

## Understanding the Effect of Social Media Tools on Organisational Virtual Team Dynamics

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### Abstract

*Corporate organisations are actively engaging with social media tools such as Facebook, Enterprise Social Networks, Blogs and Discussion Forums for team communication, collaboration and other project related activities. Virtual team work and effectiveness depends upon team dynamics such as trust, team cohesion, team satisfaction, communication, leadership and reduced conflicts. There are visible gaps as the current literature only mentions social media use (blogs and wikis) in a supportive role for virtual team communication, and to this end, the proposed research contributes by studying social media communication in organisational virtual teams. This research-in-progress employs a Transactive Memory System (TMS) approach to develop a framework for understanding the effect of social media usage on virtual team dynamics. The proposed research attempts to fill the gap in literature and extends the existing knowledge on virtual teams, group support systems, computer mediated communication and social media. The practical relevance of this research lies in the guidance for virtual team managers and members.*

### Keywords

Team Dynamics, Social Media, Virtual Teams, Transactive Memory System.

## INTRODUCTION

A virtual team is defined as “small temporary groups of geographically, organizationally and/ or time dispersed knowledge workers who coordinate their work predominantly with electronic information and communication technologies in order to accomplish one or more organization tasks” (Ale Ebrahim et al. 2009, pg. 1578 cited in Bastida et al. 2013). The purpose of enquiry is to shed some light on the use of social media tools for coordinating project work. The existing body of literature discusses about various communication and collaboration tools such as email (Brown et al. 2007; Jarvenpaa and Leidner, 1998), videoconferencing (Brown et al. 2007; Duarte and Snyder 2011), fax, telephone (Brown et al. 2007; Duarte and Snyder 2011), wikis, blogs and instant messaging (Brown et al. 2007; Knox and Wilmott 2008; Sivunen and Valo 2006; Thissen et al. 2007; Turban et al. 2011) that are used for VT communication. Additionally, the effect of three of these tools viz instant messenger, email and knowledge forums on work performance was studied by Ou et al. (2013). Blogs are seen as a means to broadcast information (Brown et al. 2007) or to interact with customers (Turban et al. 2011).

Apart from blogs and wikis, all of these tools encourage little collaborative effort and virtual team members function as independent units. There is no central repository for the project communications as the key project information tends to reside with individual team members leading to a delay in communication. Social media tools such as blogs create a central repository for the project discussions, documents and tasks (Murugesan 2007), which could be useful to virtual teams. Additionally, blogs keep information managed and organised since, everything is in the same place. This helps in avoiding information clutter and overload which is a downside of using email (Darisipudi and Sharma, 2008). Previous literature also mentions about Group Support Systems but, they are associated with information overload and clutter (Bastida et al. 2013; Grise and Gallupe 1999/2000) and poor information processing capabilities (Dennis 1996). Computer mediated communication systems and Computer Supported Cooperative Work systems (CSCW) have also been mentioned in the previous literature (Hollingshead et al. 1993; Warkentin et al. 2007), and research points towards a reduction in some aspects of team performance while using these systems.

Little is written about social media usage in the context of virtual team communication (Bastida et al. 2013; Brown et al. 2007; Ou et al. 2013). Virtual team work and performance depends on virtual team dynamics such as trust, satisfaction, team cohesion, communication, reduced conflicts and leadership (Maznevski et al. 2006). To the best of researchers' knowledge, the effect of social media usage on virtual team dynamics has not been researched by any previous study and consequently, there is no evidence in terms of the potential of social media usage to affect virtual team work. This gap in knowledge coupled with the benefits of social media tools formed the motivation for this research. The research questions for this study are:

RQ1: How does social media usage affect virtual team dynamics?

RQ2: Can social media usage create an improved Transactive Memory System of a VT?

The aim of this research is to explore how social media tools impact the key virtual team dynamics. This research explores the relationship between six team dynamics and Transactive Memory System (TMS) (Wegner et al. 1985; Wegner 1987) and attempts to explain the effect of social media tools on the TMS development of a virtual team.

In the next section, a literature review explaining the six team dynamics and the TMS theory is presented followed by the research methodology in the subsequent section. In the last section, some concluding remarks are made and the contribution of this research is highlighted.

## LITERATURE REVIEW

Social media is defined as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content” (Kaplan and Haenlin, 2010, pg. 61). Blogs, discussion forums, wikis and social networks are some well known forms of social media (Gupta et al. 2012). Prior research suggests that different forms of social media offer different capabilities (Nissen and Bergin 2013) but, collaboration and information broadcast are common to most of the social media tools (Brown et al. 2007; Goodwin-Jones 2003; Gupta and Wingreen 2014). Hence, for the purpose of this research, the focus is on social media tools rather than any specific form of social media.

Virtual team work and performance depends on a number of virtual team dynamics (Maznevski et al. 2006) as identified in the literature:

## **Trust**

Trust between team members is a vital component of a virtual team and is defined as “a state involving confident positive expectations about another’s motives with respect to one’s self in situations entailing risk” (Boon and Holmes 1991, pg. 194). Repeated communication and sharing of information electronically (Henttonen and Blomqvist 2005; Kirkman et al. 2002) leads to the development of trust in a VT. The more the level of trust in a VT, the higher the collaboration levels (Peters and Manz 2007). In a VT, the members have minimal face to face communication in order to form relationships (Horwitz et al. 2006), hence the role of trust becomes important. Drawing on the existing literature on trust, it is understood that frequent communication, knowledge sharing and a sense of shared understanding (Horwitz et al. 2006) encourage the development of trust in a virtual team.

## **Team Cohesion**

Team cohesion has a capability to create knowledge workers who can pool their expertise (Sivunen and Valo 2006) to suit a variety of tasks. Team cohesion is highly desirable in a VT and trust acts as a precursor to it. Proper member-task pairing increases team cohesion (Malhotra et al. 2007) and team members are aware of each other’s expertise (Sivunen and Valo 2006) in a cohesive team.

## **Satisfaction**

Team satisfaction is triggered by trust and team cohesion in virtual teams. Team satisfaction is also achieved by appropriate skill matching, and satisfied team members tend to work in an organized manner (Curseu et al. 2008; Shachaf 2008). Satisfied team members perform better and raise the productivity of the team (Lin et al. 2008). Team satisfaction therefore, contributes to overall team performance. It can be concluded that appropriate skill matching, individual’s self organisation, inter member trust and levels of team cohesion improve virtual team’s satisfaction levels.

## **Communication**

Communication technology is the foremost enabler of a virtual team and VTs often encounter communication problems (Carvalho 2008; Daim et al. 2012). Communication breakdowns occur in VTs (Malhotra et al. 2007; Rosen et al. 2007) and are more frequent in newly created VTs (Hinds and Mortensen 2005). By building a sense of ‘shared meaning’ (Bjorn and Ngwenyama 2009), team members are in a position to adjudge others’ thoughts and perceptions and this helps in case of a communication breakdown since, the task can be carried out with bits of information that can be found in the communication media. Hence, frequency of communication (Horwitz et al. 2006) and shared meaning lead towards effective communication in a virtual team.

## **Reduced Conflicts**

Virtual team conflicts downgrade the team’s efficiency, morale and productivity (Griffith et al. 2003; Montoya-Weiss et al. 2001). Team members might not be able to sort out the issue by meeting face-to-face (Brown et al. 2007) and due to the diversity of the team, the conflicts can be much more pronounced than in co-located teams (Baan 2004). ‘Collaboration awareness’ allows team members to remember critical information (Leinonen et al. 2005) and increases the likelihood of success. A reduction in conflicts increases virtual team effectiveness.

## **Leadership**

VT managers often encounter challenges as they are constrained in terms of not having a real picture of the events (Carmel 2002; Joinson 2002) and to add to it, there is an absence of visual feedback. Team leadership contributes by guarding the VT against potential troubles (Gaudes et al. 2007), boosting team spirit (Furst et al. 2004) and motivating team members (Leinonen et al. 2005) through appropriate feedback. Effective leadership therefore, helps in improving virtual team efficiency.

## **Theoretical Framework**

Transactive Memory System (TMS) is important for a virtual team and it refers to how the team stores, retrieves and applies knowledge and directly impacts team performance (Choi et al. 2010). “A TMS refers to a specialized division of cognitive labor that develops within a team with respect to the encoding, storage, and retrieval of knowledge from different domains” (Wegner 1987 cited in Choi et al. 2010, pg. 856). Great teams have a well developed TMS (Hsu et al. 2012) which increases team performance. The researchers believe that an effective

TMS is an antecedent condition to better team performance in the later stages. There are three major components of a TMS:

“*Specialization*”: Selection of team members with the right set of skills for a task creates a team of experts. This develops a sense of satisfaction in the team members, who in turn, exhibit a greater degree of commitment towards the task. This leads towards specialization and boosts overall team performance (Curseu et al. 2008; Lin et al. 2008; Shachaf 2008).

“*Co-ordination*”: Co-ordination is understood as team members working together on a common project and agreeing to what they are building, performing and sharing amongst themselves (Kraut and Streeter 1995). Co-ordination is attained by effective communication and team cohesion. Effective communication is highly desired in a VT and it heavily depends on the communication tool. Team cohesion (Sivunen and Valo 2006) creates a responsive team and the team members work collectively and seek each other’s expertise and skills when needed. Together with effective communication, team cohesion, leads towards co-ordination in a VT; a synergy which is highly desirable in a VT due to time zone and cultural differences.

“*Credibility*”: Specialization and co-ordination in teams enforce credibility. Credible teams have enhanced trust, more mutual understanding, reduced miscommunication and exhibit good team performance. Team members understand the situation well and work with a greater commitment towards the project. Team members are aware of each other’s expertise and they can collaborate effectively.

#### Research Model

VT dynamics are interrelated with Transactive Memory System as shown in table 1. Hence, a positive effect on VT dynamics can create an effective TMS for the VT. TMS development depends on the communication technology since, frequent communication accelerates the development of the TMS (Kanawattanachai and Yoo, 2007). Good feedback from leadership (Choi et al. 2010) also affects the development of TMS.

Table 1. Relationship Between VT Dynamics and Transactive Memory System

Virtual Team Dynamics	Explanation	Transactive Memory System Context
Satisfaction	Task-skill matching leaves team members satisfied (Curseu et al. 2008; Dennis et al. 2001)	Specialization is achieved
Leadership	Good leadership creates a good skill-task match	
Communication	Effective communication and team cohesion lead to co-ordination (Kraut and Streeter 1995; Sivunen and Valo 2006)	Co-ordination is achieved
Cohesion		
Trust	Trust develops on account of team cohesiveness (Sivunen and Valo 2006)	
Communication	Reduced miscommunication (Shachaf 2008)	Credibility is achieved
Trust	Increased trust due to effective team co-ordination (Sivunen and Valo 2006).	
Reduced Conflicts	Trust (Brown et al. 2004) and effective communication lead towards reduced conflicts (Horwitz 2006).	

Social media has a potential to improve virtual team trust and satisfaction and it ensures a greater commitment towards the task as suggested by prior research (Bastida et al. 2013; Moqbel et al. 2013). Social media also

affects team work as suggested by the literature (Ou et al. 2013), and its “networking” characteristics (Waters et al. 2009) are expected to work towards boosting team cohesion. Social media provides a platform for effective communication through its information sharing capabilities (Kaplan and Haenlin 2010). Enhanced trust and effective communication via social media are hoped to reduce VT conflicts. Finally, it is hoped that social media usage would have an effect on each of the six team dynamics, and consequently affect the TMS development of the virtual team. Extending the previous research (Bastida et al. 2013; Choi et al. 2010; Kanawattanachai and Yoo 2007; Moqbel et al. 2013; Ou et al. 2013), the researchers propose their hypotheses as:

**H1: Social media can positively impact virtual team trust.**

**H2: Social media can positively impact virtual team cohesion.**

**H3: Social media can positively impact virtual team satisfaction.**

**H4: Social media can positively impact virtual team communication.**

**H5: Social media can lead to a reduction in virtual team conflicts.**

**H6: Social media can positively impact virtual team leadership.**

**H7: Social media can positively impact the TMS of a virtual team.**

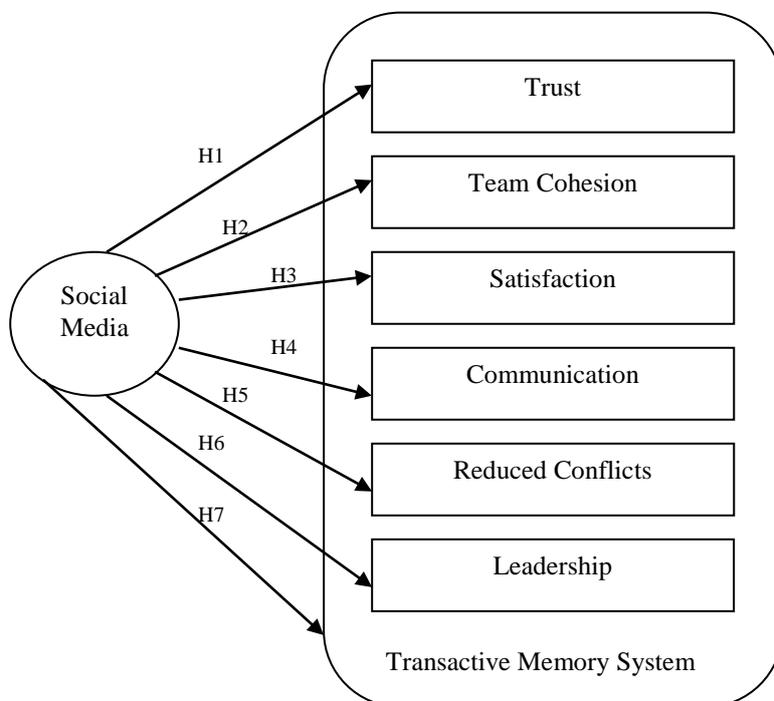


Figure 1: Research Model

## RESEARCH METHODOLOGY

This research is exploratory in nature owing to the lack of literature and any established framework to determine the effect of social media usage on virtual team dynamics. The researchers decided to pursue an exploratory research approach based on the TMS theory which is discussed in table 1, though TMS is loosely adopted *a priori*. Relevant literature was researched in journals, conference proceedings, industry whitepapers and company reports. Academic databases such as ABI/Inform Global and Business Source Premier were also researched for relevant literature. This formed the starting point for this research. During this phase, the researchers constantly compared the evolving extant literature with the TMS theory and this process lead to the development of categories mentioned in table 1. The proposed research would be conducted using a mixed method of research (Creswell 2014). Mixed methods of research are recognized as the third major research approach alongside qualitative and quantitative research methods (Creswell 2014; Johnson et al. 2007). The benefit of mixed method is that it attempts to consider different viewpoints, positions and perspectives on the

subject. Many researchers try to collect different types of data with an aim of confirming their findings which were reached through collection of a particular type of data (Miller and Gatta 2006; Slinim-Nevo and Nevo 2009). This approach is known as triangulation, since the researchers collect different types of data to study the same phenomenon. According to Small (2011), mixed methods can either be confirmatory or complementary. Complementary research approach is used when the researcher assumes that given data can produce only one kind or type of results and hence, the researcher combines different types of data to counter the weakness of the other. Confirmation is achieved when different types of data produce the same results thus validating each other. In this study, a complementary research approach would ensue where the qualitative and quantitative phases are expected to mutually inform the primary data.

### **Instrumentation**

A 6-point Likert-style questionnaire was designed to record the experiences of participants while working in their respective virtual teams and using social media for communication and other project related activities. The questionnaire was hosted on Qualtrics survey software. The Likert questionnaire had measurements for each of the six team dynamics viz trust, team cohesion, satisfaction, communication, reduced conflicts and leadership. Existing measures of each of the six dynamics were researched in the literature and were adapted according to the context, communication via social media and virtual teams to form measures for the Likert questionnaire. The scale used was 6 point (strong agree-agree-slightly agree-slightly disagree-disagree-strongly disagree) and the neutral response category was eliminated to get a definite response from the participants. The Likert instrumentation will allow the researchers to examine the correlations between the constructs represented in the research model and also conduct statistical tests to determine the relationships between them.

Following this, a set of 29 Q-Sort statements (Brown 1980) was designed from the measures researched for designing the Likert questionnaire to represent the "concourse". The chief strength of Q-methodology is that it allows a domain of interest to be defined in its own terms by people who are active participants in that domain (Brown 1980), and hence it is of great usefulness in exploratory research, and in domains of interest that are not well-structured. Hence, the Q-sort instrumentation will be employed as a method of modifying and triangulating the validity of the research model. To accomplish this, first, a set of items or statements were developed to represent the domain of interest. Once developed, the items are then administered to the people of interest, in this case, members of virtual teams who use social media to support their work, with instructions to sort them into categories from "most important" to "most unimportant". The result of this is a "q-sort", which is then combined with other q-sorts, and will be analyzed by factor analysis, which acts on the correlations between the q-sorts. The results of the factor analysis therefore represent types of people, not variables as in the usual type of factor analysis, who share similar perspectives about the domain of interest. These factor "types", as such, represent the structure of the domain as it is held by participants in the domain, in their own language and terms, with no a-priori assumptions as to what is to be expected (Bastida et al. 2013; Brown 1980; Klaus et al. 2010; Wingreen et al. 2009). Since, the "factor scores" generated by the procedure apply to the person, not the variable, these q-factor scores may be correlated with other measured responses, in this case the Likert-style items and grouping categories of the participants (Bastida et al. 2013; Klaus et al. 2010; Wingreen et al. 2009). The Likert instrumentation along with the Q Sort is hoped to provide a strong quantitative end to the data collection process. Additionally, open ended follow up interview questions were designed by the researchers to ascertain that no valuable constructs are excluded from the domain represented by the research model. Semi-structured interviews (Myers and Newman 2007) are hoped to provide a strong qualitative support to the quantitative data add a level of richness that will inform the research in light of the exploratory goals of this research.

### **Pilot Testing**

The Likert instrument, the Q-Sort and semi-structured interviews are currently being administered to a sample to make sure that expected results could be achieved through the instruments and to make sure that the measured scales along with follow-up semi-structured interviews reveal the naturally-existing state of the domain and facilitate the revision of the instrument. The revised instrument would then be used for primary data collection using more rigorously-controlled methods than were employed for pilot testing of the instruments. The participants were sent an information letter and a consent form and asked to sign the consent form and send it back to the researchers, following which, the questionnaire links were sent to the participants through the Qualtrics Survey Software, where the Likert questionnaire was hosted. Once the responses to the questionnaire were recorded, Q-Sort statements were sent to the participants in a Microsoft Word document and the participants were asked to fill the Q-Sort and send the Word document back to the researchers to record their response. Once all the Q-Sorts will be successfully received, the researchers would conduct follow-up interviews with the participants. Finally, the participants would be sent emails, requesting them to give feedback to the researchers on the sequence of questions, grammatical errors, question skips, instruction write-up,

validation, abnormal inputs, user-friendliness and response time of the Likert instrument. Similarly, feedback will also be asked for the Q-Sort statements and the interview questions. Any additional feedback from the participants will also be requested. After the feedback is received from the participants, the pilot testing phase will conclude. The results of the pilot testing along with the feedback from the participants will be used to make modifications to the instrument. The modified instrument will then be employed for the primary data collection phase. Since, the final version of the instrument is not yet ready, it has not been reported in this paper.

### Sampling

A sample frame consisting of researchers' professional and personal contacts would be established for the purpose of this research. Participants would be sent an information letter detailing the specifics of this research in terms of the research method, timeframe and a consent form which needs to be signed and returned back to the researchers. All participants will be requested to participate in this study voluntarily as they will not be given any incentives to participate. The participants will also be given an option to withdraw from this research without any penalty whenever they wish to do so. The participants that would be selected for this research will currently be working in virtual teams and using social media to co-ordinate their project related tasks (fully or partially). The participants will initially be sent the questionnaire and once they reply back, they will be sent a Q-Sort and will be invited to participate in a follow-up telephonic or face-to-face interview, according to their convenience. In order to achieve an assurance of variance on key independent variables in the research model, primary data would be collected from virtual teams who vary in their use of social media for coordinating project work. The researchers intend to rely on the principle of "theoretical saturation" (Eisenhardt 1989) where the primary data collection would conclude when no new insight is gained from further data collection. Primary data once gathered would allow the researchers to explore the relationship between team dynamics and TMS more fully and thus, form a much stronger framework for analysis.

### CONCLUSION

The proposed research attempts to understand the effect of social media usage on virtual team dynamics using a TMS theory approach. TMS theory (Wegner 1987) coupled with existing literature (Bastida et al. 2013; Choi et al. 2010; Kanawattanachai and Yoo 2007; Ou et al. 2013) lead to the formation of a strong research framework. Going beyond the existing research which ceases to explain the context, this research would be highly relevant to researchers and practitioners. This research would contribute literature in terms of the effect of social media tools on virtual team dynamics and consequently, the effect on the TMS development of the virtual team. Social media offers a different and highly collaborative environment (Bastida et al 2013; Goodwin-Jones 2003) than email, videoconferencing and telephone and is thus expected to have a positive effect on the VT dynamics and TMS. As a theoretical contribution, this research would address the gaps in literature and add value to the TMS theory by operationalising it in the context of virtual teams and social media. This research would also extend the existing literature on Group Support Systems (Dennis 1996; Grise and Gallupe 1999/2000), Computer Supported Cooperative Work (Hollingshead et al. 1993; Warkentin et al. 2007) and Computer Mediated Communication (Moqbel et al. 2013; Ou et al. 2013; Quan-Haase et al. 2005) into social media usage for team work. As a practical contribution, this research would be of value to virtual team managers and practitioners, since this research would evaluate social media as a tool for VT communication and hence, will provide a reference for practitioners to understand the benefits and downsides of using social media within their virtual teams.

Further research would involve the completion of the pilot testing and primary data collection phase followed by a strong quantitative and qualitative analysis. The hypotheses would be tested and the research model would be validated by the primary data and this would facilitate an empirical evaluation of the context and address the research questions.

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