Association for Information Systems
AIS Electronic Library (AISeL)

ECIS 2011 Proceedings | European Conference on Information Systems (ECIS)

Summer 10-6-2011

PREPARING FOR THE FUTURE OF IT PROJECT VALUE REALISATION: UNDERSTANDING BENEFITS MANAGEMENT PRACTICES – DO INCENTIVES AND MANAGEMENT SUPPORT REALLY HELP?

Kunal Mohan

Frederik Ahlemann

Jessica Braun

PREPARING FOR THE FUTURE OF IT PROJECT VALUE REALISATION: UNDERSTANDING BENEFITS MANAGEMENT PRACTICES – DO INCENTIVES AND MANAGEMENT SUPPORT REALLY HELP?

Mohan, Kunal, Institute of Research on Information Systems (IRIS), EBS University of Business and Law, Söhnleinstraße 8D, 65201 Wiesbaden, Germany, kunal.mohan@ebs.edu

Ahlemann, Frederik, Institute of Research on Information Systems (IRIS), EBS University of Business and Law, Söhnleinstraße 8D, 65201 Wiesbaden, Germany, frederik.ahlemann@ebs.edu

Braun, Jessica, Institute of Research on Information Systems (IRIS), EBS University of Business and Law, Söhnleinstraße 8D, 65201 Wiesbaden, Germany, jessica.braun@ebs.edu

Abstract

Although organisations continue to make substantial investments in information systems and information technology (IS/IT), the successful realisation of value (i.e. benefits) from such investments has consistently been reported as a major organisational challenge. From a project perspective, this paper examines whether benefits management (BM) practices can be considered a viable approach to achieve such anticipated value. Drawing on a field study conducted by investigating BM practices in 29 organisations as well as the BM literature, we derive a structural equation model that is tested using data collected from 456 individuals. Our data analysis, by means of partial least squares, finds that specific BM competencies positively impact benefits realisation success (BRS). Furthermore, the findings suggest that the development of effective BM competencies are facilitated by an alignment of business and IT processes reflected in the constructs a) business process knowledge, and b) business-IT communication. We also find that incentives negatively influence the positive effect of benefits review practices in realising project benefits. Collectively, the results have important theoretical and practical implications, as they provide quantitative evidence of how IS/IT investments should be managed to successfully realise benefits. We expect our research to spur organisations to instil a shared understanding of how IS/IT relates to the business and vice versa within their project teams, which will intensify BM's positive effect on BRS.

Keywords: Benefits management, incentives, IS/IT investments, project value

1 INTRODUCTION

Firms in almost every industry rely on investments in information systems and information technology (IS/IT) to realise benefits after their successful implementation. These benefits range from providing “problem-based solutions”, which help achieve business objectives and prevent performance deterioration, to “innovation-based solutions”, which enable organisations to achieve a competitive advantage by exploiting business opportunities or creating new organisational competencies (Peppard et al. 2007). However, many IS/IT projects fail to deliver the desired benefits (Peppard et al. 2007). As a research stream, “value of IS/IT investments” is not new. It has been well researched, especially in respect of frameworks classifying IS/IT value and methods with which to evaluate IS/IT investments. However, lately, the focus on IS/IT value has been gradually shifting from merely quantifying and measuring tangible and intangible value generated by IS/IT investments towards their goal-oriented management. A mutual consensus has developed among researchers that the ability to quantify value might not be sufficient to ensure that IS/IT projects actually deliver the promised value. Because of the complex socio-technical nature of IS/IT investments, academics as well as practitioners have recognised that delivering IS/IT value is a multifaceted task that needs to consider: a) the interests, needs, and abilities of the diverse stakeholders, b) the dynamic technical and social environment, and c) how their interactions create risks and reveal opportunities which, when overlooked, can severely hinder IS/IT investments from delivering their full potential. This revelation has led to the evolvement of an independent research discipline investigating the successful realisation of benefits from IS/IT projects (Ward et al. 1996), termed *benefits management* (BM) and defined as “the process of organizing and managing such that potential benefits arising from the use of IT are actually realized” (Ward et al. 1996). The basic assumption in BM literature is that benefits can be realised if they are managed appropriately. However, to date, little research has been conducted on whether and how BM practices help realise the value promised by IS/IT projects. Most existing research is of a qualitative nature, conducted in the form of case and field studies – for example, (Ashurst et al. 2008); (Peppard et al. 2007); (Ward et al. 1996) – and has helped identify some BM practices. However, to date, research has neglected to study the effect of some of the most empirically validated theoretical concepts, for example, incentive management, top management support, business-IT alignment, and communication. Neglecting the impact of such complex relationships might lead to results that are not always valid (Henseler and Fassott 2010). This raises fundamental questions regarding the realisation of value of IS/IT projects: a) What BM practices enable the realization of IS/IT project benefits? b) What are the critical antecedents of these BM practices? c) How do contextual factors such as incentives and top management support influence the effectiveness of these BM practices?

Despite the notion that BM is a key predictor of realising IT/IS value, academics have not yet provided any quantitative confirmatory evidence for this. In our view, this is a key issue, and one that needs to be addressed before further implications for theory as well as practice can be inferred. This paper presents the results of the concluding phase of a long-term research project (2007-11) on BM. In the first phase of this project, a comprehensive literature review was conducted, to familiarise ourselves with prior research and to uncover research gaps (reference removed due to double-blind review process). A broad exploratory field study was then conducted by investigating BM practices in 29 organisations with 36 semi-structured interviews. The results led to the construction of a BM success framework that elucidates essential competencies, their development over time, as well as contextual factors that promote those competencies. In the final phase, the results (project as unit of analysis), which we discuss in this paper, were tested in our BM framework in an exploratory positivist way, based on the survey research method, in order to answer the aforementioned questions and with the aim of building theory.

The remainder of this paper is organised as follows: Section 2 introduces BM discourse. This is especially helpful for a better understanding of the relationships that underpin our conceptual model. In Section 3, we derive the conceptual model and present the hypotheses. We then provide an overview of the research methodology, explaining data collection and analysis. In the data analysis section (Section 4), we discuss the validation of the measurement model and then proceed with analysing the structural model using the structural equation modelling technique. In Section 5, we discuss our findings and provide an outlook for future research activities.

2 BACKGROUND

Research on BM as a comprehensive approach began in the mid-1990s with an empirical study on industry practices in the UK (Ward et al. 1996). This study found that many organisations were not satisfied with the available methods for realising project benefits. One of the most widely used and cited models outlining BM's scope and nature is the Cranfield BM process model, which formed the basis for the aforementioned study (Ward et al. 1996). The basic idea behind BM is the lifecycle perspective on the benefits of IS/IT investments: benefits must be identified, evaluated (ex ante), realised, and evaluated again (ex post). Despite the fact that research on benefits management has already been conducted for one and a half decades, only a few organisations have methodological standards in place to realise benefits from IS/IT investments. This leaves much room for improvement. In 2007, the result of further research extending the 1996 UK study was presented. Although the adoption of BM had increased from 12% to 25% in the participating organisations, it was not yet mature. Unsurprisingly, a number of researchers have focused on BM's critical issues to facilitate the adoption of its practices. Notwithstanding previous research endeavours – for example, (Ashurst et al. 2008); (Peppard et al. 2007); (Ward et al. 1996) – BM research can be described as an evolving discipline. A 2009 literature review (reference removed due to double-blind review process) identified only 74 research papers as highly relevant to BM (60 journal articles and 14 conference papers). Of these, only 9 articles focused on the BM process, while the remaining 65 dealt with only one of the phases of the Cranfield BM process model. Academics have also not analysed BM success as such. To date, most research has been either qualitative (Peppard et al. 2007); (Ward et al. 1996), theory analysis, or theory explication.

3 CONCEPTUAL MODEL

The study described in this paper is of exploratory nature, as a) BM is a relative young research area, and b) the review of prior literature did not reveal a commonly accepted model to investigate benefits management's success. However, several factors were identified during literature research that have the potential to influence benefits realisation in IS projects; therefore, these shape our model. We also found support for constructs from our previous exploratory field study.

Benefits management practices: One fruitful way to add granularity to the complex concept of BM is to decompose it into a number of constituent practices, each of which is underpinned by the skills, knowledge, and experience of organisational employees (Ashurst et al. 2008). Wenger et al. (2002) consider practices to be "a set of socially defined ways of doing things in a specific domain: a set of common approaches and shared standards that create a basis for action, problem solving, performance and accountability". In our research model, we investigate which BM practices account for the ability to realise benefits from IT/IS investments. Our exploratory field study, and the Cranfield BM process model in particular, provide fertile theoretical foundation, the basic idea being that benefits must be identified, evaluated (ex ante), realised, and evaluated again (ex post).

Benefits identification (BI), which is defined as the extent to which project stakeholders have a priori transparency regarding the benefits to be realised. Transparency thereby refers to the type of benefits to be realised. Identification of the right benefits, i.e. practically realistic benefits achievable through a project, is critical to their actual realisation. IT benefits expectations that are not objectively identified based on sound reasoning and facts are deemed to be disconfirmed during the course of the project and lead to cognitive dissonance among the responsible parties. BI is therefore expected to positively influence an organisation's capability to realise benefits (see table 1 for research hypotheses).

Benefits measurement (BME) is the ability to develop suitable measures (both financial and non-financial) for each identified benefit (Ward et al. 1996). Measurable variables must be developed to allow stakeholders to understand the full scope of the investment and its impact on the realisation of expected benefits. Measures enable the assessment of benefits at any given time. Without precise measures, the stakeholders are like a ship's captain somewhere on an ocean without a compass. There is no way to develop a sense of direction regarding the status of benefits. BME is therefore expected to positively influence an organisation's capability to realise benefits.

Benefits planning (BP) is the ability to effectively identify the parties responsible for each identified benefit and explicitly state, based on mutual consensus, the means by which the responsible parties are to achieve the benefits, i.e. plan which resources are to be used when, in which manner, and by whom. This construct implies defining all the activities, interdependencies, timing, and responsibilities involved in managing the changes and realising the benefits (Ward et al. 1996). The mere application of IT does not lead to benefits; benefits realization must be carefully planned and managed. BP is therefore expected to positively influence an organisation's capability to realise benefits.

Benefits review (BR) is the ability to effectively assess a project's success in terms of the current state of benefits at any point in the project lifecycle, and the delivered benefits (Ashurst et al. 2008). IT project benefits will only be realised if they are systematically measured (Jurison 1996). Organisations need to effectively and ongoingly monitor and evaluate their project results (Ashurst et al. 2008), to ensure that benefits are being realised as planned. Regular review status reports therefore help to detect shortfalls and problems early on, and enable the individuals responsible to initiate corrective actions in time to ensure the realisation of identified benefits. BR is therefore expected to positively influence an organisation's capability to realise benefits. Furthermore, as the assessment of benefits depends on the availability of precise quantitative and qualitative measures, BME is expected to positively impact BR.

Benefits implementation (BIM) is the ability to execute the benefits realisation plan and facilitate organisational change in order to implement planned benefits by adapting and coordinating business processes, working practices, structures, roles, and management framework, as deemed necessary for the realisation of benefits (Ashurst et al. 2008). Organisations must take a proactive approach to ensure that benefits management practices are surrounded by appropriate policies, strategy, committed people, and sound relationships. Organisations will only deliver value from IT projects if they can design and execute the program of organisational change needed to realise all the benefits as planned (Ashurst et al. 2008). BIM is therefore expected to positively influence an organisation's capability to realise benefits.

H1: *Benefits identification* (BI) will be positively associated with *benefits realization success* (BRS).
H2: *Benefits measurement* (BME) will be positively associated with BRS.
H3: *Benefits planning* (BP) will be positively associated with BRS.
H4: *Benefits review* (BR) will be positively associated with BRS.
H5: BI will be positively associated with BR.
H6: *Benefits implementation* (BIM) will be positively associated with BRS.

Table 1: Research hypotheses regarding direct effects of BM practices on BRS

Business-IT alignment: As a result of the complex socio-technical nature of IT projects, BM practices are underpinned by the skills, knowledge, and experience of a diverse set of individuals involved in the project, who have different interests, working practices, and roles. Uniting these various groups of individuals involved in a project in pursuit of the common goal of maximising benefits realisation is therefore critical to the discipline of benefits management. In practice, though, these relationships tend to be poor, because there is a significant gap between the IT department and the rest of the organisation (Peppard and Ward 1999). It has been argued that this lack of alignment between IT and business is the reason why a) wrong unrealistic benefits are identified or not identified at all, b) operationalisation of measures is incorrectly specified, c) activities and resources are improperly planned, and d) the required organisational change is not achieved (Henderson and Venkatraman 1993). Based on the results of our exploratory study, we propose that the following two specific constructs are expected to nurture cooperation and understanding among the business (project sponsor) and the IT (the project team) and are expected to lead to the development of effective BM practices (see table 2).

Business-IT communication (BITC) is defined as the formal and informal sharing of information between the project team and the project sponsor. Information exchange and communication are key constructs in many empirical studies of exchange relationships – see (Deepen et al. 2008); these studies come to the similar conclusion that complete, open, and frequent exchange of operating and strategic information is the "glue that holds alliances together". Following the notion of Tushman and Katz (1980), we propose that the IS/IT department as well as the business department can each be considered as a specialised subunit that has evolved to deal with relatively homogeneous tasks: The IS/IT department focuses on the technical work environment, whereas the business department focuses on the functional work environment. As a result, each subunit develops its own locally defined languages and orientations that gradually evolve from interactions among the subunit's task demands. Considering that, in an IS/IT project, both subunits are affected, effective interaction in terms of communication between the IS/IT department and the business department becomes essential in the planning and executing of the various BM practices. This is also widely accepted in business-IT alignment literature, in which communication, as ongoing knowledge sharing, is an integral part (Luftman 2003). BITC is expected to positively influence the benefits management practices BI, BME, BP, BR, and BIM.

Business process knowledge (BPK) draws on the argument that IS/IT investments neither provide any sustained advantage per se (Bharadwaj 2000), nor have any inherent value (Peppard et al. 2000). Organisations and their managers thus need to understand that, even though IS/IT may have been an enabler within successful projects, the business benefits are ultimately derived from "understanding the business and committing it to change" and that IT impacts organisational performance via intermediate business processes (Dehning and Richardson 2002). However, in order to be able to change the business processes in such a way that they ultimately lead to benefits, one must first gather business process knowledge. BPK is expected to positively influence benefits management practices BI, BME, BP, and BIM. BITC is also expected to positively impact BPK since high quality, breadth, and depth of information exchange between IT project team and the business facilitates a better understanding of the activities on the part of the parties involved.

H7: *Business-IT communication* (BITC) will be positively associated with BI, BME, BP, BR, and BIM.
H8: *Business process knowledge* (BPK) will be positively associated with BI, BME, BP, and BIM.
H9: BITC will be positively associated with BPK.

Table 2: Research hypotheses regarding direct effects of Business-IT alignment on BM practices

The moderating influence of incentives and top management support: In our research, we specifically focus on moderating effects because, besides the examination of direct effects, scholars are increasingly seeking to understand complex relationships (Henseler and Fassott 2010). While the importance of taking moderation effects is repeatedly emphasised in the literature (Chin et al. 2003), its neglect has led to a lack of relevance as "…relationships that hold true independently of context factors are often trivial" (Henseler and Fassott 2010). In the following, we specify the role of key moderators and provide theoretical justification for our hypotheses (table 3).

Incentive management (IM) is defined as the degree to which individuals involved in the realisation of benefits are *rewarded* with incentives upon success or *penalised* in the case of failed objectives. IM aligns the often divergent goals and interests of all the parties involved by means of tangible or intangible incentives. Principal-agent theory explains inefficiency in relationships between individuals and implies that this is caused by a fundamental misalignment between the goals and interests of the individuals involved in the project (Eisenhardt 1989a). Principal-agent theory also suggests that incentives would increase the effectiveness of BM practices by motivating the individuals involved to share information and resources as well as work together towards the common goal of maximising the realisation of project benefits. Therefore, we propose that the presence of incentives will improve the effectiveness of the BM practices and will amplify the effect of BI, BME, BP, BR, and BIM on BRS.

Top management support (TMS) is defined as the degree to which top management keeps itself informed of a project's activity and displays its willingness to allocate valuable organisational resources to the project. Lucas (1981) also implies that top management's ability to ensure sufficient resources for projects and its role as change agents are important elements of their support. Top management helps in "creating a climate of support" for IS initiatives. In our view, top management functions as a "back seat driver", blessing the IT project manager's initiatives, signalling the importance of BM practices to line management, providing a general business direction and ensuring that operational managers take responsibility for delivering the anticipated benefits (Henderson and Venkatraman 1993). TMS is thus expected to elevate the effects of BM practices due to its ability to motivate the individuals involved to share knowledge and resources and to commit themselves to the goal at hand. Therefore, we propose that TMS will increase the effect of BI, BME, BP, BR, and BIM on BRS. The related research hypotheses are summarised in Table 1.

H10: The influence of BI, BME, BP, BR, and BIM on BRS will be moderated by IM, such that the effect will be stronger in projects with a high degree of IM.
H11: The influence of BI, BME, BP, BR, and BIM on BRS will be moderated by TMS, such that the effect will be stronger in projects with a high degree of TMS.

Table 3: Research hypotheses regarding indirect effects of contextual factors

4 RESEARCH METHODOLOGY

4.1 Data collection: As this is the first study which operationalises BM practices for a survey, we took appropriate measures to ensure that validity criteria are satisfied. The entire development process, leading to the final survey instrument, was conducted according to Straub's (1989) recommendations (see appendix B for list of measures and literature used). An initial pool of reflective measures was selected, based on their empirical validation in prior research as well as our field study which included 34 interviewees from 29 organizations. The interview consisted of 23 open-ended questions (see appendix A). All interviews were conducted face-to-face, audiotaped, transcribed and approved by the interviewees. Generally, two investigators conducted each interview, which ranged between 60 and 90 minutes. Statements made by respondents provided the basis for generating the preliminary list of items. Analysis of participant responses, to generate the items, was undertaken in two phases. First, we carried out a within-interview analysis, using a content analysis technique that enables the analysis of open-ended data. Through a cross-interview analysis, we attempted to execute a detailed search to identify the similarities and differences between the interviews. This approach enabled us to gradually identify items which characterise successful benefits management and ensure high content validity. Instrument refinement was conducted based on interviews with 6 subject matter experts, Q-sorting exercise in 2 rounds (Moore and Benbasat 1991) with 7 and 8 participants respectively, and a web-based pre-test with 31 participants. Finally, all items were embedded in survey questions using a 7-point Likert-type scale anchored at *strongly disagree* (1) and *strongly agree* (7). Throughout the entire instrument development process, three researchers were always involved, discussing every issue and formulating improvements. This triangulation of researcher and methods provides stronger substantiation of a valid and reliable instrument.

Data was collected via an online survey for a period of seven months from December 2009 to June 2010. Participants for the study were randomly chosen from Germany, Austria, and Switzerland, utilising databases of professionals (e.g., XING, CompetenceSite), with keyword search such as benefits management, IT project management, portfolio management etc. This approach was chosen so as to elicit a wide representation by industry and company size. We then sent a personalised URL of the online survey to every individual identified in such a manner. Further to utilising databases, we also approached randomly selected organisations by sending them an open invitation to participate. Personalised survey URLs were administered to a total of 2,147 individuals, of which 456 participants completed the survey, representing a 21.2% response rate. Among the non-respondents, 359 individuals started but did not complete the survey, while 1,379 did not click on the URL once. We addressed the issue of nonresponse bias prior to the study by following the recommendations by Rogelberg and Stanton (2007): a) Physical design of the survey was evaluated to ensure that it is pleasing to the eye, easy to read, uncluttered, and structured. b) Potential participants' interest was aroused and the importance of the survey explained by providing participants with general information regarding the study motivation in the invitation email. c) Personal incentives (e.g., an iPod for one lucky participant) were promised to further motivate participants. We also communicated that participants would receive a report of the final results. After the survey, we contacted all individuals who were invited but did not participate in the survey via email to inquire as to the reasons for their non-participation. Overall, we received feedback from 111 *non-participants*, whereas the most-cited reasons for non-participation were: 1) lack of time (52.25%), 2) the individual is wrong contact person for the survey (18.92%), 3) the questionnaire is too long (9%), 4) no interest (9%), 5) overlooking the invitation email (2.7%), 6) data confidentiality concerns (1.8%), 7) the questionnaire is too complex (0.9%). As all survey questions needed for our BMS model were mandatory, we did not have to exclude any cases due to missing or incomplete responses. The majority of data records refer to IS/IT projects (62.02%), followed by organisational projects (17.58%). The IT industry (21.17%) is most widely represented, followed by consulting (10.15%), the service sector (9.29%), and logistics (8.43%). The participants are mainly project managers (50.93%), followed by project team members on the business side (7.23%).

4.2 Data analysis and results: We followed Chin et al.'s (2003) as well as Carte and Russell`s (2003) guidelines and recommendations to test and analyse interaction effects with PLS. The process includes three steps (Chin et al. 2003): 1) standardising indicators for the main and moderating constructs, 2) creating all pair-wise product indicators (i.e. each indicator from the main construct is multiplied with each indicator from the moderating construct), and 3) using the new product indicators to reflect the interaction construct. In a recent review of moderating effects in PLS models, Henseler and Fassott (Henseler and Fassott 2010) also recommend the product indicator approach, which we have applied. The research model was tested and the psychometric properties of the scales were assessed with the software SmartPLS (version 2.0 M3), based on partial least squares (PLS), due to the exploratory nature of our study (Fornell and Bookstein 1982). The statistical significance of the parameter estimates was assessed using a bootstrapping procedure with 1,000 resamples.

Validation of the measurement model: We used reflective indicators for all constructs. The adequacy of the measurement model was assessed by the reliability of individual items, internal consistency between items, and the model's convergent and discriminant validity (Straub et al. 2004). Cronbach's alpha (CA) (Cronbach 1951) reliability estimates were used to measure the internal consistency reliability. In this study, the CA of each construct is greater than 0.83, as shown in Table 2, which indicates a strong reliability for all constructs in our model (Nunnally and Bernstein 1994). We also followed the Chin's (1998) suggestion and calculated composite reliability (CR) as an alternative to CA. The CR values for all constructs are higher than 0.92, above the recommended minimum of 0.70 (Nunnally and Bernstein 1994). Convergent validity is demonstrated (see appendix C) as a) the AVE (average variance extracted) values for all constructs were higher than the suggested threshold value of 0.50 (Fornell and Larcker 1981), and b) all item-loadings were higher than 0.80, well above the 0.70 guideline and statistically significant at the 0.001 level (Hair et al. 2009). Evidence of discriminant validity could be found, since a) the square root of all AVEs were larger than interconstruct correlations, and b) all construct indicators loaded on their corresponding construct more strongly than on other constructs (Chin 1998), and the cross-loading differences were much higher than the suggested threshold of 0.1 (Gefen and Straub 2005).

Common method bias (CMB) was evaluated through the exploratory method of Harman's one-factor test (Podsakoff and Organ 1986). Results from this test show that 9 factors are present, which explains a total of 78.6% variance, with the most variance explained by one factor being 37.1%, indicating that common method biases most likely did not contaminate our results (see appendix D). In order to further examine CMB, we applied the confirmatory method proposed by Podsakoff et al. (2003), as explained by Huigang Liang et al. (2007), and found that a) only 5 of the 48 method loadings are significant, and b) while the average substantively explained variance of the indicators is 0.782, common method-based variance is only 0.004. The ratio of substantive variance to method variance is about 218:1. As a result of the above-mentioned evidence, and the small magnitude and insignificance of method variance, we contend that common method bias is unlikely to be a significant concern for this study.

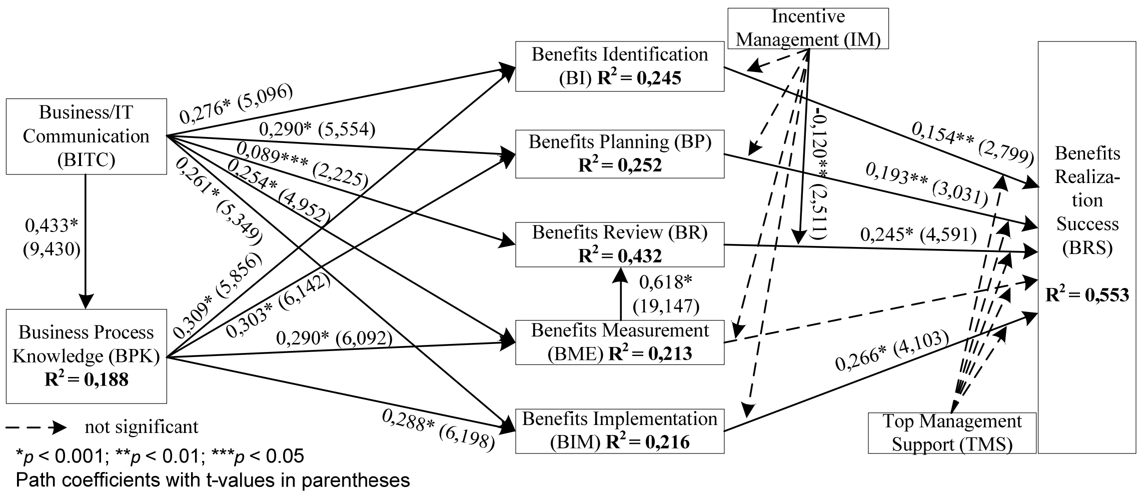

Figure 1: Results

Structural model results: After the validation of the measurement model, the structural model was independently analysed and the proposed relationships between the constructs were tested. Using a blindfolding approach (Tenenhaus et al. 2005), we measured the cross-validated communality and redundancy via a Stone and Geisser test. Q^2 results for both cross-validated communality and redundancy were greater than zero, suggesting that the model has good predictive validity. A *post hoc* power analysis with the software G*Power 2 (Erdfelder et al. 1996) resulted in a value greater than 0.80, which implies that our model is able to detect small effect sizes (Chin 1998). Finally, we calculated the goodness of fit (GoF) of our model, as suggested by Wetzels et al.(2009), who define GoF as the square root of the product of AVE and R^2. The application of this formula leads to a GoF of 0.493, which exceeds the cut-off value of 0.36 for large effect size of squared multiple correlations (R^2), as proposed by Cohen (1988) and allows us to conclude that our model performs well (Wetzels et al. 2009).

In assessing the PLS model, we examined the R^2 for each endogenous latent variable. The structural paths were evaluated for their significance. Proposed relationships were considered supported if the corresponding path coefficients had the proposed sign and were significant. Although some of the paths between variables were statistically significant, they did not meet the criterion of practical significance suggested by Kerlinger and Pedhazur (1973) and repeatedly emphasized by researchers – for example, (Igbaria et al. 1994); (Meehl 1990) – for inclusion in a path diagram. Therefore, as per the recommendation by Meehl (1990), only betas with values of .10 or higher, and which are significant at the .05 level or better, are reported. Figure 1 shows the PLS structural model results. Four of the five proposed BM practices had a significant influence on BRS: BI (β=.15, p<.01), BP (β=.19, p<.01), BR (β=0.25, p<.001), and BIM (β=.27, p<.001); together, they explain 55.3% of the variance in the dependent variable BRS. However, the effect of BME on BRS was found to be not significant; therefore, hypothesis H2 is not supported. As depicted in Figure 1, hypotheses H7, H8, and

H9 are supported, implying that communication between project team and the business departments and knowledge of business process are important predictors of BM practices, and that higher frequency of communication leads to a better understanding of the business. Furthermore, BITC emerged as the construct with the biggest total effect (0.33) – indirect and direct – on BRS. However, in light of the weak path coefficient (β=.089) of BITC → BR, the practical significance of BITC in explaining BR is questionable (Chin 1998). To clarify further, we calculated the effect size using the T-test. The difference between the squared multiple correlations is used to assess the overall effect size f^2 for the interaction, where it has been suggested that $f^2 < .02$ = practically no effect, $.02 \leq f^2 < .15$ = small effect, $.15 \leq f^2 < .35$ = moderate effect, and $f^2 \geq .35$ = large effect (Cohen 1988). The resulting f^2 value was 0.01, which – according to Cohen (1988) – can be considered to represent practically no effect. Regarding moderation effects, hypothesis H11 (i.e. the moderating effect of TMS) was found to be not significant and therefore is not supported. On the other hand, while the moderating effect of IM on the effect of BI, BP, BME, and BIM on BRS are found to be not significant, PLS results did show that IM has a significant negative effect (β=-.12, $p<.01$) on BR → BRS, contrary to what we have theorised. While unexpected, we do not think that multicollinearity (which causes "bouncing betas" in which the direction of the beta terms can shift from previously positive to negative relationships, or vice versa) (Cohen 1978) could have caused this, since examining the difference in cross-loadings (min.=0.63, max.=0.72) and the intercorrelations matrix of the latent variables, high correlation between the constructs is not expected. H10 is partially supported.

5 DISCUSSION AND IMPLICATIONS

Our research has certain limitations. Since the population consisted only of German-speaking industrialised European nations, which have similar cultural, legal, and organisational structures, certain relationships might be found to be weaker or stronger in developing nations. For example, in high-powered cultures like Japan, influence of top management support might have a much stronger effect on generating commitment from organisational members towards aligning personal goals and business goals. In another example, prior research and concepts in organisational sociology have also found that high bureaucracy reduces the effectiveness and flexibility of management practices such as BM by creating a vicious circle of formalised procedures (Platje and Seidel 1993). Researchers should seek to address these questions. With respect to measurement, our instrument evaluated self-reported perceptions. Even though such perceptual self-reports tend to be subjective, we think they shed significant light on the phenomenon under investigation (Iacovou et al. 2009). There is also a need to improve the operationalisation of BM constructs. Since this is the first study to develop measures for BM constructs, because no validated BM scales exist, the indicators should be further refined and validated.

In general, the empirical results are encouraging and provide support for the study's two primary objectives. One major objective related to the development of a fresh perspective on project benefits realisation, both in terms of dimensionality as well as structure of the construct. We propose a taxonomy of benefits management practices to understand how they might enable the realisation of planned project value, something that has proven to be a difficult task in MIS literature, evident in the growing number of studies reporting failed projects. The results of the study indicate that among the theorised BM practices: 1) the ability to monitor and review the status of benefits (BR) and 2) the ability to mobilise organisational change necessary to implement and execute planned actions (BIM) are the most important BM competencies in regard to an organisation's ability to maximise project value. Furthermore, we find that the ability to develop accurate measures to operationalise project benefits (BME) helps to realise project value indirectly by increasing the accuracy and effectiveness with which an organisation is able to monitor the status of benefits realisation – "if you can't measure it, you can't track it". We think that this might be the case because BME might enable an organisation to increase the transparency of the depth and breadth of realised value. Improved metrics tailored to the unique characteristics of individual benefits shed light into the "black box" of project value realisation, illuminating *why* benefits realised look like they do and what might be done about them to allow organisations to *diagnose* problems and *manage* improvements before it is too late. While BME emerged as the only substantial predictor of BR competency, the theorised constituents of business-IT alignment – communication and business process knowledge – were proved to foster the development of effective BM practices. However, in the light of the practically non-existent effect of communication on BR, we think that this might be a result of the very nature of the review activity. While all the other BM practices (BM, BP, BME, and BIM) are dynamic, requiring the various stakeholders to come together, discuss, understand, plan, cooperate, and coordinate each other's activities based upon a deep understanding of what each *can* and *will* do, BR practice is more static, founded largely on automated metrics calculation based on data provided, requiring only standard reporting channels, and little interaction with the diverse group of individuals. Furthermore, the finding that frequent and productive communication between the project team and the business departments promotes better understanding of business process is in line with previous research, which finds that communication leads to trust and information sharing (Jarvenpaa et al. 1998) and the ability to explain complex concepts clearly and skillfully (Greimel-Fuhrmann and Geyer 2003), and influences how knowledge is gathered, interpreted, and understood (Koskinen 2004). From the perspective of communication theory, shared understanding emanates from frequent and competent interactions between and among communicators (Henderson 1987).

This study's second major objective was to find empirical support for the theorised consequence of top management support and incentives on the effectiveness of BM practices as a means to realise project value. In general, while some of the proposed moderation effects were not confirmed, this cannot be traced back to the statistical inability of our study to detect small effects (since the power of this study is greater than 0.80) (Cohen 1988). This therefore calls for an in-depth theoretical investigation of why the theorised effects were not found to exist. Regarding top management support, we think that this might be so due to our definition and operationalisation of the construct. Firstly, regarding the depth and breadth of TMS, we studied a more superficial view of management support in which managers do not get involved in a project's operational activities. The literature is still very unclear on the matter of defining TMS (Jarvenpaa and Ives 1991), differentiating between *executive participation*, which involves top management's investment of time and energy in IS/IT planning, development, and implementation, and *executive involvement*, in which executives do not need to be directly involved in managing IT, but rather provide strong signals and visions in support of IT to get the operative management personally involved in realising its benefits (Jarvenpaa and Ives 1991). One possible explanation is that, in regard to benefits management, top management might need to be involved more deeply in project operational activities. Secondly, we studied top management support for the classical project goals of time, cost, and quality. However, BM requires a change in perspective, away from a focus on project completion, to benefits realisation. Although speculative, based on nomological validity, we think that future studies should seek to study TMS specifically for BM and as *executive participators*.

One significant contribution of our study lies in the finding that incentives negatively influence the positive effect of benefits review practices (BR) in realising project benefits. While originally theorised to have a positive effect, grounded on the overwhelming research based on principal-agent theory (Eisenhardt 1989), the current finding is in line with the recently developed stream of IS research on *selective reporting* (SR) in projects (Iacovou et al. 2009). SR refers to behaviours that individuals responsible for projects (e.g. project managers and project sponsors) pursue while providing review reports based on regular assessment of the planned versus actual status of metrics to his/her supervisor in order to convey an impression that does not accurately reflect the individual's perception of the project's actual status (Iacovou et al. 2009). In conducting selective reporting, individuals *optimistically bias* their review reports to acquire incentives or to avoid punitive sanctions by a) exaggerating the status of BM measures/metrics, and b) omitting problem metrics in reports or downplaying their significance (Iacovou et al. 2009). Experimental studies, for instance that of Smith et al. (2001), also demonstrate that project reporters would be unwilling to report review results if they anticipate negative materialistic or immaterial results for doing so. In such a case, the integration of incentive management might prove to be counterproductive to benefits realisation, as it promotes selective reporting behaviour, which distorts the benefits review (BR) practice, which is supposed to provide management with much-needed transparency regarding problems with the achievement of planned project benefits. This might also explain why incentives only have a negative moderation effect on BR → BRS and no effect on the other BM practices. While BI, BP, BME, and BIM also contribute to project benefits realisation, the way they do this is not directly visible to the management approving the incentives. Management usually only receives review reports at regular intervals (an output of BR practice), upon which they are able to visualise the achievement of set goals. Therefore, distortion of BR to show that project benefits are being achieved might be the only way individuals can secure incentives from management, since manipulation in other BM practices are not directly acknowledged. In conclusion, realization of value from IS/IT investments remains a complex and elusive yet extremely important phenomenon. Past research has made some progress in unraveling some of its mysteries. The development and testing of our model seeks to advance theory and research on this crucial area.

References

Ashurst, C., Doherty, N.F. and Peppard, J. (2008). Improving the Impact of IT Development Projects: The Benefits Realization Capability Model. *European Journal of Information Systems*, 17 (4), 352-370.

Bassellier, G., and Benbasat, I. (2004). Business competence of information technology professionals: conceptual development and influence on IT-business partnerships. *MIS Quarterly*, 28(4), 673-694.

Bharadwaj, A.S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *MIS Quarterly*, 24 (1), 169-196.

Carte, T.A. and Russell, C.J. (2003). In Pursuit of Moderation: Nine Common Errors and Their Solutions. *MIS Quarterly*, 27 (3), 479-501.

Chin, W.W. (1998). Issues and Opinion on Structural Equation Modeling. *MIS Quarterly*, 22 (1), p. 1.

Chin, W.W., Marcolin, B.L. and Newsted, P.R. (2003). A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from a Monte Carlo Simulation Study and an Electronic-Mail Emotion/Adoption Study. *Information Systems Research*, 14 (2), 189-217.

Cohen, J. (1978). Partialed Products Are Interactions; Partialed Powers Are Curve Components. Psychological Bulletin, 85 (4), 858-866.

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences. 2nd ed. Routledge Academic,

Cronbach, L.J. (1951). Coefficient Alpha and the Internal Structure of Tests. *Psychometrika*, 16 (3), 297-334.

Deepen, J.M., Goldsby, T.J., Knemeyer, A.M. and Wallenburg, C.M. (2008). Beyond Expectations: An Examination of Logistics Outsourcing Goal Achievement and Goal Exceedance. *Journal of Business Logistics*, 29 (2), 75-105.

Dehning, B. and Richardson, V.J. (2002). Returns on Investments in Information Technology: A Research Synthesis. *Journal of Information Systems*, 16 (1), 7-30.

Eisenhardt, K.M. (1989). Agency Theory: An Assessment and Review. *Academy of Management Review*, 14 (1), 57-74.

Erdfelder, E., Lang, A., Buchner, A. and Faul. (1996). G*Power 3: A Flexible Statistical Power Analysis Program for the Social, Behavioral, and Biomedical Sciences. *Behavior Research Methods*, 39 (2), 175-191.

Fornell, C. and Bookstein, F.L. (1982). Two Structural Equation Models: LISREL and PLS Applied to Consumer Exit-Voice Theory. *Journal of Marketing Research*, 19 (4), 440-452.

Fornell, C. and Larcker, D.F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18 (1), 39-50.

Garrity, J.T. (1963). Top Management and Computer Profits. *Harvard Business Review*, 41 (4), 6-174.

Gefen, D. and Straub, D. (2005). A Practical Guide to Factorial Validity Using PLS-Graph: Tutorial and Annotated Example. *Communications of AIS*, 2005 (16), 91-109.

Greimel-Fuhrmann, B. and Geyer, A. (2003). Students' Evaluation of Teachers and Instructional Quality--Analysis of Relevant Factors Based on Empirical Evaluation Research. *Assessment & Evaluation in Higher Education*, 28 (3), 229.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2009). Multivariate Data Analysis. 7th ed. Prentice Hall,

Henderson, J. and Venkatraman, N. (1993). Strategic Alignment: Leveraging Information Technology for Transforming Organizations. *IBM Systems Journal*, 32 (1), 484, 472.

Henderson, L.S. (1987). The Contextual Nature of Interpersonal Communication in Management Theory and Research. *Management Communication Quarterly*, 1 (1), 7-31.

Henseler, J. and Fassott, G. (2010). Handbook of Partial Least Squares, in: Handbook of Partial Least Squares),

pp. 713-735.
Huigang Liang, Saraf, N., Qing Hu and Yajiong Xue. (2007). Assimilation of Enterprise Systems: The Effect of Institutional Pressures and the Mediating Role of Top Management. *MIS Quarterly*, 31 (1), 59-87.
Iacovou, C.L., Thompson, R.L. and Smith, H.J. (2009). Selective Status Reporting in Information Systems Projects: A Dyadic-Level Investigation. MIS Quarterly, 33 (4), 785-A5.
Igbaria, M., Parasuraman, S. and Badawy, M.K. (1994). Work Experiences, Job Involvement, and Quality of Work Life Among Information Systems Personnel. *MIS Quarterly*, 18 (2), 175-201.
J. Ward, P. Taylor and P. Bon. (1996). Evaluation and Realisation of IS/IT Benefits: An Empirical Study of Current Practice. *European Journal of Information Systems*, 4 , 214-225.
Jarvenpaa, S.L. and Ives, B. (1991). Executive Involvement and Participation in the Management of Information Technology. *MIS Quarterly*, 15 (2), 205-227.
Jarvenpaa, S.L., Knoll, K. and Leidner, D.E. (1998). Is Anybody Out There?: Antecedents of Trust in Global Virtual Teams. *J. Manage. Inf. Syst.*, 14 (4), 29-64.
Jurison, J. (1996). Toward More Effective Management of Information Technology Benefits. The Journal of Strategic Information Systems, 5 (4), 263-274.
Kearns, G.S. and Lederer, A.L. (2004). The Impact of Industry Contextual Factors on IT Focus and the Use of IT for Competitive Advantage. *Information & Management*, 41 (7), 899-919.
Kerlinger, F.N. and Pedhazur, E.J. (1973). Multiple Regression in Behavioral Research. Holt, Rinehart and Winston,
Koskinen, K. (2004). Knowledge Management to Improve Project Communication and Implementation. *Project Management Journal*, 35 (1), 13-19.
Lucas, H.C. (1981). Implementation: The Key to Successful Information Systems. Columbia University Press,
Luftman, J. (2003). Assessing IT/Business Alignment. *Information Systems Management*, 20 (4), 9-15.
Meehl, P.E. (1990). Why Summaries of Research on Psychological Theories Are Often Uninterpretable. *Psychological Reports*, 66 , 195-244.
Moore, G.C. and Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*, 2 (3), 192-222.
Nunnally, J. and Bernstein, I. (1994). Psychometric Theory. 3rd ed. McGraw Hill, New York.
Peppard, J. and Ward, J. (1999). Mind the Gap': Diagnosing the Relationship Between the IT Organisation and the Rest of the Business. *The Journal of Strategic Information Systems*, 8 (1), 29-60.
Peppard, J., Ward, J. and Daniel, E. (2007). Managing the Realization of Business Benefits from IT Investments. *MIS Quarterly Executive*, 6 (1), 1-11.
Peppard, J., Lambert, R. and Edwards, C. (2000). Whose Job Is It Anyway?: Organizational Information Competencies for Value Creation. *Information Systems Journal*, 10 (4), 291-322.
Platje, A. and Seidel, H. (1993). Breakthrough in Multiproject Management: How to Escape the Vicious Circle of Planning and Control. *International Journal of Project Management*, 11 (4), 209-213.
Podsakoff, P.M., MacKenzie, S.B., Jeong-Yeon Lee and Podsakoff, N.P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88 (5), 879.
Podsakoff, P.M. and Organ, D.W. (1986). Self-Reports in Organizational Research: Problems and Prospects. *Journal of Management*, 12 (4), 531.
Rocheleau, B. (2000). Prescriptions for Public-Sector Information Management. *American Review of Public Administration*, 30 (4), 414.
Rogelberg, S.G. and Stanton, J.M. (2007). Introduction Understanding and Dealing With Organizational Survey Nonresponse. *Organizational Research Methods*, 10 (2), 195-209.
Smith, H., Keil, M. and Depledge, G. (2001). Keeping Mum as the Project Goes Under: Towards an Explanatory Model. *Journal of Management Information Systems*, 18 (2), 189-227.
Straub, D., Boudreau, M. and Gefen, D. (2004). Validation Guidelines for IS Positivist Research. *Communications of AIS*, 2004 (13), 380-427.
Straub, D.W. (1989). Validating Instruments in MIS Research. *MIS Quarterly*, 13 (2), 147-169.
Tenenhaus, M., Esposito Vinzi, V., Chatelin, Y. and Lauro, C. (2005). PLS Path Modeling. *Computational Statistics & Data Analysis*, 48 , 159 – 205.
Tushman, M.L. and Katz, R. (1980). External Communication and Project Performance: An Investigation into the Role of Gatekeepers. *Management Science*, 26 (11), 1071-1085.
Ward, J., Taylor, P. and Bond, P. (1996). Evaluation and Realisation of IS/IT Benefits: An Empirical Study of Current Practice. *European Journal of Information Systems*, 4 , 214-225.
Wenger, E., McDermott, R. and Snyder, W.M. (2002). Cultivating Communities of Practice. 1st ed. Harvard Business Press,
Wetzels, M., Odekerken-Schröder, G. and van Oppen, C. (2009). Using PLS Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration. *MIS Quarterly*, 33 (1), 177-195.

Appendix

Appendix A. Interview Questions

1. Please define what you understand under the term „Benefit"?

2. How do you evaluate expected benefits of projects ex post in your organization?

3. Was are in your view critical success factors for a realistic assessment of benefits?

4. Was is in your view the objective of assessing project benefits?

5. To what degree are you satisfied with identification of relevant benefits and their assessment in your organization?

6. What is the basis of a project plan in your organization? On what metrics is project controlling based upon?

7. How does a classical project organization look like in your organization?

8. To what degree do business and IT departments work together during the project lifecycle regarding the realization of benefits?

9. How and in which project phases do you consider benefits realization to take place?

10. To what degree are you satisfied with the level of benefits realization in your organization?

11. Please describe which activities regarding project evaluation are executed after project finish.

12. Wie werden Projekte bzw. ein Projektportfolio nach Abschluss auf zusätzliche, bisher noch nicht entdeckte Nutzenpotenziale untersucht?

13. Please describe the monitoring of benefits during and after the project lifecycle.

14. In your view, how big is the difference between planned and actually realized benefits?

15. To what extent are you satisfied with project evaluation after project finish in your organization?

16. Does a written and documented strategy exist? If yes, please describe the most important goals relevant to your department.

17. Please describe the communications and coordination process between the planners and the executors of the IT strategy

18. How are the strategy objectives operationalized?

19. How do you ensure in your organization that a link between the strategic planning and the operative project management is always maintained?

20. To what extent are you satisfied with the strategic planning and implementation of the objectives anchored in the IT strategy of your organization?

21. Please provide us with a critical evaluation of the potentials and risks of benefits management in your organization.

22. Please outline for us, in your view, the three critical success factors for benefits management.

23. How important is, in your view, organizational culture fort the establishment of benefits management?

Note: The listed questions were supplemented by further question, on the spot, that could be beneficially pursued during the interview, for example, if the interviewees' answers were not satisfactory.

Appendix B: Measures

The following table provides an overview of the measures used in our survey instrument.

Code	Measure	Literature
Business-IT communication (BITC)		
BITC1	Frequent meetings took place between the project sponsor and the project team.	Kearns and Lederer (2004)
BITC2	The project sponsor and the project team had frequent and active discussions.	Kearns and Lederer (2004)
BITC3	The project team had easy access to the project sponsor.	Kearns and Lederer (2004)
BITC4	Overall, I rate the communication between the project team and the project sponsor as very good.	Self-developed
Business Processes Knowledge (BPK)		
BPK1	The project team had a high level of knowledge regarding the single activities carried out within the business process that were affected by the project.	Bassellier and Benbasat (2004)
BPK2	The project team had a high level of knowledge regarding the interfaces to business process indirectly affected by the project.	Bassellier and Benbasat (2004)
BPK3	The project team had a high level of knowledge regarding the language (e.g., key concepts, jargon, etc.) of the project sponsors division.	Bassellier and Benbasat (2004)
BPK4	Overall, the project team had a high level of knowledge regarding the core business processes affected by the project.	Self-developed
Top Management Support (TMS)		
TMS1	Top management knew about the status of the project at any time.	Garrity (1963)
TMS2	Top management was available for important project-related decisions.	Garrity (1963)
TMS3	Top management showed active interest in the project.	Garrity (1963)
TMS4	Top management provided necessary resources to execute the project successfully.	Rocheleau (2000)
TMS5	Overall, I rate the top management support in the project as high.	Self-developed
Benefits Identification (BI)		
BA1	Project stakeholders had transparency about which benefits were to be realized with the project.	Self-developed
BA2	Overall, I rate the ex-ante benefits transparency in the project as high.	Self-developed
Benefits Planning (BP)		
BPC1	Project stakeholders were competent in developing a plan how to achieve benefits.	Self-developed
BPC2	Project stakeholders were competent in planning when to achieve benefits.	Self-developed
BPC3	Project stakeholders were competent in planning resources to achieve benefits.	Self-developed
BPC4	Overall, I rate the benefits planning competency in project	Self-developed

	as high.	
BPC5	Project stakeholders knew how they contribute to realizing planed benefits.	Self-developed
BPC6	Project stakeholders knew when planed benefits would be realized.	Self-developed
BPC7	Project stakeholders knew which resources were needed to achieve benefits.	Self-developed
BPC8	Overall, I rate transparency of benefits planning in project as high.	Self-developed
Benefits Review (BR)		
BR1	Project stakeholders were competent in measuring benefits after project completion.	Self-developed
BR2	Project stakeholders were competent in determining measures to be undertaken in regard to unachieved benefits.	Self-developed
BR3	Overall, I rate competency of Benefits-controlling in project as high.	Self-developed
BR4	Project stakeholders knew which benefits were to be realized with the project.	Self-developed
BR5	Project stakeholders knew that benefit were measured throughout the project lifecycle.	Self-developed
BR6	Overall, I rate the ex-ante benefits realization transparency in the project as high.	Self-developed
Benefits Realization Success (BRS)		
BRS1	Project benefits were realized according to the plan (including changes to the plan).	Self-developed
BRS2	Project stakeholders were satisfied with the benefits realization success.	Self-developed
BRS3	The intended changes within the organization could be realized successfully.	Self-developed
BRS4	Overall, I rate the benefits realization of the project as high.	Self-developed
Incentive Management (IM)		
IM1	The incentive management system provides rewards based upon the achievement of benefits.	Self-developed
IM2	Incentives were granted based on benefits achieved with the project.	Self-developed
IM3	Project stakeholders knew about the incentives provided for achieving target benefits.	Self-developed
IM4	The incentive management system includes staff performance reviews in which benefits achievement were considered.	Self-developed
IM5	Overall, I rate the integration of incentive management and BM for the project as high.	Self-developed
Benefits Implementation (BIM)		
Project Stakeholders showed competence in…		
BIM1	… managing the activities to realize benefits.	Self-developed
BIM2	… implementing benefits realization reporting.	Self-developed

BIM3	… systematically executing the benefits realization plan.	Self-developed
BIM4	… applying a suitable methodology for benefits realization (processes, roles, reports, escalation routines, …)	Self-developed
Benefits Measurement (BME)		
BME1	Project stakeholders were competent in defining indicators to measure benefits.	Self-developed
BME2	Project stakeholders were competent in selecting data necessary to measure benefits.	Self-developed
BME3	Project stakeholders were competent in using software for measuring benefits.	Self-developed
BME4	Overall, I rate competency to measure benefits in the project as high.	Self-developed
BME5	Project stakeholders had transparency about how benefit were to be measured.	Self-developed

Table 4: Measures used for the BRS model

Appendix C: Construct Validity

	BI	**BIM**	**BITC**	**BME**	**BP**	**BPK**	**BR**	**BRS**	**IIMS**	**TMS**
BI1	0.93	0.53	0.41	0.54	0.67	0.42	0.45	0.55	0.11	0.35
BI2	0.92	0.57	0.35	0.68	0.64	0.37	0.55	0.53	0.20	0.34
BIM1	0.59	0.90	0.38	0.56	0.71	0.40	0.62	0.66	0.16	0.37
BIM2	0.52	0.90	0.33	0.65	0.62	0.37	0.63	0.55	0.23	0.34
BIM3	0.55	0.93	0.34	0.58	0.67	0.34	0.63	0.62	0.18	0.33
BIM4	0.50	0.92	0.36	0.61	0.66	0.35	0.64	0.58	0.20	0.34
BITC1	0.27	0.28	0.81	0.27	0.29	0.36	0.22	0.24	0.09	0.39
BITC2	0.35	0.37	0.90	0.34	0.37	0.39	0.29	0.36	0.11	0.41
BITC3	0.38	0.32	0.83	0.32	0.36	0.34	0.30	0.41	0.16	0.42
BITC4	0.41	0.36	0.92	0.38	0.42	0.41	0.30	0.42	0.12	0.46
BME1	0.57	0.60	0.36	0.92	0.56	0.42	0.58	0.49	0.17	0.38
BME2	0.56	0.61	0.34	0.93	0.55	0.36	0.58	0.47	0.19	0.33
BME3	0.43	0.50	0.29	0.81	0.46	0.26	0.49	0.38	0.16	0.24
BME4	0.58	0.61	0.34	0.95	0.57	0.36	0.62	0.49	0.21	0.33
BME5	0.75	0.57	0.35	0.83	0.60	0.37	0.61	0.47	0.24	0.32
BP1	0.64	0.64	0.37	0.54	0.87	0.42	0.51	0.54	0.20	0.32
BP2	0.60	0.62	0.39	0.52	0.86	0.41	0.48	0.55	0.18	0.39
BP3	0.54	0.63	0.35	0.50	0.85	0.37	0.47	0.56	0.15	0.33
BP4	0.66	0.71	0.41	0.60	0.92	0.42	0.56	0.62	0.21	0.40
BP5	0.67	0.64	0.34	0.57	0.86	0.34	0.53	0.53	0.17	0.30
BP6	0.59	0.56	0.34	0.49	0.84	0.34	0.50	0.53	0.16	0.30
BP7	0.58	0.63	0.36	0.51	0.88	0.32	0.54	0.54	0.17	0.26

BP8	0.67	0.68	0.39	0.58	0.92	0.37	0.58	0.58	0.22	0.33
BPK1	0.33	0.34	0.37	0.33	0.36	0.87	0.27	0.36	0.09	0.34
BPK2	0.36	0.35	0.39	0.38	0.40	0.88	0.31	0.36	0.07	0.36
BPK3	0.42	0.37	0.36	0.33	0.38	0.82	0.24	0.30	-0.01	0.35
BPK4	0.39	0.34	0.39	0.35	0.36	0.91	0.28	0.33	0.08	0.42
BR1	0.47	0.64	0.28	0.63	0.50	0.27	0.90	0.58	0.24	0.29
BR2	0.42	0.58	0.32	0.51	0.47	0.27	0.87	0.55	0.25	0.35
BR3	0.49	0.65	0.34	0.62	0.53	0.30	0.94	0.59	0.28	0.32
BR4	0.54	0.61	0.27	0.55	0.60	0.31	0.91	0.60	0.24	0.29
BR5	0.47	0.62	0.25	0.62	0.55	0.28	0.89	0.50	0.29	0.28
BR6	0.53	0.65	0.30	0.61	0.60	0.30	0.93	0.56	0.27	0.32
BRS1	0.55	0.60	0.37	0.46	0.58	0.35	0.56	0.90	0.11	0.31
BRS2	0.54	0.61	0.37	0.45	0.59	0.36	0.57	0.93	0.16	0.32
BRS3	0.46	0.57	0.40	0.48	0.53	0.36	0.52	0.87	0.18	0.33
BRS4	0.58	0.65	0.41	0.52	0.62	0.35	0.62	0.96	0.19	0.33
IIMS1	0.14	0.20	0.12	0.19	0.20	0.04	0.25	0.15	0.88	0.13
IIMS2	0.14	0.18	0.15	0.19	0.19	0.06	0.29	0.15	0.91	0.15
IIMS3	0.15	0.13	0.12	0.16	0.14	0.02	0.21	0.11	0.83	0.11
IIMS4	0.15	0.20	0.11	0.21	0.18	0.08	0.26	0.16	0.92	0.15
IIMS5	0.14	0.19	0.12	0.21	0.19	0.05	0.24	0.17	0.89	0.14
TMS1	0.30	0.33	0.40	0.32	0.29	0.38	0.27	0.27	0.12	0.79
TMS2	0.30	0.32	0.43	0.31	0.32	0.34	0.28	0.31	0.16	0.86
TMS3	0.30	0.30	0.43	0.29	0.28	0.30	0.28	0.23	0.14	0.86
TMS4	0.33	0.32	0.38	0.28	0.35	0.37	0.27	0.33	0.11	0.81
TMS5	0.35	0.34	0.45	0.34	0.36	0.39	0.33	0.35	0.16	0.94

Table 5: Cross-loadings

Construct†	M (S.D.)	CA	CR	BI	BIM	BITC	BME	BP	BPK	BR	BRS	IM	TMS
BI (2)	5.11(1.41)	.83	.92	**.93**	0	0	0	0	0	0	0	0	0
BIM (4)	4.41(1.51)	.93	.95	.59	**.91**	0	0	0	0	0	0	0	0
BITC (4)	5.47(1.32)	.89	.92	.41	.39	**.86**	0	0	0	0	0	0	0
BME (5)	4.31(1.56)	.93	.95	.66	.65	.38	**.89**	0	0	0	0	0	0
BP (8)	4.73(1.39)	.96	.96	.71	.73	.42	.62	**.87**	0	0	0	0	0
BPK (4)	5.32(1.15)	.89	.93	.43	.40	.43	.40	.43	**.87**	0	0	0	0
BR (6)	4.07(1.69)	.96	.97	.54	.69	.32	.65	.60	.32	**.91**	0	0	0
BRS (4)	4.81(1.54)	.94	.95	.59	.66	.42	.52	.64	.39	.62	**.92**	0	0
IM (5)	2.14(1.61)	.93	.95	.16	.21	.14	.22	.21	.07	.29	.17	**.89**	0
TMS (5)	4.98(1.43)	.91	.93	.38	.38	.49	.36	.38	.42	.34	.35	.16	**.85**

† *The number in parentheses indicates the items in the scale.*

Table 6. Mean (M), Std. Deviation (S.D.), CA, CR, and Intercorrelations of the Latent Variables

Appendix D: Common Method Bias

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17,086	37,143	37,143	17,086	37,143	37,143
2	4,030	8,760	45,904	4,030	8,760	45,904
3	3,518	7,647	53,551	3,518	7,647	53,551
4	2,823	6,137	59,688	2,823	6,137	59,688
5	1,982	4,309	63,997	1,982	4,309	63,997
6	1,873	4,071	68,068	1,873	4,071	68,068
7	1,742	3,787	71,855	1,742	3,787	71,855
8	1,559	3,390	75,245	1,559	3,390	75,245
9	1,282	2,788	78,032	1,282	2,788	78,032
10	,803	1,746	79,779			
11	,719	1,564	81,343			
12	,634	1,379	82,721			
13	,579	1,259	83,981			
14	,528	1,147	85,128			
15	,486	1,056	86,184			
16	,420	,913	87,097			
17	,386	,840	87,937			
18	,369	,802	88,739			

Table 7. Harman's one-factor test: Principle Component Analysis