

Reciprocal Effect of Team Commitment and Media Richness in eCollaboration: A Conceptual Model

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Abstract

One of the major areas of E-Business applications is the sourcing of expert human resources globally with the help of virtual teams operating in various parts of the world. Major corporations are increasingly using eCollaboration technologies to make the functioning of these teams economical and effective. The tasks performed by these teams can vary from software design and development to providing back office services like call center support, technical support, transcription services etc. Additionally, after 9/11 corporations have embarked on major initiatives to implement eCollaboration technologies at the global level to help reduce travel.

Extensive work has been done to study the decision-making performance of face-to-face and virtual teams. However, previous studies have found conflicting results regarding the impact of media richness on decision-making performances of teams. This paper posits the significant role of media type on the communication richness when team members have low commitment to the collaborative team projects. A conceptual model that depicts the influence of media type on satisfaction, team conflict, social influence, and supportiveness that influences the team commitment has been developed. The influence of team commitment on communication richness is also examined. A controlled lab experiment is designed to test the research model.

1. Introduction

Team or group work is widely practiced in an organization to accomplish various tasks. With the advent of Internet technology organizations are increasingly using, virtual teams, whose members need not be present at the same location or at the same time [3] [19]. Researchers have investigated issues related to the virtual team practices [34] and the factors that influence virtual team performance [20]. One of the key factors contributing to team performance is effective communication [8], which is the focus of this study.

Virtual teams by definition do not have the luxury of a face-to-face meeting, but require the use of communication technology or “new media” as a medium to coordinate the work and share/exchange information among their members [20]. According to media richness

theory [8], “new media” should be used appropriately by matching characteristics related to media richness with a task’s requirements. However, communication effectiveness is affected not only by the match between media and task, but also by other factors, such as willingness and capability of the participants to adapt and use new media [25] [27] and social influence [39].

Using the Hermeneutic Interpretation approach to examine the actual exchange of e-mail messages among a group of managers, Lee [27] found that in addition to other factors, communication effectiveness requires the willingness and capabilities of members, and support from their organizations. Similarly, Kock [25] studied the use of computer-mediated meetings in a small group and found that “lean media” like e-mail (according to the classification of media richness theory) can be used as effectively as “rich media” like face-to-face for tasks that require high richness, if members using lean media are motivated enough. These findings are parallel to the organization literature on the affect of team commitment on team performance.

The studies of team commitment in organization literatures have addressed both the linkage between team commitment and performance [14] and the antecedents like perceived task interdependence, inter sender conflict, and satisfaction with co-workers. The antecedents are related to the level of team commitment [2]. Studies of organization communication and communication technology, consequently, have focused on the impact of communication medium, and other factors- mentioned earlier, on the team performance. However, none of these studies has specifically explored the possibility of media richness influencing the levels of team commitment.

The Social Influence Model can be used to explain the choice and use of media [39]. Similarly, based on team commitment literature, we argue that an individual using the same media can have either rich communication or lean communication with other members depending on the level of commitment to their team. We, thus, assert that team commitment influences the richness outcome of the media use. The purpose of this study is to determine the communication effectiveness (rich communication) in lean media usage under different levels of team commitment and to examine the effect of media characteristics on the level of team commitment. Thus, we posit that team commitment and media usage is not a one-way relationship. Extending upon the previous study

of Bishop and Scott [2] and on media richness and social presence theories [8], we argue that team commitment is not static and can also be influenced by the ability of medium to transmit multiple cues, immediacy of feedback, language variety, and the personal focus of the medium.

2. Theories and Model Development

2.1 Goal Commitment

One of the plausible explanations of why some people perform better than others when they all have equal abilities is their motivation to work harder [30]. According to goal setting theory, different goal levels motivate people to behave differently that results in performance differences. Researchers have shown evidence of a significant positive relationship between goal difficulty (high goals) and performance [29] [31] [41]. However, the goal difficulty does not have an effect on performance without commitment [17] [28] [42] [46]. Locke and colleagues considered commitment as an important factor in goal setting theory. Goal commitment can be defined as the resistance to change a goal over time [28] or the determination to try for a goal and the persistence to attain the goal over time [18] [32]. Locke [28] suggested that commitment influences how people expense their cognitive/physical effort to achieve a goal and hypothesize commitment to moderate or strengthen the relationship between goal and performance. Lock et al [32] suggested that the difficulty of the goal affects goal commitment. The moderating effect of goal commitment was also found to be stronger when a difficult goal is assigned [24]. However, prior study by Donovan and Radosovich [11] found that the moderating role of goal commitment on the goal difficulty-performance relationship accounted for less than 3% of the variance in task performance. This small effect might have been the result of the use of easy tasks for difficult goals in the study. The results of Martin and Manning [33] study suggest that commitment is important only when a difficult goal and a difficult task are used.

The commitment to accomplish a goal is classified on two dimensions - the expectancy and the attractiveness [17] [31]. Variables that affect both of these dimensions of goal commitment are: authority, peers/supervisors influence, supportiveness, monetary incentive, feedback, expectancy, self-efficacy, individuals' need for achievement, and past success.

Hollenbeck and Klein [17] classified the above variables into situation factors and personal factors affecting both attractiveness and expectancy of goal attainment. They suggested that the situation factors affecting attractiveness of goal attainment would be *publicness*, *volition*, *explicitness*, *reward structure*, and *competition*. Publicness refers to the awareness of others about one's goal. They argued that it is difficult to abandon publicly known goals because such behavior appears unattractive to other people. In a team context where all members know their team goal, members of a

team are unlikely be happy with a member who abandons a team goal.

Volition is defined as the individual's free time and energy to engage in a behavior. Low volition implies that people will easily abandon a difficult goal that requires more time and energy than they are willing to give. In an environment where people are involved in more than one team projects or have many responsibilities, time and energy become scarce resources and are not enough to accomplish all goals; thus, people may choose to accomplish some of their personal and team goals and abandon or change the level of remaining goals. In other words, goals that require less energy and time are more attractive than goals that require more resources.

The reward structure also influences the attractiveness of the goals. People prefer goals that have higher rewards than the goals that have low potential rewards. Therefore, high reward goals can be more attractive even though they require lot of energy and time. Unclear description of the goal or vague goals can lead people to believe that the goal is attractive, however, vague goals are not as effective in generating high performance [28]. Competition with other groups or team members, which creates a pressure or desire to accomplish a goal, is another important factor that influences the attractiveness of a goal.

Hollenbeck and Klein [17] also proposed several personal factors that would affect the attractiveness of goal attainment. For example, they argued that high *Need for achievement* personality was related to the commitment to difficult goals. Their arguments are based on the findings of a study [5] that people with high need for achievement set more difficult goals than people with a low need for achievement. Other personality variables that are relevant to goal commitment are *endurance* and *type A personality*. People with high endurance are willing to work longer hours, and do not give up quickly on a problem; thus they are unlikely to abandon difficult goals. Similarly, people with a type A personality, being aggressive and competitive, setting high standards, and putting themselves under time pressure, are more likely to set more difficult goals and put more effort to accomplish those goals.

Situation factors that would affect the expectancy of goal commitment are social influence, task complexity, performance constraint, and supervisor supportiveness [17]. Social influence with respect to others' performance, others' goals, and others' goal commitment, has shown a strong impact on goal commitment [17]. They suggested that individuals are unlikely to maintain their goal commitment when the majority of team members appeared to either abandon their goals or lower their goal level. An individuals' commitment level would be higher when team members have the similar goal level.

Martin and Manning [33] manipulated the level of normative information on, how others have performed (others did well/ others did poorly). They found that there was no significant difference in the performance of high and low goal commitment subjects when they were told

that others did not perform well. On the other hand, there was a significant difference in performance when subjects were assigned with different level of goal difficulty and were told that others performed well. The findings suggest the moderating effect of goal commitment on the relationship between the task performance and the normative information. However, the study did not examine whether there is an effect of normative information on goal commitment.

Additionally, Martin and Manning [33] examined the relationship among goal levels, performance, and goal commitment. They found that people with a low goal commitment could perform as well as people with a high goal commitment when easy tasks were used. However, when difficult tasks were assigned, the performance of people with high goal commitment was significantly better than the performance of people with a low goal commitment. These findings indicate that low goal commitment does not mean that people would attempt to fail or not accomplish the goal [33]. However, for people with low goal commitment assignment of difficult tasks may lead to frustration and high-level of anxiety, which may result in the goal abandonment.

Hollenbeck and Klein [17] identified high self-efficacy, past success experience, high self-esteems, and locus of control as personal factors affecting the expectancy of goal commitment. Their literature reviews (c.f. [15] [16] [29] [45]) indirectly supported the propositions of the relationship between the personality variables and goal commitment. Klein et al [24] found a correlation (0.38) between supervisor supportiveness and goal commitment.

Locke et al [30] asserted that goal commitment directly influences the performance of the team members. The strength of this relationship depends on the amount of variance in the goal commitment. Internal factors, external factors, and interactive factors that determine the variance of the goal commitment were identified. Internal factors include the expectancy of success and self-efficacy. External factors include legitimate authority, trust in authority, peer (group) influence, values, incentive, and rewards. Interactive factors include the participation of individuals in setting up their goal and competition.

Studies show that an authority's instruction need not always be obeyed [1]. In this case, the goal assigned should be legitimate (such as possible to be accomplished or reasonable). Legitimate authority and trust in the authority influences individuals to commit to the assigned goal. Social pressures or peer influence has a positive effect on commitment [12]. According to expectancy theory, the value of the outcomes and the estimated probability of effort and performance will affect commitment/choice and thereby performance. The values of outcome, however, may include both recognition and monetary reward.

A study by Mueller [36] found that the relationship between competition and goal difficulty leads to better performance, but there was no evidence of a relationship between commitment and competition. The above

described internal factors, external factors, and interactive factors are used during cognitive processing to judge the value of goal commitment. Locke et al [30] adopted a different approach to categorize the distal antecedent factors of goal commitment. The antecedent variables in Locke et al [30], however, are very similar to those proposed by Hollenbeck and Klein [17].

Klein et al [24] conducted a meta-analysis of the distal antecedents of goal commitment. They found that situation factors had a higher correlation with goal commitment than personal factors. Task complexity, social influence, supervisor supportiveness, and volition have significant correlations of -0.50, 0.45, 0.38, and 0.37 respectively, while other variables had correlations smaller than 0.20. Thus, this study will focus on task complexity, social influence, supervisor supportiveness, and volition influencing the goal commitment.

2.2 Team Commitment

The present study focuses on commitment to a goal and also on commitment to a team membership. Team commitment characteristics, accordingly, include the determination and the persistence to achieving a team's goals and the strong desire to maintain membership in a team. Bishop and Scott [2] suggested that satisfaction with co-workers and intersender conflict influences the desire to maintain membership in a team, which in turn impacts the team commitment. In a situation where team performance benefits each member, individuals are likely to replicate the effort of teammates to create an equitable exchange relationship. Experiencing a good social relationship with team members will enhance team commitment.

Bishop and Scott [2] examined two types of role conflict: Intersender and Resource-related conflict. Intersender conflict is posited to have a negative relationship with team commitment either directly or through satisfaction with teammates. Resource-related conflict is posited to have a negative relationship with organization commitment and satisfaction with supervisors. Intersender conflict occurs when members cannot behave in a way that will satisfy incompatible expectations among teammates about their members. Bishop and Scott [2] also argued that high perceived task interdependence would lead members to be more aware of the importance of their contribution to the team as well as to the organization; members, thus, increase their positive affect on the team and their effort on the task [35].

In summary, the factors that will influence team commitment are those that have an impact on the persistence to achieving team's goals and the strong desire to maintain membership in a team. We suggest integrating the factors satisfaction, intersender conflict, and perceived task interdependence, included in the model of Bishop and Scott [2], with the factors task complexity, social influence, supervisor supportiveness, and volition, included in goal setting theory.

2.3 Media Selection and performance

Over the last two decades, researchers in organization communication have developed theories to understand and explain the choice of communication media in an organization [7]. Carlson and Davis [6] in their study of a public agency found that ease of accessibility is the default selection criterion for media choice. People, therefore, view the chosen media to be effective enough to be used in a particular situation or for a particular task if it achieves the expected outcomes/performance. As a result, they do not choose the most effective media. Another explanation based on cost minimization was provided by Swanson [40], people are likely to choose inferior quality information because its use requires less effort or work than the use of high quality information. These explanations, however, may not apply to all situations. Other plausible variables that can explain the selection of media are, information quality, message personalization, and social influence.

Even though, there are many plausible explanations for media choice, the main reason for using a particular media is that it allows people to successfully exchange or acquire the meaning of information. Exchange of the meaning of information and subjective views is required in equivocality situation¹ such as problem definition or resolution of disagreement. Acquisition of the meaning of information, on the other hand, is required when the members are in the uncertainty situation². Media richness theory [8] hypothesizes that communication would be effective if the media used is congruent with the task. The theory measures the richness of each medium based on its ability to give immediate feedback, the variety of communication cues, the personalization of the medium, and the language variety. Thus, rich media enable users to provide quick feedback about their understanding or ambiguity of opposing parties' messages, and to transmit cues in multiple, concurrent ways. Similarly, social presence theory views the capabilities of each medium to permit users to perceive others as being psychologically present [9]. Therefore, rich media usually can be viewed as a media that also provides a high degree of social presence.

Several studies that examined the central hypothesis of richness theory that matching media with the task leads to communication effectiveness, however, found that in some situations, a mismatch of media with the task demand still resulted in high performance. Dennis and Kinney [9] found that the success of communication might not be determined by the richness construct but the more fundamental constructs of feedback and social presence cues. Other factors that influence the performance are organizational norms, personal characteristics and shared histories among group

members [13] [37] [38]. Kock [25] suggest that the reasons subjects using lean media have the same level of performance, as subjects using rich media are that with lean media, an extra effort to overcome problems due to the limitations of media capabilities is necessary.

Using Hermeneutic concepts to interpret a collection of exchanged e-mail messages among a group of managers, Lee [27] concluded that electronic mail is neither rich nor lean media because richness or leanness is not a property of the e-mail medium, but a property of the interaction of the user with e-mail medium in organizational context. Lee suggested that, to have rich communication using e-mail, e-mail receivers must not be passive recipients of data but active producers of the meaning.

In summary, we can conclude that people usually select the media that are easier to access and are effective enough to get the job done. In some situations, however, people require more effort to interpret the meaning of information or interact with counterparts during the decision making if one medium is used over another. Thus, it is interesting to examine team performance under use of different media when one or more members of the team have a low commitment to the team. Also it will be interesting to examine how the richness/social presence of media affects the team commitment.

2.4 Research Model

Based on the foregoing discussions and extending the theoretical bases, we propose a research model (shown in figure 1) to examine the role of media type on the communication richness when team members have low commitment to the collaborative team projects in eCollaboration environment. The study by Kock [25] found that subjects using lean media put an extra effort to collaborate on equivocal tasks. Burke and Chidambaram [4] found that subjects using lean media are focused on the task at hand that leads to better performance. The behaviors of subjects in both studies can be explained when all subjects accept and are committed to the assigned tasks and goals.

We argue that individuals who are members of multiple different teams and are working on individual projects/tasks concurrently are unlikely to put the same intensity and focus in every task. According to goal setting theory, given that all teams have the same ability and use the same technology, performance of teams/groups varies due to the difference in the level of effort intensity. The goals that the team sets to pursue will influence the intensity of effort required to accomplish the goal. For goals to have an impact on performance, however, every team member must accept and commit to the goals (e.g. [30] [31] [32]).

Commitment and acceptance of team goals influences and motivate individuals to expense their cognitive/physical effort. Research in Group Decision Support Systems (GDSS) has shown that group members with the focus and attention on the task at hand would lead to higher decision quality [10]. Thus, we believe

¹ Equivocality Situation means ambiguity, confusing, disagreement, and lack of understanding tasks and information.

² Uncertainty Situation means that there is not enough information to make a decision or to perform a task.

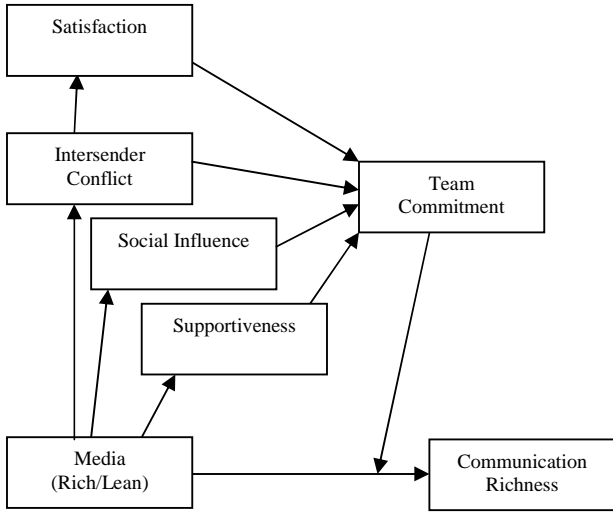


Figure 1: A Research Model

that individuals using lean media can put effort and focus to successfully collaborate on equivocal tasks, when the individuals have a high commitment to the team goals.

On the contrary, individuals using lean media will not put enough effort and focus to successfully collaborate on equivocal tasks when they do not have commitment or have low commitment to the team goals. A sign of low commitment is, for example, when individuals delay their response to the team members or ignore the requests of others. We posit that team members will perceive the rich communication with individuals who have high commitment and will perceive the lean communication with individual who have low commitment to the team goal. Thus, team commitment has a moderating effect on the communication richness achieved by the media (as shown in figure one). As discussed earlier based on the previous research important factors affecting team commitments are: Satisfaction, Intersender conflict, Social Influence, and supportiveness (as shown in figure one). These factors in turn are affected by richness of the communication media in eCollaboration environment. Thus, there exists a reciprocal relationship as shown in figure 1. The next section proposes a set of Hypotheses and briefly describes a planned experimental study.

3. Hypotheses & Proposed study

Based on commitment literature, individuals with high commitment will put more effort in collaborating among team members to achieve a team goal than those with low commitment, hence our first hypothesis is:

H1: Use of lean media under high commitment situation will be perceived as richer communication than use of lean media under low commitment situation.

Discrepancies in feedback between performance and effort are an important factor affecting goal commitment (e.g. [22] [44]). The tasks with the lowest discrepancy

will receive priority if the tasks have the same amount of incentives. Large discrepancies in feedback may indicate that the goal is impossible or very difficult to attain. With limited resources (time and effort), individuals have to lower goal commitment of other tasks to meet the commitment required by a task that is determined to be more important. We can conclude that the feedback using either rich media or lean media should not differ in their impact on team commitment.

In the GDSS research, however, social presence has a significant effect on individual involvement in generating and evaluating ideas. In meetings anonymous individuals generate more ideas than those with names identified [21]. Jessup et al. [21] also found that individuals in a face-to-face meeting are more threatened by possible criticism. In addition, social factors such as social pressures and social norms are shown to influence individual behaviors in selecting media use. Social impact theory [26] suggests that pressure to act is a function of the interpersonal power, immediacy, and group member status. Based on these studies, we can imply that the feedback and praise in high social presence environments are more persuasive or have a greater effect on individuals' behavior than the feedback and praise in a low social presence environment.

According to media richness and social presence theories, each media has a different capacity to transmit information, which in turn exhibits differences in social presence and richness (e.g. [4] [8]). The theory ranged the richness of each medium based on its abilities to give immediate feedback, the variety of communication cues, the personalization of the medium and the language variety. The rich media exhibit more social presence and awareness of other participants. We argue that rich media are likely to create more pressure for individuals to follow group norms than lean media does. Team members and the "team leader" can use the feedback and a variety of communication cues to convey the supportiveness and social influence to affect individual's commitment to the team, which will be confounded when they are using rich media instead of lean media. Thus, we hypothesize that:

H2.a: Individuals with low commitment using rich media will feel greater social influence from team members than those with low commitment using lean media.

H2.b: Individuals with low commitment using rich media will feel more support from team members and team leaders than those with low commitment using lean media.

H2.c: The perceived social influence will have an effect on individual's commitment to the team goal.

H2.d: The perceived team supportiveness will have an effect on individual's commitment to the team goal.

Bishop and Scott [2] found that intersender conflict has significant indirect effect on team commitment and significant direct effect on satisfaction with the team members. Satisfaction was also found to significantly

influence team commitment. Individuals perceive to have intersender conflicts in a team when they feel that two or more members give them different requests, answers, or agreements. These differences or conflicts may leave team members in a state of confusion and unsure about what to do next, which leads to a lowering of the goal expectation, the effort, and the team commitment [2]. We propose that the faster the intersender conflicts are resolved, the less effect the conflict will have on the team commitment and the satisfaction with team members. Rich media, which provides a variety of cues and immediate feedback, should help individuals in resolving these conflicts faster than with lean media. Since, in case of lean media individuals can postpone or delay their response, especially when they already have a low commitment to the team. In addition, the slow response to the request and to the slow conflict resolution process will lead to individuals' frustration and adversely effect satisfaction with the team members. Thus, we can posit that intersender conflicts will have less confounding effect on the satisfaction with team members when rich media is used.

H3a: Teams using rich media have smaller negative effects of the intersender conflicts on satisfaction with the team members than teams using lean media.

H3b: The intersender conflicts will have a negative effect on team commitment.

In situations where individual with low team commitment decides not to respond at all - e.g. do not show up at the meeting, show up at the meeting but do not participate, or do not reply back, team members using rich media will feel more offense to the low commitment individuals' behavior than team member using lean media. As a result, we anticipate that we will not find the effect proposed in the hypothesis 3 if the individuals decide not to respond to the requests of the team members.

To test the proposed hypotheses, about 180 student subjects who are enrolled in internet and non internet classes will be used for this study. The design of planned research study is a 2 (high commitment, low commitment) x 2 (rich media, lean media) matrix with a between subject design for the team commitment. Subjects will be assigned randomly to a team. Subjects will be manipulated using incentive, task difficulty, and perceived task independence to have high commitment to the first project and have low commitment to the second project.

4. Conclusions

With the increasing interest in application of eCollaboration technology at the global level for a variety of tasks it is important to understand the factors that affects the performance of these global teams. Even though many studies have focused on media richness the

impact of team commitment in eCollaboration have not been studied. As can be seen form the conceptual model presented in this paper there is a reciprocal relationship between the media richness and team commitment. Based on the theoretical model a set of hypothesis has been derived. The model explains intricate relationships between various factors affecting team commitment and how media richness can impact these factors.

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