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Knowledge Management Strategy Determination in Programs: A Case of Iran Tax Administration Reform and Automation

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Abstract: This study aims to examine the determinant role of program dimensions onto knowledge management strategies. The research proposes a new framework for classifying different KM strategies in programs and makes propositions about how the size, geographical desperation and the nature of programs affect the portfolio of strategies suitable for each program. Prior studies tend to examine only one dimension of knowledge management strategies: personalization versus codification. In this study, personalization versus codification and generalization versus specialization are highlighted as two distinct dimensions of KM strategies. The study highlights that codification is more suitable for large, geographically dispersed programs; while generalization is more suitable for programs conducting projects that are more standardized and routine in nature. To achieve the main research goals; two-phase research strategy is employed. At first, knowledge derived from an analysis of the literature is used in order to design the conceptual framework of the research. Then, the results of the case study of Iran Tax Administration Reform and Automation program employed to evaluate the research propositions. The results show that the program is used personalization-specialization knowledge management strategy. The study gives valuable information, which hopefully will help programs to accomplish knowledge management.

Key words: Information system, strategic planning, project management, learning, codification, personalization

INTRODUCTION

Nowadays, modern organizations are increasingly using project-based structures to become more flexible, adaptive and customer-oriented. Programs and projects deliver benefits to organizations by enhancing current or developing new capabilities for the organization to use. A benefit is an outcome of actions and behaviors that provides utility to stakeholders. Benefits are gained by initiating projects and programs that invest in the organization's future (PMI, 2006).

Traditionally, the vast majority of practical and theoretical developments on project management have been related to single projects considered in isolation (Evaristo and Fenema, 1999).

Over time, however, issues have arisen where multiple projects are undertaken within organizations, including lack of co-ordination and confusion over responsibility for managing multiple demands on staff (Lycett *et al.*, 2004).

There has been an increasing awareness of the requirement for a new perspective on the management of projects, distinct from that applied in a single project context (Payne, 1995). In this context, the foundations have been laid for a new discipline, commonly referred to as program management.

Contrary to project management, which is a concept that is clearly understood by both academics and practitioners, program management seems to be a term that has not reached this maturity yet (Vereecke *et al.*, 2003). Recent studies stress the difference between project and program management, but do neither show consensus nor precise definitions of program management (Arto *et al.*, 2009).

In the literature, many definitions of program management have been given, ranging from the management of a collection of projects to the management of change (Vereecke *et al.*, 2003). There is an increasing recognition that program management provides a means to bridge the gap between project delivery and organizational strategy (Lycett *et al.*, 2004).

Program management is defined as the integration and management of a group of related projects with the intent of achieving benefits that would not be realized if they were managed independently (Lycett *et al.*, 2004).

The object of programs is the change of a permanent organization. With projects, the permanent organization is usually a given factor that dictates criteria and enablers for project success. Therefore, projects represent narrowly defined task entities or temporary organization (Arto *et al.*, 2009).

While there has been an increasing recognition in the literature about diversity of different types of programs, little guidance is offered in terms of the necessary difference in managing approaches for different programs (Lycett *et al.*, 2004), especially in the area of learning and knowledge management.

Organizing work by projects and programs allow organizations to respond flexibly to changing organizational needs, but project-based environments face significant challenges in promoting organization-wide learning.

While it is a misconception to think that there is no learning across projects since there are little commonalities across projects, the challenges in facilitating knowledge sharing across projects are well-recognized (Boh, 2007).

The management, reuse and transfer of knowledge can improve project management capabilities resulting in continuous learning. Although, knowledge management has been recognized as a critical success factor in program management, very little research has been conducted to date (Owen, 2008).

This study aims to examine the determinant role of program dimensions onto knowledge management strategies.

The research proposes a new framework for classifying different KM strategies in programs and makes propositions about how the size, geographical desperation and task nature of programs affect the portfolio of strategies suitable for each program.

Prior studies tend to examine only one dimension of knowledge management strategies-personalization versus codification. In this study, personalization versus codification and generalization versus specialization are highlighted as two distinct dimensions of KM strategies.

The framework and its propositions are based on a literature review and analysis. Moreover, the results of the empirical case study of Iran Tax Administration Reform and Automation (TARA) employed to evaluate the research propositions. The State Tax Organization of Iran is undertaking the TARA program aimed at improving its effectiveness and efficiency. The primary focus of this

program is the design and development of an Integrated Tax System, that is one of the most important national software systems in Iran, with the goal of developing and improving the existing tax administration and collections process, as well as implementation of a fully integrated technology solution to manage taxpayer information and automate manual processes.

MATERIALS AND METHODS

The research was conducted from July of 2008 to January of 2009 at the PMO of TARA program in Tehran. To achieve the main research goals; two-phase research strategy is employed in this study. At first, knowledge derived from an analysis of the Literature is used in order to design the conceptual framework of knowledge management strategies in programs by covering aspects referring to personalization versus codification and generalization versus specialization. Therefore, the phase provides us with suitable framework for the case study in the second phase.

The second phase consists of an explanatory case study approach. Since, the theory about knowledge management still represents an emergent and sometimes confusing field, the case study method seems to be the most suitable research strategy in this area. A case study methodology was chosen to examine whether the proposed framework is an accurate characterization of knowledge management strategies used in programs.

In the case study, data was gathered regarding the knowledge management mechanisms used in the program by conducting interviews, browsing the portal and observing internal meetings. Based on the characteristics of the program, the results of the comparison will then indicate support or lack thereof for the propositions (Boh, 2007). Then, the mechanisms was classified into the KM strategy matrix (Fig. 2).

Over a two-months period, the authors visited the Program Management Office (PMO) located in Tehran. The purpose of the PMO is to create a framework, complete with tools, methodology and required training for management and supervision of the portfolio of future TARA projects to be defined on the program roadmap.

During the visits, nine internal meetings were observed, including meetings with advisors, PMO weekly meetings, meetings with contractors, PMO units meetings, as well as projects coordination meetings.

The researchers also browsed the intranet during the visits to understand what types of information and codified knowledge was available on the program portal.

Semi-structured interviews were conducted with managers at different program management levels:

program chief officer, PMO manager and managers of PMO units. In total, 7 people were interviewed.

During the in-depth interview, theory-driven questions related to the KM mechanisms in the program were asked. Interviewees were also probed to elaborate upon specific examples of knowledge sharing or lack of knowledge sharing.

According to Boh (2007), the data analysis was conducted in two phases. In the first phase, the researchers used the open-coding technique to code the interview transcripts and other information collected. Based on the mechanisms identified in this first round of coding, two additional coders were recruited to recode all the interview documents. This second phase of coding highlighted the text relating to each mechanism. Based on the results of this phase of coding, one of the mechanisms identified in phase 1 were collapsed. No additional mechanisms were identified in this second round of coding.

The whole program must share a common KM orientation. KM strategy describes the overall approach a program intends to take in order to align its knowledge resources and capabilities to its business strategy, thus reducing the knowledge gap existing between what a program must know to perform its strategy and what it does know.

In this study, two aspects of knowledge are considered: degree of knowledge articulation and degree of knowledge specialization. Based on these two aspects of knowledge, the proposed framework highlighted two dimensions of knowledge management strategies in programs: codification versus personalization and generalization versus specialization. The interaction between these two dimensions results in a framework that generates four classes of knowledge management strategies.

According to the degree of knowledge articulation, one of the typologies of knowledge strategy has become the most supported and referenced one. This typology recognizes two different knowledge management strategies for sharing tacit and explicit knowledge: codification and personalization (Venkitachalam and Gibbs, 2004).

Codification strategy involves securing knowledge then storing it in databases for others to access and reuse. The knowledge is independent of the person who initially created it (Smith, 2004). Codification can be a good mechanism to store large amounts of knowledge and to create an organizational memory for all employees (Boh, 2007). Codification strategy focuses on codifying knowledge using a people-to-document approach.

On the other hand, personalization is a strategy to manage the knowledge that is produced by human

interaction. This knowledge is difficult to codify and store because it is unable to replicate the human qualities used when resolving an issue (Smith, 2004). Personalization strategy focuses on dialogue between individuals, not knowledge objects in a database. It is a person-to-person approach where the shared knowledge is not only face-to-face, but also electronic communications.

Some researchers argued that you need to start by identifying what kind of organization you have and what your information needs are and then primarily focus either on a personalization or a codification strategy (Greiner *et al.*, 2007).

In a small, collocated program, personalized mechanisms may serve the knowledge management needs of the program adequately as employees frequently meet each other in the hallways or at meetings. In a large and geographically dispersed program, it is a challenge to find ways of making the connections between individuals who have the right knowledge to share with one another. The probability of serendipitous encounters drops drastically (Boh, 2007). Hence, the first research proposition is:

- Codification is more suitable for large, geographically dispersed programs; while personalization is more suitable for small, concentrated organizations

According to the degree of knowledge specialization, two types of knowledge have been identified: program management knowledge and program domain knowledge.

Based on this aspect of knowledge, the proposed framework is highlighted the second dimension of knowledge management strategies in programs: generalization versus specialization.

Program management knowledge is the sum of knowledge within the profession of program management which includes proven traditional practices that are widely applied, as well as innovative practices and published and unpublished material.

This type of knowledge, which can be labeled kernel (Leseure and Brookes, 2004), includes forms of knowledge that need to remain and be nurtured within a company in order to sustain high program performance in the long term. Because kernel knowledge is what allows programs teams to repeatedly complete independent programs in the long term, it matches the accounting definition of intangible assets.

Program domain knowledge is the knowledge about program domain (e.g., general business, industry, company, product and technical knowledge) of an application area in use during the project. This type of knowledge is called application area-specific knowledge (PMI, 2006).

This knowledge is useful for one program, but has a low probability of ever being used again. This form of knowledge, which is also labeled ephemeral knowledge according Leseure and Brookes (2004), is only active and useful during the life time of a program. Ephemeral knowledge does not match the definition of intangible assets as there is no evidence that it will be useful again in the future.

If a program provides a standardized and routine solution to its client, a generalization strategy would leverage the ability to create and reuse the program management knowledge in order to sustain high program performance in the long term. On the other hand, programs tend to tackle problems that do not have clear solutions at the outset; benefit more from specialization strategy, which allow them to create or absorb program domain knowledge in order to gain better understanding about the problem and its potential solutions. Specialization strategy increases the probability of unique programs success by supplying critical domain knowledge to them. Hence, the second research proposition is:

- Generalization is more suitable for programs conducting projects that are more standardized and routine in nature; while specialization is more suitable for programs conducting projects that are more unique in nature

The interaction between these two dimensions of programs knowledge management strategies-codification versus personalization and generalization versus specialization-results in a framework that generates four classes of KM strategies. Figure 1 shows the research propositions which are based on types of programs.

Program types	KM strategies
Small and concentrated, Routine program nature	Personalization, Generalization
Large and geographically dispersed, Routine program nature	Codification, Generalization
Small and concentrated, Innovative program nature	Personalization, Specialization
Large and geographically dispersed Innovative program nature,	Codification, Specialization

Fig. 1: Proposed KM strategies based on types of programs

RESULTS

During the three years of launching TARA program, the PMO has remained relatively small with a total of about 40 employees. All of these employees have collocated in the three-floor building. Over 80% of the employees have at least master degrees and the average age of them is about 35 years old.

TARA program includes diverse projects which are unique and complex in their nature. Projects like: Integrated Tax System, Risk-Based Audit Selection, Data Center Implementation and Tax Evasion Study and Prevention Plan are some of these projects. There is serious lack of knowledge and experiences regarding these projects in Iran. Some interviewees highlighted that collecting an acceptable level of knowledge for defining the scope and deliverables of the projects is one of the most important success factors of the program. Therefore, the program nature is characterized as very unstructured and non-routine.

As shown in the Fig. 2, the case study results highlighted that the key mechanisms used for knowledge management in the TARA program are more personalized mechanisms predominantly oriented towards specialization. Whereas, TARA is a concentrated and innovative program, the findings support the research propositions.

Many interviewees mentioned that they used oral communications to find right individuals to approach for knowledge sharing. Many individuals in the program depend on their personal network to find the answers to their questions, or to identify the right people to speak to.

Senior staffs that have been in the PMO for a long period of time and would know things from long ago are key sources of referrals and knowledge in TARA program.

Generalization	Specialization	KM strategy matrix
<ul style="list-style-type: none"> • DSS of contractor selection • Database of program management articles • Written work procedures • Program management books 	<ul style="list-style-type: none"> • Program portal • Email • Program monthly reports • Projects status reports • Document management system 	Codification
<ul style="list-style-type: none"> • Program management seminar • PMO committees • Coaching 	<ul style="list-style-type: none"> • Net meeting software • Coaching • Meeting with advisors • PMO weekly meeting • Meeting with contractors • PMO units meeting • Projects coordination meeting • Socialization of new employee • Experts consultancy 	Personalization

Fig. 2: TARA identified mechanisms in the KM strategy matrix

It was mentioned by interviewees that it was not difficult to find information when someone is looking for specific information, but they do not necessarily know what types of knowledge and information is available to them in the course of their work. Some employees highlighted that they often found out after the fact that their work would have been facilitated if they had approached so-and-so for help before they started.

The program does not use of many collaboration technologies to enable individuals to share information and knowledge with others. The main mode of knowledge and information sharing in the PMO is through diverse meetings such as: projects integration meetings, meetings with advisors, PMO weekly meetings, meetings with contractors and PMO units meetings.

Document management system is the most important codification mechanism in the program. The mechanism is a computer system used to track and store electronic documents and images of paper documents. This web based electronic document management system provides a central repository to access, create, store, modify, review and approve documents in a controlled manner.

The results of case study also highlighted that PMO has been used more knowledge management mechanisms for gaining and sharing program domain knowledge than program management knowledge. It means that the content of the projects are more challenging for the PMO staffs than the context of managing the projects.

DISCUSSION

The objective of the research has been to create a better understanding of Knowledge management in programs. The literature defines program management as the integration and management of a group of related projects with the intent of achieving benefits that would not be realized if they were managed independently.

The case study shows the usefulness of the framework in evaluating the use of knowledge management mechanisms and in analyzing the fit of the mechanisms with program dimensions. The case study results highlight that knowledge management does not necessarily mean having to codify all individual employees' knowledge. Instead, another key approach to retain and share knowledge is by ensuring that the knowledge is shared with and diffused amongst other employees in the program.

According to the findings, the researchers don't agree with some arguments in the literature about the important role of information technology to leverage knowledge management. As the research has shown, most of the mechanisms identified by participants are

social in nature; therefore, this case study confirms the view that knowledge management is a social rather than a technical process.

One of the successful mechanisms which are used in this regard is consulting with experts as knowledge providers. Based on Boh (2007), this mechanism has several advantages. First, the experts can provide customized advice for each project for which they are approached. Second, given the years of experience that these experts have accumulated, they have a wide network of contacts to draw upon. Hence, they can effectively broker knowledge linkages between problems owners to other consultants with potential solutions. Third, the experts themselves can benefit from accumulating experience in repeatedly searching for information from their contacts and archives, such that they build up an extensive mental model of who knows what as well as a large set of archives developed from earlier interactions with their own client-consultants.

One of the finding doesn't support the proposition of Boh (2007). Boh (2007) proposed that codification knowledge sharing mechanisms are more suitable for organizations conducting tasks that are more standardized and routine in nature; while personalization mechanisms are more suitable for organizations encountering problems that are more unique in nature. It is important to note that the context of his work (project based organizations) is different from this research's context (program environment).

As a single-site case study, which was investigated only one program; the study does not permit the extrapolation of the results to a larger population. So, the multiple case study approach can be adopted as a suitable strategy for future research in this regard. It will also remain for future research to refine and expand the proposed framework. Whereas, culture might play a role in the program management approach and style. Comparison of the conclusions with observations in programs in other countries is necessary to improve the external validity of the research.

CONCLUSION

As a result of the research effort, the conceptual framework of knowledge management mechanisms in program was established. The research shows that different types of programs require different knowledge management strategies. This study, however, distinguishes between codification versus personalization and generalization versus specialization as two distinct dimensions. Prior studies tend to examine only one dimension of knowledge management strategies: codification versus personalization.

The framework proposes that codification is more suitable for large, geographically dispersed programs; while personalization is more suitable for small, collocated organizations.

This study also proposes that generalization is more suitable for programs conducting projects that are more standardized and routine in nature; while specialization is more suitable for programs conducting projects that are more unique in nature.

The study is the pioneer of its kind to examine if there are suitable configurations of KM strategies for programs with different dimensions. It gives valuable information, which hopefully will help programs to accomplish knowledge management.

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