PAPERS

Establishing Project Portfolio Management: An Exploratory Analysis of the Influence of Internal Stakeholders' Interactions

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ABSTRACT

Project portfolio management (PPM) is viewed as a management innovation that must be further established and professionalized in many firms. Stakeholder behavior and stakeholder management are key success factors for project portfolios. Furthermore, stakeholder management must not only focus on single stakeholders but also account for stakeholders influencing one another in fairly complex interactions of multiple and potentially interdependent stakeholders.

Our quantitative study of internal key stakeholders' engagement in the PPM process is based on a survey using 223 project portfolios from medium to large firms in Austria, Germany, and Switzerland. We investigate the intensity of stakeholders' engagement in the three phases of the PPM process compared with expectations from PPM standards and role descriptions. Further, we analyze the interdependencies between the levels of stakeholder engagement and identify patterns of stakeholder behavior.

Our study assists in explaining the relevance of stakeholders to PPM. We further integrate stakeholder theory with a highly relevant management approach (PPM) and thus enhance the explanatory value of stakeholder theory. Finally, the current findings enable managers to address stakeholders more effectively through an increased understanding of stakeholder behavior and its consequences.

KEYWORDS: project portfolio management; project portfolio stakeholders; stakeholder management; stakeholder theory; stakeholder behavior

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INTRODUCTION

The projectification of an increasing proportion of companies' activities has been and continues to be an ongoing development (Dahlgren & Söderlund, 2010; Lundin, 2011). Therefore, the generally expected advantage in the controllability of single projects is accompanied by a loss of transparency and, hence, the effectiveness of the overall project landscape (Elonen & Artto, 2003). Thus, project management researchers and professionals have been developing and have begun to introduce a new management approach to cope with these effects and to account for the growing need for structured and proactive management of the project landscape. Project portfolio management (PPM) can be viewed as this type of required management innovation (Hamel, 2006; Jonas, 2010); that is, becoming a key competence for companies handling numerous projects simultaneously (Dietrich & Lehtonen, 2005; Killen, Hunt, & Kleinschmidt, 2008; Martinsuo & Lehtonen, 2007).

Establishing PPM in a firm's active management system is a diffusion process in which the relevant parties know, understand, have a positive attitude toward, and apply the new management approach (Twiss, 1976). Therefore, new thinking must be established in the senior management team who drives the implementation of a new management system. Also, new thinking must be established in all other involved or affected parties. Furthermore, this new thinking must be lived by these key players to enable the new management approach to be successfully implemented and to contribute to a firm's success. Further clarifying this requirement, Hamel (2006) demanded that the following questions be answered to successfully implement a new management process: Who are the owners of the existing process? Who has the power to change the process? Who are its customers? In addition, who will be directly involved in the process?

Hence, stakeholders (i.e., those who are able to affect or are affected by a new management approach) (Freeman, 1984) play a crucial role in successfully implementing management innovation. The professional and academic management literature supports this finding in a more general context, as the view that stakeholder management and favorable performance are strongly connected has become common (Donaldson & Preston, 1995). Research on programs of projects as a specific type of project portfolio and research on project portfolios in general indicate that stakeholders and their management

are key success factors for the management of project portfolios (Levine, 2005; Lycett, Rassau, & Danson, 2004).

The questions posed by Hamel (2006) emphasize internal stakeholders (i.e., those who are directly involved in or affected by a management innovation). The key roles of the PPM process to which internal stakeholders may be assigned have already been named by Jonas (2010): senior management, mid-level line management, project portfolio managers, and project managers. However, most of the PPM literature is predominantly concerned with PPM processes, tasks, and tools. To date, no contribution has been made toward understanding key stakeholders, their behavior with respect to PPM, and its effect on success.

Following Levine (2005), who emphasized the importance of involving the right stakeholders in the right process steps, and Aaltonen and Kujala (2010), who observed different stakeholder salience in different project phases, and considering that PPM is a distributed management process involving stakeholders with the aforementioned roles, we formulate our first research question:

> *Q1: To what extent do the different stakeholders engage in the constituent phases of the PPM process, and how does this engagement compare with the defined ideal target state?*

Stakeholder theory and research add a network perspective by reporting that the behavior of stakeholders is not independent but is rather the result of mutual influence and interactions (Frooman, 1999; Neville & Menguc, 2006; Rowley, 1997). Furthermore, on the project level, Crawford et al. (2008) showed that those who are accountable for projects must collaborate with numerous key stakeholders (Aubry, Hobbs, Müller, & Blomquist, 2010). Moreover, PPM can be described as a distributed and collaborative process (Jonas, 2010; Raes, Heijltjes, Glunk, & Roe, 2011). Therefore, in the second step, we investigate the following question:

> *Q2: How does the intensity of one stakeholder's engagement in a defined PPM phase correlate with his or her engagement or that of others in the various phases?*

In this article, phases are to be understood less as sequentially ordered phases but rather in the sense of fields of recurring activities and processes that can be overlapping or parallel. Finally, based on the answers to these two questions, we derive implications for the further establishment and maturation of successful project portfolio management.

For our analyses, we use data from a large sample of project portfolios from Austrian, German, and Swiss firms. In the first step, we perform a descriptive analysis, which is followed by the correlations in the second step. The contributions of the current study are threefold. First, we contribute to PPM research, as our study assists in explaining the relevance of stakeholders to project portfolio management (e.g., by providing transparency with regard to deviations in stakeholder engagement from an ideal target state of preferably high-PPM maturity and adding a network perspective). Second, we contribute to stakeholder theory by applying it to real-world problems (Freeman & McVea, 2001), integrating this theory with other management approaches, and, thus, fostering its explanatory value and relevance. Finally, the findings of our study contribute to management practice by enabling managers to cope with stakeholders more effectively through a better understanding of stakeholder behavior and its consequences. Thus, our findings also provide guidance for further establishing and professionalizing PPM.

Theoretical Background and Hypotheses

Project Portfolio Management

Although PPM may be viewed as a management innovation, the research field of project portfolio management is less new than it appears. The roots of the more general ideas behind portfolio management date back more than half a century in different management research areas, such as finance (Markowitz, 1952, 1991) and, somewhat later, predominantly innovation management (Hobbs, 2012; Twiss, 1976). Shortly after the aforementioned boom of (single) project management, project portfolio management increased in popularity across many research agendas in the late 1990s (e.g., Cooper, Edgett, & Kleinschmidt, 1999, 2001). More recently, an increasing number of scholars are adopting a wider project perspective on higher-level control mechanisms across multiple projects (Artto, Martinsuo, Gemünden, & Murtoaro, 2009), such as project portfolios (Cooper & Edgett, 2003; Engwall & Jerbrant, 2003; Hendriks, Voeten, & Kroep, 1999). Having defined the purpose of project portfolio management, its objectives, and success criteria, scholars have begun to research the antecedents and factors that drive successful portfolios predominantly in the field of new product development (NPD).

Adopted from the objectives of NPD project portfolios according to Cooper et al. (2001), project portfolio success in general can be defined along four distinctive dimensions. The first dimension is *the efficiency of a portfolio's projects,* which includes the average success components of a single project that have been defined and used in a familiar triangle of cost, schedule, and quality (Gardiner & Stewart, 2000; Pinto & Prescott, 1990) that are enriched by the fulfillment of customer needs and requirements (Griffin & Page, 1996; Lechler & Dvir, 2010; Shenhar, Dvir, Levy, & Maltz, 2001). Second, the *synergies* dimension covers the additional value that is generated from cross-project coordination, which supposedly exceeds the value of the sum of the contributions that are delivered by the independently managed projects of a portfolio; this additional value is not

obtainable by any single project (Platje, Seidel, & Wadman, 1994). Third, the dimension of the *strategic fit* of a portfolio reflects the internal strategic fit perspective (Carmeli, Gelbard, & Gefen, 2010; Miller, 1996; Rivkin, 2000; Siggelkow, 2002) that refers to the alignment of project objectives and resource allocation according to a project's strategic relevance (Hendriks et al., 1999; Kaplan & Norton, 2005; Meskendahl, 2010). Fourth, the *portfolio balance* dimension refers to adjustments according to the four perspectives of innovation (incremental vs. radical), market (new vs. old areas of application), finance (high vs. low project risks), and learning (use of new vs. existing technologies) (e.g., Chao & Kavadias, 2008; Chao, Kavadias, & Gaimon, 2009).

A project portfolio has been defined as a group of projects that compete for scarce resources under the sponsorship of a particular organization (Archer & Ghasemzadeh, 1999; Dye & Pennypacker, 2002). Accordingly, project portfolio management has been defined as the "managerial activities that relate to the initial screening, selection and prioritization of project proposals, the concurrent reprioritization of projects in the portfolio, and the allocation and reallocation of resources to projects according to priority" (Blichfeldt & Eskerod, 2008, p. 358). Following this definition and based on our process-oriented understanding of project portfolio management, we structure the scope of managerial activities for the purpose of our exploration in three generic and recursive phases: portfolio structuring, resource management, and portfolio steering. In general, firms may not necessarily accomplish all phases to the same extent and quality; however, as a whole, such a process model provides a comprehensive understanding and differentiated view of the scope of activities and research fields that relate to project portfolio management.

1. *Portfolio structuring* aims for strategic orientation among large project landscapes and is meant to be conducted at recurrent intervals in alignment with a firm's (e.g., annual) strategic planning cycles (Platje et al., 1994). All managerial activities that are initially undertaken to establish a target portfolio from a given business strategy (Meskendahl, 2010), such as strategic portfolio planning, the evaluation of project proposals, and project selection, are covered by portfolio structuring.
2. In this context, *resource management* exclusively refers to resource management activities in the environment of project landscapes (Elonen & Artto, 2003; Hendriks et al., 1999; Martinsuo & Lehtonen, 2007). Resource management aims for the effective and efficient allocation of project resources across an entire portfolio through managerial activities, such as cross-project resource planning and project resource approvals (Arvidsson, 2009; Blichfeldt & Eskerod, 2008). Resource management links the portfolio structuring phase in terms of the initial recurrent resource allocation with the portfolio steering phase in terms of the permanent reactive reallocation.
3. *Portfolio steering activities* refer to gathering information for the continuous monitoring of strategic alignment, the development of corrective measures in case of deviations from the target portfolio, the coordination of projects across organizational units to identify project synergies, and the detection and abortion of obsolete projects (Loch & Kavadias, 2002; Zirger & Hartley, 1996). Hence, portfolio steering aims to enhance a company's adaptive capacity and flexibility with respect to a portfolio's internal and external changes that appear on short notice during a planning period (Geraldi, 2008, 2009; Spillecke, 2006). Therefore, portfolio steering comprises all continuous activities for the permanent coordination of a portfolio (Müller, Martinsuo, & Blomquist, 2008).

Stakeholder Theory and Management

"Stakeholder theory is a theory of organizational management and ethics" (Phillips, Freeman, & Wicks, 2003, p. 480). The basic assumption of stakeholder theory is that a firm, represented by its management, has relationships with many constituent groups of individuals in the firm and in its external environment, and that those groups do not only play a vital role in the success of a firm, but also the interests of all (legitimate) stakeholders have intrinsic value (Clarkson, 1995; Donaldson & Preston, 1995; Freeman, 1984).

Stakeholder research is a relatively young field. However, the stakeholder concept—which originated from strategic management—has been applied to other research fields, including project management (first by Cleland, 1986). In addition, scholars in program management have increasingly advocated for integrating the idea of stakeholder theory (Lycett et al., 2004); in contrast, the extant literature is primarily practitioner-oriented, and research (especially empirical research) remains relatively scarce.

For project portfolio management, which is closely related to program management, the standard literature and guidelines implicitly account for the relevance of stakeholders, as many of them at least mention or briefly cover aspects of stakeholder management (e.g., Thiry, 2007). However, stakeholders have received even less attention in project portfolio management than in program management. Similar to general management stakeholder research—in which scholars have focused on identifying stakeholders that may influence an organization's decision making, analyzing the types of claims that stakeholders have, and categorizing stakeholders (e.g., Mitchell, Agle, & Wood, 1997)—the work of Jonas (2010) can be considered a first step in identifying the key roles in the PPM process and assigning their targeted responsibilities. However, that study represents only a first step and does not account for the statements

by Frooman (1999) and Lycett et al. (2004), who indicated that we must better understand stakeholder behavior to ensure effective stakeholder management. Moreover, in general and in project management specifically, a limited number of scholars have explicitly addressed aspects of stakeholder behavior to date (Frooman, 1999; Frooman & Murrell, 2003, 2005; Hendry, 2005; Tsai, Yeh, Wu, & Huang, 2005; project management: Aaltonen & Kujala, 2010; Aaltonen, Kujala, & Oijala, 2008), and few scholars have implicitly covered behavioral aspects like Mitchell et al. (1997) with their categorization of stakeholder salience.

Some further researchers have added relevant aspects to the general research on stakeholder behavior. For example, Rowley and Moldoveanu (2003) contributed on the mobilization of stakeholder groups. They proposed that, in addition to interest-based action, the identity of a stakeholder can vary the intensity of stakeholder action. This can be related to the defined roles in PPM and the extent to which these roles are known, accepted, and practiced (i.e., the degree to which internal stakeholders identify with their assigned PPM roles).

With respect to the actual behavior of stakeholders and connected interactions, Frooman (1999) posited that stakeholders are able to influence other stakeholders and thus indirectly influence organizations. Rowley (1997) emphasized this view of mutual influence by adding a network perspective. He proposed that the position of stakeholders in a network can explain their behavior. Finally, Neville and Menguc (2006) also addressed the interactions among stakeholders and derived implications regarding their ability to influence.

Scholars in stakeholder research have developed various conceptualizations and definitions of stakeholders (for an overview, see Mitchell et al., 1997). However, the pioneer definition of Freeman (1984), who referred to a stakeholder as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (p. 46; similar wording in Freeman, Harrison, Wicks, Parmar, & De Colle, 2010), is still widely used and is the basis for many other definitions. Thus, drawing on stakeholder theory, we define a *project portfolio stakeholder* as any group or individual in a relationship with a project portfolio so that the group or individual can affect or is affected by the achievement of the portfolio's objectives (similar definition for program management in *The Standard for Program Management*; Project Management Institute, 2006).

Referring to the definition provided by Freeman (1984), Goodpaster (1991) noted that this definition implies the notion of two types of stakeholders: strategic (affecting) and moral (being affected). Further, Freeman (1984) differentiated between a firm's internal and external stakeholders with respect to organizational aspects.

The focus of this article is strategic stakeholders (i.e., those affecting project portfolios), with the knowledge that moral stakeholders can also become strategic over time (Goodpaster, 1991) and the explicit acknowledgment that, from a normative perspective, management actions should follow ethical guidelines and serve moral stakeholders (Freeman, Harrison, & Wicks, 2007). Further, we focus on those strategic stakeholders who are internal with respect to portfolios because they constitute the core of PPM; as such, we believe them to be a major source of influence with respect to project portfolio success. Thus, we define four strategic internal stakeholders for PPM:

1. *Senior management.* According to upper echelons research, senior managers act as the key decision makers within an organization (Carpenter, Geletkanycz, & Sanders, 2004; Gallén, 2009), and they are supposed to surmount barriers regarding change by utilizing hierarchical potential (Rost, Hölzle, & Gemünden, 2007; Witte, 1977). In the PPM context, *senior management* must decide on processes and standards for the overall project organization in general and the prioritization, selection, and evaluation mechanisms. Top-level managers must approve the target portfolio from a strategic perspective and in situations of perceived deviations or fundamental conflict situations; they must deliver timely decisions regarding the reallocation of resources or the reprioritization of projects. Therefore, under ideal conditions and with respect to a process-oriented understanding of PPM, the *portfolio structuring phase* is the major phase for senior management engagement.
2. *Mid-level line management.* Middle management comprises those stakeholders that are located below senior management but not necessarily above (and increasingly alongside) project leaders. However, it is not a manager's position in the hierarchy of organizational structure alone that characterizes middle management; their easy access to top management in combination with their knowledge of operations renders them unique (Raes et al., 2011; Wooldridge, Schmid, & Floyd, 2008). In their different forms as general line managers or functional line managers, mid-level *line managers* play a predominant role in project portfolio management processes. In a traditional matrix environment, they can be considered resource owners who are responsible for the effective and efficient assignment of departmental employees (Platje et al., 1994). They act in a decentralized manner and are assumed to optimize the objectives of an organizational subsystem, such as their department or function. Further, they are responsible for leading lower organizational levels; are responsible for consistent, reliable resource commitments and project execution; and are supposed

to act as brokers and mediators between business strategy and daily business (Shi, Markoczy, & Dess, 2009). Thus, under ideal conditions and with respect to the process-oriented understanding of PPM, the major phase for line management engagement is the *resource management phase*.

3. *Project portfolio managers*. The new managerial role of project portfolio managers has evolved alongside traditional line management. This role is supposed to be critical in planning and controlling complex project landscapes and implementing project portfolio management practices (Jonas, 2010). The function of a project portfolio manager involves the cross-project coordination of multiple projects within one organization and can be classified under the aforementioned middle management. However, in terms of their particular objectives and depending on their assigned responsibilities, project portfolio managers can either be more administrative personnel or play a role in shaping the future of a company through their influence (Blomquist & Müller, 2006; Gemünden, Dammer, & Jonas, 2008). We define a project portfolio manager as a centralized middle management coordination unit that supports senior management with its specialized knowledge of project portfolio practices (Dillard & Nissen, 2007). Under ideal conditions and with respect to a process-oriented understanding of PPM, the major phase for the engagement of project portfolio managers is supposed to be the third phase of *portfolio steering*.
4. *Project managers*. The most obvious stakeholders are project managers, who are undoubtedly viewed as highly important to a project portfolio. These managers are accountable for the success of their individual projects and represent their teams and the internal or external project customers in portfolios (Anantatmula, 2008; Geoghegan & Dulewicz, 2008). For example, managing traditional resource conflicts between projects and between line and project managers in matrix organizations remains a challenging issue at the portfolio level. In contrast with the other three strategic internal stakeholders, project managers have no major phase of engagement in the PPM process. Rather, they contribute to all three phases in a different manner. Regarding *portfolio structuring*, they are responsible for attaining the agreed-on project objectives to realize the planned project value. With respect to the *resource management* phase, they must adhere to given resource commitments through robust project planning and lead to future competence development. With respect to the *steering phase*, project managers are held accountable for the continuous delivery of reliable and timely project status information to allow for cross-project optimization and mutual collaboration across project borders.

Each of these stakeholders is responsible for complying with a specific role in the PPM process. Thus, to explore stakeholder engagement in PPM, one must consider the degree to which stakeholder roles in the management system are ambiguous and the clarity of the distribution of task conduction within the system. According to Bliese and Castro, "role clarity has been explored in literally hundreds of occupational stress studies" (2000, p. 66). Nonetheless, we use role clarity as a dichotomous trait of the management system. In contrast with the role clarity of a single managerial role, in the present exploration, role clarity refers to the overall clarity across the roles of all internal stakeholders and is assumed to develop from low to high over time. Stakeholders are assumed to be more effective when they understand what must be done, whereas role ambiguity is supposed to decrease performance (Hall, 2008; Tubre & Collins, 2000). Onyemah (2008) emphasized the inverted-U-shaped relationship in which moderate levels of role ambiguity are associated with high performance, whereas low and high levels are associated with low performance. In the PPM context, unclear roles might lead to unintended meddling in the project portfolio management process or to negative effects through well-intentioned but inappropriate interventions. For example, when senior management invests a significant amount of personal time into portfolio steering and accelerates selected projects outside of official prioritization processes and rules, this may be counterproductive. Therefore, increased stakeholder engagement may positively contribute to a portfolio's success only if the higher level of engagement is also invested in the appropriate process phase.

In the narrow context of PPM, questions regarding role clarity refer to both formal differentiated role descriptions and actually practiced behavior to ensure that each task is performed exclusively by the intended stakeholder. This implies clear definitions of the objectives and authorities within the project portfolio management process; therefore, role clarity can also be understood as a potential indicator of the degree of PPM maturity.

Hypotheses

Based on these findings from PPM and general stakeholder research, this study investigates the following hypotheses pertaining to project portfolio management. PPM is a relatively young management innovation and has been established in firms to different extents and in various forms. However, we still think that PPM practices largely comply with the aforementioned understanding of the PPM process and that stakeholders primarily focus their engagement in the "appropriate" process phase.

H1: The intensity of stakeholder engagement is aligned with what we expect based on definitions in PPM guidelines and role descriptions (i.e., the highest engagement in portfolio structuring: senior management; the highest engagement in resource management: line management; and the highest engagement in portfolio steering: project portfolio managers).

Second, because stakeholders interact with each other, we argue as follows:

H2: The intensity of stakeholders' engagement depends on the intensity of other stakeholders' engagement.

Third, we hypothesize as follows:

H3: The interrelationship among the engagement levels of stakeholders is altered with increasing PPM maturity (i.e., role clarity). Hence, we use stakeholder theory to explain the differences between firms with PPM of low and high maturity.

Sampling and Measures

To explore stakeholder engagement, we used a cross-sectional sample of 223 project portfolios from firms in Austria, Germany, and Switzerland. Data were collected as part of a study that investigated various issues related to managing project portfolios. To ensure that the participants had an understanding of our research topic, we contacted only firms with project portfolios containing at least 20 simultaneous projects. For the study, 1,455 managers were contacted through a direct mailing that explained the objectives, individual returns, and procedures of the study. Follow-up phone calls were conducted, and interested managers were then interviewed by phone to verify that they satisfied the participation requirements. Specifically, we confirmed that the project portfolio sizes of these firms and the managers' access to the required informants were sufficient. Our informants were managers who were supposed to be operatively involved in project portfolio management processes. These individuals had diverse titles, such as project portfolio manager, head of project management office, department manager, and head of business unit. In total, we received 426 questionnaires, corresponding to a response rate of 29%. Thereof, 209 questionnaires were from senior management informants and 217 from portfolio manager informants. For our analysis, we refer only to the sample of fully completed questionnaires from portfolio manager informants and excluded questionnaires with missing values from our focal constructs. These criteria resulted in a sample size of 215 valid cases. After processing the data, we conducted a conference to discuss and validate our findings with nearly 100 experts from 62 firms that participated in our study.

On average, a portfolio comprised 137 projects, with an overall yearly budget of €174 million. With one third of the 100 largest corporations in Austria, Germany, and Switzerland participating in our study, the sample can be considered a representative cross-section of medium and large companies. Of the firms analyzed in our study, 33% have fewer than 500 employees, 25% have between 500 and 2,000 employees, and 42% have more than 2,000 employees. Furthermore, the sample shows a reasonable spread across industries: machinery (13%), insurance (13%), electronics (12%), automotive (11%), IT/telecommunications (11%), banking (10%), services (10%), pharmaceuticals (5%), and others (15%).

For our analyses, we measure the intensity of the engagement of each of the four stakeholders in each of the three PPM phases. Additionally, we measure role clarity as an indicator of PPM maturity.

To measure role clarity within the project portfolios in our study, we developed an appropriate multi-item scale based on insights from the literature review, our workshops, and questionnaire pretests (Hair, Anderson, Tatham, & Black, 2006). The items that we used for measuring were anchored from 1 ("strongly disagree") to 7 ("strongly agree"). For our role clarity scale (α = 0.84), we specified three items for our construct to specify the overall role clarity for all involved internal stakeholders. Appendix A shows the applied items.

Because large-scale empirical research with project portfolios and stakeholders as units of analysis is scarce, we found no well-established scales that we could use to measure stakeholder engagement with respect to our focal questions. Therefore, we developed a two-dimensional, 6×9 question matrix consisting of six items for the different stakeholders (horizontal) and nine items for the different managerial activities in the project portfolio management process (vertical), as displayed in Figure 1 (marks are exemplary).

Thereby, each of the three phases of the PPM process was represented by three activity items (portfolio structuring: items 1–3; resource management: items 4–6; and portfolio steering: items 7–9). We asked our informants to mark a cross next to the position in the organization that is primarily responsible for each of the nine chosen activities; multiple responses were allowed. For our analysis, we aggregated the answers along the three PPM phases and our four generic stakeholders, as described below.

Senior management aggregates the board of directors (X = number of marks per phase) and division heads (Y = number of marks per phase). In addition, *project portfolio managers* aggregate multi-project coordinators (X) and project management offices (Y). The respective scales for the intensity of engagement (IoE_1) of these two stakeholders were derived by applying the following scheme to obtain the one final scale from 1 (no engagement) to 7 (high engagement) for each stakeholder and phase.

$$IoE_1 = X + Y + 1 \text{ with } X,Y \in [0, 1, 2, 3]$$

To obtain the corresponding scales for *mid-level line management* and

Please indicate who is *primarily* responsible for the following activities (multiple choices are possible).	1. Board of directors/CEO	2. Division head	3. Department head	4. Project leader	5. Multiproject coordinator	6. Project management office
1. Strategic portfolio planning	X	X				
2. Evaluation of projects		X				X
3. Selection of projects	X	X				
4. Cross-project resource allocation planning			X			
5. Individual allocation of employees to projects			X			
6. Release of project resources						
7. Controlling of the project portfolio					X	
8. Monitoring of the strategic alignment of the portfolio	X					X
9. Cross-functional coordination of projects					X	X

Figure 1: 6 × 9 question matrix.

project managers (IoE_2), we used the marks for department head (X = number of marks per phase) and project leader (X), respectively. Subsequently, we applied the following scheme to arrive at one final scale from 1 (no engagement) to 7 (high engagement) for each stakeholder and PPM phase.

$$IoE_2 = 2 * X + 1 \text{ with } X,Y \in [0, 1, 2, 3]$$

Ultimately, this procedure yielded 12 constructs that measured the extent or intensity of the engagement of each of the four stakeholders in each of the three PPM phases.

We derived our results from analyzing the intensity of engagement of the different stakeholders across the different PPM process phases. In the first step, we clustered data pertaining to the intensity of engagement for each stakeholder in each phase to compare our theoretical PPM process with actual stakeholder behavior. Therefore, we classified the values of 1 (no activity at all), 2, and 3 as low engagement; the values of 4 and 5 as medium engagement; and the values of 6 and 7 as high stakeholder engagement. The results are displayed in Table 1.

In the second step, we analyzed pairwise correlations between the intensity of engagement of stakeholders in the different process phases to explore their mutual interactions. The results are displayed in Table 2. To obtain a better understanding of these interactions, we divided our sample using the median of role clarity (4.66), which resulted in one sample of 94 cases with low role clarity (<4.66) and another sample of 121 cases with high role clarity (≥4.66). To demonstrate the differences under these two different organizational conditions for all stakeholders across all PPM phases, we displayed the significant correlation in the form of a series of net graphs that are shown in Figure 2.

Results

Table 1 provides accumulated values for the percentage of companies with low, medium, and high intensities of stakeholder engagement per PPM phase. Therefore, Table 1 provides an overview of the current situation of the firms in our sample. Consistent with our expectations, each stakeholder group focuses on a different PPM phase. Senior management dominates in portfolio structuring and, in 20% of the examined firms, shows high engagement for portfolio structuring (42% medium engagement). Line management leads in the area of resource management (42% high engagement), and project portfolio managers tend to dominate in the area of portfolio steering (11% high engagement and 35% medium engagement). As expected, project managers do not drive any of our defined PPM phases; the results indicate that more than 75% of these managers exhibit low engagement in all three phases with respect to PPM activities.

Table 2 provides the complete correlation matrix for all of our variables, including the descriptive statistics. In support of the results in Table 1, the mean values of intensity of stakeholder engagement in each phase reflect the expected assignment of a major phase for each of the first three stakeholders: senior management dominates portfolio structuring (highest mean in this phase = 4.13); mid-level line management dominates resource management

Intensity of Stakeholder Engagement	Project Portfolio Management Phase		
	Portfolio Structuring	Resource Management	Portfolio Steering
Senior Management			
High engagement	20%	2%	5%
Medium engagement	42%	24%	23%
Low engagement	38%	74%	72%
Line Management			
High engagement	11%	42%	8%
Medium engagement	18%	27%	10%
Low engagement	71%	31%	82%
Project Portfolio Managers			
High engagement	1%	2%	11%
Medium engagement	14%	8%	35%
Low engagement	85%	90%	54%
Project Managers			
High engagement	1%	9%	3%
Medium engagement	5%	16%	4%
Low engagement	94%	75%	93%

Table 1: Percentage of companies with defined intensity of stakeholder engagement.

(highest mean in this phase = 4.86); and project portfolio managers dominate portfolio steering (highest mean in this phase = 3.24).

Further, we observe that role clarity is positively correlated with the engagement of project portfolio managers in the portfolio structuring and the portfolio steering phases but negatively correlated with senior management engagement in the portfolio steering phase.

A review of the correlations of the intensities of engagement of the various stakeholders in the three phases shows, as expected, a relatively high number of correlations, which are shown in Figure 2 to facilitate interpretation and to reduce the complexity of Table 2. Circles represent the intensity of engagement of a specific stakeholder in a specific phase. Arrows represent correlations between two intensities of engagement. Negative correlations are marked with a "(–)". Finally, to analyze our third hypothesis, we divided the graphs into low and high levels of role clarity.

In the following list, we present the most relevant observations from Figure 2.

1. *For each stakeholder*: We observe that the engagement of each stakeholder is positively correlated across all phases at low and high levels of role clarity (except for the correlation between resource management and portfolio steering for line management at a high level of role clarity, with $p < 0.05$).
2. *Senior management*: Focusing on the interrelation within a phase, at low levels of role clarity, we observe that the intensity of the engagement of senior management is negatively correlated with line management in their major phase of resource management and with project portfolio managers in their major phase of portfolio steering.
3. *Project portfolio managers*: At low levels of role clarity, the engagement of project portfolio managers in the portfolio steering phase is negatively correlated with the intensity of the engagement of all other stakeholders in this phase, whereas at high levels of role clarity, only the correlations with line management and project managers remain.
4. *Line management*: At low levels of role clarity, most correlations are observed with senior management and project managers, whereas at high levels of role clarity, correlations are observed as primarily occurring with project portfolio managers.

Discussion

The descriptive results in the figures support our theoretical foundations of the project portfolio management process and the expected focus of the intensity of engagement of respective stakeholders. Therefore, these findings also support Hypothesis 1. However, the results for the assumed key activities for each of the examined stakeholder groups in the three phases are less explicit than expected. For example, although senior management dominates in the area of portfolio structuring, these managers exhibit surprisingly limited engagement in this strategically highly relevant phase (in 80% of all firms, only low to medium engagement is found). Furthermore, the high percentage of firms with a low level of engagement of project portfolio managers in the resource management phase (90%) is not consistent with the assumed importance of cross-project resource allocation. However, the limited engagement in this phase and the small percentage of firms with project portfolio managers who are highly engaged in portfolio steering (11%) can be at least partially

	Variables	Mean	*SD*	Min.	Max.	0	1	2	3	4	5	6	7	8	9	10	11	12
0	Role clarity	4.60	1.34	1.00	7.00													
Engagement in Portfolio Structuring																		
1	Senior management	4.13	1.61	1.00	7.00	−0.03												
2	Line management	2.81	2.11	1.00	7.00	−0.05	0.07											
3	Project portfolio managers	2.16	1.20	1.00	6.00	0.20*	0.08	−0.08										
4	Project managers	1.70	1.20	1.00	7.00	0.03	−0.09	0.25*	−0.03									
Engagement in Resource Management																		
5	Senior management	2.31	1.45	1.00	7.00	−0.03	0.35*	−0.07	−0.07	0.11								
6	Line management	4.86	2.23	1.00	7.00	0.08	0.13*	0.28*	0.09	0.07	−0.19*							
7	Project portfolio managers	1.98	1.12	1.00	7.00	0.10	0.25*	−0.16*	0.47*	−0.06	−0.01	−0.12						
8	Project managers	2.84	1.91	1.00	7.00	−0.01	0.17*	0.19*	0.11	0.36*	0.09	0.08	−0.01					
Engagement in Portfolio Steering																		
9	Senior management	2.67	1.50	1.00	7.00	−0.13*	0.49*	0.11	−0.06	0.01	0.36*	0.08	0.02	0.10				
10	Line management	2.25	1.91	1.00	7.00	0.00	0.07	0.60*	−0.03	0.29*	0.07	0.23*	−0.06	0.20*	0.16*			
11	Project portfolio managers	3.24	1.66	1.00	7.00	0.20*	0.06	−0.21*	0.61*	−0.08	−0.09	0.11	0.46*	0.03	−0.23*	−0.28*		
12	Project managers	1.92	1.41	1.00	7.00	−0.06	0.09	0.22*	−0.03	0.34*	0.17*	0.17*	−0.07	0.34*	0.08	0.27*	−0.22*	

Note. $n = 215$; *SD* = standard deviation; Min. = minimum; Max. = maximum.

*$p < 0.05$.

Table 2: Correlation matrix for the intensity of engagement of different stakeholders.

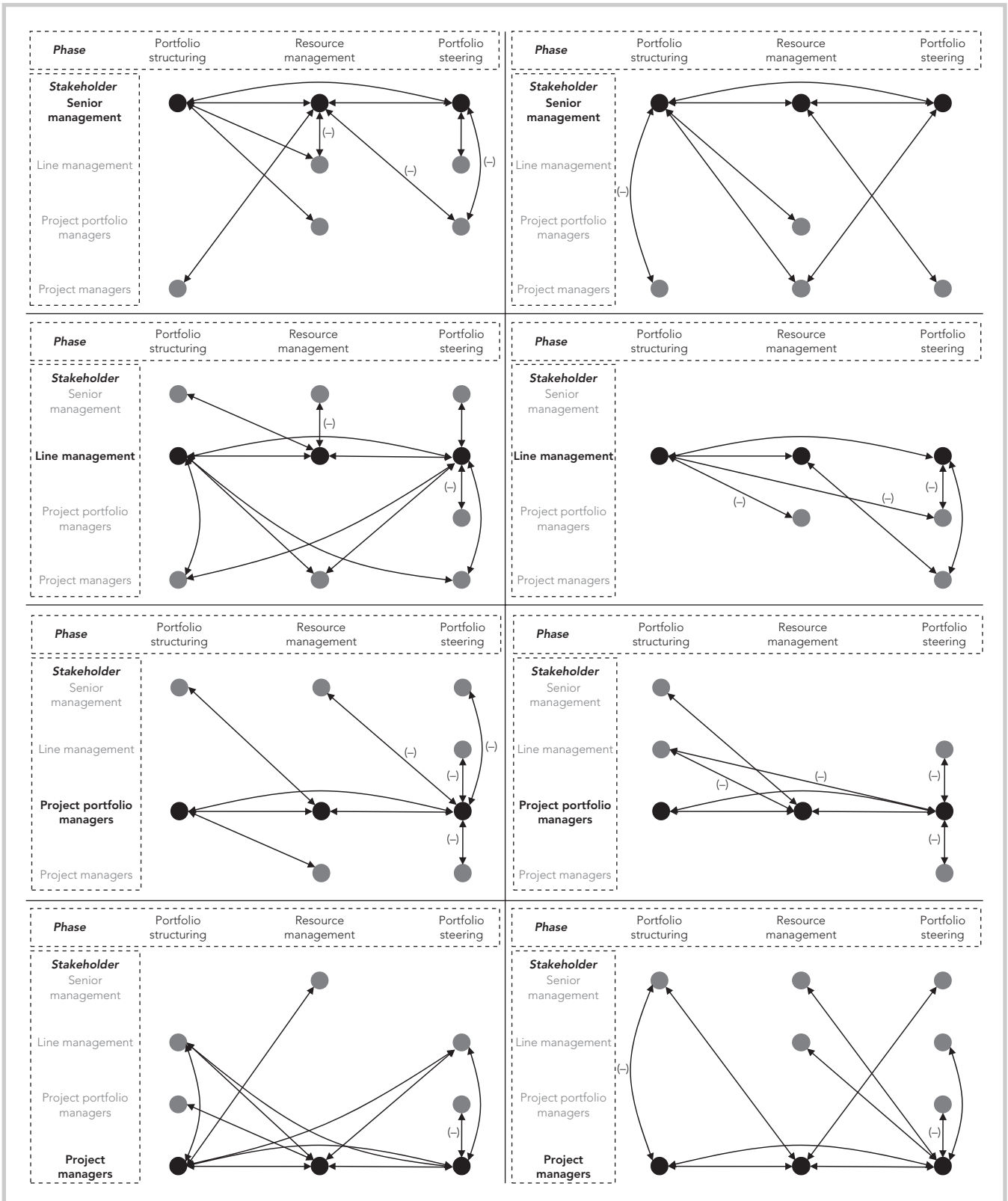

Figure 2: Visualization of significant ($p < 0.05$) correlations of the intensity of engagement for the different internal stakeholders at low and high levels of role clarity.

explained by the fact that PPM in many firms is still being developed and has yet to be fully established. Based on our interpretation of role clarity as a measure for PPM maturity, a mean of 4.60 (on a scale from 1 to 7) supports the notion that there is room for the further establishment and professionalization of PPM. This result calls for future research to understand this limited establishment and the success factors for further establishing PPM. Moreover, with the knowledge that PPM immaturity has a negative effect on success (role clarity: Hall, 2008; Tubre & Collins, 2000), our findings also translate into a managerial implication: senior and line management should increase their efforts to enact this new management system of PPM.

Although our results generally do not support Hypotheses 2 and 3, for a large number of stakeholder engagement pairs, our results do support our hypotheses that the intensity of engagement of stakeholders depends on that of other stakeholders (H2) and that this dependency is moderated by role clarity as a measure of PPM maturity (H3).

The large number of correlations and, therefore, interdependencies reinforces the view of the PPM process as a cooperative and distributed process (Jonas, 2010) and reflects that the key internal stakeholders of a project portfolio form a highly interdependent network (Rowley, 1997). We relate the existence of both positive and negative correlations to stakeholder theory with respect to the clusters of competing, complementary, and cooperative interactions according to Neville and Menguc (2006). Positive correlations among the intensities of engagement of stakeholders reflect cooperative or complementary behavior, and negative correlations are related to competing behavior. Therefore, additionally in the realm of PPM, we follow Rowley (1997), who noted that successful stakeholder management cannot address stakeholders individually but must cope with the network structures among stakeholders and their interactions.

Meanwhile, the positive correlations within one role over all three phases show that stakeholders behave consistently with respect to the intensity of their engagement in the three phases of PPM for both low and high levels of role clarity. We describe this pattern as the intra-role consistency of stakeholder behavior and thus suggest that stakeholders choose to increase or reduce their engagement with respect to their role and the overall portfolio rather than single process phases, whereas the extent of change in engagement varies. However, intra-role consistency conflicts with the confirmed major phases for the three internal key stakeholders: senior management, line management, and project portfolio managers (H1). With increasing role clarity, stakeholders should increase their engagement by focusing on their major phases while maintaining or even decreasing their engagement in the other PPM phases.

At low levels of role clarity, the negative correlations of the intensity of senior management engagement with that of line management and project portfolio management in their respective major phases are interpreted from two perspectives. First, a low level of role clarity implies a lack of clarity for line management and project portfolio managers in how they should engage in each phase and/or suggests that these managers simply do not exhibit the expected engagement for other reasons (for example, perhaps the necessary buy-in related to the strategy of senior management is absent or the workload is excessive). Hence, given their overall governance, senior management team members tend to compensate for the reduced engagement of the other two types of stakeholders through firefighting or by taking over in general. A second interpretation is that because of the authority and hierarchy level of senior management, crowding out may occur with their increased engagement. The responsibility of senior managers in the PPM process and their core competence lies primarily in strategic tasks during the portfolio structuring phase. If senior management tends to micromanage and exert a significant amount of effort into operative issues, then other stakeholders who are normally responsible for these operative tasks reduce their engagement. These correlations vanish in situations with high levels of role clarity (i.e., high PPM maturity). In an established PPM system, line management and project portfolio managers know their roles and responsibilities, and all stakeholders—including senior management—comply with and fulfill these roles. Hence, line and project portfolio managers (can) engage independently from senior management in their major phases. Thus, the managerial implication is that senior management should further establish and strengthen PPM (i.e., by increasing PPM maturity, complying with PPM roles and responsibilities, and delegating and shifting tasks accordingly) to ensure that stakeholders engage in the appropriate process phases using their core competences.

For project portfolio managers, we observe the previously discussed substitution effect in their major phase, not only with senior management but also with line and project managers in PPM contexts of low maturity. The role of a project portfolio manager is relatively new compared with the other roles. Within an immature PPM system, it can be assumed that project portfolio managers are either not fully qualified (i.e., they do not know how to engage) or do not have the required resources or strength in position. Hence, stakeholders with more traditional roles substitute for stakeholders with the relatively new project portfolio manager role. As the PPM system becomes increasingly established (i.e., role clarity is increasing), project portfolio managers are equipped with the required competences, and the basic conditions are established. Therefore, the operative roles of line and project managers hand over project

portfolio management tasks to project portfolio managers and reduce their engagement when the latter group increases their intensity of engagement. This bundling of PPM tasks with project portfolio managers is a core goal when establishing PPM and shows that the introduction of a PPM system is successful with increasing role clarity.

As in a mature PPM system, all stakeholders focus on the tasks that they are supposed to perform and fulfill their responsibilities; senior management does not need to engage in firefighting with portfolio steering but rather focuses on strategic tasks. Project portfolio managers focus more on the operative tasks of portfolio steering, which involve their core competence, and may engage in portfolio structuring only to better understand strategic issues and to prepare for subsequent operative tasks. Hence, it is rational that a substitution between senior and project portfolio managers is no longer observed.

Consequently, senior management should encourage and enable project portfolio managers to assume responsibility for portfolio steering tasks and thus release line and project managers to allow them to focus on their major tasks. In situations of high role clarity, it may also be beneficial to involve project portfolio managers in the portfolio structuring phase to a certain extent to create buy-in and understanding, thereby enhancing project portfolio managers' engagement and its impact in portfolio steering.

Finally, within immature PPM systems, line managers act as brokers and mediators between senior management, who represent business strategy, and project managers, who focus on daily business (Shi et al., 2009). This role provides line management with an important and rather powerful position in the stakeholder network. However, in more established PPM systems, line management loses this position. Meanwhile, when line management is more engaged in the strategically important phase of portfolio structuring, project portfolio managers encounter limited room for effective decisions in subsequent phases and therefore reduce their engagement. This occurs also because the line managers' original responsibilities and home turf are managing their resources, and later, projects in the portfolio are running at least partially within their departments. Therefore, and because these managers "owning" the resources represent the interface between strategy and operations, it is critical to generate the buy-in and full support of line management to successfully establish a PPM system.

Limitations and Future Research

This study has certain limitations that must be considered when interpreting the results. Although we use a sample of firms from diverse industries and the sample size is deemed satisfactory, the specific characteristics of the participating firms may not be representative of all firms. In particular, the sample consists only of medium to large firms. Thus, the results may not be directly applicable to small firms with smaller project portfolios, for which stakeholder communication may be easier, more direct, and less complex.

Furthermore, we gathered our data as part of a broader management study in German-speaking countries and among firms that already apply project portfolio management. Hence, the ability to generalize the results is limited to larger and more project-oriented firms in Austria, Germany, and Switzerland. Future studies may consider this and test these effects with samples from different countries and cultural environments.

By concentrating on the project portfolio management process and stakeholder interactions, we first focused on the intensity of their engagement. Further research could extend this study by analyzing the quality of stakeholder engagement in the sense of supportiveness (McElroy & Mills, 2007) with respect to the goals of PPM phases or the PPM process as a whole.

Second, we did not explicitly consider the competencies held by the managers involved. Although it can be assumed that the competence of the involved managers is also enhanced with increasing clarity in the roles of project portfolio management, this study did not explicitly test for these effects. This is a different story to tell and could be explored in future research.

Third, we focused on the internal key stakeholders who are directly involved in the PPM process. Future research could place greater emphasis on project managers as the interface to the projects in the portfolio or even extend the analyzed stakeholder network to include other stakeholders, such as experts and other employees within a firm or firm-external stakeholders, including suppliers and customers.

Finally, our research is based on correlations and has an explorative character. In the next step, scholars should analyze and test for the effects of the intensity of stakeholder engagement on project portfolio success. ■

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Appendix

Items for role clarity (to be answered on a Likert scale from 1 to 7).

1. The tasks of the project portfolio management actors are clearly and formally defined and distinguished.
2. Each project portfolio management task is performed exclusively by the person who is responsible for this task.
3. The tasks of project portfolio management are performed redundantly at different places in the organization.