

Influence of Knowledge Mapping On Employee Performance in Public Universities in Kenya

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Abstract

Knowledge workers are important and key strategic resources in all types of organizations; they are value creators and value adders whose major contributions come from their abilities to process and apply knowledge and information to completing tasks, making decisions, and solving problems. Through descriptive research design the study examined the influence of knowledge mapping on employee performance in public universities in Kenya. Simple regression analysis revealed positive and significant influence of knowledge mapping on employee performance in public universities in Kenya

Key words: Knowledge mapping, Employee Performance

Introduction

The knowledge worker is a product of education, technological marvel, and modern development in organizational practices and theories, (McFarlane, 2008). Knowledge workers are important and key strategic resources in all types of organizations; they are value creators and value adders whose major contributions come from their abilities to process and apply knowledge and information to completing tasks, making decisions, and solving problems, (Bohlander & Snell, 2007). The management of the knowledge worker coincides with the competitive challenges of human resources management identified by Bohlander & Snell (2007): going global, embracing new technology, managing change, managing talent, and containing costs. Two main principles of knowledge worker management emphasize professionalism and collaboration, and decreasing emphasis on individualized performance metrics and incentive schemes, (DLS Group Inc, 2007).

Generally, best practice models on KM emphasize three factors. Firstly, they put emphasis on enhancing employee abilities or knowledge and skills through effective recruitment and strong training. Secondly, best practice models contain an emphasis on motivating desired behavior through strong incentives. Finally, best practice models promote opportunities for better trained and motivated workers to contribute to their knowledge and skills through work redesign and indirect form of employee participation, (Boxall & Purcell, 2003 as cited in Akhavan & Pezeshkan, 2014).

Today, many organizations suffer not from the lack of knowledge bases but rather from ways of accessing and exploiting existing knowledge. This is the result of adopting a repository view of knowledge management, (Driessen, Huijsen & Grotveld, 2007) in which the focus is on internalizing knowledge and placing it into shared repositories. However, trying to access the appropriate knowledge can be difficult, time consuming and frustrating. Knowledge mapping is a multifaceted approach for creating structure out of an overabundance of potentially useful information. It is a method for coordinating, simplifying, highlighting and navigating in complex knowledge contexts, (Driessen et al. 2007)).

According to Davenport and Prusak, (1998) as cited in (Lee & Fink, 2013), a knowledge map points to knowledge but it does not contain it. It is a guide not a repository. It is a tool for presenting what knowledge resides where (e.g. people, media, organizational units or sources of knowledge outside the organization) and for demonstrating the patterns of knowledge flow (access, distribution, learning). It is used by organizations to find quickly cost effective and up-dated knowledge of their employees represented under different form (graphs, tables, databases, indexes or matrix) in order to help them improve processes like recruitment, promotion or learning & development, (Liang, 2007).

Knowledge mapping is the first step in creating an inventory of knowledge (i.e. the knowledge base) and developing/improving the processes of knowledge sharing. Its principal purpose and clearest benefit are to show people in an organization or within a network/supply chain very fast where to go when they need expertise. It

also helps to understand what knowledge is essential or at risk to be lost and thus needs to be reused or “secured”. Based on knowledge maps organizations can go about developing new models for improving knowledge sharing and knowledge flow and the fulfillment of their mission and goals. Knowledge maps can also help in organizing research activities and analyzing the related flow and impact of knowledge, (Lee & Fink, 2013).

Universities by nature are knowledge-intensive organizations where they are recognized to be in the knowledge business since knowledge production, distribution and application are ingrained in the institutions, (Ho, 2009). Knowledge in this case, is both the main production factor as well as its final product. Studies in Kenya by (Gichuhi, 2014; Ogola, 2010) shows that KM function is mainly focused on Library Departments and is yet to be fully embraced in other functional areas. The study proposes to investigate how KM practices can be applied in all departments through the use of a knowledge champion. This is because knowledge mapping is an ongoing quest within an organization to: discover the location, ownership, value and use of knowledge artifacts; learn the roles and expertise of people; identify constraints to the flow of knowledge and highlight opportunities to leverage existing knowledge, (Walton & Guarasico, 2007). As a practice it consists of survey, audit and synthesis of knowledge, one which may provide a useful solution to the problem of how to manage and coordinate the increasingly complex environment of academic departments, (Murtaza, 2015).

A framework for ‘academic knowledge mapping’ may provide a solution to the challenge of how to locate new forms of useful knowledge in the academic organization, which includes new ways of training employees, stimulating and facilitating knowledge sharing, and establishing useful links with external stakeholders and funders, (Driessen, 2007). Generally, when employees look for knowledge, they draw it from three sources: other employees, documents of various types and information systems (including the internet). This distributed nature of organizational knowledge makes it cumbersome to develop a clear, complete overview and come up with conclusions and often affects performance of employees, (Liang, 2007).

The work of universities centers on four intellectual activities, discovery, teaching, application and integration where according to (Boyer, 1990 as cited in Liang, 2007) discovery and teaching are traditional activities, while application focuses on development of new processes and products, and integration is about societal involvement such as university-industry relation or cooperative engagement. Whereas managing knowledge for traditional activities of discovery and teaching is important, there is increasing emphasis new academic forms of managing the application and integration activities, (Vestal, 2005).

Knowledge mapping involves four key persons, the knowledge maker who creates the details and sets the usage pattern of a knowledge map; the map user who uses the maps to accomplish their tasks and develop learning potential; the map innovators who alter the existing maps through use, reuse and diffusion of knowledge and finally the map champions who uphold the need for knowledge mapping as providing a competitive advantage for the organization (Lee & Fink, 2013). The study proposes to use the measurable variable of knowledge champions because they provide the push for map development and the creation of a new generation of knowledge maps. Map champions compete with others claiming other factors which can generate competitive advantage. The process can be seen as political. The type of map champion depends on where in the structure of the organization the push for the knowledge map originates. The top-down champion creates legitimacy. The bottom-up increases buy-in. The peer process assumes a good knowledge base, (Ho, 2009).

Theoretical and Empirical Literature

2.1 Knowledge Based View

This theoretical concept is developing out of concern for knowledge management, and is an important extension to information economics. It essentially regards the 'product life cycle' of knowledge, applying this to either an internal market within an organization or to the external (consulting) marketplace, a commercial market for professional knowledge. From this perspective, managing the knowledge economy within an organization is important because professional knowledge is a valuable commodity, (Powell & Snellman, 2004). The knowledge-based view of the firm emerges as an extension of the resource based view of the firm and proposes that heterogeneous knowledge bases among firms and the ability to create and apply knowledge are the main determinants of performance difference (Decarolis & Deeds, 1999). The key components of a knowledge

economy include a greater reliance on intellectual capabilities than on physical inputs or natural resources, combined with efforts to integrate improvements in every stage of the production process, (Drucker, 1993). According to this view, there are several important management decisions that are directly informed by the knowledge economics rationale. One decision, for example, is determining how and when to develop professional knowledge internally and under what circumstances it is more attractive to use external experts (Drucker, 1993, Nonaka & Takeuchi 1995, Prusak 1997). Another decision regards how internal knowledge should be combined with external knowledge, that is, consultants. Finally, there is a decision regarding both how and when internal knowledge should be marketed externally, (Salina & Wan Fadzilah, 2010). This study looks at how the internal knowledge can be improved the use of communities of practice, within a structure and culture that encourages knowledge sharing.

Knowledge economy theory describes the need for 'professional support' in organizations. A study by Aminga (2015), recommends implementation of KM practices policy to improve institutional performance in public universities. A study by (Gichuhi, 2014) also recommends the adoption of KM strategies to empower employees with techniques of creating and utilizing their knowledge. An organizational culture that encourages knowledge sharing, creation and contribution to organizational knowledge impacts on its overall performance both at team and individual levels, (Ajmal & Koskinen, 2008). The basic functions of professional support include communication with the environment, reduction of complexity and risk, coordination of the routine tasks issuing from reduced complexity, and standardization, adaptation, and improvement of such routines. All these basic functions are aligned to the objectives of this study which are focused on combining management of competencies within the right culture and supportive structures of communities of practices knowledge mapping and organizational learning.

2.2 Knowledge Mapping and Employee Performance

Hellstrom and Husted (2004) studied knowledge mapping and intellectual capital in Academic Environment and concluded that knowledge mapping provides a fruitful avenue for intellectual capital management in academic environments. The study concluded that knowledge mapping serves as a coordinating mechanism for individual academics, thereby creating empowerment while still serving operational and collective objectives. The study however, only concentrated knowledge mapping practice without addressing the interrelationships of other practices which also affect the performance of academicians.

Lee & Fink (2013) did a study on knowledge mapping: "encouragement and impediment to adoption" and the results showed that encouragement factors were found to be those that organizational management has direct control over such as communicating and promoting KMaps and appointing a management champion. Impeding factors were those under the control of software maintenance management and are more difficult to manage. They focused on personal factors (staff's perception of the usefulness and ease of use of KMaps), subjective norms (peer influence and culture), behavioural control (training) and the design of the KMap itself. While the research provided an exploratory KMap Adoption (KAM) Model, it did so through the lens of innovation, adoption and diffusion theories only. There are opportunities to examine the topic in a wider manner to provide a more holistic view of KMap adoption.

A study by Driessen, Huijsen, and Grootveld (2007) on a framework for evaluating knowledge mapping tools using online survey revealed that their framework can be useful, insightful and robust when applied to new knowledge-mapping tools/functionality. Research limitation was that the important issue of how to embed knowledge-mapping tools in organizations was not considered in the study.

The findings of a study by Ho, (2009) on the relationship between knowledge management enablers and performance, indicated that knowledge mapping is an ongoing quest within an organization to discover the location, ownership, value and use of knowledge artifacts; learn the roles and expertise of people; identify constraints to the flow of knowledge and highlight opportunities to leverage existing knowledge. The role of a map champion who has support from the senior leadership becomes critical to achieve this.

A framework for 'academic knowledge mapping' may provide a solution to the challenge of how to locate new forms of useful knowledge in the academic organization, which includes new ways of training employees,

stimulating and facilitating knowledge sharing and establishing useful linking with external stakeholders and funders, all of which this study has proposed as KM practices.

Research Methodology

3.1 Research Design

Research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data, (Kothari 2013). Further, Oso and Onen (2009) posits that through descriptive research design, questions pertinent to what is happening, how it has happened and why it has happened can be answered. Cooper and Schindler (2011), further indicates that a descriptive study is concerned with finding out the what, where and how of a phenomenon. The study used descriptive research design since it will enable the researcher generalize the findings to a larger population to obtain information concerning the current status of the phenomena and to describe "what exists".

3.2 Target Population

The complete enumeration of all the elements under consideration in a study is known as target population, (Polit & Beck, 2004). According to Commission for University Education (CUE) website (www.cue.or.ke), Kenya has 31 public chartered Universities. The target population was drawn from employees working in the 10 chartered public universities in Kenya which is estimated at 495 based on information obtained from the university websites. The unit of analysis was 10 selected public universities using the criteria of those which have been in existence for more than 10 years.

3.3 Sampling Frame and Techniques

A sampling frame is a complete list of all the members of the population that we wish to study. Sample is a subset of the total population which is selected to be the true representative of the target population. A sample is selected through sampling process (Oso & Onen, 2009). Sampling technique can be either probabilistic or non-probabilistic, in the former there are equal chances of being selected while in the latter the respondent is selected through subjective criteria (Kothari, 2013). The study used stratified sampling method that uses a stratum which is a subset of the population that shares at least one common characteristic, (Kothari, 2013). This technique allows the researcher to perform a sound study on a small sample selected to provide information which is rich in qualitative context in order to answer research questions and meet objectives. Additionally, the method has a higher statistical precision compared to simple random sampling because the variability within the subgroups is lower compared to the variations when dealing with the entire population. This also means that it requires a small sample size which can save a lot of time, money and effort of the researchers. The sample size for students was calculated based on Yamane's formula (Yamane, 1967).

$n = N / (1 + N * e^2)$; where, n = the sample size, N = the size of population, e = the error of 5 percentage points; $n = 495 / (1 + 495 * 0.05^2)$ $n = 221$. By using Yamane formula with sampling error of 5% and 95% confidence intervals yielded a sample of 221 from a target population of 495. Resultant sample from each stratum will be distributed as shown in Table 3.1.

Table 3.1 Sample Size Public Universities - 10 years old and above

University	Deans/Directors	Senior Management	Total
University of Nairobi	33	22	55
Moi University	27	16	42
Kenyatta University	20	11	31
Masinde Muliro	19	5	24
Egerton University	15	4	19
Maseno University	13	3	15
Kisii University	6	2	8
Technical University of Mombasa	4	2	6
Technical University of Kenya	11	2	13
Dedan Kimathi University	5	2	7
Total	153	68	221

3.4 Data Processing and Analysis

After the data collection the questionnaire were coded, entered and analyzed using Statistical Packages for Social Scientists (SPSS) version 22. The social demographic characteristics of the respondents were analyzed using descriptive statistics. According to Brace, Kamp & Snelgar (2003) descriptive statistics are statistical tools used to summarize large volumes of data with very few figures. Simple regression analysis was carried out to show the nature of the relationship between employee core competencies and employee performance, (Kothari, 2011). The level of significance was tested at 5% whereby if the p value was less than 0.05 then there was enough evidence to reject the null hypothesis and accept the alternative hypothesis. Regression model was of the form;

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where; Y = Employee Performance, X_1 = Knowledge Mapping.

Findings and Discussions

4.1 Descriptive Statistics of Knowledge Mapping

The study determined the influence of knowledge mapping on employee performance in Kenya public universities. Knowledge mapping is the initial stage on inventory management of knowledge within an organization. KM are tools which are developed to point mediums in which requisite knowledge can be gathered (Lee & Fink, 2013). KM identification save on times and other resources which are requisite for efficient gathering of requisite information from internal and external sources.

As shown in Table 4.1 majority 39.6 percent agreed and 30.7 percent strongly agreed that they have structured way of collecting data. This enhances gathering of information and may be frustrating due to non-objective approach on KM by public universities in Kenya. Secondly, majority 31.7 percent agreed and 24.3 percent strongly agreed that there is a structured way of collecting and keeping documents in Kenyan public universities. This creates an avenue of consolidating and harmonizing similar information which would in its future application. Thirdly, majority 39.1 percent agreed that and 24.8 percent strongly agreed their universities update their handbooks and work guidelines which were frequently used to inform employees on new organization development. There is need for continued communication owing to dynamic human capital management strategies. This will not only enhance performance but also minimize conflicts emanating from poor communication. Also, majority 46 percent reported agreed that universities were providing access to information required to perform their duties. Majority 63.4 agreed that to little extent and 18.8 percent strongly agreed they have guidelines to whom information should be submitted. Further, majority 43.6 percent strongly agreed and 35.6 percent agreed that their universities has clear guidelines to who information should be submitted.

Majority either agreed mean = 4.0 that that their universities had designated people who offered advice on work related issues as need arose or groups had arose arranged as per organization needs on information sharing efficiency. Also, majority either agreed mean = 4.1 that their universities had groups met regularly to evaluate information needs or employees used intranet to share information within their organization. Further, majority agreed mean = 3.9 and standard deviation = 1.1 that public universities had structured way of processing and sharing information needed. Moreover, majority either agreed mean =4.0 that public universities had channels of retrieving and accessing information through people and technology. Majority 47 percent strongly agreed and 35.6 percent agreed that public universities has process of skills gaps identification and majority 45 percent strongly agreed that they have directory of skills, knowledge, individual relationships and resources. On overall majority agreed mean = 3.9 and standard deviation 1.0 that knowledge mapping had influence on performance of employees in Kenyan public universities.

The findings mirrored Hellstrom et al., (2013) knowledge mapping assist in coordination of different information sources and creation of organization empowerment which ultimately improves organization performance. Similarly, Lee and Fink (2013) argued that knowledge mapping impact employees' behaviors positively and diffuse innovation amongst employees in different levels of organization management. Moreover, these findings concurred with Driessen et al., (2007) who argued in favor of customized organization tool geared towards gathering and dissemination information as per its unique needs. These calls for development of customized information gathering tools which will not ease data gathering but also mapping and disseminating it as per organization need. Further, in tandem with Ho (2009) the study agreed that through knowledge mapping employee performance can be enhanced since it easier to identify barriers to optimal performance within an organization. Moreover, it creates harmonious communication mechanism between relevant stakeholders within an organization structure.

Table 4.1 Descriptive Statistics of Knowledge Mapping

	n=202					Mean	Std. Dev
	SD	D	NS	A	SA		
Has a structured way of collecting data	5.4	8.9	15.3	39.6	30.7	3.8	1.1
Has a structured way of collecting and keeping documents	7.9	17.3	18.8	31.7	24.3	3.5	1.3
Facilitates communication and knowledge sharing between individuals and groups	5	11.4	19.8	39.1	24.8	3.7	1.1
Updates handbooks and work guidelines which are frequently used to inform employees of new development	6.9	9.9	20.3	30.7	32.2	3.7	1.2
Provides access to information resources required to perform my work	4	5.9	9.9	46	34.2	4.0	1.0
Has clear guidelines as to whom to submit information	3	2.5	12.4	63.4	18.8	3.9	0.8
Has clear guideline as to where to submit information	1.5	4	15.3	35.6	43.6	4.2	0.9
Has designated people who offer advice to me on work-related issues when required	5.4	5.9	10.4	39.1	39.1	4.0	1.1
Groups have emerged that share what they know as effectively as they should	3	5.9	12.9	44.1	34.2	4.0	1.0
Groups hold regular meetings to review emerging or new developments	2.5	5.4	10.9	39.6	41.6	4.1	1.0
Employees regularly use intranets to share information on processes within the institution	2	7.9	7.9	45.5	36.6	4.1	1.0
Has structured processes of knowing what information is required	5.9	5	15.8	40.1	33.2	3.9	1.1
The channels of accessing and retrieving of information (e.g. through people and technology) are available	2.5	7.4	18.3	35.1	36.6	4.0	1.0
Information sources at my university are well labeled and easily accessible	3	5.4	10.9	49.5	31.2	4.0	1.0
Has processes to identify gaps between required skills and current skills	4.5	5.9	6.9	35.6	47	4.2	1.1
Has a directory of skills, knowledge, individual relationships and resources	2.5	4.5	15.3	32.7	45	4.1	1.0
Overall average						3.9	1.0

*SD- Strongly disagree, D-Disagree, NS- Not Sure, A-Agree, SA-Strongly agree

4.2 Knowledge Mapping has no Significant Influence on Employee Performance in Public Universities in Kenya

The hypothesis of the study stated that there was no significant influence of knowledge mapping on employee performance in public universities in Kenya. As shown in Table 4.2 regression model summary shows an R squared on 0.63, which depicts that 63 percent of changes in employee performance is significantly influenced by knowledge mapping in public universities in Kenya.

Table 4.2 Model Summary on Test for Significant Influence of Knowledge Mapping on Employees Performance in Public Universities in Kenya

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.791a		0.63	0.62

a Predictors: (Constant), KMAP

As shown in Table 4.3 analysis of variance on test for significant influence of knowledge mapping on employee performance in public universities in Kenya revealed that it was significantly influenced ($F = 333.374$, p value <0.05).

Table 4.3 Analysis of Variance on Test for Significant Influence of Knowledge Mapping on Employees Performance in Public Universities in Kenya

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108.173	1	108.173	333.374	.000b
	Residual	64.896	200	0.324		
	Total	173.069	201			

a Dependent Variable: EMP

As shown in Table 4.4 there was significant influence between knowledge mapping and employee performance in public universities in Kenya ($\beta = 0.73$, p value <0.05). These findings concurred with Hellstrom et al., (2013) who reported positive significant influence of knowledge mapping on employee performance. Similarly, Drissen et al., (2007) argued that there is need to consolidate information so as to support quality of decision making. Similar findings were echoed by Ho (2009) who found positive and significant influence of knowledge mapping and employee commitment.

$$EMP = 0.04 + 0.73 KMAP \dots\dots\dots 4.3$$

Table 4.4 Regression Coefficient on Test for Significant Influence of Knowledge Mapping on Employees Performance in Public Universities in Kenya

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.04	0.04		1.05	0.30
	KMAP	0.73	0.04	0.79	18.26	0.00

a Dependent Variable: EMP

Conclusion and Recommendations

It was found that knowledge mapping had positive and significant influence on employee performance in Kenyan public universities. This implies that improved knowledge mapping enhanced employee performance in Kenyan public universities. Hence, it can be concluded that there is need for public universities to enhance their data collection strategies, structure the methods they have for information storage and develop clear and easier guidelines for information submission from relevant stakeholders. Further, they ought to sensitize employees on measures deployed in place for information access and retrieval and create directory for skills identification and its gaps management.

There was positive significant influence of knowledge mapping on employee performance in public universities. This calls for adoption of heterogenous measures for knowledge identification, location and grouping. This will enhance employee performance. Knowledge identification can be achieved if public universities incorporate technology to structure information gathering and storage. All employees ought to be continuously informed on new university development on knowledge identification mechanisms and groups should be formed as per their knowledge needs, this will mitigate on knowledge sharing costs.

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