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KNOWLEDGE MANAGEMENT PROCESS IMPLEMENTATION IN PRIVATE FINANCE INITIATIVE PROJECT IN MALAYSIA

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Abstract:

PFI involved a project with long-term relationships at various stages from pre-contract stage to contractual stage and in use stage which also include maintenance stage. KM process is one of the elements to ensure the success of the KM system. In the PFI project, the KM process also needs to be checked whether it is applied in the various stage of the pre-contract stages. Questionnaires had been distributed to the parties involved at the pre-contract stage. The results are then analyse using the Relative Important Index (RII) to identify the ranking of KM usage in various stages of the pre-contract stage. According to the analysis, some of the stages in the pre-contract process of the PFI are not fully implemented in the KM process. For knowledge acquisition and storage practise, the high usage of the process is at the conduct of value management, submission to cabinet and access, evaluation, and approval. The next KM process which is capturing and storing, the process evaluation, negotiation and recommend are the activities at the higher level practising these KM processes. At next KM process which is re-using and sharing are Access and approval by the ministry, evaluation, negotiate and recommend practise more on this KM process.

Keywords:

Project Finance Initiative (PFI), Pre-Contract Stage, Knowledge Management System, Knowledge Management Process

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Introduction

The first Malaysian version of PFI was financed by the employee provident fund (EPF) loans. Nevertheless, there is a view that the government could still bear the risk to a certain extent, in particular, if any of the PFI projects becomes unsuccessful. Although the PFI may have been tested for more than a decade in developed countries such as the UK, Australia, US and others, the appreciation of it is relatively new in Malaysia and introduced in the year 2006.

Knowledge management has emerged as a major driving force to achieve objectives. Knowledge management is a process of acquiring, creating, sharing, utilizing and storing intellectual assets and other stimuli from the internal and external business environments that facilitates an organization to perform successfully (Huber, 1991;Badi & Murtagh, 2019). By improving the value of knowledge as assets, it drives the organization's success.

According to Carrillo et al., (2006) decisions on what knowledge a construction organisation needs or the knowledge intensity depends on the context of the business environment, i.e. key knowledge about processes and people for the delivery of its products. These context-based factors address issues of what is produced (products-goods/services), how it is produced (processes) and by whom (people). There are therefore three aspects of knowledge to manage in the construction context: (1) products or project types, (2) processes, and (3) people (see **Figure 1**). The knowledge base of construction organizations is a function of the procedures put in place to capture knowledge about processes, products, as well as people because knowledge primarily resides in people, not technology (Davenport, 2000). Technology supports connectivity; it is, therefore, an important enabler to support the KM process.

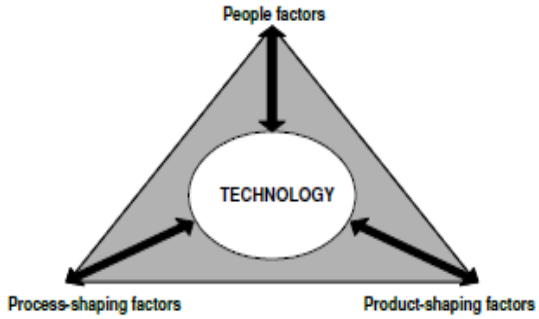

Figure 1:Context-Based Factors Influencing A KM Strategy

Source: Chimay J. Anumba, et al., 2005) (Reproduced by Chimay J. Anumba, et al., (2005), with permission by Robinson et al., 2001)

Methodology

The methodology adapts in this research is using literature to collect all the possible answers to be asked in the questionnaires(Kamar, K. A. M., Alshawi, M. and Hamid, 2010; Musawa & Ahmad, 2017; Wang et al., 2015). The population of this research are the employees from the 20 PFI projects listed under Public Private Partnership unit (UKAS), which comprise of different professionals with different areas of specialization and working together under the PFI projects.

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The sample size determines by using simple random sampling where we assume every party in the 20 projects has an equal chance of answering the questionnaires distributed. Random sampling use in this research because random sampling is where each member of a population has a known and non-zero probability of being included in the sample. If a sample of size n is taken an infinite number of times from a population by a random sampling method, the distribution of the sample means is the sampling distribution of the mean(Fellows & Liu, 2003). As for this research, the questionnaires distribute to Civil Engineers, Mechanical and Electrical Managers, Quantity Surveyors, Architects, Projects Directors, Project Managers, Building Surveyors and Technical Assistant involved in each project and a total of 160 questionnaires distribute including those working with UKAS, Ministry of Finance, Ministry of Higher Education, Economic Planning Unit (EPU) and other related agencies.

As for the data analysis, the Relative Importance Index (RII) is being used to find the most suitable analysis(Henjewele et al., 2012;Zawawi et al., 2014;Abdullahi Ahmed Umar et al., 2013;A.A. Umar et al., 2013;Zhou et al., 2014). The RII was used to rank the benefits as perceived by the respondents. The priorities (relative importance weights) must be established for each set of elements at every stage of the hierarchy. Finally, the weighted evaluation of each alternative is obtained by summing the weighted scores (by multiplying the priority weight and the evaluation rating) of all attributes(Fellows & Liu, 2003).

Main Result

Table 1: The Designation Of The Research Respondents

Designation	Frequency	Percentage %
Project Director	6	5.0
Project Manager	6	5.0
Architect	6	5.0
Quantity Surveyor	18	15.0
Electrical and Mechanical Engineer	18	15.0
Civil and Structural Engineer	48	40.0
Technical Assistant	12	10.0
Building Surveyor	6	5.0
Total	**120**	**100**

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From 120 questionnaires returned, it can be deduced that 40% of the total respondents are Civil and Structural Engineers, Project Manager 5%, Project Director 5%, 15% Quantity surveyors, 5% Architects, 5% Building Surveyors, 15% Mechanical and Electrical Engineers and 10% are technical assistants.

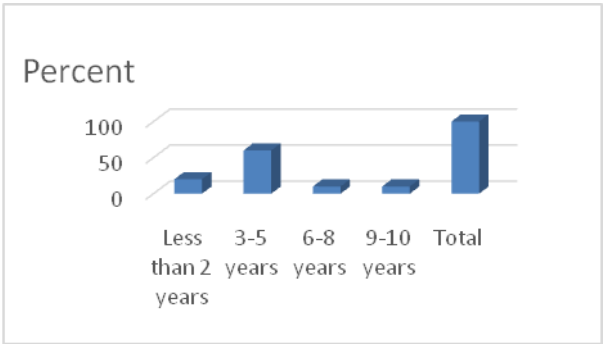

Figure 2: The Respondents Working Experience In PFI Projects

According to Figure 2, most of the respondents who are around 60% have 3-5 years of working experience in PFI projects. 10% of them have 6-8 years of working experience in PFI, another 10% of them have 9-10 years working experience in PFI and lastly, 20% have less than 2 years working experience in PFI.

The result in Table 2 shows the level of implementation of KM process in the various stage during the pre-contract of PFI projects. The results analyse using RII. From the table, we can see the various result on the level of implementation. In setting the decision rule for identifying factors that contribute significantly to variance in rateable values, the RII figure was classified into two groups of 'accept' and 'reject' as shown in Table 2. In this analysis, the highest RII was 0.85 and the lowest was 0.42. The range of the RII was 0.42 to 0.85.

The decision rule was that only those where the RII score fell within the very significant and the extremely significant were considered to contribute significantly to variance in rateable values. This type of decision rule was used by (Gunduz & Yahya, 2018; Ismail, 2015).

The result of the application of RII decision rule of Table 2 is presented in **Table 3**.

Table 2: Decision rule for RII analysis

Scale Of Index	Range Of Index	Decision Rule
Not At All Significant	0.42 To 0.52	Reject
Slightly Significant	0.53 To 0.63	Reject
Some What Significant	0.64 To 0.74	Reject
Very Significant	0.75 To 0.86	Accept
Extremely Significant	0.87 To 0.98	Accept

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For knowledge re-using and sharing the respondents answered that it is Easy to understand the item, the RII is 0.75, and the stage above 0.75 are stage 2,3,4,7 and 9. Easy to retrieve an item, the RII is 0.78. The stages which are above 0.78 are stage 2, 4, 9 and 10.

For Knowledge Capturing and Storing RII for item "Assigned a person to take records of past projects data/information, and reports of site meeting" is 0.77. The stage which relatively important is stage 2, 7, 10. While for Knowledge reusing and sharing RII for "Reviewing data/information, best practice and experiences from past projects contents and experts" is 0.76. The stages in which the RII more than 0.76 is 2, 7, 9 and 10. For item "Classifying data/information, best practices, and experiences of past projects to facilitate recording and searching" the RII is 0.72, and the stages which above this RII are 2, 4, 7, and 10. The item "Capturing data and information of projects in the electronic repository (database)" RII is 0.72 and the stages above this RII are 2, 4, 7, and 9.

Conclusion

The knowledge process in PFI Project for the pre-contract stage is still not fully implemented at certain procedures. For knowledge acquisition and storage practice, the high usage of the process is at the conduct of value management, submission to the cabinet, and access, evaluation, and approval. The next KM process which is capturing and storing, the process evaluation, negotiation, and recommend are the activities at the higher level practicing these KM processes. At next KM process which is re-using and sharing are Access and approval by the ministry, evaluation, negotiate and recommend practise more on this KM process.

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Table 3: Level Of Implementation Of Knowledge Management

	SECTION B : LEVEL OF IMPLEMENTATION OF KNOWLEDGE MANAGEMENT																				
	Stages in PFI / Process in KM	RII	1	Preparation And Submission Of The Proposal	2	Assesses, Evaluation & Approval By JKAS/ UTAS	3	Submission To Cabinet & Approval	4	Conduct Value Management Lab	5	Preparation Of RFP Documents	6	RFP Invitation To Bidders	7	Evaluation Of RFP	8	Approval Of JKAS/UTAS & Cabinet Of The Successful Bidder	9	Negotiate And Finalise The Terms And Conditions Of The Agreement	10	Recommend Terms And Conditions To Cabinet & Signing Of The Agreement
1	Knowledge Acquisition And Storage Practice																				
A	Up To Date	0.69		0.69		0.75		0.87		0.94		0.48		0.44		0.83		0.68		0.86		0.86
B	Easy To Access	0.72		0.56		0.79		0.79		0.84		0.42		0.53		0.82		0.58		0.71		0.71
C	Contain Relevant Information	0.76		0.56		0.76		0.79		0.80		0.42		0.53		0.83		0.60		0.74		0.76
D	Identifies The Key Personal	0.75		0.64		0.90		0.79		0.80		0.48		0.58		0.83		0.58		0.74		0.76
E	Easy To Understand	0.75		0.64		0.83		0.79		0.86		0.46		0.67		0.80		0.56		0.76		0.74
F	Easy To Retrieve	0.78		0.56		0.83		0.76		0.82		0.48		0.58		0.85		0.58		0.79		0.81
2	Knowledge Capturing And Storing																				
A	Recording New Ideas And Perception Of Experts And Professional In PFI	0.79		0.59		0.81		0.7		0.73		0.5		0.58		0.90		0.64		0.79		0.81
B	Recording Problems Solution And Experiences In The Electronic Repository (Databases)	0.79		0.59		0.79		0.68		0.75		0.48		0.58		0.79		0.64		0.79		0.79
C	Attaching Pictures, Videos, And Text Files To Clarify Data/Information, Experiences And Best Practices From	0.73		0.75		0.65		0.85		0.48		0.44		0.70		0.74		0.58		0.74		0.76

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	Past Projects.																				
D	Referring Knowledge To Its Source (Experts, Books, Articles Or Websites)	0.77		0.61		0.76		0.68		0.75		0.48		0.58		0.88		0.62		0.79		0.79
E	Recording The Best Practices, Vital Information/Data, And Experiences Of Experts From Past Projects.	0.77		0.61		0.81		0.61		0.73		0.48		0.58		0.88		0.62		0.76		0.81
F	Assigned A Person To Take Records Of Past Projects Data/Information, And Reports Of Site Meeting.	0.77		0.61		0.79		0.61		0.66		0.48		0.58		0.88		0.62		0.76		0.81
3	Knowledge Re-Using And Sharing																				
A	Showing The Contact Details And Experience Of The Employees.	0.73		0.55		0.76		0.68		0.69		0.48		0.58		0.85		0.60		0.71		0.81
B	Using The Intranet To Share And Transfer Data/Information, Experiences, Best Practice From Past Projects.	0.74		0.56		0.84		0.65		0.73		0.44		0.58		0.83		0.58		0.76		0.81
C	Using Searching Tools To Find Required Information/Data, And Best Practice, Etc.	0.78		0.61		0.81		0.68		0.73		0.44		0.58		0.85		0.6		0.85		0.81
D	Using The Intranet To Publish And Edit Data/Information, Experiences, And Best Practices From Past Projects.	0.74		0.56		0.79		0.65		0.75		0.46		0.58		0.85		0.58		0.85		0.76
E	Reviewing Data/Information, Best Practice And Experiences From Past Project Contents And Experts.	0.76		0.66		0.76		0.75		0.73		0.44		0.58		0.83		0.58		0.80		0.81

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F	**Classifying Data/Information, Best Practices, And Experiences Of Past Projects To Facilitate Recording And Searching.**	**0.72**		**0.56**		**0.76**		**0.65**		**0.73**		**0.46**		**0.58**		**0.83**		**0.58**		**0.71**		**0.76**
G	**Capturing Data And Information Of Projects In Electronic Repository (Database)**	**0.72**		**0.61**		**0.81**		**0.65**		**0.73**		**0.46**		**0.58**		**0.83**		**0.58**		**0.71**		**0.81**