this study is to test the interaction effect of knowledge management and creative climate towards organizational innovation. The findings of this study revealed that there is no significant interaction effect of knowledge management and creative climate towards organizational innovation. These findings imply that knowledge management practices are not supported by the creative climate in a bid to execute organizational innovation but rather the two predictor variables act independent of each other. One plausible explanation from this finding is that there is no organizational system in parastatal organizations in Uganda that integrates organization support, supervisory support, and work group support with the knowledge management practices such as knowledge sharing with the aim of building organizational innovation. That is why probably knowledge management and creative climate are distinctively associated with organizational innovation in Uganda parastatal organizations.

The findings of the study indicated that knowledge management plays a significant role on organisational innovation. This finding suggests that organizational innovation occurs in Uganda parastatal organizations through the use of knowledge resources to create new organization structures, processes and to review organization competences. The findings in this study are in line with the previous researchers who found out that knowledge resources play an important role in organizational innovation (e.g. Zaid et al., 2015). The use of knowledge in building organizational innovation can be either explorative or exploitative whereby the former refers to the use of knowledge for the organizational innovation while the latter implies the use of the existing knowledge to execute organizational innovation. The explorative knowledge use is based on knowledge acquisition for instance through benchmarking, consultancy reports, or new talent. For the case of exploitative knowledge use, managers can retrieve existing knowledge for accomplishing organizational innovation.

Engaging in knowledge management practices builds absorptive capacity of Uganda parastatal organizations to carry out organizational innovation. Absorptive capacity is the ability of the organization to assimilate knowledge into redesigning and implementing new organizational structures, processes and reviewing organizational competences. Absorptive capacity is determined by the quantity and quality of knowledge resources that the organization has acquired,

created, and stored. Knowledge resources can be specifically applied during strategic planning summits of the top management teams in parastatal organizations where new ideas are utilized to redesign and implement new organization structures, processes and to develop new competences. Parastatal organizations can benchmark better structures, processes and competences or utilize consultancy reports for organizational innovation. This useful information (knowledge) can be shared in explicit or tacit forms among the top management teams for organizational innovation. Knowledge sharing is deemed important for organizational innovation as emphasized by scholars like Lin (2007) who found out that willingness to donate and collect knowledge is key in organizational innovation since knowledge sharing facilitates the implementation of new ideas, processes, and services.

In this study, the contribution of knowledge management towards organizational innovation was found to be independent of the support of creative climate since the interaction effect was not significant. The results showed that a creative climate on its own is a significant predictor of organizational innovation. This implies that a conducive creative climate stimulates employee creativity as a gateway for organizational innovation. Organizational innovation is likely to occur when parastatal organizations encourage employees to generate new ideas which are synthesized and implemented in form of new organizational structures, processes, and competences. The encouragement for employee creativity maybe in form of; allowing room for experimentation, providing idealization time, assigning challenging tasks, and rewarding new and unique ideas. This is in line with what Mathisen et al., (2012) referred to as building a creative organization by creative leaders. Besides these scholars, Nasurdin et al., (2014) emphasized the need for idea support, employee constructive debate, and challenging tasks for employee creativity. In their study they state that organizations which allow debates where employees generate different ideas and experiences promote employee creativity which is a precursor for organizational innovation. They further state that organizations should be agreeable to employees' new ideas and suggestions.

Organizational innovation is generated when the organization encourages employees to think outside the box and have the freedom to challenge the status quo of certain issues that affect organizational effectiveness and efficiency. This is what Cangemi and Miller (2007) described as breaking out of the box in order to promote employee creativity which is required for innovation in the structures, processes, and competences. The importance of creative climate towards organizational innovation is also supported by Lin and Liu (2012) who found a positive and significant relationship between creative climate and innovation in Taiwan companies.

Conclusion and Implications

From the above discussion, this study draws the following lessons. As much as the creative climate support in building the relationship between knowledge management and organizational innovation was presumed to be imperative, this study confirms that creative climate does not moderate knowledge management practices towards organizational innovation. Knowledge management practices play a critical role in organizational innovation. However, knowledge management practices can translate into organizational innovation without being supported by the creative climate. Therefore, it appears the relationship between knowledge management and organizational innovation requires different moderating variables other than the creative climate.

This scenario requires further investigation by other researchers. Nevertheless, we learn from this study that organizations can acquire and share knowledge in a bid to redesign organizational structures, processes and development of organization competences with the aim of building adaptive capacity. Structural innovation can be executed through job redesigns, programme redesign, and review of action plans. Process innovation may occur through business process reengineering. Furthermore, perceived competence innovation requires improvement of task handling behavior, risk handling behavior, and resource handling behavior. This current study has provided evidence that creative climate is important for building organizational innovation. Thus stronger organizational support, supervisory support, and work group support towards employee creativity are paramount for stronger adaptive capacity in an organization. Furthermore, from this study we learn that besides the common innovations in the extant literature (product innovation, marketing innovation, and technological innovation) organizations can also emphasize structural innovation and perceived competence innovation which seem to have received less attention among scholars.

This study generates both theoretical and practical implications. Theoretically, from the perspective of the dynamic capabilities, this study contributes to the principle of continuous development and renewal of various capabilities to make the organization better. The findings of this study showed that knowledge resources and creative climate capabilities are critical for building organizational innovation capabilities. The dynamic capabilities theory postulates the importance of an organization to reformulate its organizational capabilities in order to build adaptive capacity (Teece et al., 1997). Basing on the dynamic capabilities theory, there is need for organizations to continuously improve their creative climate and develop knowledge resources for purposes of promoting innovation capabilities. This study provides evidence for the application of the dynamic capabilities theory in building organizational innovation based on knowledge resources and a conducive creative climate.

The practical implications of this study are as follows. Organizations should provide room for experimentation whereby learning from mistakes is encouraged. From the mistakes, employees can generate new ideas about how to avoid such mistakes in the future. Employees who generate new and unique ideas that can add value to the organization should be rewarded. There is need for psychological safety to be guaranteed by organizations in order for employees to feel free to critique the status quo of structures, processes and competences. Organizations should engage in benchmarking, consulting, research and development as some of the avenues for acquiring and creating knowledge that is required for organizational innovation. Organizations should source, hire and retain talent that is critical for building adaptive capacity. Managers should encourage knowledge sharing whereby employees freely, seek for knowledge from those who know (knowledge seeking) and help those who do not know (knowledge helping). This knowledge sharing behavior necessitates the creation of communities of practice which are innovation driven. Members in these communities exchange knowledge for purposes of organizational innovation. Organizations should create knowledge repository with easy interoperability and retrieval system which can be accessed by employees in case of need for critical knowledge resources.

This study had some limitations. First, the study used a cross sectional design whereby we collected data only once without repetition as it is the case with the longitudinal design. Due to the cross-sectional nature of the data, we cannot assume causality by the predictor variables onto the organization innovation. Future studies may use a longitudinal design which is robust enough to analyse the cause-effect relationships among the variables. Second, the study used a small sample size given the limited number of parastatals in Uganda. The small sample size may have affected the statistical power and variance of the correlations, regression coefficients and the moderation results. A bigger sample size which can consider a wider public sector is hereby recommended. The study used a five point Likert scale which includes a neutral point that is prone to social desirability, whereby respondents are tempted to score the neutral point. Conceptually, this study treated the variables as multidimensional concepts whereby the effect of the uni-dimensional constructs of knowledge management and creative climate on organizational innovation was not examined which requires further investigation. Lastly, the use of survey instrument cannot provide answers to the how question - how relationships about the study variables occur in the study population. Thus the use of qualitative approaches is necessary to collect qualitative data about how knowledge management and creative climate relate with organizational innovation. Despite the aforementioned limitations, the paper makes a contribution to the existing body of knowledge specifically to the field of organizational development with emphasis on the role of knowledge management and creative climate in building organizational adaptive capacity.

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Appendix: Survey Instrument

Knowledge Management

Scale							
I strongly disagree	I disagree	I am not sure	I agree	I strongly agree			
1	2	3	4	5			
A	Knowledge Acquisition						
KA1	We acquire knowledge through team work		1	2	3	4	5
KA2	We can locate the source of information that we need		1	2	3	4	5
KA3	We learn from our successes for future reference		1	2	3	4	5
KA4	We gain knowledge from consultancy reports		1	2	3	4	5
KA5	We employ people deemed to have the expertise we need		1	2	3	4	5
B	Knowledge Creation						
KC1	We train our staff		1	2	3	4	5
KC2	Our staff generate useful ideas out of performance mistakes		1	2	3	4	5
KC3	We brainstorm to generate useful ideas for our organisation		1	2	3	4	5
KC4	We do research for our organisation		1	2	3	4	5
C	Knowledge Sharing						
KS1	We conduct regular meetings to exchange experiences		1	2	3	4	5
KS2	Some of our staff discuss issues with professional associations		1	2	3	4	5
KS3	We use newsletters to disseminate information		1	2	3	4	5
KS4	We exchange information with stakeholders		1	2	3	4	5
KS5	Knowledgeable staff share their ideas with other staff		1	2	3	4	5
D	Knowledge Storage and retrieval						
KST1	We have a system for keeping information		1	2	3	4	5
KST2	We have a system for retrieving information		1	2	3	4	5
KST3	Our staff have access to information required		1	2	3	4	5
KST4	Staff can access information on-line		1	2	3	4	5
KST5	We update our knowledge databases		1	2	3	4	5

Creative Climate

Scale									
This is very untrue		This is untrue	I am not sure	This is true	This is very true				
1		2	3	4	5				
A	Organisational Support								
OS1	Our organization rewards new ideas				1	2	3	4	5
OS2	Our organization tolerates risky initiatives				1	2	3	4	5
OS3	Our organization allocates resources to facilitate generation of new ideas				1	2	3	4	5
OS4	Our organisation provides relevant technology for creativity				1	2	3	4	5
OS6	Our organization recognizes new ideas				1	2	3	4	5
OS7	Our organization encourages generation of new ideas				1	2	3	4	5
OS8	Our organization trusts the ideas we generate				1	2	3	4	5
B	Supervisory Support								
SS1	Our supervisor encourages use of diverse skills				1	2	3	4	5

Scale										
This is very untrue		This is untrue		I am not sure		This is true		This is very true		
1		2		3		4		5		
SS2	In our organization, supervisors facilitate creativity					1	2	3	4	5
SS3	In our organization, supervisors set creativity objectives					1	2	3	4	5
SS4	There is supervisory transparency in our department					1	2	3	4	5
SS5	In our organization, supervisors consult with their staff					1	2	3	4	5
C	Work Group Support									
WGS1	We challenge each other’s work in our team					1	2	3	4	5
WGS2	We provide the work support required by any member of our team					1	2	3	4	5
WGS3	Communication in our teams is open					1	2	3	4	5
WGS4	We work in a friendly teamwork atmosphere					1	2	3	4	5
WGS5	Disagreements in our teamwork are constructively resolved					1	2	3	4	5

Organizational Innovation

Scale										
I strongly disagree		I disagree		I am not sure		I agree		I strongly agree		
1		2		3		4		5		
A	Structural Innovation									
SI1	We redesign different strategies to meet our objectives					1	2	3	4	5
SI2	We review the functions of departments in our organization					1	2	3	4	5
SI3	We review performance plans in our organization					1	2	3	4	5
SI4	We improve our systems of handling organization risks					1	2	3	4	5
SI5	We review our programmes					1	2	3	4	5
SI6	We improve on the time our customers take to get served					1	2	3	4	5
SI7	We review the job descriptions of different jobs in our organisation					1	2	3	4	5
SI8	We improve the methods of delivering our services					1	2	3	4	5
B	Process Innovation									
PI1	We redesign the flow of work by the use of information communication technology					1	2	3	4	5
PI2	We design the internet to deliver our services					1	2	3	4	5
PI3	We improve the internet to deliver our services					1	2	3	4	5
PI4	We change the flow of work by eliminating certain activities					1	2	3	4	5
PI5	We change the flow of work by merging certain activities					1	2	3	4	5
C	Perceived competence innovation									
CI1	We improve our leadership behaviours					1	2	3	4	5
CI2	We improve our customer service behaviours					1	2	3	4	5
CI3	We improve our conduct of handling information resources					1	2	3	4	5
CI4	We make new networks for our organization					1	2	3	4	5
CI5	We improve our task performance behaviours					1	2	3	4	5
CI6	We change our behavior of handling organizational resources					1	2	3	4	5

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