The Criteria for Assessing Knowledge Management Outcomes in Organizations: the Case of Alexandria Shipyard in Egypt

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ABSTRACT

This paper intends to present and discuss the findings of a case study analysis of the adoption and use of a widely-accepted the criteria that are intended as a tool for measuring Knowledge Management (KM) initiatives in organizations which needed to successfully perform its business activities. This study will investigates the characteristics of shipbuilding acting on KM criteria, thus classifying elements of differentiation among Egyptians' shipbuilding able to determine the level of KM criteria activity. The investigation tool was shown to be both reliable and valid. This research effort included the survey questionnaire. The statistical package employed for the survey data analysis was SPSS for Windows Version 20.0. 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. A total of 250 from Alexandria Shipyard in Egypt (ASY) were surveyed for their perspectives on current and future knowledge management. This paper seeks to reach an approach for a successful implementation of initiative knowledge management (KM) programs procedures among Egyptian organization to be more effective than its competitors. Consequently, it can be observed as an all-inclusive approach able to assist decision makers in their Knowledge Management System quality process.

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

INTRODUCTION

In recent years, KM has become a significant issue both in the relevant literature and in practice. Companies have strived to manage knowledge more efficiently, the primary aim of this being the improvement of performance by gaining a competitive advantage. Organizations understand that KM can contribute to their bottom line, however several authors proposed that in today's competitive world KM is becoming a source of competitive advantage. Moreover, today's core competencies and high performance have two primary bases, which are knowledge and intellectual capital [2&6&7&9&16&13].

In fact, Sustainability of competitive advantage that has derived from special knowledge inside companies is mainly characterized by exhaustive competition among competitors and shortened product lifecycles. KM assets of a company are a crucial issue to creating SCA. Hence, sustainability of companies' competitive advantage in chaos and uncertain business environment is highly related to implementing special knowledge to their core business processes and activities [12&10&8].

According to [6]; Knowledge is seen as one of the most important strategic resources with the ability of creating and maintaining a competitive advantage. KM is not only storing knowledge, and sharing is considered the greater focus in KM. With this in mind; applying KM in the workplace is approximately limitless. Finally, there are some possible benefits to implement KM, which can be: allowing ideas that flow during the organization, encourage innovation, the attractive additional efficient in service, enhance customer experience, the capitalizing on opportunities canister to increase profits, the recognition and reward for their appreciated knowledge contribution to increase retention rate of employees, through the improving core effectiveness and reducing the cost [1].

This can stretch existing knowledge and learning resources within an organization, to say nothing of the need for knowledge and learning functions to adapt to new cultural and process stimuli emerging from the new market. Enhanced KM is critical to organizational activities at the state, district or local levels, as managerial organizations are fundamentally knowledge-based organizations. KM has also become one of the creativities inside most states' e-

Government Plans [9&6]. To measure success or lack of it, an organization has to develop metrics and benchmarks based on the KM criteria. To measure success of KM initiatives, companies need to establish metrics based on the set of KM criteria [11]. From being imperative role of KM, a comprehensive set of criteria for measuring KM outcomes was not developed yet [11], "Using interpretive".

Many organizations allocated such resources to implement KM programs. However, latest research surveys have represented that despite companies have demanded to implement KM programs, not many of them are marked as KM's successful implementer [4]. KM implementation can be seen as an investment decision and therefore its performance outcomes must be evaluated and measured. A useful set of measures grants actionable insight on providing set of performance metrics. Hence, to organize a well-developed and formal performance measures is a crucial need for KM implementation within organizations [11&4].

In this regard, [11], "Using interpretive" stated; without structuring such methods to measure KM successes, many organizations may not recognize its full potential. Indeed, without measuring KM efforts there is no way to manage organization's intellectual capital properly. Hence, in order to realize KM's full capability, to emphasize on establishing criteria to measure KM outcomes is vital and imperative.

In order to determine outcomes, structuring criteria for KM efforts is an essential task of organization. Reference [4], Criteria for measuring] reported that there is no sufficient attempt to establish a widely accepted list of criteria or outcomes associated with KM programs. According to [15], a set of criteria to measure success of quality management, and project management programs have been established clearly.

Statement of the Problem

Reference [11] 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. Reference [4]. An important wide-accepted KM principle is a comprehensive set of criteria to measure outcomes of KM efforts. Using criteria for implementing and evaluating KM may have helped these organizations to identify their knowledge assets and channel their KM efforts to achieve what is expected of them. The time is appropriate to set a group of criteria to measure outcomes of KM efforts objectives to clearly seen that outcomes of efforts for KM and can also be evaluated KM projects.

Knowledge Management Criteria

Reference [11], "Using interpretive". From being imperative role of KM, a comprehensive set of criteria for measuring KM outcomes was not developed yet. Reference [15], a set of criteria to measure success of quality management, and project management programs have been established clearly. Reference [4]," Criteria for measuring reported that there is no sufficient attempt to establish a widely accepted list of criteria or outcomes associated with KM programs.

Reference [12], Suggested KM criteria to measuring KM success in organizations. This criterion formatted with 26 criteria results from survey's that target population consist of KM professionals, and Expats executives were working in different types of organizations including Governmental, Non-governmental, For-profit, and Nonprofit sectors. 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 questionnaire of Anantatmula provided a comprehensive list of KM Criteria to discover the criteria for measuring KM success.

The survey provided a list of 26 KM criteria tries were made to discover the most favored criteria among 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. Finally, it is hoped that the current study provides a better picture for Egyptian Shipbuilding industries to identify and develop a comprehensive set of criteria to measure success of KM initiatives.

The list of KM outcomes that are grouped based on the previous works. Outcomes can be incorporated into five different categories:

- Improved Business Processes,
- Improved Communication,
- Improved learning / Adaptation Capability,
- Improved Productivity, and
- Increased Profits

Knowledge processes play a main role in creating KM as a guiding strength inside the organization which develops and creates organic and holistic approaches are showing the practicality; Knowledge process includes defining, creating, capturing, sharing, disseminating, and using knowledge assets [7]. It needs to acquire personal knowledge to turn into organization's knowledge for sharing it through corporation [3].

As [3] specified, greatest valued knowledge is held in employee's head, so organizations are required to motivate their knowledge workers to share knowledge through assurance programs. References [3&4], suggested that one of the main objectives of KM programs is to encourage valuable experiences of knowledge among workers via methodical knowledge and movement of knowledge resources which can be exploited effectively.

Many organizations allocated such resources to implement KM programs. However, latest research surveys have represented that despite companies have demanded to implement KM programs, not many of them are marked as KM's successful implementer [4].

Reference [11], hiring KM in organizations is an investment decision. To measure success or lack of it, an organization has to improve metrics and benchmarks based on the criteria branded to measure KM success and proposed that describes the criteria for quality for both business and education as a test, principle, rule, organ, faculty, or instrument for judging or estimating and the bases for organizational self-assessment, for making awards, and for giving feedback.

According to this program, the criteria would help to improve organizational performance practices, capabilities, and results in addition to improving communication and sharing best practices. By its definition, criteria can be used both for implementing and evaluating KM. However, the focus of this study is to identify criteria for measuring the success of KM to improve practices, processes, capabilities, and results in addition to improving communication and knowledge sharing.

Reference [11], suggested a criterion for measuring the success of knowledge management success among Malaysian organizations. To contributes with program managers to implement KM towards the organization's mission, goals, and objectives. Aims to increase the effectiveness of the implementation of the programs KM, which helps the organization to meet the expected results of these programs, as well as improve quality and to meet the objectives of a company and that can lead to obtain a competitive advantage in today's business environment confusion.

Research Methodology

Research methodology outlined the step-by-step process used for data collection employed using combination between methods and their application, including the analysis of output supported by the logic of the enquiry, and methods are techniques for data collection. This research followed an exploratory quantitative and qualitative approach. Consequently a qualitative case study approach is used; qualitative in-depth case study is integrated with quantitative data gathering (a questionnaire approach).

Deductive/Logical Research; incomes from current theory to form testable hypotheses. The particular is deduced from the general, e.g., data is collected and analysed in order to accept or reject the hypotheses. The research approaches is a deductive research in which qualitative and quantitative data is gathered. Investigation methodology was used with the aim of gathering data regarding the most favoured criteria for measuring KM success, related organizational aspects in ASY.

Research Objectives

This study aims to discover the criteria for measuring KM success among Egyptians shipbuilding industry. The principal objective of this study is to present criteria list that was adopted by shipbuilding industry to measure KM efforts. Specially, the following objectives were deployed to cover overall objectives of this Part. Stage one can be summarized through three stapes to:

- Determine the most favored criteria for measuring KM success into Egyptian shipbuilding industry, (Table 3 & Table 4).
- Find out the dependency of the criteria on organizations' mission, goals, and objectives, and (H2 & Table 7).
- Analyze the relationship between the criteria for measuring KM results and the success of KM programs.

Research Questions

Q1: Are there criteria for measuring KM results and can they corporate with the success of KM programs? (Table 3, Table 4, Table 5, and Table 6).

Q2: Are there criteria for measuring KM success based on organization's mission, goals, and objectives? This is shown in (Table 7).

Hypotheses of the Study

H10: There is a positive relationship between the criteria for measuring KM results and the success of KM programs.
H11: There is a negative relationship between the criteria for measuring KM results and the success of KM programs

(Table 6).

H20: There is a positive relationship between favored criteria for measuring KM success and organizational mission, goals, and objectives.

H21: There is a negative relationship between favored criteria for measuring KM success and organizational mission, goals, and objectives (Table 7).

Data Analysis

In this investigation 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 initial study, the following data collection technique existed used. This investigation study active 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
    - Email lists that have aggregated many different ASY departments executives,
    - Knowledge workers, KM experts, and expats.

Hence, generalizability across all ASY departments is limited because of characteristic constraints of the sample. Then, the questionnaire was shared among all participants.

Participants

The contributors of the survey's

- Aim population consist of KM professionals,
- Egyptians executives,
- And Expats executives who activated in Egyptians shipbuilding industry.
- These respondents were working in different ASY departments executives.

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.

The questionnaire was shared among all participants (Groups' members) as shown in (Table 1). A total of 350 questionnaires were then distributed to 10 main departments into ASY were surveyed for their perspectives on current and future KM and QM approaches. Each questionnaire includes a letter of introduction and respondent back the questionnaire when they complete it thought their department. Consequently, 290 questionnaires were back at gross response rate of 82.85%. Total number of used questionnaire is 250 achieving respondent rate of 71.43%. Finally, identify KM enablers that impact on the KM success into the organizations. As expected, questionnaires were received with no missing variables under the population frame.

Table 1: Questionnaire Instrument

Departments	Sent	Received	Achieving Respondent	Percentage (%)
H.Q	20	20	18	90
IT & Computer	30	25	22	73
Training Activity	40	30	25	62.5
Planning & Follow up	45	29	25	55.5
Finance	25	19	15	60
Sales & Marketing	25	20	15	60
HR	30	29	25	83.3
Building Facilities	50	46	40	80
Engineering Workshops	45	34	33	73.3
Ship Repair	40	38	32	80
	350	290	250	71.43

Questionnaire

Questionnaires present a research tool to collect evidence data around employee's knowledge, motivations, mind-sets, and organizational behavior. Statistical tools presented format of the recommended framework involves computation of, Descriptive statistics – Mean and Standard Deviation. Parametric shows, F-test, t-test, and Correlation Technique, ANOVA and Regression.

The questionnaire was designed based on a comprehensive list of 26 KM Criteria to measure success of KM initiatives, thus; the survey instrument in this research study was adopted from [11] based on the questionnaire of [15]. This questionnaire was established to identify the criteria of measuring KM success in the organization that were the first objectives. Inaddtion, the respondents' easiness to the importance and effectiveness of each criterion that included KM criteria, individual, and organizational background demonstrated the impact of organizational mission, goals, and objectives on the KM criteria success in ASY. The structure of the questionnaire was elaborated as bellow:

- The main objective of the questionnaire was to discover the criteria for measuring KM success.
- The questionnaire consists of 19 questions including 16 close-ended questions as well as 3 open-ended questions, this score was a Likert scale (5=Very High to Very Low=1).
- The questionnaire was divided into three sections, which were KM Criteria, Individual Background, and Organizational Background.
- This criteria to arm the respondents' acceptance to navigate between criteria and less time consuming to answer.
- In cover page, respondents were provided to get a brief explanation about the study 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.

Research Results

The examination provided several of KM criteria. Contributors are present demanded to make clear whether they have active of this criteria to measure KM efforts in the Egyptian shipbuilding industry, also demanded to recognize importance and effectiveness of each criterion.

The statistical package employed for the survey:

- Data analysis was SPSS for Windows Version 20.0.
- 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.

The major contribution of this study will affect managers to implement KM sequencers to shipbuilding industry mission, goals, and objectives and led us to being aware of the importance of each criterion in measuring KM success; managers can adjust their sequencers on where they should spend their efforts and which area requires more concentration in order to get high achievement.

Demographic and Background Results

Operation Sectors of ASY

The operation sectors of ASY were depicted in (Table2) among the sectors investigated in this research study, 7.20% were operating in H.Q. In addition, 8.80% of which were operating in IT & Computer, 10.00% are in Training Activity, 10.00% are in Planning & Follow up, 6.00%are in Finance, 6.00% are in Sales & Marketing, 10.00% are in HR, 16.00% are in Building Facilities, 13.20% are in Engineering Workshops, 12.80% are in Ship Repair.

Table 2: Operation Sectors of ASY

		Frequency	Percent	Valid percent	Cumulative Percent
Valid	H.Q	18	7.20	7.20	7.20
	IT & Computer	22	8.80	8.80	8.26
	Training Activity	25	10.00	10.00	52.03
	Planning & Follow up	25	10.00	10.00	54.01
	Finance	15	6.00	6.00	66.00
	Sales & Marketing	15	6.00	6.00	76.00
	HR	25	10.00	10.00	82.03
	Building Facilities	40	16.00	16.00	72.05
	Engineering Workshops	33	13.20	13.20	73.20
	Ship Repair	32	12.80	12.80	100
		250	100	100	

Analytical Results

Most Favored Criteria

Testing Hypothesis as shown in (Tables 6 & 7) answers the questions and hypotheses in this stage; there are two parts which aid as follows:

- ***First,*** Questionnaire (Close-ended questions included 26 items regarding KM initiatives).
- ***Second,*** Semi-Structured & Structured Interviews (Open-ended questions regarding KM factors, individual, and organizational). Based on the initial interview, semi-structured and, in some cases, structured interviews were conducted with various people in each department as needed. These interviews were aimed at:
- Understanding general issues regarding KM and
- Establishing background of its implementation as well as
    - Establishing the current situation of the various KM initiatives and
    - Key factors effecting KM. Additionally,
    - Obtaining and reading all available documentation regarding KM in the company or that considered necessary for the study.

As shown in (Table 3), the survey delivered a list

of 26 KM criteria based on the favoured rate. Favoured criteria and success of KM initiatives are using Regression Analysis. Contributors were requested to clarify whether they have employed any of these criteria to measure KM efforts in ASY or not and identify the importance and effectiveness of each criterion. A criterion with average of 3.85 or above can be considered as the most favoured criterion.

As can be seen in (Table 3), the most favoured criteria include eight criteria as follows; Improved business processes (M=3.92, SD=1.04), Sharing best practices (M=3.91, SD=1.08), Enhanced collaboration(M=3.88, SD=1.08), Improved communication (M=3.89, SD=1.05514), Improved learning/adaptation capability (M=3.99, SD=.09680), Enhanced product or service quality (M=3.87, SD=0.37), Improved productivity (M=3.77, SD=1.05), and Increased profits (M=3.76, SD=1.07). All of these criteria directly contributed in the success of KM programs, furthermore, the results also represented that the most important criteria that were involved in predicting the success of KM programs was Improved Productivity as example from reference and was statistically significant at á=0.01 (p<0.01).

Table 3: The List of Criteria Based on the Favoured Rate

	N	Mean	Std. Deviation
Improved business processes	250	3.9200	1.04417
Sharing best practices	250	3.9100	1.07961
Enhanced collaboration	250	3.8800	1.08637
Improved communication	250	3.8880	1.05514
Improved learning/adaptation capability	250	3.9948	.09680
Enhanced product or service quality	250	3.8740	.37155
Improved productivity	250	3.7660	1.04603
Increased profits	250	3.7580	1.06847
Increased innovation	250	3.7440	.93777
Increased share price	250	3.6440	84298
Return on investment of KM efforts	250	3.5400	.90247
New or better ways of working	250	3.4320	.95432
Reduce costs	250	3.2160	.93361
Better decision making	250	3.1120	.93236
Creation of more to customer	250	3.0920	1.05417
Better staff attraction	250	3.0920	.68681
Entry to different market type	250	3.0720	1.15991
Increased market size	250	3.0680	1.01809
Improved employee skills	250	3.0680	.65873
Increased market share	250	3.0560	.66336
Improved new product development	250	3.0480	.89621
Enhanced intellectual capital	250	3.0080	.99417
Faster response to key business issues	250	3.0040	1.06854
Better customer handling	250	2.9840	.50558
Increased empowerment of employees	250	2.9680	1.06409
Creation of new business opportunities	250	2.9640	46536
Valid N (list wise)	250		

The summaries of regression analysis were depicted in (Tables 4, 5, and 6). As shown in (Table 4)., SPSS generated five models; this model was selected as final model to analyse the relationship between Success of KM programs as dependent variable and Favoured Criteria as independent variables.

Tables 4, 5, and 6 depicted the summaries of regression analysis for favoured criteria and success of KM programs. As shown in (Table 4), SPSS generated five models. The model Summary was selected as final model to analyse the relationship between successes of KM programs as dependent variables and favoured criteria as independent variables.

Table 4: Model Summary - Criteria Favour on Meet Expected Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson (1.5<DW<2.5)
1	.789[a]	.623	.612	.87495	
2	.779[b]	.618	.610	.87318	
3	.787[c]	.620	.611	.87506	
4	.785[d]	.616	.608	.87773	
5	.786[e]	.619	.613	.87406	2.003

According to (Table 4). The R-Square value produced (R2=62.0%). This indicated that 62 per cent of variation in the success of KM programs can be explained by all five independent variables (Improved learning / Adaptation Capability, Improved Productivity, Improved Business Processes, Improved Communication, and Increased Profits).

The Durbin-Watson (DW) of (2.003) falls between 1.5 and 2.5 (1.5<DW< 2.5) representing no autocorrelation among the error terms. Hence, it confirms that all error terms are independent. From the (Table 5). The F-value provided (F=57.149) 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 five independent criteria can be used to model the success of KM programs.

Table 5: ANOVAe - Criteria Favour on Meet Expected Results (Using Multiple Regressions).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	305.028	8	38.129	49.806	.000[a]
	Residual	184.496	241	.766		
	Total	489.524	249			
2	Regression	305.013	7	43.573	57.149	.000b
	Residual	184.511	242	.762		
	Total	489.524	249			
3	Regression	303.452	6	50.575	66.049	.000c
	Residual	186.072	243	.766		
	Total	489.524	249			
4	Regression	301.542	5	60.308	78.280	.000d
	Residual	187.982	244	.770		
	Total	489.524	249			
5	Regression	305.013	4	53.373	65.129	.000e
	Residual	174.521	245	.767		
	Total	476.415	249			

All Exemplary was demonstrated in this table are = More than 0.1 & Variation Inflation Factors (VIF) = Lower than 10. From the (Table 6). The collinearity statistics indicate that tolerance statistics for favorite criteria as shown in this table.

Table 6: Coefficients [a] - Criteria Favour on Meet Expected Results a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.454	.163		2.833	.005		
	Improved business processes	.137	.079	.135	1.726	.086	.106	1.000
	Sharing best practices	-.157	.092	-.156	-1.698	.091	.078	4.129
	Enhanced collaboration	.113	.090	.111	1.263	.208	.078	4.128
	Improved communication	-.197	.096	-.179	-2.058	.041	.071	4.535
	Improved learning/adaptation capability	.435	.089	.427	3.903	.000	.087	4.827
	Enhanced product or service quality	.132	.095	.141	1.391	.165	.077	3.996
	Improved productivity	.428	.091	.445	4.679	.000	.079	4.567
	Increased profits	-.021	.089	-.024	-.238	.874	.067	2.999
2	(Constant)	.467	.165		2.972	.003		
	Improved business processes	.139	.078	.137	1.781	.078	.106	1.000
	Sharing best practices	-.156	.091	-.155	-1.707	.089	.078	4.128
	Improved communication	-.178	.093	-.178	-1.909	.059	.078	4.003
	Improved learning/adaptation capability	.425	.088	.425	3.916	.000	.088	4.455
	Enhanced product or service quality	.134	.094	.143	1.424	.158	.078	4.019
	Improved productivity	.424	.090	.444	4.697	.000	.080	2.554
	Increased profits	-.028	.089	-.034	-.319	.750	.126	4.065
3	(Constant)	.510	.165		3.083	.003		
	Improved business processes	.159	.077	.157	2.064	.042	.098	.998
	Sharing best practices	-.142	.090	-.142	-1.580	.117	.107	3.958
	Improved communication	-.193	.093	-.166	-2.077	.040	.078	4.573
	Improved learning/adaptation capability	.435	.088	.436	4.925	.000	.103	4.335
	Improved productivity	.434	.090	.507	4.829	.000	.103	4.257
	Increased profits	-.021	.089	-.025	-.237	.813	.126	3.115
4	(Constant)	.474	.155		3.059	.003		
	Improved business processes	.175	.074	.174	2.363	.020	.271	3.773
	Improved communication	-.158	.085	-.150	-1.864	.066	.261	4.044
	Improved learning/adaptation capability	.376	.083	.377	4.536	.000	.273	3.659
	Improved productivity	.463	.079	.481	5.837	.000	.290	4.561
	Increased profits	-.021	.089	-.025	-.235	.815	.285	3.511

a. Dependent Variable Meet Expected Result: ASY receives favorable responses from their customers (e.g. feedback on product/service).

Improved Business Processes, Improved Communication, Improved learning / Adaptation Capability, Improved Productivity, and Increased Profits are all more than 0.1, and VIF are all lower than 10.

Therefore, these show no multicolumn eerily problem. Hence, *H10* 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 6). also confirmed that there were five criteria including Improved Business Processes, Improved Communication, Improved learning/adaptation Capability, Improved Productivity, and Increased Profits that were positively linked with the success of KM programs. As can be seen in this Table, the five criteria namely Improved learning/adaptation capability ($p<0.01$), Improved Productivity ($p<0.1$), Improved business processes ($p<0.05$), Improved communication ($p<0.05$), and Increased profits ($p<0.05$) all directly contributed in the success of KM programs. Furthermore, the results also represented that the most important criteria that were involved in predicting the success of KM programs were Improved Productivity as example from reference and was statistically significant at $\alpha=0.01$ ($p<0.01$).

As shown in (Table 7), the criteria for measuring KM success are significantly based on organizations' mission, goals, and objectives. As noted in research methodology, *H20 & H21* examines the dependency of criteria for measuring KM efforts on organizations' mission, goals, and objectives. Hence, respondents were asked to assign a score to the dependency of criteria for measuring KM success on organizations' mission, goals, and objectives.

The first step to examine the *H20* 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.

In this study, the test value was assumed equal to 3. Hence, *H21* was tested using Wilcoxon Signed Ranks test as shown in (Table 8). Chan, (2003), suggested that the Wilcoxon Signed Ranks test is applied in place of one-sample t-test when the normality assumption is not met. (Table 8) is obtainable; the P-value (Sig) equals to .000 which is less than 0.05; thus, the test would lead to reject *H21* at level of $\alpha=0.05$.

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 KM success are significantly based on organizations' mission, goals, and objectives.

Table 7: Table of Ranks in Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
Hype_Mean - Criteria and Negative Ranks		196a	38.89	6440.50
Mission	Positive Ranks	46b	39.18	960.50
	Ties	8c		
	Total	250		

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	-5.302a
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

H10 examines the dependency of criteria 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.

H20 examines the dependency of criteria for measuring KM efforts on organizations' mission, goals, and objectives or not. Hence, respondents were asked to assign a score to the dependency of criteria for measuring KM success on organizations' mission, goals, and objectives. The first step to examine the ***H20*** 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. Therefore, the criteria for measuring KM success are significantly based on organizations' mission, goals, and objectives. Semi-structured and structured interviews (Open-ended questions) results of stage one; where, it is important to note that different people in each department where informed in different areas of KM. For example,

a. In a semi-structured interview,

- Information about training programs was obtained from training advisors and training personnel where the questions were focused on these issues.
- Similarly, information about IT & Computer deployed by an organization was obtained from IT division manager and IT personnel helpdesk operator where the questions were focused on technological issues.

b. Structured interviews,

- On the other hand, were used when exact information was needed from the respondents such as in the case of investigating employees' willingness to share their knowledge or their contribution and views on a particular KM system.

The first survey interviews of semi-structured and structured interviews (Open-ended questions) about KM criteria, individual and Organizational done as follows:

The KM criteria questions; aims to asking the respondents just how the processes of knowledge creation assistant of the ASY and effectiveness of KM system. Moreover, the challenges are faced by IT organizations.

The individual and Organizational questions; aims to asking the respondents which knowledge sharing mechanisms in ASY take a place and the influence of the role of top management in these mechanisms. Likewise, asking the respondents about project members transfer knowledge and the rotation of members in projects. Finally, how the concepts are created and developed.

Summary

According to the results achieved from Multiple Regression Analysis, a set of criteria that contributed in the success of KM programs were , Improved Business Processes, Improved Communication, Improved learning / Adaptation Capability, Improved Productivity, and increased profits. All the mentioned criteria have significant positive relationship with the success of KM 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 five criteria.

The results from the survey are encountering the gap in this thesis problem which agrees with the previous study. Hence, the researcher created efforts to cover this gap. Thus, the survey attempted to discover the key factors that can be integrated with KM programs to evaluate the effectiveness of KM implementation and the value added to KM initiatives. The examination of the tested research hypothesis and interviews confirmed the following results:

Hypothesis Results

- The first hypothesis; shows the effect of KM criteria for measuring results on the KM programs success and the relationship between them are positive. This finding answers question 1 and accepted H1.

- The second hypothesis; shows there is a positive relationship between KM favored criteria for measuring KM success and organizational mission, goals, and objectives. This finding answers question 2 and accepted H2.

Interviews Results

a. The KM criteria questions

- The respondents understood KM supported the ASY and they were pleasing agreement with their feeling about the effectiveness of KM system. Where, KM system provides the technical and commercial - profitable basis for all quality procedures .
- The respondents voiced KM raises information sharing with others' experiences which led to rapid growth and innovative approach to business. ASY was an exemplified process of knowledge creation that aided the teamwork to encourage posting knowledge objects frequently on the global interface of the company.
- Finally, the respondents exemplified the challenges faced by IT organizations in retaining and assisting the employees with ownership of process. Also, IT assists employees to developing work instructions, but employees demonstrated they need to have IT training and courses.

b. The individual and Organizational questions

- The respondents believed KM supported the ASY and they were pleasing agreement that the specific mechanisms through which knowledge sharing, were knowledge sharing with personnel and other skills such as experiences which has led to KM fosters information sharing from different departments playing a main role to rapid growth and innovation .
- The respondents exemplified the role of top management in these mechanisms with effectiveness influence the project associate of the ASY. Where, top management from project management, engineering, quality, finance, construction, etc. influence the project to post knowledge objects frequently on the global interface of the company .
- The important role of project member's officers in knowledge transfers associate of the ASY between ship owner, shipyard, and the shipbuilding project. A project member consumes kept data and information, which is part of project documentation, project knowledge (team's know-how) includes all the ASY team's proved and effective methods of executing the project .
- In time, project knowledge becomes ASY competitive advantage and project members are extrapolate and apply it to other projects in ASY. This is why project knowledge requires management: acquisition, retention, and transfer of knowledge within a project team .
- The most common theme was that the rotation of members in projects was associated with the ASY. This was exemplified as the rotation of members in projects by comments such as:
  - There seems in ASY to be a trend toward limiting each of the members in projects to a maximum number of fixed-year terms before those members in projects must be off the members' projects at least one year prior to qualifying for election to a new term.
  - The most popular requirements; from 2- to 3 years terms for more complex organizations.
  - The primary reasons for changing rules to limit consecutive terms; provides more of the population a chance to aid on the members in projects in fresh ideas, experience, contacts, etc. on a regular basis prevents directors from becoming stale and contributes new project members a sense of their maximum service before having at least one year off the projects' members.
  - Outstanding project members after 6 or 9 years; ASY needs to lose a truly motivated and effective project members could be agreed other tasks for a year, e.g., chair a task force, serve on a project committee (assuming bylaws allow non-directors to be on committees, which they should), or develop a new project as a volunteer.
- The most common theme was that how new ideas and concepts are created and developed associate of the ASY. This was exemplified by the new ideas and concepts created and developed by comments such as:
  - Standard idea-generation methods focus on merging or adapting existing ideas. ASY realizes that constant, current innovation is

critical to stay ahead of the competition; this can certainly generate results .

- The ability to think differently, generate new ideas, and spark creativity within a team becomes an important skill .
- Our focus is on preparing the employees with tools that help him leap against a totally different plane .
- These approaches push the employees mind to forge new connections, think differently and consider new perspectives.
- These techniques are extremely effective; they will only succeed if the employees are backed by rich knowledge of the area you're working on.
- This means that if the employees are not prepared with adequate information about the issue, you are unlikely to come up with a great idea even by using the techniques listed here.
- Incidentally, these techniques can be applied to spark creativity in group settings and brainstorming sessions as well.

Conclusion

This research attempted to determine criteria for measuring KM success among Egyptians' shipbuilding industry; then find the factors which can lead to increasing the effectiveness of implementing KM programs and enhancing the excellence of KM programs to content the mission and the goals of the shipbuilding determination be the core value of the study, which can lead in gaining competitive advantage in current chaotic business environment .

The main contribution of this study existed toward impact managers apply KM programs to organization's mission, goals, and objectives. Hence, describing well-organized and clear mission, goals, and objectives is an imperative task of top management. This may help an organization to meet its expected results of KM programs. Evaluating the relationship between KM criteria and the success of KM programs lead 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.

Generalizing Results

Significance and Limitations of Research

The importance of this research esteems the contribution to the existing literature as it relates to managing shipbuilding industries' performance through the utilization of KM as a practical technique of managing and steering quality performance in a government organization .

The organization in this case is a locally single company in Egypt-Alexandria. Because of the lack of previous research on KM, comparing the answers to another organization was difficult to achieve. This, however, still does not weaken the studies' contribution to the existing literature as it instils understanding and insights and provides a frame of reference for future studies on the matter. In spite of the interesting implications, this study has several limitations as follows:

First: this study was the snapshot research that did not consider the feedback effects.
Second: we surveyed interview, semi – structure interviews into ASY in Egypt. Even if we tried to avoid response bias through careful questionnaire design, we were not totally free of such bias.
Finally: the research from this survey was limited to ASY in Egypt. Therefore, the research of this study may have to be carefully interpreted. This limits the outlook on KM somewhat as the research would have been more robust if other organizations were included. But due to time and resource constraints the current scope was the most appropriate one. Future research may drop on the topic again and increase the view on KM initiatives and factors in the region .

Recommendations and Future Research

Organizations need to achieve competitive advantage in order to sustain their organizational performance. The current research has found those shipbuilding industries that have existed in the global market. Consequently, organization industry is looking to find a please in this market via rebuilding and maintaining their competitive advantage. KM is becoming a source of competitive advantage and seen as one of the most important strategic resources with the ability of creating and maintaining a competitive advantage. Moreover, today's core competencies and high performance have two primary bases, which are knowledge and intellectual capital.

There are variety of features and perspectives of KM system appearing in criteria, which classified into four

vital criteria namely, knowledge impact, cost reduction, application and stakeholder and employees' satisfaction. From past studies, KM system has been identified as a solution to respond to the challenge of sustainability. As a result, the current research recommends further studying of KM can be perceived through quality practice. Quality of KM system implementation and consulting services are particularly important if the decision maker lacks previous experience in KM system.

This study investigated the problem of determining the criteria to measure KM initiatives and the impact on KM implementation that sound in the organizational performance among ASY in Egypt. The results and findings can present viable and practical area of researches for future studies. The recommendations for future researches are stated as bellow:

- Break downing the most favored criteria to less abstract components in order to establish a clear measurement foundation for these criteria.
- Developing research to another shipbuilding industry in Egypt in order to get a better picture for investigation of that particular industry and generalization.

The current research has been tested in the ASY in Egypt sector of building and ships repair. Therefore, it is recommended for future researchers to expand their examination to include Egyptians shipbuilding industries in their empirical research.

Managerial Implications

Based on the findings of this study and examined literature is that the involvement of KM in the resurgence of KM criteria is not a passing fad, but holds great significance in the future management of quality system. The success of KM processes is greatly enhanced when its importance in the delivery of quality is understood and realized. By adopting well designed quality systems within the organization to monitor and structure the way in which knowledge is created and captured, a tacit understanding of organizational knowledge be developed and worked towards by all individuals within the organization.

This paper proposes that through the development of KM as a discipline in the post industrial world in general and especially in shipbuilding industry, KM criteria will once again become the mantra for organizations as they move forward into the future. It is also important to not just focus on what competitors are doing but also serve the purpose of sustaining customers' needs. Top managers can consider the following guidelines when attempting to improve their organization performance. The results and discussion presented above portray valuable lessons for practitioners and researchers in the quality and KM fields can be recommended to management :

- Top managers should strive to improve all the different aspects of KM criteria in order to increase the value of KM system and the need to understand the implementation of KM, developing and maintaining KM scopes will support shipbuilding industry performance.
- Top management wants to acknowledge the status of KM as strategic tools that can support the firm achieve competitive advantage and can aid in utilizing the intellectual capital of the organization more efficiently and effectively. Therefore, a clear KM strategy needs to remain industrialized and should be integrated into the organization's strategic objectives.
- Also, it is important that shipbuilding industry managers know the objective and strategy to establish KM system before the implementation phase. That known will unquestionably achieve the objectives of differentiation, creating entry barriers to competitors, strengthen their competitive advantage and build a sense of satisfaction among the customers, employees and the organization which enhance performance in a highly competitive environment.
- These are requirements for effective KM. By proactively implementing KM system, firms can re-write the old saying, "Change is inevitable, growth is optional" to "Change is inevitable, growth is intentional".

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