IBIMA Publishing
Journal of Organizational Knowledge Management
http://www.ibimapublishing.com/journals/JOKM/jokm.html
Vol. 2011 (2011), Article ID 955926, 15 pages
DOI: 10.5171/2011.955926

The Criteria for Measuring Knowledge Management Initiatives: A Rare Glimpse into Malaysian Organizations

Reza Sigari Tabrizi[1], Yeap Peik Foong[1] and Nazli Ebrahimi[2]

[1]Multimedia University, Cyberjaya, Malaysia

[2]University of Malaya, KL, Malaysia

Abstract

Many challenges are facing measuring KM initiatives and one of the key challenges is to provide a comprehensive set of criteria to measure success of KM programs. The aim of this research is to address the problem of identifying the criteria for measuring KM outcomes among Malaysia companies and seeks to develop widely-accepted criteria based on the systematic review of the literature in order to measure success of knowledge management programs for Malaysian organizations. Hence, attempts were made to discover the most favored criteria among Malaysia organizations and to investigate the relationship between KM criteria and organization's mission, goals, and objectives. In addition, the relationship between KM criteria and success of KM programs were examined using regression analysis. The current population study was composed of 79 Malaysian organizations from different types of sectors. According to results achieved by statistical analyses, the most favored criteria among respondents who participated in this survey were enhanced collaboration, improved communication, improved learning/adaptation capability, sharing best practices, better decision-making, enhanced product or service quality, enhanced intellectual capital, and increased empowerment of employees. Finally, it is hoped that the current study provides a better picture for Malaysia organizations to identify and develop a comprehensive set of criteria to measure success of KM initiatives.

Keywords: Knowledge Management, Knowledge Management Outcomes, KM Criteria, Measuring KM Outcomes

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Introduction

The current business environment is affected by a cutthroat competition, new launched products, and fast technology development (Davenport & Prusak, 1998). The backward-looking performance indicators are no longer sufficient since the knowledge era has begun and organizations need forward-looking indicators to move nimbly (Van Buren, 1999). According to Lubit (2001), today's core competencies and high performance have two primary bases, which are knowledge and intellectual capital. In fact, sustainability of competitive advantage that has derived from special knowledge inside companies is predominantly characterized by exhaustive competition among rivals and shortened product lifecycles (Lubit, 2001). Macintosh (1998) stated that exploiting knowledge assets of a company is a crucial issue to creating sustainable competitive advantage. Hence, Sustainability of companies' competitive advantage in chaos and uncertain business environment is highly related to implementing special knowledge

 Contact author: Reza Sigari Tabrizi e-maill: reza.tabrizi@live.com

to their core business processes and activities (Ndlela L. T. & du Toit, 2001).

Many organizations allocated such resources to implement knowledge management programs. However, latest research surveys have represented that despite companies have claimed to implement KM programs, not many of them are tagged as KM's successful implementer (Chong, Yew, & Lin, 2006). For the sake of implementing successful KM program, considering performance measurement is imperative and timely since not many organizations developed a well-organized performance measures to appraise their knowledge assets (Longbottom & Chourides, 2001). Hence, to organize a well-developed and formal performance measures is a crucial need for KM implementation within organizations (Chong, Yew, & Lin, 2006). In order to determine outcomes, structuring criteria for knowledge management efforts is an essential task of organization (Anantatmula & Kanungo, 2005). Needless to stress, the importance of determining criteria of measuring knowledge management efforts is significant.

Statement of the Problem

An important wide-accepted KM principle is a comprehensive set of criteria to measure outcomes of knowledge management efforts. It can be clearly seen that outcomes may not be identified without criteria; thus, structuring a set of criteria for knowledge management is imperative and timely (Chong, Yew, & Lin, 2006). Similar to a project or imitative that needs to meet a set of criteria to be selected; KM projects can also be evaluated through a set of criteria (Anantatmula & Kanungo, 2005). As such, companies have to establish metrics that are associated with KM criteria.

Knowledge Management Criteria

Perkmann (2002) investigated knowledge value from two different perspectives, which were the macro view and the micro view. According to Perkmann (2002), the macro perspective measures intangible assets of a company by using means like Balance Scorecard, Score Board, Skandia navigators. The main advantage of macro perspectives is to evaluate knowledge management programs from non-financial approaches (Perkmann, 2002). In line with measuring knowledge value, Perkmann (2002) reported a measurement paradox of quantitative approaches. For example, it can be clearly seen that ROI as a financial ratio can only measure the financial gains of a specific project whereas there are many unintentional outcomes that may not be reflected by financial aspects. By contrast, Perkmann (2002) introduced a heuristic measure, which is named "Sveiby's Collaboration Climate Index" (CCI). The assumption behind the CCI is an excellent collaborative environment that facilitates knowledge sharing and hence increases organization's intellectual assets (Perkmann, 2002). Nonetheless, the CCI is a useful tool to find out the determinants, which are crucial for collaboration and knowledge sharing (Perkmann, 2002). In case of determining knowledge management outcomes, KPMG consulting (2000) has published a report on benefits of knowledge management program. KPMG (2000) conducted this research among 423 organizations in three different regions, which were United Kingdom, mainland Europe, United States.

Over 81 percent of the target organizations had knowledge management program, 38 percent had a KM program in place, 30 percent were preparing and 13 percent recognized the need to implement KM program (KPMG, 2000). Participants in KPMG (2000) research study indicated the percentage of the KM drivers inside organizations. According to KPMG (2000), 32 percent of board members, and 41 percent of senior management were belonged as knowledge management greatest drivers. This states that top management of companies supported knowledge management initiatives (KPMG, 2000). KPMG (2000) asked the respondents for their

perspectives about the potential role of KM program that can contribute in gaining particular organizational goals. According to KPMG (2000), respondents believed that knowledge management program can play a role in achieving best results with respect to improving competitive advantage, marketing, improving customer focus, profit growth, product innovation, revenue growth, reducing costs, employee development, investment, and achieving mergers respectively.

BP AMOCO illustrated a set of parameters to assess knowledge management performance (Barrow, 2001). These parameters include efficient communication, employees' motivation, employees' morality, efficient knowledge sharing and transferring, efficient production management, effective project management, effective energy management, improving resource management, high product quality, high service quality, enhancing brand image, and improve company's efficiency (Barrow, 2001). Lynn, Reilly, and Akgün (2000) conducted a survey among such companies to find out the outcomes of knowledge management programs in new product teams. According to Lynn et al. (2000), the outcomes of knowledge management programs include cycle time reduction in launching new products, lower time-to-reach market, lower error and mistake in introducing new products, improving project documentation, more speed in retrieving information, efficient storage, access to best practices, and vision clearness.

Chong et al. (2006) exploited a list of KM outcomes that are grouped based on the previous works. According to Chong et al. (2006), outcomes can be incorporated into five different categories:

- Efficient Knowledge Processes
- Effective Personnel Development
- Customer Satisfaction
- Effective External Relationship
- Firm's Achievement

Knowledge process includes defining, creating, capturing, sharing, disseminating, and using knowledge assets (Van Buren, 1999). It needs to acquire personal knowledge to turn into organization's knowledge for sharing it through corporation (Chong et al., 2006). According to Chong et al. (2006), through systematic knowledge activity knowledge assets can be exploited effectively. One of the main objectives of knowledge management programs is to attract valuable experiences of knowledge workers (Chong & Choi, 2005). Today's high performance of organizations has two primary bases, which are knowledge and intellectual capital (Lubit, 2001). Ordonez de Pablos (2006) explained how intellectual capital relies on human, organizational, relational, and technological capitals. As Chong et al. (2006) stated, most valuable knowledge hold in employee's head, therefore, organizations are required to motivate their knowledge workers to share knowledge through commitment programs. Along with these programs, companies require to establish strong relationships with external environments involving suppliers and partners (Chong & Choi, 2005). Inside external zones, companies also need to acquire customer's experiences and knowledge (Van Buren, 1999).

Creating criteria for measuring knowledge management success is vital since criteria support to create a foundation for evaluating the value and assessing its outcomes (Anantatmula, 2005). In order to exploit criteria for evaluating knowledge management success, Anantatmula (2005) designed a questionnaire in which a list 26 KM outcomes was portrayed. The research targeted knowledge workers as respondents from various types of firms. The current research study adopted the questionnaire of Anantatmula.

Research Methodology

This section explains and discusses the systematic procedures that were performed in this survey.

Research Objectives

In this paper, an effort will be made to discover the criteria for measuring knowledge management success among Malaysian organizations. The focal objective of this study is to present criteria list that was adopted by Malaysian organizations to measure KM efforts. Specially, the following objectives were deployed to cover overall objectives of this paper.

- To ascertain the most favored criteria for measuring KM success

- To find out the dependency of the criteria on organization's mission, goals, and objectives

- To analyze the relationship between the criteria for measuring knowledge management results and the success of KM programs.

Research Questions

- What criteria are the most favored for measuring KM success?

- Are the criteria based on organization's mission, goals, and objectives?

- Is there any significant relationship between the criteria for measuring knowledge management results and the success of KM programs?

Hypotheses of the Study

The research hypotheses were depicted from research objectives as bellow:

- $\mathbf{H_{10}}$: The criteria for measuring KM success are not dependent on mission, goals, and objectives.

- $\mathbf{H_{11}}$: The criteria for measuring KM success are dependent on mission, goals, and objectives.

- $\mathbf{H_{20}}$: There is no significant relationship between the criteria for measuring knowledge management results and the success of KM programs.

- $\mathbf{H_{21}}$: There is a significant relationship between the criteria for measuring knowledge management results and the success of KM programs.

Data Analysis

In this research study, the SPSS software was used to analyze the questionnaire data. For this study, the proposed methods to find out hidden patterns were Descriptive Analysis, Multiple Regression Analysis, and Wilcoxon Signed Ranks Test.

Data Collection Method

For the purpose of this preliminary study, the following data collection method was used. This research study employed mixed-mode sampling approach in order of data collection. The first step of data collection was to choose a population to be sampled. The population framework was limited to web sites' forums, Yahoo discussion groups, Facebook discussion groups, email lists that have aggregated many different Malaysian executives, knowledge workers, knowledge management experts, and expats. Hence, generalizability across all Malaysian organizations is limited because of inherent constraints of the sample. Then, the online questionnaire was shared among all participants (Groups' members and email lists' contacts) and finally 79 of respondents answered the shared questionnaires. As expected, questionnaires were received with no missing variables under the population frame.

Participants

The participants of the survey's target population consist of KM professionals, Malaysian executives, and Expats executives who activated in Malaysia. These respondents were working in different types of organizations including Governmental, Non-governmental, For-profit, and Non-profit sectors. The questionnaire was developed on Google Document platform. The questionnaire then was shared with respondents using email lists and writing messages on their Social Networks' walls

Questionnaire

All surveys employ a questionnaire to collect relevant data. Questionnaires present a research instrument to collect information about employee's knowledge, motivations, mind-sets, and organizational behavior (Boynton & Greenhalgh, 2004). Questionnaire of Anantatmula provided a comprehensive list of KM Criteria, thus; the survey instrument in this research study was adopted from (Anantatmula, 2005). For this paper, all of the responses were collected using online questionnaire. The SPSS for windows version 16 was employed to generate summary outputs, graphs, and data analysis. The structure of the questionnaire was elaborated as bellow:

- The main objective of the questionnaire was to discover the criteria for measuring knowledge management success.

- The questionnaire consists of 19 questions including 16 close-ended questions as well as 3 open-ended questions.

- The questionnaire was divided into three sections, which were KM Criteria, Individual Background, and Organizational Background.

- In cover page, respondents were provided to get a brief explanation about the research topic.

- There was only one page that included all 26 criteria to arm the respondents' easiness to navigate between criteria and less time consuming to answer.

- In the last part of the questionnaire, respondents can give their email address to receive research findings.

- After submitting the online questionnaire, respondents can view latest summary of the survey.

Research Results

The statistical package employed for the survey data analysis was SPSS for Windows Version 16.0. Descriptive analysis was used to portray main attributes of the survey's data. Then, Wilcoxon Signed Ranks test was utilized to examine a hypothesis about the median of our target population. Finally, the KM criteria were regressed against success of KM programs using the Multiple Regression Analysis.

Demographic and Background Results

Types of Organizations

In the current survey, selected companies were activating in different types of organizations in Malaysia. As shown in Table 1, 53.16% of all organizations were operating as For-profit, 24.05% of which were operating as Non-Profit organizations. The remaining 22.78% were operating as Governmental organizations.

Operation Sectors of Organizations

The operation sectors of organizations were depicted in Table 2. Among the organizations investigated in this research study, 8.86% were operating in manufacturing sector. In addition, 30.38% of which were operating in Service industry, 21.52% are in Energy/Utilities, 1.27% are in Telecommunication, 15.19% are in Finance/ Banking/ Insurance, 5.06% are in Education, 8.86% are in R&D, and finally 8.86% are in trading sector.

Table 1: Types of Organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	For-Profit	42	53.16	53.16	53.16
	Non-Profit	19	24.05	24.05	77.22
	Govemmental	18	22.78	22.78	100
	Total	79	100	100	

Table 2: Operation Sectoprs of Organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturing	7	8.86	8.86	8.86
	Service	24	30.38	30.38	39.24
	Energy/Utilities	17	21.52	21.52	60.76
	Telecommunications	1	1.27	1.27	62.03
	Finance/Banking/Insurance	12	15.19	15.19	77.22
	Education	4	5.06	5.06	82.28
	R&D	7	8.86	8.86	91.14
	Trading	7	8.86	8.86	100
	Total	79	100	100	

Respondents' Role in Organizations

There were 79 participants to the survey, all of whom specified their role in their company. Table 3 represents respondents' role in organizations. As can be seen in Table 3, 13.92% of all respondents held position of CEO, 11.39% of whom held position of CIO/CKO, 15.19% were manager of HR, 26.58% were project manager, 21.52% project member and finally 11.39% of respondents held position of Professional Executive.

Table 3: Respondents' Role in Organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CEO	11	13.92	13.92	13.92
	CIO / CKO	9	11.39	11.39	25.32
	Manager of HR	12	15.19	15.19	40.51
	Project Manager	21	26.58	26.58	67.09
	Project member	17	21.52	21.52	88.61
	Professional Executive	9	11.39	11.39	100
	Total	79	100	100	

Table 4: Experience in Knowledge Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 2 years	19	24.05	24.05	24.05
	3 to 5 years	32	40.51	40.51	64.56
	6 to 10 years	24	30.38	30.38	94.94
	More than 10 years	4	5.06	5.06	100
	Total	79	100	100	

Experience in Knowledge Management

Table 4 represents the KM Experience gained by each participant during the years of working.

According to the above-tabulated results, 24.05% of all respondents had between 1 to 2 years experience, 40.51% of whom had between 3 to 5 years, 30.38% had between 6 to 10 years whereas only 5.06% of all respondents had more than 10 years experience in knowledge management.

Expertise in Knowledge Management

In this section, participants were asked to state their degree of expertise in knowledge management. The respondents' responses were illustrated in Table 5. According to Table 5, 20.25% of all respondents had Average level in KM, 24.05% of whom had above average whereas 55.7% of all respondents had excellent level of expertise in knowledge management.

Table 5: Expertise in Knowledge Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average	16	20.25	20.25	20.25
	Above average	19	24.05	24.05	44.3
	Excellent	44	55.7	55.7	100
	Total	79	100	100	

Analytical Results

Most Favored Criteria

Question 1 of the survey provided a list of 26 KM criteria. Participants were requested to clarify whether they have employed any of 26 criteria to measure knowledge management efforts in their companies or not. Respondents were also demanded to identify importance and effectiveness of each criterion based on the Likert scale. Both Importance and Effectiveness have equal Likert scale with 5 showing very high and 1 indicating very low. In order to calculate favored criteria, the mean scores of both Important and Effectiveness were computed for each criterion. Hence, the values nearer to 5 represent the most favored criteria. The list of favored scores for each criterion was represented in Table 6.

According to Table 6, a criterion with average of 3.85 or above can be considered as most favored criterion. As can be seen in Table 6, the most favored criteria include Enhanced collaboration (M=4.12, SD=1.02), Improved communication (M=4.07, SD=1.01), Improved learning/adaptation capability (M=3.94, SD=0.98), Sharing best practices (M=3.89, SD=0.95), Better decision making (M=3.89, SD=1.06), Enhanced product or service quality (M=3.89, SD=0.48), Enhanced intellectual capital (M=3.86, SD=1.01), and Increased empowerment of employees (M=3.85, SD=0.39).

KM Criteria and Mission, Objectives, and Goals

As noted in research methodology, H_1 examines the dependency of criteria for measuring knowledge management efforts on organization's mission, goals, and objectives. Hence, respondents were asked to assign a score to the dependency of criteria for measuring knowledge management success on organization's mission, goals, and objectives. The first step to examine the H_1 is to test the normality assumption. According to Royston (1992), the Shapiro-Wilk test is valid when sample size is greater than 3 and lesser than or equal to 2000. For this variable, the p-value for Shapiro-Wilk test of normality is 0.000, which is less than 0.05. Thus, the normality assumption was not met. Hence, the research hypothesis was tested using Wilcoxon Signed Ranks test. The Wilcoxon Signed Ranks test is applied in place of one-sample t-test when the normality assumption is not met (Chan, 2003). The results were represented in Table 7 and Table 8.

Table 6: The List of Criteria Based on Their Favored Rate

	N	Mean	Std. Deviation
Enhanced collaboration	79	4.1203	1.01973
Improved communication	79	4.0696	1.01190
Improved learning/adaptation capability	79	3.9430	.98380
Sharing best practices	79	3.8924	.95297
Better decision making	79	3.8924	1.05512
Enhanced product or service quality	79	3.8924	.48484
Enhanced intellectual capital	79	3.8608	1.00937
Increased empowerment of employees	79	3.8544	.39347
Improved productivity	79	3.7975	1.03316
Improved business processes	79	3.7848	1.08511
Improved employee skills	79	3.7152	.91876
New or better ways of working	79	3.7089	.85713
Return on investment of KM efforts	79	3.6456	.97452
Increased profits	79	3.6076	.90819
Better staff attraction/retention	79	3.5316	.93144
Better customer handling	79	3.4494	.91845
Improved new product development	79	3.4304	1.04922
Creation of more value to customers	79	3.2342	.69723
Faster response to key business issues	79	3.1899	1.13314
Increased innovation	79	3.1899	1.08988
Creation of new business opportunities	79	3.1329	.66847
Entry to different market type	79	3.0570	.63036
Increased market share	79	3.0316	.80599
Increased market size	79	2.9304	.94981
Reduced costs	79	2.8608	1.09760
Increased share price	79	2.6519	.58482
Valid N (listwise)	79		

Table 7: Table of Ranks in Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
Hype_Mean - Criteria and Mission	Negative Ranks	64[a]	37.98	2430.50
	Positive Ranks	11[b]	38.14	419.50
	Ties	4[c]		
	Total	79		

a. Hype_Mean < Criteria and Mission

b. Hype_Mean > Criteria and Mission

c. Hype_Mean = Criteria and Mission

Table 8: Wilcoxon Signed Ranks Test

	Hype_Mean - Criteria and Mission
Z	-5.523[a]
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

In this study, the test value was assumed equal to 3. According to Table 8, the p-value (Sig) equals to .000 which is less than 0.05; thus, the test would lead to reject H_{10} at level of α=0.05. As shown in Table 7, most of the respondents would select 4 and 5 scores as their responses to this question. Therefore, the criteria for measuring knowledge management success are significantly based on organization's mission, goals, and objectives.

KM Criteria and Success of KM Programs Using Multiple Regression

The H_2 examines the relationship between the criteria for measuring knowledge management results and the success of KM programs. It is important to indicate that for Multiple Regression Analysis, the normality assumption should be tested. Therefore, the Shapiro-Wilk test was examined ($3< n \leq 2000$). The Shapiro-Wilk statistics provided the p-value of 0.062, which was greater than 0.05. Thus, data can be assumed to be normally distributed. Hence, the Favored Criteria variables (See Section of Most Favored Criteria) were regressed against success of KM programs using stepwise Multiple Regression Analysis. The statement of "Do you think that knowledge management programs met the expected results?" was used to measure success of KM programs.

Favored Criteria and Success of KM Programs

The summaries of regression analysis were depicted in Table 9, 10, and 11. As shown in Table 9, SPSS generated four models. The model 4 was selected as final model to analyze the relationship between Success of KM programs as dependent variable and Favored Criteria as independent variables.

Table 9: - Model Summary - Criteria Favor on Meet Expected Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.840	.706	.702	.580	
2	.864	.747	.740	.542	
3	.875	.766	.756	.525	
4	.885	.783	.771	.509	1.984

From the Table 10, the F-value provided (F=66.590) which was significant at α=0.05 (Sig=.000<0.05). This means that the regression model was fitted significantly and at least, one of the four independent criteria can be used to model success of KM programs. According to Table 9, the R-Square value produced (R^2=78.3%). This indicated that 78.3 percent of variation in success of KM programs can be explained by all four independent variables. The Durbin-Watson of 1.984 falls between 1.5 and 2.5 (1.5<D-W<2.5) representing no autocorrelation among the error terms. Hence, it confirms that all error terms are independent.

The collinearity statistics indicate that tolerance statistics for Enhanced Intellectual Capital, Improved Productivity, Return on Investment of KM efforts, and Enhanced Product or Service Quality are all more than 0.1, and VIF (Variation Inflation Factors) are all lower than 10. Therefore, these show no multicollinearity problem.

Hence, H_2 was strongly supported and this represents that there is a significant relationship between the criteria for measuring KM results and the success of KM programs.

The results of Table 11 also confirmed that there were four criteria including Enhanced Intellectual Capital, Improved Productivity, Return on Investment of KM efforts, and Enhanced Product or Service Quality that were positively linked with success of KM programs. As can be seen in Table 11, the four criteria namely Enhanced Intellectual Capital (p<0.01), Improved Productivity (p<0.1), Return on Investment of KM efforts (p<0.05), and Enhanced Product or Service Quality (p<0.05) all directly contributed in the success of KM programs. Furthermore, the results also represented that the most important criteria that were involved in predicting success of KM programs was Enhanced Intellectual Capital and was statistically significant at α=0.01 (p<0.01).

Table 10: ANOVA - Criteria Favor on Meet Expected Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.241	1	62.241	184.782	.000
	Residual	25.936	77	.337		
	Total	88.177	78			
2	Regression	65.866	2	32.933	112.183	.000
	Residual	22.311	76	.294		
	Total	88.177	78			
3	Regression	67.519	3	22.506	81.712	.000
	Residual	20.658	75	.275		
	Total	88.177	78			
4	Regression	69.006	4	17.252	66.590	.000
	Residual	19.171	74	.259		
	Total	88.177	78			

Table 11: Coefficients - Criteria Favor on Meet Expected Results [a]

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.431	.260		1.661	.101		
	Enhanced intellectual capital	.885	.065	.840	13.593	.000	1.000	1.000
2	(Constant)	.276	.246		1.119	.267		
	Enhanced intellectual capital	.513	.122	.487	4.209	.000	.248	4.027
	Improved productivity	.419	.119	.407	3.514	.001	.248	4.027
3	(Constant)	.071	.253		.282	.779		
	Enhanced intellectual capital	.466	.120	.442	3.890	.000	.242	4.136
	Improved productivity	.313	.123	.305	2.545	.013	.218	4.585
	Return on investment of KM efforts	.216	.088	.198	2.450	.017	.477	2.096
4	(Constant)	1.363	.593		2.301	.024		
	Enhanced intellectual capital	.532	.119	.505	4.454	.000	.229	4.367
	Improved productivity	.212	.127	.206	1.674	.098	.194	5.160
	Return on investment of KM efforts	.224	.086	.205	2.617	.011	.476	2.099
	Enhanced product or service quality	.306	.128	.139	2.395	.019	.867	1.153

a. Dependent Variable: Meet Expected Results

Discussion of Findings

Based on the data collection from participants who were working for Malaysian organizations, effort was done to fulfill the objectives of this paper that is mainly, to determine the criteria for measuring knowledge management programs. As stated earlier, the accessibility of criteria as a platform to measure KM efforts would be delivering a great value to knowledge management programs inside organizations.

Most Favored Criteria

As shown in Table 6, the most favored criteria among respondents included: Enhanced collaboration (M=4.12, SD=1.02), Improved communication (M=4.07, SD=1.01), Improved learning/adaptation capability (M=3.94, SD=0.98), Sharing best practices (M=3.89, SD=0.95), Better decision making (M=3.89, SD=1.06), Enhanced product or service quality (M=3.89, SD=0.48), Enhanced intellectual capital (M=3.86, SD=1.01), and Increased empowerment of employees (M=3.85, SD=0.39). It can be clearly seen that establishing the measurements for these criteria needs critical thinking. Care must be taken that the intangible feature of above selected criteria makes it difficult to establish measurements for these criteria. For the sake of developing measures for some of the above favored criteria, Anantatmula (2005) proposed the following statements.

- Developing and promoting communication channels such as computer networks, organizational wiki pages, internal email system, and organizational social networks. This may help to develop a coherence transformation of employee's knowledge to organizational knowledge and vice versa.

- Establishing quantitative methods such as frequency of decision-making functions, and quantity of documented practices is a helpful procedure to measure communication aspect.

- Encouraging employees to contribute to organizational activities such as decision-making situations, and team working to solve management problems, is a valuable way to enhance collaboration inside organizations. It can be observed that the results and outputs of teams and committees are not relatively difficult to measure and evaluate.

Apart from above-mentioned solutions, companies can integrate some performance monitor tools with their network infrastructure to quantify number of shared organizations' practices, frequency of participation in workshops, seminars, problem solving committees, and quantity of achieved degrees and certifications. It can be also useful to provide feedback systems and suggestion box for measuring empowerment of employees (Anantatmula, 2005). Conducting organizational surveys to measure satisfaction and empowerment level of employees is another way to measure this criterion (Anantatmula, 2005). Finally, Total Quality Management as a strong instrument geared to ensure that company can measure the enhancing of product or service quality (Anantatmula, 2005).

KM Criteria and Organization's Mission, Goals and Objectives

According to literature review, criteria for measuring knowledge management efforts must associate and align with organizational mission, objectives, and goals. In this study, respondents were asked to give a score to their criteria depending on organizations' goals, mission, and objectives. According to the findings achieved from statistical analysis, the criteria for measuring knowledge management success were significantly based on organization's mission, goals, and objectives.

KM Criteria and Success of KM Programs

In order to analyze the relationship between KM Criteria and success of KM programs, the Favored Criteria variables were regressed against "Meet Expected Results" using

Stepwise Multiple Regression Analysis. According to the results achieved from Multiple Regression Analysis, a set of criteria that contributed in the success of KM programs were as bellow:

- Enhanced Intellectual Capital
- Improved Productivity
- Return on Investment of KM efforts
- Enhanced Product or Service Quality

All above-mentioned criteria have significant positive relationship with the success of knowledge management programs. Indeed, these criteria are aligned toward the success of KM efforts. The findings provided supporting evidence that success in KM efforts is highly dependent on developing measurement tools to evaluate these four criteria.

Limitations

Likewise each survey, this survey has its limitations some of which are; time restriction and budget constraint. These limitations as well as transportation problem compelled researchers to select a medium sample size. This is why researchers limited survey's population framework to email lists, Yahoo Discussion Groups, and Internet Forums etc. Hence, generalizability across all Malaysian organizations was limited because of inherent constraints of the sample. Furthermore, due to the above-mentioned limitations, this research study concentrated on only 26 KM criteria.

Recommendations for Future Researches

This study investigated the problem of determining the criteria to measure knowledge management initiatives among Malaysian firms. The results and findings can present viable and practical area of researches for future studies. The recommendations for future researches are stated as bellow:

- A study on the same topic with a larger pool of participants and a broad range of KM criteria.
- Break downing the most favored criteria to less abstract components in order to establish a clear measurement foundation for these criteria.
- Expanding the research to other countries in order of having multinational comparison.
- Developing research to special industry in order to get a better picture for investigation of that particular industry.

Conclusion

This paper attempted to determine criteria for measuring knowledge management success among Malaysian organizations. The major contribution of this study was to persuade managers to implement knowledge management programs toward organization's mission, goals, and objectives. Hence, defining well-organized and clear mission, goals, and objectives is an imperative task of top management. This may help organization to meet its expected results of KM programs. Analyzing the relationship between KM Criteria and the success of KM programs, led us to discover that by setting well-defined criteria and being aware of the importance of each criterion in measuring KM success, managers can adjust their programs on where they should spend their efforts and which area requires more concentration in order to get high achievement.

In conclusion, increasing the effectiveness of implementing KM programs and improving the quality of KM programs to satisfy the goals and the mission of the company will be the main value of the study, which can lead in gaining competitive advantage in current chaotic business environment.

Acknowledgement

We wish to express a sincere thank to Dr. VS Anantatmula who so graciously, agreed to use his questionnaire in this survey. We also would like to acknowledge the academic efforts of Dr. Chong Siong Choy in the knowledge management field.

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