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Examining the Value of Collaboration Systems in Collocated Teams: A Longitudinal Analysis

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ABSTRACT

This study examines user perceptions regarding the value of collaboration systems from a longitudinal perspective. Resource management support, coordination support, and evaluation support are highlighted as key aspects based on which the users form cognitions about collaboration system value. Based on technology acceptance model and expectation disconfirmation theory, we propose a model that examines the evolution of user cognitions from pre-usage to post-adoption stage. The results show that the basis on which users form their cognitions about collaboration systems change over time. At the pre-usage stage, coordination support was found to be the most important determinant of value. At the post- adoption stage, evaluation support assumed more importance. Further, at the post-adoption stage the impact of confirmation on usefulness perceptions is partially mediated by user perceptions regarding evaluation support, providing interesting insights on the cognition revision process. The study offers implications for research and practice.

Keywords: collaboration systems value, expectation disconfirmation theory, IS usefulness, longitudinal design

INTRODUCTION

Prior research has examined the role of IS (information systems) in virtual teams with specific emphasis on lack of face-to-face interaction among group members. Such an environment offers unique issues such as culture diversity, sense making, cumulative knowledge development, and effective communication, some of which have been addressed by prior studies (Dennis et al., 2001; Riemer and Frobler, 2008; Riemer and Vehring, 2008). Less emphasis has been placed on contexts in which team members are co-located, but use collaboration systems to manage projects. Team members have the opportunity to meet on a frequent basis and conduct meeting in the physical space. Thus, it is unclear what value the team members derive from the collaboration system and how the basis of value evolves over time as users move from project initiation to project completion.

The key objective of this study is to assess end user perceptions regarding the value of collaboration systems from a longitudinal perspective. In achieving this objective, we first elaborate on how users evaluate the value of a collaboration system. Collaboration system features support various tasks that users perform to effectively manage the project. Then, we evaluate the shift in user's perceptions from pre-usage (T1) to post-adoption stage (T2) in order to understand the user's cognition revision process related to collaboration system value. Overall, the results of the study will offer theoretical and practical insights on collaboration system value, which will help in developing better systems and promoting usage of such systems.

LITERATURE REVIEW

Prior literature on virtual teams highlights two types of structures. The first category involves individuals within an organization that work as a team to achieve a common goal (i.e. complete short term project). Second category involves individuals within or across organizations that are geographical dispersed and communicate through electronic channels on an on-going basis to collaborate on short term and/ or long term projects. Our focus in this study is on the first category. We are interested in examining the value that collaboration systems offer to users working together as a co-located team on a short term project. The literature review is structured around two important themes. First, we review literature on collaboration systems in order to gain a better understanding of its key features. Second, we review theoretical perspectives that provide guidance on assessing user beliefs about IS in general and collaboration systems in particular from a longitudinal perspective.

What role do collaboration systems play in team projects and what features / tools users evaluate to form an overall opinion about its value? Prior research provides guidance on the structural features of group support systems (GSS). Dennis et al. (2001) based on extensive review of literature propose three structural features of GSS. Communication support includes features that facilitate communication across team members. Information processing support includes tools that support

aggregation and manipulation of information related to the group task. Finally, process structure subsumes features that help in managing the project / task through task allocation, adherence to prescribed roles, and monitoring of performance. Interestingly, these three features align well with the tasks that group members perform while working on a project.

Project related activities include project planning, developing project schedule, sharing project related material, resolving issues, and ascertaining that the project is on track (Qureshi et al. 2006). Collaboration systems are structured to support such activities by offering various features such as shared storage spaces, group email, discussion boards, video conferencing, wikis, and instant messaging. Riemer and Vehring (2008) categorize types of communications observed across group members into information sharing, coordination, collaboration, conflict resolution, and social communication by using genre approach. They highlight features that collaboration system offers and link them to specific observed communication patterns identified through inductive analysis. Research based on task technology fit proposes that the richness of the communication channel has to align with the nature of the task (Reza et al. 2006). It can be argued that the fit is reflected in the user's perception regarding the value that collaboration system features offer in supporting project related tasks.

We build on this work and propose that alignment between project activities and collaboration system features can provide insights on how users value such systems. Collaboration system features help in managing project related resources such as documents and files and support communication regarding project related activities (Malhotra et al. 2001). Contemporary collaboration systems offer shared virtual spaces to share documents and files. The features within this category fall under the information processing support concept highlighted by Dennis et al. (2001). Further, coordination of tasks and managing issues requires tools that foster effective communication. Group email, project calendar, instant messaging, and group discussion boards are tools that can support coordination needs (Qureshi et al. 2006). Features related to communication support presented by Dennis et al. (2001) fall under this category. Finally, collaboration system provides features that assist in evaluating the status of the project and assessing performance. Collaboration system may provide specific evaluation tools for this purpose, but using features such as email, shared storage, and discussion boards can implicitly inform the group members regarding the extent of engagement of a team member in the project (Malhotra et al., 2001). Thus in general, collaboration system offers support in evaluating the progress of the project and assessing if team members are performing their roles adequately.

Overall, the synthesis of prior literature highlights three aspects of collaboration systems. We call these features / tools resource management support, coordination support, and evaluation support. Resource management support is defined as the extent to which collaboration systems support management and sharing of project related documents and files. Coordination support is defined as the extent to which a collaboration system supports communication among the group members. Evaluation support is defined as the extent to which the collaboration system supports project monitoring and evaluation. We believe that these three structural features provide comprehensive coverage of what collaboration systems have to offer and thus constitute the basis on which the users will evaluate their value. These structural features are grounded in both prior literature on the group support systems and contemporary collaboration tools being offered by software firms.

The second critical issue is the assessment of how user perceptions about collaboration system value evolve over time as they gain usage experience. Prior longitudinal studies on information systems (IS) acceptance have relied on the technology acceptance model (TAM) and expectation disconfirmation theory (EDT) in order to understand the change in user perceptions. Further, literature on post-adoption usage of information systems also offers interesting insights. All three approaches highlight cognition revision process as the core theme and propose that a better understanding of how user cognitions evolve from pre-usage to post-adoption stage is critical. TAM related studies show that the influence of perceived usefulness on intention to use persists in the post adoption stage. So regardless of whether the user is at the pre-usage stage or has usage experience, IS usefulness cognitions induce IS usage continuance. Expectation disconfirmation theory delves deeper into the cognition revision process and proposes confirmation / disconfirmation as an intermediate process between pre-usage and post adoption perceptions regarding IS. Bhattacharjee and Premkumar (2004) based on EDT propose that pre-usage cognitions are based on second hand information which may induce unrealistic expectation from the IS. After the users gain firsthand experience, their post-adoption cognitions and behavior are revised to achieve better alignment between initial expectations and cognitions after actual use experience. Thus, EDT offers factors and processes that explain the temporal changes in user cognitions. Prior research shows confirmation / disconfirmation and satisfaction as two factors that explain the change in user beliefs over time (Bhattacharjee and Premkumar, 2004).

Research in the domain of post-adoption IS usage presents usage experience as a central theme in comprehending post-adoption cognitions. Assessment of the change in user cognitions has been mainly done at the aggregate level. For example, experience based assessment of the IS, may result in reconfiguration of perceptions about collaboration system value (usefulness). However, work outcomes are closely tied to the features of the IS (Jasperson et al. 2005). Thus, it would be interesting to delve into user perceptions about IS features in assessing the cognition revision process. Usage experience provides the users with the opportunity to evaluate collaboration system features, opening up the door for revision in initial cognitions at the feature level. However, limited research exists on examining this issue.

The review highlights two interesting issues. First, special attention needs to be given to user perceptions regarding IS features that support project related work. This approach offers a more granular assessment of IS features that influence the overall IS usefulness perceptions. Second, prior studies that use longitudinal design to evaluate the cognition revision process do not explicitly examine the role of user perceptions at the feature level. Do such perceptions help in providing a better assessment of the temporal change in user cognitions? Next, we formulate these issues into a research model.

RESEARCH MODEL

The research model builds on TAM and EDT (figure 1). Longitudinal studies on TAM show that usefulness is an important user cognition that drives intentions and behavior at both pre-usage and post-usage stages (Venkatesh and Davis, 2000). Extensions of TAM also examine concepts that influence usefulness perceptions. Research highlights the concept of identity structure that posits that individuals link specific actions to achievement of higher level goals (Venkatesh and Davis, 2000). This mechanism assists in comprehending the linkage between actions and its outcomes. Identity structure concept provides strong theoretical support for linking user's perception about IS features and IS usage outcomes. The main objective from the user's perspective is to achieve project goals. Collaboration system features (resource management support, coordination support, evaluation support) will be evaluated based on how well they support attainment of project goals (usefulness of collaboration systems). User perceptions are generally situated at the pre-usage stage. However, as the user gains more experience, determinants of the collaboration system value may change.

The process through which the change in usefulness perceptions takes place over time is unclear. EDT provides guidance on the change (Bhattacherjee, 2001). The key factor in understanding the change process is experience with the IS. Experience with using the features of the collaboration system in completing project tasks triggers an evaluation process that consequently results in confirmation or disconfirmation of pre-usage cognitions. Confirmation / disconfirmation then results in reconfiguration of perceptions regarding the value of collaboration systems. The research model introduces two variations to this thesis. First, the research model introduces user perceptions about how well the collaboration system supports project needs as an important aspect both at the pre-adoption and post-adoption stages. Second, it proposes that post-adoption perceptions are derived from pre-adoption perceptions and thus argues for a completely mediated model. The hypotheses are presented next.

The initial hypothesis is based on TAM and the concept of identity structure. Venkatesh and Davis (2000) propose that cognitive instrumental processes play an important role in how the users form their perceptions about IS value. Work motivation theory posits that individuals link actions to achievement of work goals. In the presence of multiple options, individual's actions are driven by the selection of the option that best enables them to achieve their goals. Venkatesh and Davis (2000) propose the concept of job relevance wherein a user evaluates the relevance of information system in supporting the task at hand. The team members need to perform various activities in order to effectively manage and complete the project. Thus, usage of IS features can be linked to attainment of overall project goals. Dennis et al. (2001) through synthesis of literature propose information, communication, and process support. These are relevant system features because they align with the different tasks that team members perform for effective management of the project. Users implicitly evaluate the compatibility between system features and their needs for effective completion of the project. User perceptions regarding value of the collaboration system will be enhanced, if the initial assessment shows that the collaboration system features enable the team members to achieve project goals. Thus, we argue that user perceptions regarding resource management support, coordination support, and evaluation support will influence the user' pre-adoption usefulness perceptions related to the collaboration system. Overall, this captures the formulation of initial expectation regarding the support offered by the collaboration system and its aggregate value in the context of the project.

H1: User's perceptions regarding resource management support, coordination support, and evaluation support will be positively associated with user's usefulness perceptions (after controlling for use experience with the internet and the collaboration systems)

The actual usage of the collaboration system can confirm the initial expectation or result in disconfirmation. This constitutes the cognition revision process. But how does the process manifest itself? Bhattercharjee and Premkumar (2004) based on EDT show that the influence of pre-usage IS usefulness cognitions on post-adoption IS usefulness cognitions is filtered through the disconfirmation process. It is probable that some features of the collaboration system meet the user's expectations, while other features fall short. However, the aggregate assessment of confirmation / disconfirmation does not provide any insights on this issue. In order to explore this issue further, it is important to examine the revised perceptions regarding the type of support provided by the collaboration system features after accumulation of use experience. Thus, we argue that the link between pre and post adoption usefulness perceptions is mediated through confirmation / disconfirmation and post adoptions user perceptions about resource management support, coordination support, and evaluation support.

The arguments presented earlier provide support for a mediation model. However, prior studies in this area argue for partial mediation based on adaptive level theory (Oliver, 1980). The theory proposes that as individuals are exposed to new

situations, they evaluate them in the context of existing cognitions. Thus, revised cognitions can be evaluated as deviations from initial cognitions (Helson, 1964). At the pre-usage stage, user cognitions are mainly based on secondary information. As users deploy the IS in their work, the initial cognitions are confirmed or disconfirmed. Regardless of the outcome, the cognitions at the post-usage stage are a function of the cognitions at the pre-usage stage which forms the baseline reference point. These arguments provide support for partial mediation of the relationship between beliefs in pre-usage stage and post usage stage. Thus, the research model proposes that usefulness perceptions at the pre-usage stage (T1) will influence perceptions about confirmation, collaboration system support, and usefulness perceptions at the post-adoption stage (T2) directly as well as through confirmation / disconfirmation process. Figure 1 provides a schematic representation of the research model.

H2: Usefulness perceptions at the pre usage stage positively influence user's confirmation perceptions at the post-adoption stage (after controlling for user's prior experience with the internet and the collaboration systems).

H3: The relationship between user's confirmation perceptions and usefulness perceptions at post-adoption stage will be mediated by the user's assessment of how well the collaboration system provides resource management support, coordination support, and evaluation support.

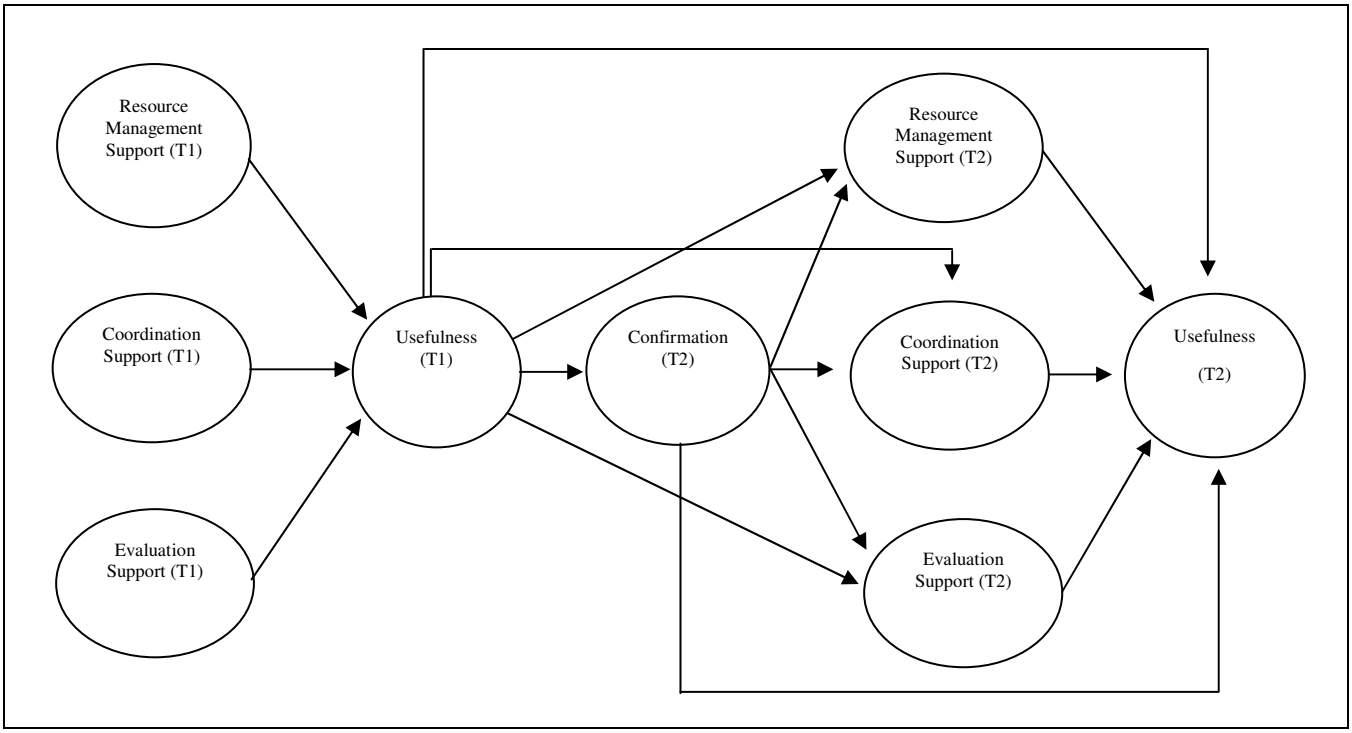

Figure 1. Research Model

RESEARCH METHODOLOGY

The study included student subjects taking an advanced programming class. Data was collected from different students taking the same class and working on the same project. Team formation and participation in the research project was completely voluntary. The group project involved developing an application using MS Visual Studio, Visual Basic.Net, and MSSQL Server for a retail store selling videos and DVDs. Each group was provided with the same description of the project requirements and was given 12 weeks to work on the project. Further, in addition to developing the application, the students were required to document the decisions that they made at each meeting (physical or otherwise), time (hours) that was spent by each group member on working on the application and managing the project, and the key lessons learned over the course of the project. The students were informed that all members of a team will get the same grade. Further, the group project constituted 25% of the overall grade for the class. Thus, the students had sufficient motivation to perform well on the group project. The students had some history of prior interaction with each other. All the students enrolled in the class had taken another programming class in the prior semester.

Before initiation of the project, the instructor provided a tutorial on the collaboration system available on the blackboard system (system to manage courses). The students were informed that the usage was voluntary and the decision regarding not to use the system will not impact their grade on the group project. After the initial demonstration, the students completed the first questionnaire. We refer to this time as T1. The second questionnaire was completed right after the final submission of the group project. Thus, the second questionnaire was administrated after the students had used the collaboration system for 12 weeks. We refer to this time as T2. Out of 65 students taking the classes, responses were collected from 46 students at T1 and T2. 19 students decided not to use the collaboration system. This was indicated in the post-usage questionnaire they completed giving a voluntary adoption rate of 71%. The sample profile shows that on average the respondents have 11.6 years of computer usage experience and 7.7 years of experience in using the Internet. The gender distribution was skewed towards males with 74% males and 26% females. All the students were in their senior year and were majoring in MIS.

Construct Development and Validity

Construct development focused on developing measures for collaboration system support variables. In this regard, a thorough review of literature was conducted to identify the features of collaboration systems that prior studies have examined and develop measurement items (Table 1).

Resource Management Support**
Collaborative tools enabled:
• Organizing project documents and files
• Managing project documents and files
• Distributing project documents and files to group members*
Coordination Support**
Collaborative tools enabled:
• Coordination among group members
• Resolution of conflicts regarding the project
• Management of issues regarding the project
• Conducting group meetings online*
Evaluation Support**
Collaborative tools enabled:
• Tracking the progress of the project
• Emphasizing project milestones
• Tracking whether group members are performing their roles and responsibilities
• Group members to be more involved in the project*
Usefulness**
• Using collaborative tools enabled completion of the project on time
• Using collaborative tools enabled improving quality of the project
• Using collaborative tools enabled effective management of the project
• Overall, using collaborative tools was useful for the project
Confirmation**
• My experience with collaborative tools was better than what I expected
• The benefit provided by collaborative tools was better than what I expected
• Overall, most of my expectations from using collaborative tools were confirmed
Prior Experience**
Please the extent to which you have experience in using the collaborative tools available through the blackboard system. (No Experience – Highly Experienced)
How long have you used the Internet?_____ Years
* Item dropped
** The items were measured based on a 0-10 likert scale

Table 1. Construct Items

We followed a two step process in ascertaining construct validity. The first step involved generating items for each construct and ascertaining the content validity through a review of items by a group of students who had experience in using the

blackboard based collaboration system. The items were revised based on the inputs provided by the students. The second step involved evaluating the dimensionality and convergent validity of the constructs. Measurement items for usefulness and confirmation were adopted from previously studies (Venkatesh and Davis, 2000; Bhattacherjee, 2001). Factor analysis was performed for constructs separately at each time frame (T1 and T2) to evaluate dimensionality and discriminant validity. The results show a three factor solution with high loading of items on respective constructs. The loadings range from 0.72 to 0.98 for the constructs at the pre-usage stage and 0.74 to 0.94 at the post usage stage. Further, the convergent validity was evaluated through cronbach's alpha. Table 2 shows that all constructs have reliabilities higher than the recommended guidelines (Sharma, 1996) confirming convergent validity for the constructs.

Variables	Mean / (S.D)	Alpha	1	2	3	4	5	6	7	8	9
Resource Management Support (T1) (1)	8.45 (1.60)	0.92	1								
Coordination Support (T1) (2)	7.86 (1.85)	0.81	0.37(*)	1							
Evaluation Support (T1) (3)	7.75 (1.69)	0.88	0.36(*)	0.47(**)	1						
Usefulness (T1) (4)	8.10 (1.35)	0.89	0.51(**)	0.61(**)	0.52(**)	1					
Resource Management Support (T2) (5)	8.01 (1.82)	0.92	0.42(**)	0.29	0.45(**)	0.43(**)	1				
Coordination Support (T2) (6)	6.79 (2.20)	0.94	0.35(*)	0.50(**)	0.39(**)	0.66(**)	0.56(**)	1			
Evaluation Support (T2) (7)	6.87 (2.06)	0.89	0.19	0.25	0.51(**)	0.47(**)	0.60(**)	0.69(**)	1		
Usefulness (T2) (8)	7.29 (2.00)	0.92	0.20	0.23	0.33(*)	0.51(**)	0.51(**)	0.66(**)	0.78(**)	1	
Confirmation (T2) (9)	7.37 (1.96)	0.86	0.24	0.23	0.35(*)	0.47(**)	0.51(**)	0.54(**)	0.58(**)	0.65(**)	1
* p-value <=0.05 ** p-value <= 0.01											

Table 2: Mean, Correlations, and Reliability

RESULTS

Table 2 shows the descriptive statistics and correlations among the variables. The results show that user perceptions dropped from T1 to T2 (see Table 3). Prior studies show a similar trend and attribute it to either high expectations at pre-usage stage or worse than expected performance even if the user's per-usage expectations were reasonable (Bhattercharjee and Premkumar, 2004). Regardless of the underlying reason, we observe that user perceptions regarding the collaboration system support are adjusted to the down side from T1 to T2. The relative assessment across variables shows that the most significant drop was in user perceptions related to coordination support followed by evaluation support and usefulness. However, change in resource management support was not statistically significant.

The hypotheses were examined through a series of regression models. H1 was supported (Table 4). The results show that at the pre-usage stage (T1), all three support factors were significant predictors of usefulness. Overall, the model explained 51% of the variance in usefulness. A second regression model was run to test H2. The results show that usefulness perceptions at T1 influence confirmation perceptions at T2 supporting H2 (Table 5). We also examined an alternative model, to formally test for mediation. However, the relationships between collaboration system support facets at T1 and confirmation were not significant indicating full mediation (Baron and Kenny, 1986). Usefulness (T1) explained 25% of the variance in confirmation (T2).

The next set of regression models evaluated H3 and the partial mediation hypothesis (H4) (Table 6 & 7). The results provide support for H3. Usefulness (T1) and confirmation (T2) were found to be significant predictors of user's perception regarding resource management support (R-square = 0.30), coordination support (R-square = 0.50) and evaluation support (R-square = 0.40). Evaluation of the partial mediation hypothesis was partially supported. We found that evaluation support (T2) and confirmation (T2) were significantly related to usefulness (T2), while resource management support (T2), coordination support, and usefulness (T1) were not. Overall, the model explained 68% of the variance in usefulness (T2) perceptions. The mediation model was examined using Baron and Kenny (1986) approach.

Overall, the results provide an interesting perspective on how users evaluate the value of a collaboration system and the revision in cognitions. At the pre-usage stage, users considered all these support factors as critical to collaboration system value. At the post-adoption stage, confirmation and evaluation support were the key drivers of collaboration system value. The relationship between resource management support (T2), coordination support (T2), and usefulness (T2) was found to be non-significant at T2. The relationship between evaluation support and usefulness actually strengthens from T1 to T2. The assessment of the support factors in the context of project life cycle shows that team members need them throughout the project. Thus, project needs at different stages of the project is probably not what is influencing cognition revision. The revision is driven more by the experience that the user has gained by actually utilizing the collaboration system. We elaborate on the results in the discussion section.

Variables	Means	Significance (p-value)
Resource Management Support T1 T2	 8.44 8.01	 0.23
Coordination Support T1 T2	 7.86 6.78	 0.01**
Evaluation Support T1 T2	 7.75 6.87	 0.03*
Usefulness T1 T2	 8.01 7.29	 0.02*
* p-value <=0.05 ** p-value <= 0.01		

Table 3. Comparison of Means across Pre-Usage (T1) and Usage Stage (T2) using T-Tests

Variables	Standardized Beta	Significance (P-Value)
Prior Experience (T1)	-0.08	0.27
Internet Experience (T1)	0.04	0.37
Resource Management Support (T1)	0.30	0.02*
Coordination Support (T1)	0.40	0.00**
Evaluation Support (T1)	0.24	0.04*
* p-value <=0.05 ** p-value <= 0.01; R-Square : 0.51		

Table 4. Regression Analysis (Dependent Variable: Usefulness (T1))

Variables	Standardized Beta	Significance (P-Value)
Prior Experience (T1)	0.18	0.10
Internet Experience (T1)	0.05	0.35
Usefulness (T1)	0.43	0.00*
* p-value <=0.05 ** p-value <= 0.01; R-Square: 0.25		

Table 5. Regression Analysis (Dependent Variable: Confirmation (T2))

Dependent Variable	Independent Variables	Standardized Beta	Significance (P-Value)	R-Square
Resource Management Support (T2)	Confirmation (T2) Usefulness (T1)	0.39 0.25	0.01** 0.05*	0.30
Coordination Support (T2)	Confirmation (T2) Usefulness (T1)	0.29 0.52	0.01** 0.00**	0.50
Evaluation Support (T2)	Confirmation (T2) Usefulness (T1)	0.46 0.21	0.00** 0.03*	0.40
* p-value <=0.05 ** p-value <= 0.01				

Table 6. Regression Analysis (Dependent Variables: Resource Management Support (T2), Coordination Support (T2), and Evaluation Support (T2))

Variables	Standardized Beta	Significance (P-Value)
Usefulness (T1)	-0.02	0.44
Resource Management Support (T2)	-0.03	0.39
Coordination Support (T2)	0.18	0.12
Evaluation Support (T2)	0.52	0.00**
Confirmation (T2)	0.28	0.01*
* p-value <=0.05 ** p-value <= 0.01; R Square: 0.68		

Table 7. Regression Analysis (Dependent Variable: Usefulness (T2))

DISCUSSION AND IMPLICATIONS

It is intriguing to assess the underlying reasons for why the basis of value shifted from pre-usage to post-adoption stage. A deeper understanding of the confirmation process can provide guidance on this issue. It is important to ask if the basis of value is situated or evolves over time. If expectations are met or not met, does the user still considered them to be important in forming perceptions about IS value after accumulating usage experience. Prior studies based on adaptation level theory show that adaptation in beliefs through actual usage experience are a function of initial beliefs. Thus, user's pre-usage cognitions regarding collaborative system usefulness have a direct influence on collaborative system support aspects at T2. The usefulness cognitions at T2 are driven more by the adapted cognitions regarding collaboration system support and confirmation at T2. It is likely that users tend to discount the aspects where expectations have been met. For example, if users expect the collaboration system to perform in a certain way that will benefit them and it performs to their expectations future

assessment of the collaboration system may not take into consideration this element as central to its value. Based on the marginal utility concept the value of an element will tend to diminish over time or through repeated use.

Another, interesting perspective related to visible features and derivative usage. Resource management support and coordination support are both tied with specific features. Thus, user's initial expectations about these aspects were confirmation at the post adoption stage. However, evaluation support constitutes an extension of how the users can utilize the system as the system does not offer specific features for this type of support. Evaluation of performance is a challenging issue in group work. Evaluation criteria are relatively opaque and group members can verbally disclose completion of a milestone. What a collaboration system offers is an approach to induce more objectivity through archiving of emails, discussion board comments, and file sharing. Further, time stamping of any type of interaction among the group members through the collaboration system provides further objective evidence. Since both confirmation and evaluation support influence usefulness (T2), it is possible that confirmation constitutes met expectations, while evaluation support constitutes unique determinant of value after gaining usage experience.

Teamwork is an integral part of how organizations work. The study elaborates on three areas in which users expect the collaboration systems to offer support. However, over time users tend to put more value on evaluation support in assessing collaboration system value. Thus, incorporating features to support evaluation of the project and team members may be a good area to explore in enhancing collaboration system value. In terms of theoretical implications, future studies can built on the results of this study and explore cognition revision process in more detail. Although, there is ample support in literature for expectation confirmation paradigm, the study highlights that it does not adequately address the emergence of new expectations that may result from substantive use experience. Discovery of new uses and features can change the factors based on which users evaluate the value of an IS. This thesis is in line with the wearing out effect, wherein the impact of confirmation or disconfirmation diminishes over time as new basis of value are discovered and embraced. Since, limited research has been conducted to thoroughly investigate the post adoption stage there is much room for future work.

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