The application of project portfolio management in the government investment projects

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Abstract—The main purpose of this paper is to deal with the problems in government investment projects by the implementation of project portfolio management. As is known to us all, there are many problems in the government investment projects, and these problems do affect the economic and social development. In this paper, we sum up seven problems in the government investment projects. With the help of project portfolio management (PPM), we advance a new perspective to deal with these problems.

First of all, we simply analyze the problems in the government investment projects in China. And then we introduce the project portfolio management’s several definitions and review PPM’s history briefly. At last, referring to the PMI’s The Standard for Portfolio Management, we put forward eight steps to implement PPM in the government-invested projects so that we can effectively select, prioritize, balance and monitor the right government-invested project portfolio, and link the government strategic goals with the projects and/or programs as well.

Keywords-government investment project; project portfolio management; strategic project office; project management; financial crisis; strategy

I. INTRODUCTION

According to the China Statistical Yearbook on Fixed Assets Investment [11] published by the National Bureau of Statistics, the investment misplay ratio of the Chinese investment projects is close to 50% from 1958 to 2001. During the eighth five-year plan period, the unsuccessful ratio of the projects which are larger than the middle-level in China is 42%. Most of the unsuccessful projects are caused by the mudd decision-making. Although Chinese government tries to improve this situation, such as applying the agent-construction system, and carrying out more strictly examining and proving system, the situation is still not satisfactory at all. What’s more, Chinese government determines to invest many different kinds of projects which are cost at least 4 trillion RMB in response to the challenges of the global financial crisis. How to avoid misplaying these government-invested projects costing such a big note is very urgent.

With the the extensively using of project portfolio management in many different industries, such as IT industry[12], R&D industry[13], mobile telephone communications, finances, energy, pharmaceuticals, toys, software, and foods[14], etc., project portfolio management has become more and more popular. In this paper, we mainly try to use PPM to solve the problems in the government investment projects.

II. PROBLEMS IN THE GOVERNMENT-INVESTED PROJECTS

Undoubtedly, there are surely many problems in the government investment projects not only in China, but also in many other countries. Laura Melody Williams [10] listed eight aspects to explain that the public sector problems are more difficult to address than the private one, those are: (1) the impact of the decision will be felt by those not involved in the decision making process; (2) measures of outcome are more difficult; (3) organizational structures are more complicated; (4) elected official’s time horizon; (5) issues of efficiency, effectiveness and equity; (6) who is in charge and legislative concerns; (7) review of public sector analysis; (8) political concerns are more extreme. According to Laura, it is more difficult to control the government-invested projects. In fact, problems in the government-invested projects are more complicated in China than those in the developed countries, e.g. Britain, Japan, the US, etc. These problems are as follows:

- The government’s strategy always does not coincide with the implementing of the government investment projects, i.e. the strategy is one thing, while the implementing is another. Many local governments invested plenty of projects, but just because of lacking the government’s monitoring and the resources support, lots of these projects turn into be failed at the end.
- There is not a general effective procedure to evaluate the project investment and the project selection, and the project decision-makers make decisions subjectively and arbitrarily.
- Because of the constraint of the resources and the lack of the project priority, it is difficult for the government to put the right resources in the right project at the right time. Thus, this situation always
leads to the conflict of the projects because of the not ample critical resources.

- People usually don’t consider the income of the projects from the strategic level, and neglect the balance between the short-term projects and the long-term projects.
- There exist many repeated and redundant projects which waste lots of public funds.
- Lacking effective monitoring is very common in these government investment projects.
- The shortage of legislation also caused the poor performance of the government-invested projects management.

Above all, the current project management pattern can not account for many problems in government-invested projects effectively especially in China.

III. PROJECT PORTFOLIO MANAGEMENT

A. What’s the PPM?

According to PMI, a portfolio refers to a collection of projects or programs and other work that is grouped together to facilitate effective management. The projects or programs of a portfolio may not necessarily be interdependent or directly related [2].

While in the PMI’s The Standard for Project Portfolio Management, Portfolio management is also an opportunity for a governing body to make decisions that control or influence the direction of a group of components (a subportfolio, program, projects, or other work) as they work to achieve specific outcomes. It uses the tools and techniques described in this standard to identify, select, prioritize, govern, measure, and report the contributions of the components to, and their relative alignment with, organizational objectives [1].

In Roland Gareis’s opinion, a project portfolio is defined as the set of all projects and programmes a project-oriented organization holds at a given point in time and the relationships between these projects and programmes [3].

And Gerald I. Kendall defines the Project Portfolio Management (PPM) as a set of processes to authorize, activate, expedite and monitor projects with correct cope to meet organization improvement goals. If performed successfully, PPM will meet its key objective of measurably improving the return on investment (ROI) from an organization’s projects [3].

In this paper, we adhere to the definition in the PMI’s The Standard for Project Portfolio Management.

B. Literature review

The field of portfolio management owes its origins to a seminal paper written in 1952, in which Harry Markowitz laid down the basis for the Modern Portfolio Theory (MPT). MPT allows determining the specific mix of investments generating the highest return for a given level of risk [12].

However, MPT was just widely used in the financial investment.


After that, in the mid-1990s, the field of PPM received increasing attention [12]. Among the first scholars who focused on PPM, the issue of choosing the right (number of) projects was especially emphasised. Thus, these researchers suggested how one reaches the optimum project portfolio by means of mathematical models [14]. In 1998, John Thorp used PPM to manage risk and maximise return along a number of dimensions [8]. According to John Thorp, PPM techniques are fundamental for getting value from IT projects.

In recent years, Roland Gareis [15] insisted that for project-oriented organizations it was not sufficient to have the competence to manage single projects efficiently, but additional competences, such as the competences for the assignment of projects and programmes, for project and programme coaching and auditing, for networking between projects, and for programme management and project portfolio coordination are required. He claimed that there should be professional project portfolio management.

According to Gerald I. Kendall [3], to accomplish its primary objective of improved ROI, PPM must ensure that all three of the following activities are performed expertly: a. Choose the right project mix; b. Ensure the correct scope; c. Execute quickly, in the correct sequence. Gerald I. Kendall [3] also listed three common challenges that executives must overcome with the way that projects are sanctioned in most organizations. a. Goals set by the senior executive are not measurably tied to projects. b. The collection of active projects is not tracked to see if it is meeting the goals (on time and magnitude of improvement promised). c. Organizations breed too many projects that are not sanctioned by any executive.

PPM, in Neville Turbit’s opinion, can bring the business many benefits as follows:

- Faster response to changing conditions
- More quick wins.
- Not having minor projects escalate into major undertakings.
- Focus on what will achieve the initiative rather than on the project itself.
- IT responsibilities centred on one business area rather than trying to compromise across several.
- Blending business and IT projects and treating both as contributors to the same goal.
- Portfolios can be constantly reviewed and altered if necessary to produce the highest returns based on changing situations.
- Management sees the projects as groups of activities contributing to an initiative. They are not a series of unrelated work.
- Dependencies are easier to identify. If we don’t upgrade these servers, we can’t run the new software. Both are part of the same initiative.

Miia Martinsuo[16] examines how single-project management contributes to project portfolio management.
efficiency, and his research implied that understanding of portfolio-level issues needed to be considered as part of project managers’ capabilities and not only a top management concern.

Bert De Reyck [12] studied the the impact of project portfolio management on information technology projects.

Laura Melody Williams studied the strategic decision support for project portfolio management in the public sector in his Ph.D. thesis.

Just like we described above, there are rare papers studying the application of PPM in the government-invested projects.

IV. PROCEDURE FOR PPM IN THE GOVERNMENT INVESTMENT PROJECTS

About the steps to apply PPM, different people have different opinions, e.g. Max Wideman put forward ten steps to comprehensive project portfolio management [9], Gerald I. Kendall and Steven C. Rollins presented 8 steps to establish and improve any project portfolio [7], etc.

According to PMI, portfolio management includes processes to collect, identify, categorize, evaluate, select, prioritize, balance, authorize, and monitor components within the portfolio. As the PMI’s The Standard for Project Portfolio Management describes [1], the portfolio manager may evaluate the portfolio components and the portfolio as a whole as to how well they are performing in relation to the key indicators and the strategic plan.

In the modern PPM’s opinion, one of the PPM’s contributions is to integrate the organisation’s strategy with the portfolios.

As we mentioned before, it’s very necessary to emphasise the government’s strategy in the government-invested projects. So, for the sake of linking the government strategic objectives with the components of the portfolio, i.e. the projects or programs, it would be helpful to set up a strategic project management office (SPO). SPO is an organizational entity responsible for mapping strategy to projects and monitoring projects and portfolios to ensure they continue to address strategic initiatives, even as these initiatives change over time. It serves as the critical link between executive vision and the work of the enterprise. SPO is responsible for ensuring that projects reflect the strategic goals established by top management [6].

Thus, with the help of SPO, we can effectively manage the government investment projects by PPM.

A. Identify the government strategic objectives

Most of the failed government invested projects are caused by the separation between the projects and the government strategic goals. So, for the first, we should identify that what the objects the government want to achieve, i.e. what the results the government wants to see after the completion of the government-invested projects. In China now, most of the projects invested by the government are related to the living conditions of the Chinese citizens, interests of the Chinese citizens, and the government future strategy, such as the public facilities, railway, dams, etc. So it is a must to identify the government strategic goals firstly.

B. Identify and Categorize Components

In this process, SPO should firstly identify and create an up-to-date list including which are the ongoing government investment projects and which are the new ones.

Figure 1. Steps to implement PPM in the government-invested projects.

Thus, people can effectively avoid those repeated projects which are common in China. And then, SPO should assign identified components to relevant categories using a common set of decision filters and criteria for subsequent evaluation, selection, prioritization, and balancing.

SPO defines the categories on the basis of the government strategic goals. The components in a given group have a common goal and can be measured on the same basis regardless of their origin in the organization. The categorization of the components allows the organization to balance its investment and its risks between all strategic categories and strategic goals.

C. Evaluate and Select Components

In this process, SPO should gather and summarize information (which can be qualitative and/or quantitative and comes from a variety of sources across the organization) for each component of the portfolio firstly. And then, it is necessary to produce a subset of the organization’s components worthy of pursuit based on the evaluation recommendations and the organization's selection criteria. The result of this process is a list of choices needed for prioritization.

D. Identify and Analyze Portfolio Risks

In this process, the main task is to identify the risks in each component of the selected portfolio and analysis these risks. And these identified risks must be documented for further action.
When identifying portfolio risks, people must discriminate risks from uncertainties. And people should just concentrate on the portfolio risks which are likely to come forth and have an undesired effect or significant loss. Whereas uncertainties are those which it is impossible to exactly describe existing state or future outcome, more than one possible outcome [4].

And when SPO conducts risk analysing, they should take into account many aspects of the risks, such as: their probability of occurrence, the corresponding impact on portfolio objectives e.g. social enhancement, return on investment and other factors. SPO should also take into account the risk tolerance of the organization (i.e. government in this paper) and the individual stakeholders.

The result of this process determines the priority of identified risks (i.e. the next step)

E. Prioritize Components

In this process, the main work people need to do is to rank those selected components with the help of the previous step and according to the established criteria. And people should make sure that which are the high risk investments, and which are the investments that mostly match up with the strategic objectives. It is also necessary to take into account the resources.

F. Balance Portfolio

Balancing the portfolio of components is an essential step in the PPM responsibility. The purpose of this process is to organize the prioritized components into a component mix that has the best potential for collectively supporting and achieving your organization's strategic goals in terms of the benefits to be derived [9].

G. Monitoring and Controlling Process Group

The Monitoring and Controlling Process Group conducts the activities necessary to ensure that the portfolio as a whole is performing to achieve predefined strategic objectives determined by the government, i.e. all the components should be monitored and controlled by category or across the entire project portfolio.

According to the latest study performed in Switzerland [17], risk minimization on the portfolio level was only performed by very few companies [18]. Here, we must emphasise that, it is different between financial portfolio and project portfolio. Project portfolio is more complex than financial portfolio. So, we insist that this process should attract more attention.

H. Closure

Since the only certainty is uncertainty, conditions will change, and it is important to build effective feedback loops into project portfolio management processes. And in this process, people should end this PPM loop by delivering the portfolio and summing up the gains and losses. In order to implement better in the next PPM circle, all of these summaries should be documented.

V. CONCLUSION AND FUTURE WORK

The main work of this paper is that we use the PPM to deal with the problems that exist in the government-invested projects in China. Referring to PMI’s The Standard for Project Portfolio Management, we bring forward 8 steps to implement PPM in the government investment projects in China.

Almost every local government has many projects to invest these years. Thus, it is the right time to apply PPM. We hope our paper will inspire people to practise project portfolio management in China.

To be frank, we just put forward a framework of the application of PPM in the government investment projects and there are still many works for us to finish in the future, such as: how to monitor a group of the government-invested projects, how to measure the portfolio, etc.