THE IMPORTANCE OF GOVERNANCE STRUCTURES IN IT PROJECT PORTFOLIO MANAGEMENT

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THE IMPORTANCE OF GOVERNANCE STRUCTURES IN IT PROJECT PORTFOLIO MANAGEMENT

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Abstract

Although recently a lot of attention has been devoted to IT project portfolio management in theory as well as in practice, research in this area is particularly focused on approaches for project selection. Related tasks and especially the organizational environment in which IT project portfolio management is embedded are often excluded. This paper relates existing findings from the field of IT governance to the field of IT project portfolio management. Based on a qualitative study, different fields of activities in IT project portfolio management are identified. Furthermore, governance issues in IT project portfolio management are illustrated and a category schema for the assessment of governance structures in the different fields of activities is introduced. In contrast to existing publications in this field of research, which usually employ a maturity level perspective, the paper focuses on the advantages and disadvantages of centralized, decentralized and federal structures in different fields of activities of IT project portfolio management. The paper is intended to highlight why different degrees of centralization in IT project portfolio management can be observed in practice.

Keywords: IT project portfolio management, IT governance, centralization, decentralization, federal structures
1 Introduction

In recent years, in-house IT functions throughout different industries have witnessed far-ranging changes in respect to their organization and their spectrum of tasks. The steadily increasing use of information technology has also led to a growing need for structure and professionalization in regard to the management of IT projects (de Reyck et al. 2005). In this context IT project portfolio management is more and more becoming an important field of research.

Referred to by the terms "corporate capital budgeting" and "project portfolio management" an existing body of literature regarding the control of strategic investments is already available. However, past research has mainly emphasized on the selection of projects out of a given set of project proposals (selection stage). Although other stages have also been surveyed, an integrated view on the project portfolio management process seems to be missing (Burns and Walker 2009). Furthermore, as the importance of coherent governance structures has been emphasized in information systems research (Weill and Ross 2004) an adapted concept for IT governance in IT project portfolio management seems to be a valuable contribution.

There are already a number of contributions explicitly addressing governance in IT project portfolio management. For example, some researchers have identified different maturity levels in regard to the adoption of IT project portfolio management and have proposed how companies could evolve from one level to the next level (Jeffery and Leliveld 2004; de Reyck et al. 2005). In this respect, contemporary literature highlights that a central perspective on projects is an important determinant of IT project portfolio management maturity.

However, in practice strongly decentralized IT project portfolio management structures can be witnessed even in large companies with a long history of multi-project environments. Thus, an impetus for this research was to investigate the reasons for differences in respect to the degree of centralization, and to identify the advantages and disadvantages of centralized and decentralized control in the specific context of IT project portfolio management.

Consequently, this paper aims at exploring IT project portfolio management with consideration of the influence of the company's organizational and decision-making structures. We expand on existing research in the fields of IT governance and IT project portfolio management by explicitly investigating reasons for different degrees of centralization in this specific field.

The structure of this paper is as follows. Section 2 briefly introduces existing publications in the field of IT governance. Section 3 describes the methodology of a qualitative study, providing the methodical foundation of this paper. In the following sections (Section 4-7) different fields of activities in IT project portfolio management are analyzed in respect to governance aspects. Afterwards, Section 8 presents a simple concept for examining current governance in IT project portfolio management. Finally, Section 9 contains a conclusion, a brief discussion of limitations and a call for further research.

2 Brief introduction into IT governance

The investigation of causes and effects of different degrees of centralization is one of the key topics in information systems research and has been investigated in a large number of research papers (e.g. C. V. Brown and Magill, 1998; Ein-Dor and Segev, 1982; Kahai, Carr, and Snyder, 2003; Olson and Chervany, 1980; Sambamurthy and Zmud, 1999). However, in recent years the research field of IT governance has evolved and there has been an amalgamation of two different research streams – Contingency Analysis and Analysis of different Governance Structures. Especially the often-cited work of Weill and Ross (Weill and Ross 2004) can be seen as an example of an integrated IT Governance Framework (Brown and Grand 2005).
According to Weill and Ross (2004, p. 2) IT governance can be defined as:

"(...) specifying the decision rights and accountability framework to encourage desirable behavior in using IT."

Weill and Ross point out that different decision domains require different decision-making structures. One of the decision-making domains identified by Weill and Ross is the domain "IT investments". In the current paper, this domain is examined in more detail by further distinguishing between the different fields of activities identified in a qualitative study. In this context the focus is on the management of "(…) a group of projects that compete for scarce resources and are conducted under the sponsorship or management of a particular organization" (Elonen and Artto 2003, p. 395) and thus on IT project portfolio management.

In contrast to Weill and Ross, who distinguish between different governance archetypes by the two properties of centralization degree and IT-relatedness, in this paper there is a concentration on only one property, the degree of centralization. We distinguish between centralized, decentralized and federal structures, a very common differentiation in IT governance research (Sambamurthy and Zmud 1999). Although questions regarding IT/business alignment have been addressed during the expert interviews, there was a strong focus on the location of decision authority. Thus, the authors decided to focus on the advantages and disadvantages of different degrees of centralization.

While a high exploitation of synergy effects, standardized controls and a greater specialization have been identified as general advantages of centralized IT governance, the general advantages of decentralized IT governance are greater business responsiveness, business ownership and more business flexibility (Peterson 2004). The disadvantages of centralized structures are corresponding to the advantages of decentralized structures and vice versa. Federal structures combine these advantages to a certain degree. These general advantages and disadvantages have also been observed during the expert interviews. In the following we will provide a more detailed view on these and other advantages and disadvantages in the specific context of IT project portfolio management.

3 Methodology

To retrieve an insight into the organization of IT project portfolio management, the authors conducted a qualitative study with twelve interviewees in ten companies between January and December 2009.

The study aimed at answering the following research questions:

- Which fields of activities can be distinguished in the context of IT project portfolio management?
- Which decision-making structures can be identified in IT project portfolio management?
- Why are different decision-making structures employed?

3.1 Sampling and data collection

We first conducted two interviews in two companies concentrating on industry specific services and, after having analyzed these interviews, decided to choose half of the remaining cases from the banking and insurance sector and the other half from the chemical and pharmaceutical sector. This way, we wanted to account for similarities as well as differences (Orlikowski 1993). The companies within the same sector had quite similar characteristics while by selecting companies from two different sectors different organizational settings (centralized vs. decentralized) and different organizational cultures should be taken into account. The companies were selected in particular with regard to their overall governance structures which had been analyzed via a website analysis in advance to the interviews. To be able to also account for potential differences in organizational structures due to company size (Ein-Dor and Segev 1982), companies with different head counts (from 3,000 to 96,000 employees) were chosen.
The selected companies were contacted and interview partners with a good insight in the governance structures in IT project portfolio management were identified. The selected interviewees were predominantly CIOs and managers of IT governance departments and/or IT project portfolio management departments. Details about the sample are listed in Table 1.

<table>
<thead>
<tr>
<th>Company code</th>
<th>Industry</th>
<th>Organizational characteristics</th>
<th>Role of interviewee</th>
<th>Interview duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Industry specific services</td>
<td>Separated into relatively independent business segments</td>
<td>CIO</td>
<td>1 h 02 min</td>
</tr>
<tr>
<td>C2</td>
<td>Industry specific services</td>
<td>Organized into regions controlled by a central headquarter</td>
<td>Director for IT strategy and portfolio management</td>
<td>0 h 48 min</td>
</tr>
<tr>
<td>C3</td>
<td>Banking</td>
<td>Separated into business segments controlled by a central headquarter</td>
<td>Head of IT governance and architecture planning</td>
<td>0 h 43 min</td>
</tr>
<tr>
<td>C4</td>
<td>Banking</td>
<td>Separated into business segments controlled by a central headquarter</td>
<td>Head of IT governance; IT-Architect</td>
<td>1 h 06 min</td>
</tr>
<tr>
<td>C5</td>
<td>Banking</td>
<td>Separated into business segments controlled by a central headquarter</td>
<td>Head of IT governance</td>
<td>2 h 01 min</td>
</tr>
<tr>
<td>C6</td>
<td>Insurance</td>
<td>Separated into business segments controlled by a central headquarter</td>
<td>Head of IT planning and controlling</td>
<td>0 h 57 min</td>
</tr>
<tr>
<td>C7</td>
<td>Chemicals</td>
<td>Matrix structure (divisions and regions); IT is organized according to the regions</td>
<td>CIO EMEA</td>
<td>2 h 06 min</td>
</tr>
<tr>
<td>C8</td>
<td>Chemicals</td>
<td>Matrix structure (divisions and regions); IT is organized according to the regions</td>
<td>CIO EMEA; Local IT manager</td>
<td>2 h 15 min</td>
</tr>
<tr>
<td>C9</td>
<td>Chemicals/Pharmaceuticals</td>
<td>Separated into business segments controlled by a central headquarter</td>
<td>Head of the CIO office</td>
<td>1 h 02 min</td>
</tr>
<tr>
<td>C10</td>
<td>Pharmaceuticals</td>
<td>Matrix structure (divisions and regions); IT is organized according to the regions</td>
<td>CIO EMEA</td>
<td>0 h 48 min</td>
</tr>
</tbody>
</table>

Table 1. Sample overview

The interviews were guided by a questionnaire, but the questions where held open in order to be able to take the organizational context of the particular company into account. The interviews were open-ended and took place on site in direct dialogue.

### 3.2 Data analysis process

The interviews were digitally recorded and chronologically transcribed by the first author. All transcripts were integrated into a hermeneutic unit. The authors assigned codes and memos to each paragraph of the interview transcripts and identified categories, properties and dimensions (Strauss and Corbin 1990). In case of conflicts the authors discussed their different perceptions until they arrived at a joint assessment.

As a result of the study four fields of activities in IT project portfolio management were identified as categories: Budget Allocation, Demand Management, Project Selection and Resource Management. The degree of centralization of the underlying organizational structure was identified as a central property in all four fields of activities. Consequently, the categories were further investigated according to this property and the dimension of centralized, decentralized and federal decision-making structures. However, federal structures could only be identified in the categories Budget Allocation and Project Selection but not in the two other categories. Thus, in the latter two categories only centralized and decentralized decision-making structures were distinguished.

The results of the interviews are discussed in detail in sections 4 to 7. To provide an insight into the interviewees’ views, typical quotes taken from the interview transcripts are presented. As the study was conducted especially in cooperation with German-speaking interviewees, most of the quotes have been translated.
4 Budget allocation

As there is only a limited amount of financial and personnel resources to support IT-related changes, most companies limit the maximum amount of investment by assigning budgets. In general, different kinds of IT budgets can be distinguished, e.g. budgets for investments, for operations, for maintenance, et cetera. This paper focuses on IT project portfolio management and, thus, concentrates on budgets for strategic investments.

In the sample only in one of the companies project budgets were managed centrally, whereas in five companies budgets were assigned to individual business units. The remaining four companies had chosen a federal approach, in which both a central budget and budgets for the different business units were assigned. This raises the question why different arrangements can be observed in practice and which advantages and disadvantages are associated with centralized, decentralized and federal budget assignments.

As indicated above, in the investigated companies it was very common that budgets were at least partly allocated to local units. However, decentralized budget allocation caused several problems. For example, an important disadvantage highlighted by interview partners in decentralized organizations is the problem of financing corporate projects when budgets are assigned to decentralized business units.

In principle, one has to distinguish between projects only affecting a single business unit and overarching projects which are relevant for the entire enterprise or group. Examples of such projects are enterprise-wide system consolidations, infrastructure projects, process standardization projects and the introduction of enterprise application systems (especially ERP systems were frequently mentioned by the interviewees).

Problems relating to the approval of corporate projects could be regularly observed in companies where IT budgets were assigned to decentralized business units without allowing for an adequate budget for central projects. Where consolidation projects had to be financed by business units, the IT function had to undertake the task of convincing the business units of the benefits of these projects. However, costs caused by inappropriate processes and systems are difficult to quantify because they are incurred in a somewhat "atomized" way. Therefore, consolidation projects were often abandoned or extended over a long period even though they were important and profitable from a corporate perspective.

One interviewee described this situation as follows:

"The other thing is, you could say: I'm just not satisfied - from a group perspective - and enforce a group-wide standard. I present a roadmap within which this standard must be implemented. And here is the problem: then I would normally invest money as a group. So, and exactly that is what we are not doing. But we will go back to the business units and the business units will say, 'No, no money'. And so we are back in this mess."

An alternative to a decentralized budget assignment are centralized or a federal arrangements where at least a part of the budget is assigned to a central unit. However, these arrangements often lead to a conflict with the local units. In the regarded companies local units were regularly held accountable for their investment success and, thus, also demanded to administer their budget independently. Taking away budgets from these units would have caused strong resistance (also compare Section 6).

A possible remedy is to introduce a targeted incentive scheme via a central coordination unit. In one of the companies with largely decentralized budget allocation, for example, corporate IT has been provided with only a small budget which has been used to initiate projects promoting company-wide standardization in various business units. This measure has been designed to convince business units of the need for comprehensive projects and to create an incentive to participate in such projects. This way, the implementation of corporate projects has been evaluated prototypically in single units in advance to a complete rollout. Thereby, conflicts between central and local authorities can be avoided.
Problems also occurred when the authority for project selection (Section 6) and the budgeting authority were not identical. For example, in one of the companies surveyed, major projects were approved centrally - the business unit managers were not allowed to decide independently. However, the budgets were clearly assigned to the business units. Thereby, both - decentralized and cross-border projects - were impeded.

5 Demand management

Before projects can be compared and prioritized, a lot of information about these projects has to be collected. In most of the companies surveyed, a demand management function is responsible for the collection of project propositions and the associated business cases and requirements.

The demand for new projects usually originates from local units (Stanley and Block 1984). Demand management in the companies surveyed, therefore, was – with one exception – aligned to the company’s organizational structure. Each business unit or region was supported by at least one permanent contact who discussed IT demand with this unit. The demand manager usually supported the respective business unit in collecting the required information for project proposals and was responsible for the coordination between the business unit and the IT department. This relationship between a central IT function and different local business units resembled the "Bicycle Wheel" introduced by Weill and Ross (2004). While demand management was usually strongly aligned to the organizational structure of the company, there were different ways of passing the project proposals to the decision-making authorities concerned with project selection (see Section 6).

The interviewees highlighted that the establishment of a single interface between the IT function and its internal customers is a key advantage of a dedicated demand management function. If there is no defined interface between the business units and the IT function, inconsistencies and redundancies are inevitable. In this respect the demand management function is especially important for organizations which are decentralized to a large extend. However, in centralized IT organizations the demand management function was also perceived as very important, since the demand managers provide a means for personal communication with representatives of IT. Otherwise, a central IT function might be perceived as bureaucratic by the business units. Therefore, the introduction of a systematic demand management was proposed by the interviewees as a measure to compensate for this particular disadvantage of central IT organizations. In general, demand management was perceived to be of vital importance, because it provides a comprehensive and consistent decision-support basis for project selection. Furthermore, all IT organizations in the sample wanted to improve IT/business alignment via a structured demand management.

6 Project selection

After being identified and documented, IT project proposals are usually compared with each other and prioritized in a project selection process. The design of this selection process varied considerably in the companies surveyed. First, there were differences in the way prioritization and selection was conducted; second, different decision-making authorities were involved in this process. In essence, governance of project selection was often strongly influenced by power constellations and questions of enforceability as explicited in the following.

6.1 Influence of existing power constellations

The IT project portfolio management practices surveyed in the study varied widely in their degree of compulsion. While some companies selected projects strictly based on predefined metrics and procedures, in other companies there was considerable ambiguity in the way projects were selected.
Interestingly, the lack of determination in respect to project selection decisions in most companies did not seem to be due to methodical problems. Instead, noncommittal processes most often were caused by a lack of management support or resistance from local business units (Elonen and Artto 2003).

For example, in one of the companies surveyed the corporate controlling function had been assigned to determine the projects to be implemented together with the IT department. The envisaged capital expenditure had been previously set by the Executive Board. However, there was no clear rule specifying how to proceed if the total cost of the proposed projects exceeded the envisaged capital expenditure.

In effect, this resulted in general in higher expenditures than originally planned. At the same time the decision-making processes were cumbersome and slow, since a consensus with different departments was required. Otherwise there would have been a high risk that some departments might have blocked at later stages. The interview partner described this situation as follows:

"You need the staff, the cooperation and consent of the respective departments or divisions for which you are planning. (...) So this has to be solved in a dialogue. But that is enormously difficult, because each department has the inherent interest to get as much budget as possible for itself and always more budget than is available."

In another company, in contrast, several attempts had already been made to introduce a cross-functional IT project portfolio management process. This led to a lot of discussions and finally to a rejection of the new process by the business units. Consequently, the individual business units decided to govern their own decentralized budgets independently. At the time the interview took place, the central IT project portfolio management was therefore primarily concerned with the portfolio of ongoing projects.

In the companies surveyed the introduction of a central IT project portfolio management often caused resistance because the business units or regions were restrained in their decision-making powers. In addition, the orientation on key figures sometimes led to resistance in the business units, as some areas felt disadvantaged.

Therefore, it is important that boards and decision makers with sufficient authority and enforcement capabilities are entrusted with IT project portfolio management. The anchoring of central control tasks on a low decision-making level without the backing of the Executive Board, for example, can lead to resistance on the part of the divisions. If this is the case the conflicting and diverging interests have to be resolved in order to avoid blockade and standstill:

"There is a planning board, but only since this year. The IT planning board, however, could only perform [...] - in the sense of a decision-oriented reduction of projects - if one is ultimately entrusted by the board and says, 'No, we only have so much to spend. There we have to get now. And I now want to have an adequate contribution of everyone.' Only with this strict course you have a chance."

### 6.2 Centralized and decentralized arrangements

Governance structures for project selection decisions, again, can be divided into centralized, federal and decentralized arrangements. In four of the ten companies considered in the study, the decision-authority for project-selection was decentralized into regions or divisions. Another five companies employed a federal arrangement and only one company had completely centralized the authority for project selection decisions.

The interviews revealed that the emphasis on the accountability of local units for their investment success was a main reason for the delegation of decision-making powers to these units. The financial accountability of the decentralized units justifies a claim for autonomy in regard to the selection of projects or at least a claim for extensive participation rights in the decision-making process. Moreover, decentralized decision-making enables the business units to rapidly respond to their business needs (DeSanctis and Jackson 1994).
The advantages of selecting projects in a central location in particular arise from the avoidance of redundancies and the utilization of synergies (Cho and Shaw 2009). Additionally, rules can be enforced and monitored much easier by a central control. The interviews revealed that a corporate IT project portfolio management unit in cooperation with an IT architecture management unit can also help to define and to enforce standards.

However, several interviewees had experienced that a central allocation of decision-making powers can also result in considerable disadvantages. In those companies that had moved or were moving towards a more centralized arrangement, regions or divisions often felt cut as soon as their projects had to be approved by headquarters. Thus, the interviewees were in agreement that by centralizing decision authorities, a certain degree of flexibility and autonomy is taken away from the decentralized units. Furthermore, centralized structures in general bear the risk that decision-making becomes slow and cumbersome, while local decision makers can decide faster, especially when information costs are high (Wyner and Malone 1996). Moreover, as a consequence of increased documentation requirements the administrative burden also increases.

Several interviewees stressed that decentralized IT project portfolio management structures in particular promote the rapid implementation of small projects. Cross-divisional projects, however, can be delayed or in the worst case do not come about at all. In addition, in decentralized structures a comprehensive overview of budget and resource requirements is only available at a late point in the planning process. This in turn can lead to delays due to unanticipated resource constraints (Engwall 2003).

6.3 Federal arrangements

Federal arrangements have been proposed as a way to combine the advantages of centralized and decentralized decision-making structures (Peterson 2004). Correspondingly, in many of the companies surveyed, project approval rights were distributed to several hierarchy levels.

In most of the examined federal structures, different budgets were set for different hierarchical levels. Usually, there were three or more different levels. On each level decision authorities were allowed to approve projects with a certain volume. Larger projects (in terms of project costs) had to be approved at a higher hierarchical level, while smaller projects could be approved locally. However, two interviewees pointed out that project cost is not the only criterion to determine the required level of decision-authority. It should also be evaluated whether only a single unit or different units would be affected by a project. For example, one interviewee noted that changes to ERP systems regularly affected all divisions of the company. Therefore, already at the beginning of the survey process, the project initiator had to specify whether the project could have cross-divisional nature.

In general, an important advantage of federal arrangements in comparison to central decision-making structures lies in the workload reduction for central decision makers. In federal project selection structures, superior committees and authorities only have to decide about relatively few projects, but these projects usually consume a large amount of financial resources, bind many human resources and have a high strategic relevance.

The establishment of a federal decision-making structure, however, can also be associated with challenges. As mentioned above, the introduction of federal structures usually involves the establishment and coordination of decision-making authorities at different hierarchical levels. An uncoordinated introduction of a federal structure can lead to confusion about responsibilities and can even stir up conflicts. Furthermore, it can be observed that federal decision-making structures in tendency lead to delays in decision-making and to bad compromises (Weill and Ross 2004).
7 Resource management

In the context of IT project portfolio management the consideration of the available human resources is of great importance. The number of projects running in parallel and the timely implementation of these projects not only depend on the availability of financial resources, but also on the availability of the necessary project staff. In order to avoid resource bottlenecks and to provide for a high utilization of resources at the same time, an effective organizational assignment of project resources is crucial (Engwall 2003).

In the context of resource management, again, centralized and decentralized arrangements can be distinguished. In this context decentralized control means that project resources belong to the individual business units or regions and usually work on projects of a single local unit. In a centralized decision-making arrangement, however, project resources are not controlled by individual units. Instead, they are controlled centrally and can, in principle, be assigned to projects in various sectors or regions (Kahai, Snyder and Carr 2002).

7.1 Advantages and disadvantages of centralized resource management

The interviews revealed that a central resource control offers a high level of flexibility due to a better availability of project resources. By centralizing project resources, several companies also wanted to reduce their dependency on employees with specialized knowledge and special skills. Moreover, a better scalability of the organization was mentioned as an advantage of central control over project resources.

However, one interviewee also described some disadvantages resulting from the grouping of IT staff into an enterprise-wide shared service center. After the transfer of employees to the shared service center the local units lost their direct contact partners and a lot of process knowledge. Thus, projects such as process standardization initiatives became very difficult. It turned out that this gap in process knowledge was difficult to close. The lack of contact even intensified when employees were transferred from the shared service center to external providers.

7.2 Advantages and disadvantages of decentralized resource management

In comparison to a centralization of project resources the assignment of staff to individual business units can be advantageous because small changes can be implemented quickly and efficiently. In these constellations there is usually a very direct dialogue between employees in IT and in the business units.

However, a major disadvantage of decentralized resource assignments is that resources for cross-divisional projects have to be taken from several decentralized departments. In some of the companies surveyed, cross-divisional projects were mandated by the Executive Board, leading to resource bottlenecks in the local units. This caused the following situation:

"IT then had to (...) decide where the capacity had to be taken from - who had to bleed. And that was just a stupid state. The buck was always passed to IT."

Another disadvantage of decentralized resource control results from the fact that in these constellations staff can be underemployed in some areas of IT, while they are urgently needed elsewhere. One interviewee described this situation as follows:

"If there were no functional requirements at some point in time then one would have applied occupational therapy and virtual maintenance activities were invented to be busy. And if you had a closer look at it they actually were not busy and with their know-how they could have provided valuable support to distressed projects in other places."
Based on our distinction into the fields of budget allocation, demand management, project selection and resource management we classified the governance mode of the investigated companies into centralized, decentralized or federal governance. Table 2 depicts the outcome of this classification. The numbers in parentheses indicate how many of the companies in the study employed the respective arrangement.

At this point, it should be mentioned that these figures only provide an overview of the companies investigated in the study and are not generalizable. However, the following matrix can be employed as a simple instrument for assessing the current governance of IT project portfolio management in a given company.

<table>
<thead>
<tr>
<th></th>
<th>Centralized</th>
<th>Decentralized</th>
<th>Federal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget allocation</td>
<td>(1)</td>
<td>(5)</td>
<td>(4)</td>
</tr>
<tr>
<td>Demand management</td>
<td>(1)</td>
<td>(9)</td>
<td></td>
</tr>
<tr>
<td>Project selection</td>
<td>(1)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Resource management</td>
<td>(5)</td>
<td>(5)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Governance matrix for IT project portfolio management

Companies considering changes regarding their IT project portfolio management governance may first survey their existing governance structures by filling out the matrix above. Based on this overview, the advantages and disadvantages that arise from the respective governance mode can be reflected. Therefore, Table 3 summarizes the general advantages and disadvantages of centralized, decentralized and federal structures discussed in the sections above.

<table>
<thead>
<tr>
<th></th>
<th>Centralized</th>
<th>Decentralized</th>
<th>Federal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantages</td>
<td>Organizational manageability</td>
<td>Acceleration of decisions</td>
<td>Workload reduction for central decision makers</td>
</tr>
<tr>
<td></td>
<td>Scale effects</td>
<td>Rapid implementation of divisional projects</td>
<td>Balance between synergy and autonomy</td>
</tr>
<tr>
<td></td>
<td>Synergy potentials</td>
<td>Customer proximity / direct dialogue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Redundancy avoidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disadvantages</td>
<td>Bureaucratic overhead</td>
<td>Delays in corporate projects</td>
<td>Unclear responsibilities</td>
</tr>
<tr>
<td></td>
<td>Long approval durations</td>
<td>Resource shortage in the absence of coordination</td>
<td>Delays in the decision-making process</td>
</tr>
<tr>
<td></td>
<td>Acceptance problems</td>
<td>Redundancies</td>
<td>Risk of bad compromises</td>
</tr>
</tbody>
</table>

Table 3. Advantages and disadvantages of centralized, decentralized and federal decision-making structures

The advantages and disadvantages displayed in Table 3 in general match the advantages and disadvantages identified from literature in Section 2 but are more specific to the field of IT project portfolio management. However, these advantages and disadvantages do not apply exclusively to one field of activity but depend on the combination of governance arrangements in the different fields of activities. For example, redundancies can be avoided either by centrally coordinating the project proposals via demand management or by controlling for redundant proposals via central project selection. Moreover, interdependencies between the different fields of activities in IT project portfolio management have to be regarded. Especially, decision-making rights for budget assignment and project selection have to be aligned. Also, the available human resource capacity should be reflected in the budgets. Thus, for practical use it is important to assess the advantages and disadvantages...
simultaneously in regard to all four fields of activities. For this purpose, Table 2 may provide a starting point to evaluate the organizational needs in advance to the introduction or alteration of project portfolio management processes.

During the interviews we observed that it is vital to build a consensus between the different stakeholders in regard to the distribution of decision authority, before IT project portfolio management procedures and roles are altered or implemented. If no consensus is build, especially middle managers responsible for IT project portfolio management get often torn between the different interests. This in turn leads to frustration and standstill.

9 Conclusion, limitations and further research

From the study presented above it can be concluded that in advance to the implementation of a new IT project portfolio management process, the organizational and political realities have to be taken into account. In particular, acceptance and support by the relevant stakeholders has to be secured. Without sufficient management support there is a considerable risk that rules and procedures are circumvented. Whether certain decision-making rights should be centralized or not, seems to depend on contingency factors as the general organizational structure and the strategic focus of the enterprise as a whole. While the interviews showed that demand management is usually aligned to the organizational structure of the company, there are freedoms of design especially in regard to budget allocation and project selection. The companies surveyed in the study often employed federal structures in these decision domains. However, federal structures can lead to inefficient compromises and to delays in decision-making. Nevertheless, federal structures are often introduced because they offer a compromise between centralization and decentralization and, thus, provide a means to avoid conflicts.

A main conclusion from our investigation is that, before IT project portfolio management procedures are introduced or altered in a company, there has to be a thorough assessment of the different interests of the relevant stakeholders and a clarification of the current and the intended governance structures. Else, even well intended initiatives are likely to fail because they do not map to the organizational culture. To support the structured evaluation of high level governance arrangements, we identified different fields of activities in IT project portfolio management that can be governed in different ways. Moreover, we provide an overview of general advantages and disadvantages of different degrees of centralization and, thus, a foundation for the evaluation of different decision-making structures in a specific company. These advantages and disadvantages of course have to be concretized, e.g. by employing scoring methods for a structured evaluation by the relevant stakeholders.

Some limitations apply to this paper: As the number of companies investigated in the study is rather small, the advantages and disadvantages discussed above might be specific for the companies selected for this study and thus are limited in their generalizability. Moreover, as it is difficult to oversee and to present the organizational context of a company as a whole, some results might have been presented in an oversimplified way. As the perspective on governance in this paper is mainly limited to the degree of centralization, the applicability of this research might also be limited. Finally, as usually only one person was interviewed in each company and all interviews were conducted with IT managers, the results reflect only a single perspective and might be biased towards the perspective of IT.

From our point of view, further research should analyze IT project portfolio management from a holistic perspective and provide an integrated view on the different fields of activities identified in this publication. In order to provide relevant and applicable results, especially authors concerned with project selection and resource allocation methods should make clear which governance structures they assume for their conception. Current formal methods often seem to oversimplify in this regard. In this publication we tried to highlight that organizational structures have a large impact on the way IT project portfolio management may be implemented. Thus, further research aiming at categorizing different governance structures in IT project portfolio management would be a valuable contribution as this would provide the foundation for tailored mathematical approaches and software solutions.
References


