The Effect of Performance Management Indicators on Knowledge Management:
An Empirical Investigation

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Abstract
Knowledge Management consists of making sure that the teams and individuals have the know-how they need, to make their task easier and to improve their performance. Knowledge management therefore feeds performance management, and knowledge is also derived from performance. Performance and knowledge management can form a closed loop. As organisations has become increasingly aware that knowledge management is among their most valuable strategic assets, they will be forced to re-evaluate the way in which they engage with the source of that knowledge to underpin their sustainable development. Key indicators that measure the performance of knowledge management integration are needed. They need to measure both effectiveness and efficiency. KM is now an integral part of an organisation's business processes. The effective implementation of KM strategy needs to measure current performance and guide the organisation toward its changing image of the future. KM and particularly its performance measurement dimension has become the most important economic task for most organisations. This study is based on research conducted in a large construction company. The paper provides an understanding of indicators of performance management that have an effect on knowledge management. The result shows that all indicators of performance management in the study have a positive significant relationship with knowledge management.

I. Introduction

Within the last years, nearly all major corporations started Knowledge Management (KM) initiatives, particularly to strengthen the knowledge base within the organization, especially to help employees share, activate and increase their knowledge to finally generate a more innovative, faster acting, competitive organization. The introduction of a KM initiative is a large investment for many corporations. Therefore performance measurement systems are required to make the benefits and the performance of KM initiatives transparent. Especially in times of scarce budgets the usefulness of KM is in doubt, as the business impact of such initiatives often can be hardly quantified or is only indirectly measurable. The industry or branch of the corporation and the corporation itself sets specific requirements for performance measurement of KM. Knowledge management is recognized as an important weapon for sustaining competitive advantage and improving performance. The evaluation of knowledge management (KM) performance has become increasingly important since it provides the reference for directing the organizations to enhance their performance and competitiveness. The twenty first century is the era of knowledge economy, in which most organizations possess knowledge that enables them to improve their performance. How does the organization enhance organizational capabilities to boost internal performance and external competitiveness is a critical issue. Many scholars had attempted to measure the contribution of the KM by different models.

KM practices means the process of acquiring, storing, understanding, sharing, implementing knowledge, and these actions are taken in the organizational learning process with regard to the culture and strategies of the organizations (Kiessling, T. S., Richey, R. G., Meng, J., and Dabic, M,2009). On the other hand, (Bhatti and Qureshi (Bhatti, K. K., and Qureshi, T. M,2007) stated that KM means efforts to explore the tacit and explicit knowledge of individuals, groups, and organizations and to convert this treasure into organizational assets so that individuals and managers can use it in various levels of decision making. KM is a systematic and integrated management strategy that develops, transfers, transmits, stores, and implements knowledge so that it can improve efficiency and effectiveness of the organization's manpower (Dahiya, D., Gupta, M., and Jain, P, 2012)

With knowledge being one of the most important resources today, traditional factors of production have become secondary (Reinhardt et al., 2001). As organizations became aware of the power of knowledge as the most valuable strategic resource in the knowledge economy, knowledge management became widely recognized as essential for the success or failure of organizations. Consequently, over the past 15 years, knowledge management has progressed from an emergent concept to an increasingly common function in business organizations (McKeen et al., 2006). Customer satisfaction is an essential component for the survival of the firm, and firms that are responsive to changes in customer needs, requirements and wants are expected to achieve a sustainable competitive advantage (Griffa, A. F, 2008). Additionally, innovation can be considered as a critical factor in achieving high performance. Innovation is about using technology and knowledge to offer customers a new product or service via improved features or lower prices (Halliday, S. V, 2008).

II. Literature Review

Most of the organisations normally use general business performance management models to evaluate their KMSs and to assess the influence of the KMSs on their business performance. Carlucci et al. (2004) reviewed the role of KM in the business performance management models such as the Balance Scorecard (Kaplan & Norton, 1992), the Business Excellence Model (EFQM, 1999) and most recently the performance prism (Neely et al., 2002). The study depended on the classification of knowledge assets , using a method developed by Marr and Schiuma (2001), into four asset groups (i.e. knowledge of human resources, management or stakeholder relationships, physical infrastructure and virtual infrastructure) to conclude that KM processes will lead to enhancements in competencies, effectiveness and efficiency of organisational processes, business management abilities and business performance. That will finally lead to an increase in value generation for the whole organisation.

A vast amount of knowledge in the project-oriented organisations resides in the heads of numerous individuals who may belong to different companies with different professional backgrounds and many of these companies are unstable and can be completely changed during the period of the project life cycle, which causes difficulty for people to collect, share and manage their knowledge within limited time and budget of the construction projects (Carrillo et al., 2000). The research by Gupta et al. (2000), which discussed practices and challenges of KM in selected organisations, shows that the two major trends currently used when applying KM are measuring the intellectual capital by developing measurement ratios and benchmarks, and mapping knowledge that includes capturing and disseminating knowledge of individuals, mainly through information technology.

An and Ahmad (2008) discussed and represented the influence of environmental factors and the way they affect the ability of KM methods, tools and activities in delivering desirable outcomes for individuals and organisations. Recently, Quink (2008) investigated the impact of knowledge management on the organizational

performance of nonprofit organizations. The results showed that there is a positive relationship between knowledge management infrastructure, knowledge management process, and organizational performance. Suzana and Kasim (2010) studied the significant role of Knowledge management practices in improving the performance of organizations. The results showed that the levels of knowledge management practices were important criteria for determining and improving organizational performance. More recently, Chang and Chuang (2011) examined empirically the effective KM processes from the roles of infrastructure capability and business strategy on firm performance. The results confirmed the impact of KM processes on firm performance. Mills and Smith (2011) studied the impact of knowledge management resources on organizational performance. The results show that some knowledge resources (structure & acquisition) were directly related to organizational performance, while others (technology & culture) were not directly related to organizational performance.

Accordingly, this study analyzes the previous studies and measures knowledge management elements to investigate the correlation between knowledge management and organizational performance.
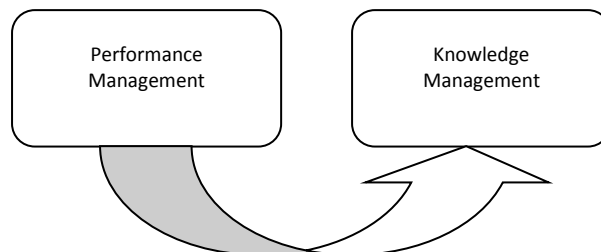

Figure 01: Link between Performance Management and Knowledge Management

The above shown figure 1 shows that there is a close link between the two. It is obvious from this link that knowledge management and performance management will be strongly linked.
More the knowledge betters the performance of the employees. Learning from performance will lead to increase in knowledge.

III. Conceptual Frame Work

Figure 02: Conceptual Framework Knowledge Management with Performance Management variables
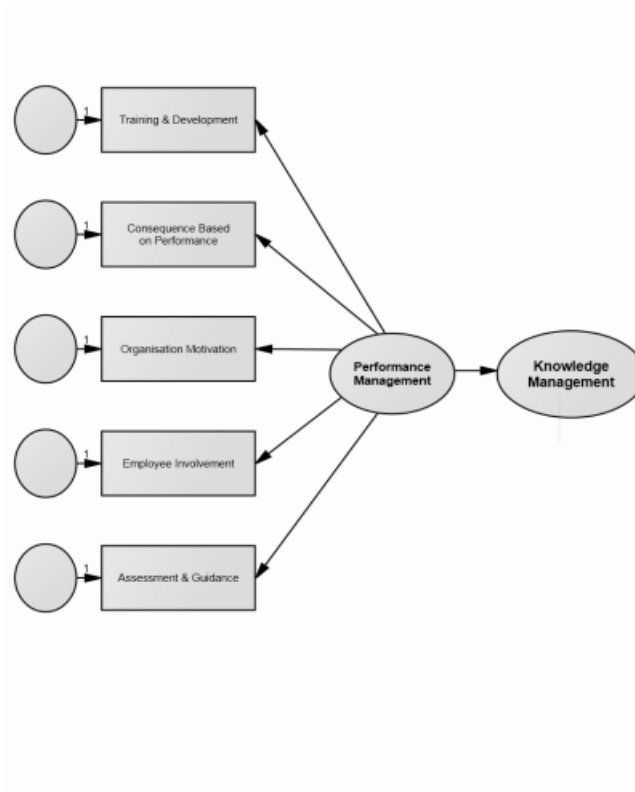
IV. Methodology

Many knowledge management enablers have been recognized as important for successful knowledge management in an organization. Our primary data set for this research was information through circulation of questionnaire to 150 respondents of the company on Performance Management and Knowledge Management. The questionnaire to assess was a 5-point Likert scales with end points labelled strongly agree to strongly disagree. The conceptual model was constructed using the dimensions assessment & guidance, employee involvement, organisation motivation, consequence based on performance and training & development. The sample was collected from both technical and non-technical employees of the company. To analyse the data regression analysis, inter correlation matrix, mean and standard deviation was used. The link between knowledge management and performance management in a large construction company was assessed through correlation analysis between the dimensions of performance management factors and knowledge management.

V. Results and Discussions

Table 01: Regression Analysis for Knowledge Management with Performance Management variables

Model Summary

Multiple R	R Square	Adjusted R Square	Apparent Prediction Error
.978	.956	.955	.044

Dependent Variable: KM_TOTAL
Predictors: AG TOTAL EI TOTAL OM TOTAL CBT TOTAL T&D TOTAL

ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	143.429	5	28.686	628.683	.000
Residual	6.571	144	.046		
Total	150.000	149			

Dependent Variable: KM_TOTAL
Predictors: AG TOTAL EI TOTAL OM TOTAL CBT TOTAL T&D TOTAL

Coefficients

	Standardized Coefficients		df	F	Sig.
	Beta	Bootstrap (1000) Estimate of Std. Error			
Assessment & Guidance	.341	.029	1	138.090	.000
Employee Involvement	.182	.024	1	57.568	.000
Organisation Motivation	.488	.028	1	305.264	.000
Consequence Based on Performance	.103	.023	1	19.988	.000
Training & Development	.289	.025	1	135.634	.000

Dependent Variable: Knowledge Management

From the above table it is interpreted that R^2 (R Square) value is .956, this indicates that ninety six percentage variations in Knowledge Management are explained by Performance Management (Training & Development, Consequence based on performance, Organisation Motivation, Employee Involvement, Assessment & Guidance). It is also seen that the coefficients table shows that Performance Management (Training & Development, Consequence based on performance, Organisation Motivation, Employee Involvement, Assessment & Guidance) is a significant predictor of knowledge management, because significance value is less that the criterion alpha level (ie.,.000, $p < 0.05$). It indicates that the study variables promote knowledge management which is significantly proved. The beta value of the predictors indicates that assessment & guidance ($\beta = .34$, $p < .05$) which states that one unit increase in knowledge gathering leads to 34 percent increase in knowledge management. Where employee involvement ($\beta = .18$, $p < .05$) increased by one unit there will be an increase of 18 percent in knowledge management, organisation management ($\beta = .48$, $p < .05$) is increased by one unit there will be an increase of 48 percent in knowledge management. Looking into consequence based on performance (($\beta = .10$, $p < .05$) is increased by one unit there will be an increase of 10 percentage in knowledge management and training & development ($\beta = .29$, $p < .05$) is increased by one unit there will be an increase of 29 percentage in knowledge management. It is also seen that F statistics, shown as F= 628.683. The F statistics is proven to be statistically significant ($p < .05$) because the value is less than the criterion alpha value.

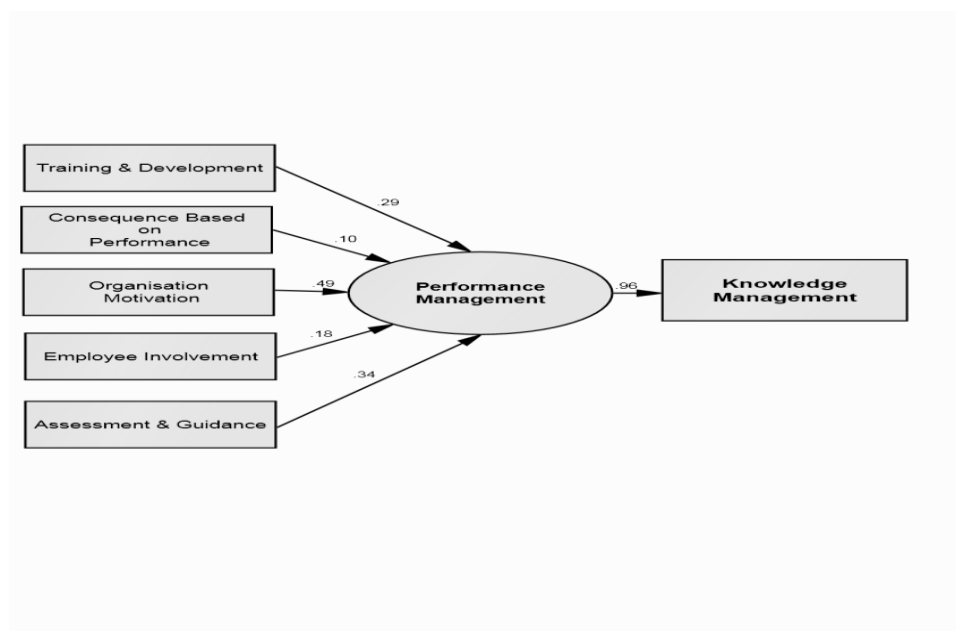*Figure 03: Knowledge Management with Performance Management variables*

Table 02: Inter correlation Matrix between Knowledge Management and Performance Management variables

Dimensions	T&D	CBT	OM	EI	AG	PMS	KM
T&D	1						
CBT	.091	1					
	.270						
OM	.190*	.402**	1				
	.020	.000					
EI	.398**	.388**	.441**	1			
	.000	.000	.000				
AG	.272**	.223**	.323**	.509**	1		
	.001	.006	.000	.000			
PMS	.700**	.501**	.667**	.829**	.616**	1	
	.000	.000	.000	.000	.000		
KM	.565**	.482**	.791**	.743**	.714**	.961**	1
	.000	.000	.000	.000	.000	.000	

*. Correlation is significant at the 0.05 level (2-tailed).   **. Correlation is significant at the 0.01 level (2-tailed).

The above table portraits the relationship between the study variables. It is understood there is a strong relationship between Knowledge Management and overall performance management system variables. This means that changes in one variable are strongly correlated with changes in the other variable. In our correlation result between KM & PM, Pearson's r is 0.961. This number is very close to 1. For this reason, we can conclude that there is a strong relationship between KM and PM variables. However, we cannot make any other conclusions about this relationship, based on this number. It is also found that there is a positive relationship between KM & PM. It is that if one variable increases in value, the second variable also increases in value. Similarly, as one variable decreases in value, the second variable also decreases in value. This is called a positive correlation. In the table Pearson's r value of 0.961 is positive. Since Pearson's r is positive, we can conclude that when the amount of KM increases the employee PM also increases. It is here to conclude that there is a statistically significant correlations (p<0.05) between KM & PM. That means, increases or decreases in one variable do significantly relate to increases or decreases in other variable. Looking into the correlation between variables of PM and KM, it is found that all the variables have a positive relationship and statistically significant (p<.05) with KM. That means, increase or decrease in one variable do significantly relate to increase or decrease in KM.

Table 03: Descriptive statistics of Knowledge Management and Performance Management Variables

Dimensions	Mean	Std. Deviation
Training & Development	35.70	6.680
Consequence Based on Performance	9.61	2.433
Organisation Motivation	22.30	4.625
Employee Involvement	29.01	5.754
Assessment & Guidance	9.65	2.732
Knowledge Management	26.10	2.945

The mean value was conducted to measure the use of knowledge management and to determine the extent to which indicator of performance management has high impact on knowledge management. The table shows that the performance management indicator Training and Development have higher value (35.70), whereas; Knowledge Management have (26.10). The detailed results show also that Employment Involvement value (29.01) and organisation motivation (22.30). The detailed results indicates that the present organisation pay more attention to training and development followed by employee involvement, knowledge management and organisation motivation, but other dimensions like consequence based on performance and assessment & guidance also should be given more importance.

VI. Conclusions

The most determining factor in Knowledge Management (KM)'s survival is acceptance and use by industry. With an environment characterized by continued change, diversity and even elements of silent intolerance and conflict, these findings are of extreme importance to KM practitioners, scholars and professionals. In moving past theoretical propositions and investigating growth in KM as it relates to different organizational settings, managerial levels and industries, it can be concluded that KM is taking on a new dimension, one where it is growing in stature, becoming a self-governing entity and also dependent upon performance management of the organization. Growth in KM changed vastly between different industry groupings, with Construction, building materials and mining companies achieving high growth, Consumer goods and utilities, Banks and insurance, Automotive and transport, Government and ICT companies, moderate growth, and educational institutions, low growth. This study reveals the close link between performance management and knowledge management. The factors of PM have an impact on KM. From the results of the survey discussed in the paper, it is concluded that Performance Management based Knowledge Management in organization can prove to be a promising management to enhance performance in the vital areas of organization. Based on the results a conceptual framework was framed for the development and refinement of knowledge management in organization. The approach will enable the organization to proactively respond to the needs of the stakeholders and acquire enhanced capability to plan and develop.

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