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INFLUENCE OF COMMUNICATION ON CLIENT SATISFACTION IN INFORMATION SYSTEM PROJECTS – AN EXPECTATION-CONFIRMATION APPROACH

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Abstract

The problem of adequately measuring success of information system (IS) projects has not been sufficiently solved. Whereas the traditional approach of assessing IS project success in terms of adherence to budget, schedule and requirements is said to be insufficient, there is lack of agreement on a multidimensional approach using further or different criteria. As success is seen as matter of perspective, project stakeholders' subjective perceptions of project success are supposed to be important criteria. Thereby, especially the satisfaction of the client organisation is relevant as it is crucial for the contractor's reputation and assignments of follow-up projects. However, IS developing companies and success reports predominantly assess IS project success using only the objective adherence-to-planning criteria. We believe that client satisfaction in IS projects highly depends on the confirmation of client's expectations concerning project (process and product) performance. We thus apply the Expectation-Confirmation Theory (ECT) to the context of IS projects aiming to explain the satisfaction of the client organisation. As managing expectations may influence satisfaction, we extend the ECT by client-vendor communication. We assume that client-vendor communication manages expectations, that is, it moderates the relationship between expectation and confirmation. We present and argue for our hypothesized model and according measures for a quantitative analysis. As our study is one of few focussing on the client perspective, we propose an innovative approach to further improve the understanding of IS project success.

Keywords: information systems, project success, expectation-confirmation theory, client satisfaction, client-vendor communication, moderating effect.

1 INTRODUCTION

Scholars often use information system (IS) project success in studies reporting on success rates (e.g. The Standish Group International, 2009) or as dependent variable in causal models (e.g. Sharma and Yetton, 2007). In both research and practice, a valid and reliable measurement of IS project success is essential to avoid misleading implications.

Although research concerning (IS) project success continues for decades (Cuellar, 2010; Procaccino et al., 2005; Wateridge, 1998; Baker et al., 1988), no common understanding of IS project success exists so far (cf. the diverging approaches in Barclay and Osei-Bryson, 2009; Agarwal and Rathod, 2006; Nelson, 2005; Yetton et al., 2000). Although traditionally used to measure the performance of an IS project, adherence to planning is opposed by projects considered successful despite not meeting plans and projects perceived as failures despite meeting the traditional criteria (Ika, 2009; Baker et al., 1988; Pinto and Slevin, 1988). Nelson (2005) denotes such projects as *successful failures* or *failed successes*, respectively.

Considering success to be a matter of perception is in accordance with Myers' (1995) hermeneutical view. Project success may be assessed in terms of adherence to planning or stakeholders' subjective perceptions (Nelson, 2005). To differentiate between these two types of success, we now denote the former as project performance and the latter as stakeholder satisfaction. As such, subjective perceptions of project success are supposed to be influenced by performance-unrelated factors. We assume this is the reason why subjective perceptions of project success (stakeholder satisfaction) often differ from its objective assessments in terms of adherence to planning (project performance). This finding may especially apply to IS projects. Such projects are usually contracted to a vendor by a client and differ from projects in other disciplines like construction in that the project's outcome – the developed IS – is not fully visible until project completion (Sommerville, 2011).

In this context, the Expectation-Confirmation Theory (ECT) is an adequate means for a theoretical explanation of satisfaction (cf. Bhattacherjee, 2001 and section 2.2). According to the ECT, satisfaction depends on confirmation (or disconfirmation in case of dissatisfaction) of expectations towards the outcome compared to the actual outcome as perceived subjectively. In IS projects, this corresponds to the client's satisfaction with the overall project, depending on the degree to which initial expectations are confirmed by final subjective perceptions.

Understanding and managing expectations is supposed to be an important management objective (Parasuraman et al., 1991; Mintzberg, 1971). As we assume (according to the ECT) client satisfaction to depend on the confirmation of expectations, the vendor should manage client expectations by keeping the client well informed about a project's state at any time during the project. We thus consider client-vendor communication to be a performance-unrelated factor influencing client satisfaction in IS projects. For instance, if the vendor communicates and justifies reasons for deviations from a project's plan in an open and comprehensible way, the client might be satisfied with the overall project despite budget and schedule overruns.

For an integrated perspective of the ECT and client-vendor communication in the context of IS projects, we consider communication research in general. As previous research reveals (Garnett et al., 2008; Pettit et al., 1997), communication is supposed to moderate the relation between a performance (in our case, performance expectations) and satisfaction related to that performance (in our case, the confirmation of expectation as satisfaction's foundation). For our context, we therefore extend the ECT by analysing the moderating effect of client-vendor communication on the relation between expectation and confirmation. Accordingly, we state our research questions (RQs) as follows:

(RQ1): To which extent does the Expectation-Confirmation Theory explain client satisfaction in IS projects?

(RQ2): To which extent does client-vendor communication moderate the relation between client expectations and confirmation of these expectations in IS projects?

To answer our research questions, we aim to distribute a questionnaire to gather data about IS projects from the client perspective. By taking the projects' temporal development into account, we compare initial performance expectations and final performance perceptions. We use structural equation modelling to test our hypothesized model based on the questionnaire data. With our study, we aim to shed light on the relation between project performance, client-vendor communication and stakeholder satisfaction. Thereby, new insights into designing the collaboration with the client may evolve for the contractor. The results may as well help researchers to better understand the surroundings of IS project success and its perception.

The remainder of this paper is organised as follows. In section 2, we describe previous findings concerning the success of IS projects, the ECT and the role of communication as moderator to manage expectations. We present our research design in section 3 and conclude with a short summary and by discussing our study's expected contributions in section 4.

2 THEORETICAL BACKGROUND

2.1 Information System Project Success

Scholars have controversially discussed the definition and measurement of IS project success for years. Varying approaches demonstrate that there is no consensus concerning the definition and understanding of IS project success (e.g. Cuellar, 2010; Barclay and Osei-Bryson, 2009; Agarwal and Rathod, 2006; Yetton et al., 2000; Wateridge, 1998). Researchers explicitly emphasize the difficulty of agreeing on a success definition as projects on the one hand often satisfy one criterion but fail to meet others and on the other hand are often initiated without a clearly defined set of success criteria in the first place (Thomas and Fernández, 2008; Remenyi and Sherwood-Smith, 1999).

The traditional approach for measuring IS project success is to use adherence to schedule, adherence to budget and conformance with requirements and/or quality (Ika, 2009; Judgev and Müller, 2005; Pinto, 2004; Wateridge, 1998; Pinto and Slevin, 1988). Nevertheless, many scholars judge this adherence-to-planning approach as inappropriate (Agarwal and Rathod, 2006; Baker et al., 1988) or at least insufficient (Judgev and Müller, 2005; Pinto, 2004; Shenhar et al., 2001; Dvir et al., 1998; Shenhar et al., 1997). Accordingly, this measurement approach leads to an inadequate evaluation of (IS) project success (Shenhar et al., 2001; Dvir et al., 1998). However, considering IS project success reports (e.g. The Standish Group International, 2009) and organisational approaches (Joosten et al., 2011), adherence to planning is in many cases the sole or main criterion used. Reasons for using these simplified measurement methods and rules of thumb are assumed to be the lack of a clear definition of project success and the easy measurability of adherence to planning (Pinto and Slevin, 1988).

In literature, much anecdotal empirical evidence exists for projects failing to meet the traditional criteria and nevertheless being considered successful, or, satisfying the traditional criteria but being perceived as failures (Ika, 2009; Baker et al., 1988; Pinto and Slevin, 1988). Nelson (2005) denotes such projects as *successful failures* or *failed successes*, respectively. In this context, many researchers emphasize that (IS) project success is a matter of perspective (e.g. Judgev and Müller, 2005; Shenhar et al., 1997). Nelson (2005) equals success to stakeholder satisfaction. As client satisfaction is crucial for contractor's reputation and decisions about follow-up projects, we believe the client's satisfaction to be the uppermost criterion. It can only be met if the client perceives the course of a project to be frictionless, that is, without unsolved problems. We therefore distinguish between project performance measured in terms of adherence to planning, and satisfaction of the client organisation measured in terms of client's subjective performance perceptions.

2.2 Expectation-Confirmation Theory

The ECT has been widely applied in marketing research to study amongst others consumer satisfaction and post-purchase behaviour (Hossain and Quaddus, 2011; Bhattacherjee, 2001). The ECT has also been used in a variety of studies in IS research over the past decade (Hossain and Quaddus, 2011), based on the initial model of expectation confirmation by Bhattacherjee (2001). Since then, this

theoretical model has been primarily used to explain IS users' satisfaction and continuance intentions. Moreover, there are examples of ECT's application to managing user expectations (Petter, 2008) and analysing personnel skill discrepancies (Tesch et al., 2003) in IS projects. We believe that the ECT can also be applied to explain other IS project issues. In the context of IS projects, client satisfaction is supposed to be an important success criterion (Wateridge, 1998) due to its relevancy for decisions about follow-up contracts and the vendor's reputation. We thus use the ECT to analyse the extent to which the confirmation of a client's initial performance expectations by perceived performance explains the client's satisfaction (cf. the solid parts of Figure 1). Thereby, the client's initial performance expectations depend on the project's level of uncertainty and anticipated problems. For instance, the client might expect budget or schedule overruns in high-risk or particularly complex projects. After project completion, the client's ultimate perception of the actual project performance confirms (that is the perceived performance meets or exceeds the expected one) or disconfirms (that is the perceived performance is lower compared to the expected one) the initial expectations. Accordingly, high expectations are supposed to be associated with disconfirmation and vice versa (cf. for the negative influence in Figure 1 and e.g. Bhattacherjee, 2001).

2.3 Client-Vendor Communication as Moderator

Communication is an important means to understand and manage expectation (Parasuraman et al., 1991; Mintzberg, 1971). In the organisational context, the role of communication has been topic of analysis concerning the relationship between job performance and satisfaction (Pettit et al., 1997). In the context of IS projects (contracted by the client to a vendor), the vendor should manage client expectation by keeping the client well informed about a project's state at any time during the project. In general, intensive and explicit communication is supposed to contribute to better information exchange between two parties and fewer misunderstandings (Walton and McKersie, 1965). For instance, if the vendor communicates and justifies reasons for deviations from a project's plan in an open and comprehensible way, the client might be satisfied with the overall project despite budget and schedule overruns. Based on these considerations, we extend the ECT in the context of IS projects by using client-vendor communication as moderator of the relation between performance expectations and confirmation of these expectations (cf. the dashed part in Figure 1).
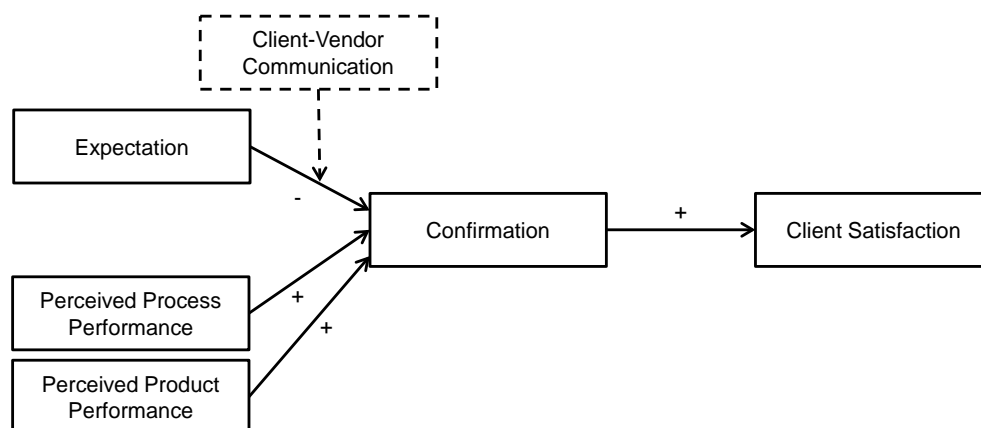

Figure 1.   *Structural Model of the Expectation-Confirmation Theory and the Moderating Effect of Client-Vendor Communication in IS Projects.*

3   STUDY DESIGN

3.1   Data Collection and Analysis

We aim to collect data via questionnaire from the client's perspective about contracted IS development projects, more specifically projects in which business information systems are developed. Thereby, we exclusively refer to client representatives who are in charge of the contracted IS project. Thus, we

ensure that (1) the collected data represents first-hand data about the client satisfaction and (2) the respondents are well informed about the project's planning indices. We intend to contact randomly selected companies to avoid a pre-selection bias, and to collect data about selected project characteristics to be able to distinguish between different project types (e.g. fixed-price vs. time-and-material contracts). We do not exclude any industries to achieve a high response rate.

For data analysis and testing of our hypothesized model, we will apply covariance-based structural equation modelling. In case of theoretically substantiated models like ours, the covariance approach is especially adequate (Bentler and Bonnet, 1980).

3.2 Measures

To design a questionnaire for our hypothesized model (cf. Figure 1), we rely on well-proven measures. Table 1 provides an overview of the selected items and their origin. All items will be measured on 7-point Likert scales.

Construct	Item	Measurement Item	References
Expectation	E1	I expected the IS project to be successfully conducted.	Newly developed based on Brown et al., 2008
	E2	I expected the IS project to be completed without problems.	
	E3	I expected the IS project's uncertainty to impact project performance.	
Perceived Process Performance	PC1	The system was completed within budget.	Wallace et al., 2004
	PC2	The system was completed within schedule.	
Perceived Product Performance	PD1	The users perceive that the system meets intended functional requirements.	Wallace et al., 2004
	PD2	The overall quality of the developed application is high.	
	PD3	The application developed is reliable.	
	PD4	The system meets user expectations with respect to response time.	
	PD5	The application is easy to maintain.	
Confirmation	C1	My experience with the IS project was better than what I expected.	Bhattacherjee, 2001
	C2	The benefit provided by the IS project was better than what I expected.	
	C3	Overall, my expectations concerning the IS project were confirmed.	
Client-Vendor Communication		During the IS project, the manner and methods of communication between us and our vendor were…	Lee and Kim, 1999
	CV1	Timely. . . Untimely	
	CV2	Accurate. . .Inaccurate	
	CV3	Complete. . .Incomplete	
	CV4	Credible. . .Incredible	
Client Satisfaction		Regarding my overall experience with the IS project, I feel…	Bhattacherjee, 2001
	S1	Very dissatisfied . . . Very satisfied	
	S2	Very displeased . . . Very pleased	
	S3	Very frustrated . . . Very contented	
	S4	Absolutely terrible . . . Absolutely delighted	

Table 1.   Constructs and corresponding items.

Based on the review by Hossain and Quaddus (2011), we analysed previous ECT studies to identify items for expectation, confirmation and satisfaction. As we did not identify measures for expectation in the context of project performance, we transferred items from Brown et al. (2008) to our context. To measure perceived performance, we chose items typically used for IS project (process and product) performance (Wallace et al., 2004). For client-vendor communication, we adopted items that have been previously developed in a study measuring the communication quality between partners in outsourcing projects (Lee and Kim, 1999).

4 SUMMARY AND EXPECTED CONTRIBUTIONS

In this paper, we present a new approach to analyse the coherence between the performance in IS projects and the satisfaction of the client contracting the project. By applying the ECT and its extension in terms of the moderating effect of client-vendor communication, we aim to investigate whether client satisfaction in contracted IS projects can be managed by a sufficiently high communication quality. Whereas a vast majority of previous IS studies applying the ECT focus on IS continuance intentions (Hossain and Quaddus, 2011), our work is along few studies using this approach in the context of IS projects and the first to analyse IS project success relations. Although neglecting other potential success criteria like the system's economic success or developer satisfaction, our study is one of few explicitly considering the client perspective.

Considering research, we hope to gain innovative insights into the measurement of IS project success. So far, most success studies like the Chaos Report (The Standish Group International, 2009) base their success assessments solely on the degree of meeting budget and time targets as well as requirements. If we are able to show that other aspects are crucial for client satisfaction, the alarming rates of 68 % of unsuccessful projects need to be carefully scrutinized. Moreover, studies analysing IS projects' critical success factors should thus use different measures for project success as dependent variable.

Regarding the practitioners' perspective, the results may impact the work of project managers on behalf of the vendor as well as persons in charge on behalf of the client. In case of a significant moderating effect of client-vendor communication, project managers should put more emphasis on managing expectations. The client might accept deviations from the project plan as long as reasons for these deviations are justified and comprehensible. Contrarily, the client should encourage the vendor to provide transparent information all throughout the development process.

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