Program management: A comprehensive literature review for future research directions

Research-in-Progress

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Abstract

During the past decades, many researches have been done, evolving from programs as the conceptual extension of projects to a rich field of empirical studies reflecting the special natures and contexts of programs and their management; however, these threads have not been woven together into a cohesive fabric. In the present study, we analyze existing studies and provide a systemic review of program management research. Based on a proposed framework, a structured and integrative synthesis of relevant studies including their theoretical foundations is outlined with the research goal of providing future research directions for program management. Future investigations are suggested to focus on evolving, contextual and interaction nature of program management.

Keywords: Program management, literature review, program lifecycle

Introduction

Program management, which is born and extended from project management area, has been extensively investigated in the project management discipline. Since the first publication of program in 1983 in project management journals (International Journal of Project Management [IJPM]), programs have evolved from fuzzy and unmanaged entities or extensions of projects into vehicles of managing a set of interdependent projects and operation activities. Though many guidelines and standards have been put forward by professional institutions such as PMI, APM and PMGG, programs still cannot be managed as expected and face a high possibility of failure (Jiang et al. 2018).

This study follows the common definition of a program as "a group of projects that contribute to a common, higher order objective" (Turner 2012). Lycett et al. (2004) emphasized that the projects in a program are inter-related, and the intent of achieving benefits would not be realized if the projects were managed independently. Project Management Institute (2013) observes that projects, programs, and portfolios are different forms of organizational project management, each with unique profiles regarding scope, change, planning, management, success, and monitoring. Although program

management may have a clear resemblance to managing large projects in terms of a unifying overall goal or mission (Eweje et al. 2012), program management may also have similarities with project portfolio management in terms of implementing and controlling multiple projects in parallel (Martinsuo 2013), lineage management in terms of emergent knowledge and feature transfer between consecutive projects (Midler 2013), and project-based firms or organizations in terms of structuring the organization to manage different kinds of projects. Program management deserves unique attention particularly as programs are usually established to achieve certain strategic benefits through organizing and managing a change in the organization.

Thus, it's the time to draw a full picture of the activities having been taken in project management field and thus provide valuable guidance for scholars interested in program. There has been a review particularly for one specific type of program (i.e., change program), with three themes — program lifecycles, context and program competence. Consistent with the research objective of this scoping review, our focus is on all kinds of studies related to any type of program that once mention the objective of managing a set of projects towards a common goal (Thiry 2002). According to an assumption in program management that a program follows a linear life-cycle in Lycett et al. (2004), the authors classify previous literature in this dimension: four program lifecycles stages (identification, planning, delivery and closure), and then conduct analyst in this framework for now. The analysis of the second dimension will be conducted recently and can be presented during the conference.

So, firstly, this study summarized the extent, range, and nature of research and identified gaps in the existing literature in order to subsequently answer our research questions.

1. What are the key management themes in each program lifecycle stage that have been addressed in the existing literature?

2. What findings and theoretical foundations can be synthesized regarding these four stages?

3. Are there any differences between program researches in project management field and IS field along these two dimensions and theoretical foundations?

4. What do previous studies on PM recommend for future research?

Through answering our research questions and achieving our research purpose, this study provides a comprehensive review of existing literature in project management area and a foundation to further systematic review and identifies research gap in current project management area regarding program management. In addition, a comparison is expected to be made between program researches in two different research domains, which can inspire scholars in project management and IS management field to explore program and program management deeper and further. Moreover, we try to provide practical guidance for scholars in project management discipline and even in other fields interested in program management to do systematic review and publish in these three top project management journals.

Review Methodology

The method introduced by Arksey (2005) and refined by Levac (2010) was used to conduct this review through five stages. This review was conducted as follows and the workflow is shown in Figure 1.

Given the research purpose, the authors combined all Electronic databases in Web of Science with hand-searching of key journals method first to identify relevant materials. We first explored the project management journals (International Journal of Project Management [IJPM], Project Management Journal [PMJ] and International Journal of Managing Projects in Business [IJMPB]) as suggested by Martinsuo and Hoverfält (2018). Reflecting time and budget constraints, we included only those studies published between January 1983 and October 2018. The start date of 1983 was chosen because the earliest work on program management is Morris (1983) and increasing attention to program management is relatively recent due to rapid technology development in this century. Foreign language publications were not considered because of the cost and time involved in translating efforts. Particularly, we use Web of Science database to do our first-round identification of relevant records and contain our search in three top journals in project management—International Journal of Project Management (279), Project Management Journal (61) and International Journal of Managing Projects in Business (49) using program as the searching term (Martinsuo and Hoverfält 2018). Whilst we had

to adopt these limits for practical reasons, it is worth pointing out that potentially relevant papers could have been missed.
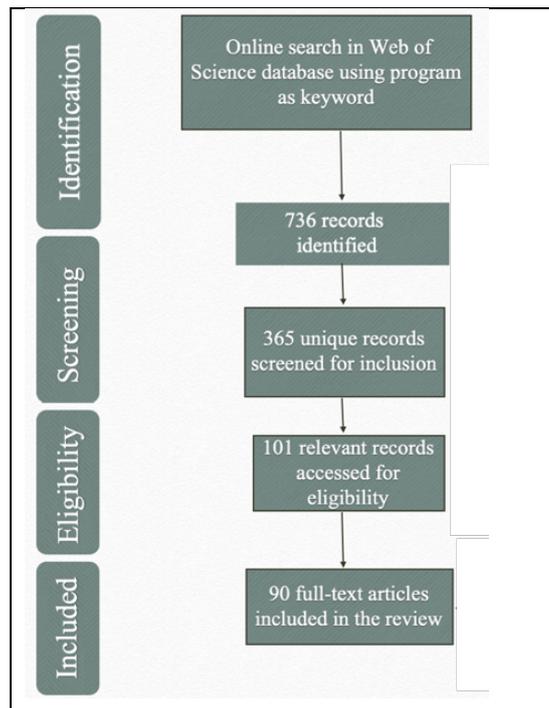

Figure 1. Workflow of Review Process

After original searching in electronic database, we checked the bibliographies of studies found through the database searching. 736 records of materials were obtained in this early identification process. It is valuable to conduct this process to identify further references, and a saturation point was reached where no new ones were being identified.

Our initial perusal of the citations indicated that the search strategy had picked up a large number of irrelevant studies, since the terminology "Program" was used widely by other subjects such as engineering and policy. So, we developed inclusion and exclusion criteria, based on a specific research question, to help us eliminate studies that did not address our core research question. Although criteria were devised post hoc, based on increasing familiarity with the literature, we could then apply to all the citations to determine their relevance.

The inclusion criteria used in this scoping study related to the: program relevance; definitions of program. We scanned all the materials through reading titles and abstracts and full paper if needed. Two reviewers independently applied the inclusion criteria to all the citations in the current list. Copies of full articles were obtained for those studies that appeared to represent a 'best fit' with the research question. If the relevance of a study was unclear from the abstract, then the full article was ordered. A deadline was set, after which it was agreed that we would not include any more studies in the analysis. Additionally, in this process, duplicates were excluded and a list of unique articles was obtained.

The next stage requires reviewers to read the full articles to make the final decision about whether they should be chosen for inclusion in the review. As Badger et al. (2000) note, abstracts cannot be assumed to be representative of the full article that follows, or to capture the full scope of an article. Out of our original 736 references, 90 articles were selected for inclusion in the review. We do not search some implicit studies that may be not use the term "Program" but explore some related aspects such as inter-project cooperation since these studies are not best suit for our research questions with particular focus on program.

After determining all included articles, we try to extract data from included studies. We recorded information as follows:

• Author(s), year of publication, journal

• Method (quantitative; qualitative), Study populations (top managers; project managers; employee)

• Stages, relationship

• Research questions; Keywords; Key findings; limitations

Together, these data formed the basis of the analysis in the next two sections.

Overall Descriptive Numerical Summary

We first circulated the amount of publications in different stages and relationship interfaces and using different research methods. Then, according to the statics, we develop our following descriptive summary. Additionally, we also count the number of articles focused on different stages and relationship according to time interval of three years, while putting studies published before 1995 altogether. Histograms with moving average lines were used in this section in order to show the increasing or decreasing trend across time line.

Overall Distributions and Trends

First, we want to know the research trends on program management holistically and thus counted the number of publications in each time interval of three years. The result is shown in the following Figure 2 and we can see that scholars are more and more appealed to this research domain with the trend line increasing sharply since 2006 and arriving at a peak in 2010. However, after this highest point, the amount of publications in recent two intervals (2013-2018) are less than that of around 2010, showing the signal of cooling down in this field. So, by this review, we may be able to identify the underlying reasons for this decline recently and provide further research possibilities.

Furthermore, the research design of each article included in the review pool was systematically documented and shown in Figure 3. Results indicate that the field of research is dominated by qualitative empirical approaches. Particularly, single case study research method was favored by many scholars to answer their proposed research questions. The second most common research designs were conceptual method, whereas clarity of program management concepts and distinguishing program management issues from project management were most prevalent. Finally, papers using mixed empirical methods, literature review, and quantitative approaches have been identified. That's interesting and unique to have such a high proportion of conceptual and review works, which demonstrates that this domain is not mature enough and thus a lot of efforts have been made to understand what is program and program management, with the locus on interpreting new concepts and practices and challenge the existing standards, guidelines and assumptions.
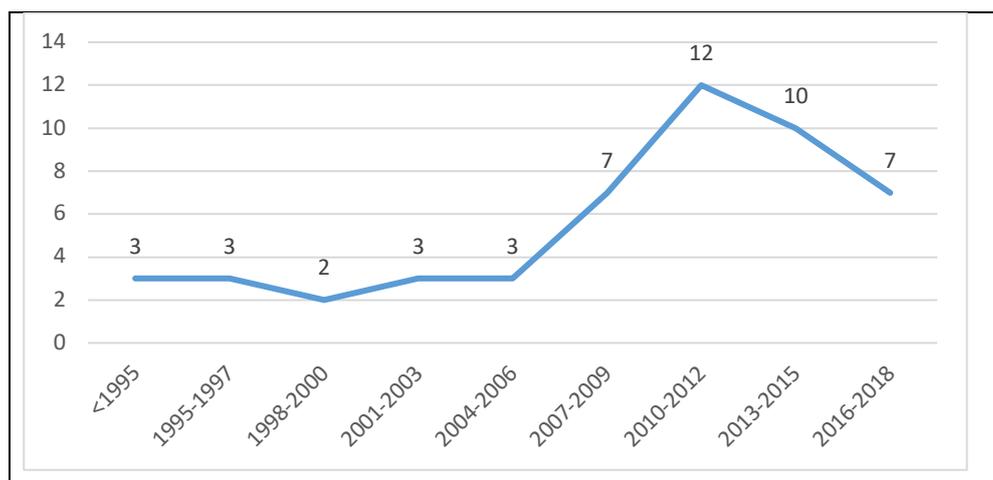

Figure 2. Amount of Published Paper in 3-year Time Periods

To achieve an integrative analysis of key findings and provide an overarching structure, all empirical papers were clustered with regard to two distinct dimensions according to Lycett et al. (2004). The first dimension considers the dominant investigating lifecycle stages, since programs are commonly recognized as linear temporary organizations with an initiation (start) and a closure (end) phase, and

between them, program implementation or benefits delivery taking place through the phases of planning and delivery of projects (or execution) (Lycett et al. 2004).

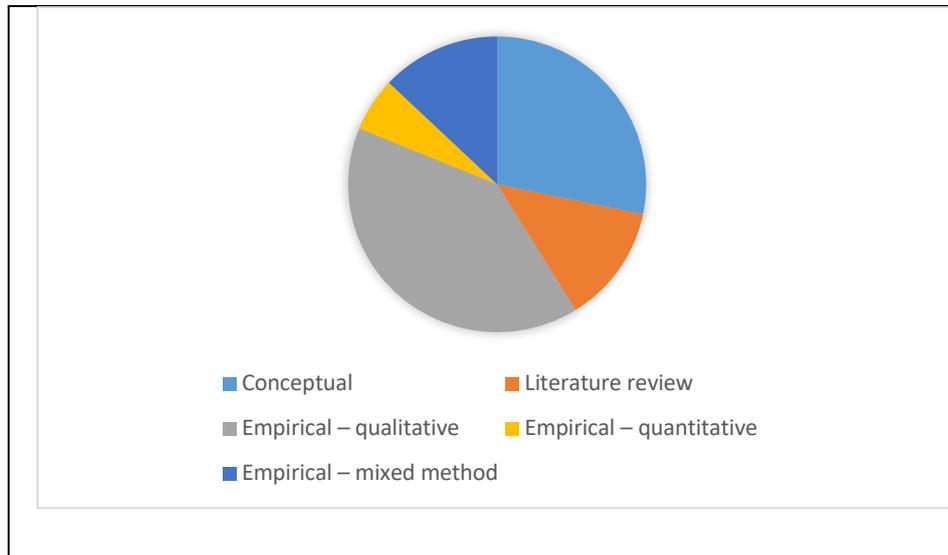The second dimension will be summarized later and the work has not finished yet.

Figure 3. Segmentation of Article Pool by Research Design

Using this framework, it is possible to make a higher-level systematization for interrelating and comparing existing studies of related research streams. Moreover, such a two-dimension approach provides a concise outline to display the main findings of the literature review and thus yields a good basis to find key research gaps for future research.

Data

First, we want to pay attention to the geographic information of data sources of all the articles in our list. As can be seen from the included articles, the cases used most happened in European counties, two researches included Australia cases (Blomquist and Müller 2006; Pollack 2012) and few datasets are obtained from US and Asia (Chang 2017; Chen et al. 2013; Shao and Müller 2011). The regional limitation is concerned by some authors (Aubry and Lavoie-Tremblay 2018). Interestingly, many program cases used in these articles have not been completed yet when the papers are written up, which has been mentioned as a limitation in several articles because the final program outcome cannot be seen (Lehtonen and Martinsuo 2008; Turkulainen et al. 2015).

Second, data collection processes in the majority of the qualitative articles in the pool are often through interviewing managers and program participants, and only one is real time talk data (Näsänen Vanharanta 2016) and one is implemented in practice kind of like experiments (Payne and Rodney Turner 1999). And almost all articles didn't explain the data analyze procedure.

Theoretical Foundation

Besides topics across program stages and interfaces, we conduct a summary of theories used in current program management research. Although we have included 71 empirical works in our systematic review, only 11 theories were used. Moreover, out of all the 71 empirical works, only 18 researches have incorporated theory in the exploration of program practice. The most used two theories are contingency theory (Aubry and Lavoie-Tremblay 2018; Dietrich 2006; Miterev et al. 2016; Shao 2018; Shao and Müller 2011) and principle agency theory (Aubry and Lavoie-Tremblay 2018; Dietrich 2006; Miterev et al. 2016; Shao 2018; Shao and Müller 2011). Contingency theory is used by five studies, aiming to explain issues such as program context, program competence and program integration. Four articles use agency theory as theoretical lens to investigate program communication, resource allocation, and integration related topics.

Researches in Information System (IS) field about Program

We use Program and Programme as keywords to search in Web of Science database in IS Basket-of-eight Journals: MIS Quarterly (MISQ), Information Systems Research (ISR), Journal of Management Information Systems (JMIS), European Journal of Information Systems (EJIS), Information Systems Journal (ISJ), Journal of the Association for Information Systems (JAIS), Journal of Information Technology (JIT), and Journal of Strategic Information Systems (JSIS) on Web of Science using program as topic. Totally, we find14 program related researches, as shown in Table 1.

Table 1. Program Related Research in IS Discipline

Journal	publications
MISQ	1:(Harkness et al. 1996)
ISR	1:(Gregory et al. 2015)
JMIS	1:(Jiang et al. 2014)
EJIS	1:(Itoh et al. 2007)
ISJ	0
JAIS	1:(Jiang et al. 2018)
JIT	8:(Brennan 2007; Clegg and Shepherd 2007; Cunningham and Finnegan 2004; Currie 2012; Eason 2007; Markus 2004; Sauer and Willcocks 2007; Vega et al. 2008)
JSIS	1:(Willcocks and Smith 1995)
Total	14

Overall Description

Delivery stage is the most investigated lifecycle stage while the other three stages are also been equally explored. Closure stage is more important and has receive more attention than in project management journals, since information system programs are often related to system adoption as a final goal.

More detailed research findings and explanations are still on progress and will be ready for presentation in the conference in July 2019.

Discussion and Limitation

Summary

Our scoping review has found that various types of research have been being done on different facets of program management. Different findings have been drawn from these studies, varying from program initiation to program impact realization. Although previous research classifies change program into a model consisted of three themes- lifecycle, context and competence, we develop a new framework along two program management dimensions.

Through our review of all these papers, even though some studies have not mentioned program stage explicitly, each study actually resolves related issues in specific stages. For example, in one study concerning maintenance and repair delivery (Bond-Barnard et al. 2013), the stages involved are program planning and delivery, which deal with communication in program implementation. For program lifecycle, almost all studies are not only focused on one stage, often across many stages, which show the complexity and systematic nature of program. Although program is a socially constructed entity, program itself can be viewed as a complex adaptive system, which makes it hard and less meaningful to do research in one stage and not involve others.

Expected Results

The objective of this study was to describe existing program management research and to show what research priorities scholars have given in current research. We found many relevant papers, indicating a generally growing interest in using program as a tool for organizational transformation, no matter incremental change such as infrastructure development or radical change such as new business exploration. More details about research findings along two dimensions in our framework will be summarized in the near future. We will also compare researches in project management field and IS field in a fine-grained way later. We are still working on analyzing existing research findings and more results will be presented in conference in July 2019.

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