

# EXAMINING THE EFFECT OF SOCIAL MEDIA TOOLS ON VIRTUAL TEAM CONFLICTS: A PROCESS MODEL

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## Abstract

*This research investigates how the use of social media tools affects virtual team conflicts. The novel concept of “feature richness”, which is understood as affordances of social media tools, is theorized. Feature richness distinguishes social media tools from other commonly used communication tools in virtual teams. The researchers propose a process model which suggests that operationally, feature richness is understood as the process nature of social media tools. The primary data was collected at corporate organizations in form of a Likert questionnaire. The research findings reveal that social media tools lead to effective communication, which encourages the development of trust, team cohesion and satisfaction in virtual teams. This further reflects in form of reduced virtual team conflicts.*

*Keywords: Virtual Teams, Conflicts, Feature Richness, Social Media.*

# 1 INTRODUCTION

A virtual team (VT) 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 foremost difference between a virtual and co-located team is that, most of the times, VT members work from different geographic locations. In some cases, there is no face-to-face contact between virtual team members, and they are required to co-ordinate their project work by using suitable communication techniques (Caney-Davison and Ward 1999; Jarvenpaa and Leidner 1998). Communication technology is the means that is used to co-ordinate most of the tasks in a virtual setting, thus demonstrating its importance to a VT. Communication effectiveness between VT members decides team performance in the later stages as suggested by previous literature (Bjorn and Ngwenyama 2009; Lanubile et al. 2010). Email is a universal VT communication tool (Bastida et al. 2013), the rest being, telephone, blogs, wikis and videoconferencing (Brown et al. 2007; Duarte and Snyder 2011; Jarvenpaa and Leidner 1998). In general, email, telephone and videoconferencing are regarded to be the core VT communication tools (Brown et al. 2007). In absence of a good communication tool, a VT could be marred by a loss of efficiency and productivity (Daim et al. 2012). Communication technology is therefore, largely associated with the success or failure of a VT and is a vital component of a VT.

The relationship between VT members is ‘virtual’ and is supported by the communication tool. VT members tend to form an impression about others during the first few communications as echoed in prior literature (Mortensen and O’Leary 2012). Conflicts often plague VTs, and have a huge potential to lower the team’s morale and downgrade the productivity of the team (Griffith et al. 2003; Montoya-Weiss et al. 2001). Miscommunication (Shachaf 2008) is one of the major factors that leads to VT conflicts, which can intensify once sparked (Canney Davison and Ekelund 2004; Paul and McDaniel 2004). VTs heavily rely on the communication tool, hence communication tools are associated with some common factors that lead to conflicts in VTs such as miscommunication (Shachaf 2008), communication breakdowns (Bjorn and Ngwenyama 2009), non-spontaneous communication (Hinds and Mortensen 2005) and lack of transparency in communication (Ferrazzi 2012). Communication tools such as email lead to information clutter and disintegration along email chains (Darisipudi and Sharma 2008). The problem manifests itself in information overload, lost information, lost time searching for information and increased confusion (Jones et al. 2004; Schuff et al. 2006). In a VT context, this can lead to more mistakes and re-work, thus reducing satisfaction. Social media tools (social media) such as blogs have features like instant posting, the posts are automatically sorted (latest first), enables information broadcasting and is relatively easier than sending out emails (Nardi et al. 2004). Hence, social media tools have a potential to reduce miscommunication and communication breakdowns, and create more transparency in communication, which may have an effect of virtual team conflicts. To the best of researchers’ knowledge, no previous study has investigated the effect of social media tools on virtual team conflicts. Hence, quantifying the effect of the use of social media tools on VT conflicts is unknown and this gap in knowledge forms the motivation for this research. The research question for this study is:

RQ: Can the use of social media tools in virtual teams lead towards reduced conflicts?

This research focuses on some of the factors which play a major role in VT conflicts as suggested by the literature. These factors include trust, satisfaction, team cohesion, and communication problems such as communication breakdowns and miscommunication. In the next section, we present a review of the literature along with a conceptual framework. In the following section, we lay down the research methodology, followed by the research findings. In the subsequent section, a discussion of the findings is presented, followed by some concluding remarks in the next section.

## **2 LITERATURE REVIEW**

A literature review of conflicts, virtual teams and social media is presented in this section.

### **2.1 Conflicts in a Virtual Team Context**

In a VT setting, the team members may not have met face-to-face even once, and hence know little about each other (Caney-Davison and Ward 1999; Chudoba et al. 2005; Jarvenpaa and Leidner 1998). Face-to-face meetings allow team members to get to know more about each other (Mortensen and O'Leary 2012) and this helps in trust building in VTs. Trust building happens by means of the communication tool in a VT, hence it takes time to develop (Henttonen and Blomqvist 2005).

Conflicts between the team members do happen in VTs (Brown et al. 2004; Griffith et al. 2003), and it can take a much longer time to tackle them as opposed to co-located teams. Face-to-face communication helps the manager in resolving conflicts in co-located teams (Carmel 2002; Joinson 2002), but things can become challenging in VTs since the team members and the manager may be based in different locations and it may become difficult to communicate for conflict resolution. In a VT environment, the team members might be unaware of each other's day to day problems which can create misunderstanding in the team (Brown et al. 2007). This can deteriorate the relationships between the team members and conflicts may intensify further, damaging team trust and communication (Kankanhalli et al. 2006). Conflicts can lower the productivity and efficiency of the team, thus badly reflecting on the project as a whole. Conflicts can affect the morale of the VT members and even reduce their motivation levels. Finally, the project outcomes can be severely compromised in the presence of conflicts in the team (Griffith et al. 2003; Montoya-Weiss et al. 2001).

Relationship and task conflicts (Maznevski et al. 2006) are two major types of conflicts. Relationship conflicts affect team members' relations and task conflicts render the VT with divided viewpoint and differences in defining strategy. Another challenge in a VT environment is that the team members may be unaware of the working style of their colleagues. They might not know their co-workers' skill set and areas of expertise, which has a potential to start task-related conflicts in the VT. In such cases, it is beneficial to have a sense of 'collaboration awareness', which is understood as ability of the team members to remember project related information and how well they do so (Leinonen et al. 2005). Collaboration awareness is regarded as a key criterion for VT project success. As discussed earlier, the VT communication tool plays a vital role in VT communications and a good communication tool may reduce problems such as miscommunication and communication breakdowns, increase transparency in communication and also have an effect on virtual team conflicts.

### **2.2 Feature Richness of Social Media Tools**

Previous research suggests that a selection of richer media (Daft and Lengel 1986; Short et al. 1976) such as videoconferencing gives a feeling of co-presence to the team members (Kirkman and Mathieu 2005). However, in a virtual team environment, the communication tool is the primary means of communication between the team members. The theory of media synchronicity (Dennis and Valacich 1998; Dennis et al. 2008) extends the media richness theory, which focuses on choice of communication media into communication performance (Dennis and Kinney 1998). Communication performance is dependent upon how well do the media capabilities match with the communication processes that are required to accomplish the task. Dennis et al. (2008) proposed that, with the development of newer communication tools it is more appropriate to refer to the set of features offered by the communication tool. Therefore, it is theorized that the 'feature richness' of the communication tool is highly relevant to teams, since communication is the primary means of contact among the team members. Feature richness is defined as "the set of features that the communication medium offers to encourage participation, collaboration, transparency and information organization" (Gupta and Wingreen 2014, pg. 3). In this research, the researchers do not refer to any specific social media tool, for example, blogs, discussion forums, social networks or enterprise social media, but

understand social media 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). Previous research (Nissen and Bergin 2013) suggests that different forms of social media offer different capabilities, however feature richness is common to most of the social media tools. Social media is a feature rich communication tool as opposed to some traditional VT communication tools such as telephone, videoconferencing and email. Although, social media tools possess medium synchronicity as opposed to videoconferencing which is highly synchronous (Dennis et al. 2008), they provides a platform for instant communication to a wider audience (Mangold and Faulds 2009). Feature richness of social media tools (table 1) is another advantage, which is not found in the case of videoconferencing. Hence, social media tools are more suitable for communication than email, which is a bit asynchronous and videoconferencing which is more synchronous (Dennis et al. 2008). As suggested by Nissen and Bergin (2013), social media tools can provide different types of communication capabilities which would make social media tools highly versatile with different types of tasks. Hence, social media tools provide a different communication medium than some other tools used in a VT environment such as email, phone, videoconferencing or fax.

Operationally, feature richness can be viewed as the ‘process’ nature (van den Hooff and de Leeuw van Weenen 2004; van den Hooff and de Ridder 2004) of social media tools, and each of the components of features richness such as participation, collaboration and transparency are individual processes that are facilitated by the use of social media tools. In this research transparency was theorised as a combination of information organisation and transparency since transparency and information organisation are not mutually exclusive in the case of social media tools. Social media tools encourage effective communication and team work on account of their feature richness (table 1).

<b>Feature Richness (Process) of Social Media</b>	<b>Explanation</b>	<b>Anticipated Effect on Team Work</b>
<p><i>Participation:</i></p> <p>‘Posts’ provide information dissemination</p> <p>‘Comments’ generate team discussion (Hoffman and Fodor 2010)</p>	<p>Antecedent for virtual team collaboration: Increased information sharing and team communication (Henttonen and Blomqvist 2005; Kirkman et al. 2002)</p>	<p>Trust building among team members (Maznevski and Chudoba 2000; Peters and Manz 2007)</p>
<p><i>Collaboration:</i></p> <p>Social media offers a collaborative environment (Standing and Kiniti 2011) and leads to increased team interaction</p>	<p>‘Rich’ process that creates values which could not be achieved through communication or teamwork alone (Peters and Manz 2007)</p> <p>Increased information exchanges and understanding between team members</p> <p>Increased team productivity and mutual trust (Peters and Karren 2009)</p>	<p>Development of a “shared meaning” (Bjorn and Ngwenyama 2009): Team members are able to adjudge others’ thoughts and work with minimal supervision</p> <p>More collaborative effort, increased team cohesion, satisfaction and performance</p>
<p><i>Transparency (includes information organisation):</i></p> <p>Social media offers transparency in communications</p>	<p>Ensures equitable access of information and encourages team participation</p> <p>Central ‘pool’ for project</p>	<p>Team members and management can resolve any potential problems through transparent records of communication (Ferrazzi 2012)</p>

and enhanced information sharing (Bertot et al. 2010; Kaplan and Haenlin 2010) Stores communication and provides a reference for future	communications, information no longer resides with individual team members (Bjorn and Ngwenyama 2009)	Reduced information clutter and minimal loss of critical project information along chain of emails (Darisipudi and Sharma 2008), increased satisfaction
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*Table 1. Feature richness of social media tools*

It is hypothesised that:

H1: Social media tools on account of their feature richness lead to an effective communication in VTs.

H2: Effective communication increases trust in VTs.

H3: Effective communication increases satisfaction in VTs.

H4: Effective communication increases team cohesion in VTs.

### **2.3 Factors Leading to Conflicts in Virtual Teams**

A number of factors can lead towards conflicts in virtual teams. Communication problems in virtual teams have a tendency to undermine effective communication, which may lead to conflicts in virtual teams. Trust, team cohesion and satisfaction are important factors related to conflicts in virtual teams as suggested by the literature. These factors are discussed below:

#### *2.3.1 Communication Problems*

Communication lies at the heart of a virtual team, and the VT would not have existed in the absence of a suitable communication tool. VTs encounter communication breakdowns at times (Malhotra et al. 2007; Rosen et al. 2007), which have a potential to lower the team's productivity, since communication and sharing of information could be delayed due to the breakdown and team members might not be able to proceed with their work. Communication tool is a major factor associated with communication breakdowns (Daim et al. 2012). Communication breakdowns can lead to miscommunication, which can occur frequently in a VT environment. Communication breakdowns and miscommunication undermine effective communication which may lead to deteriorated relationships among the team members (Shachaf 2008) and eventually spark conflicts in the team.

#### *2.3.2 Trust*

Trust is considered to be an important factor that can lead to success or failure of a VT (Maznevski et al. 2006). Trust among the VT members is desired in a VT (Horwitz et al. 2006), since a lower level of trust has a potential to downgrade team effectiveness. Repeated communication and sharing of information and key resources (Henttonen and Blomqvist 2005; Kirkman et al. 2002) leads to trust development, therefore, trust development in a VT relies on the communication tool. Trust development in a VT environment is much more complex, due to little face-to-face contact between team members. Trust determines the collaboration level in a VT (Peters and Manz 2007), and functions as an antecedent condition to effective collaboration. Absence of trust makes the VT members work as independent units with minimal collaborative effort towards the task. This makes the VT vulnerable to conflicts (Shachaf 2008). However, trust building eventually leads to relationship building (Horwitz et al. 2006) which minimizes the probability of conflicts. Hence, trust can be understood as an important factor associated with virtual team conflicts. The following hypothesis is proposed:

H5: Increased trust reduces VT conflicts.

#### *2.3.3 Satisfaction*

Satisfaction is another important factor which affects virtual team performance. Team members tend to stay committed and perform better when satisfied (Lin et al. 2008). Communication tool plays a

role in team satisfaction (Edwards and Sridhar 2003) and improves the overall team performance. When contrasted with face-to-face teams, satisfaction in virtual teams is lesser because VT communication is more time consuming, since little information is being exchanged (Hertel et al. 2005). Satisfaction is vital for a virtual team and has a potential to improve team performance (Curseu et al. 2008; Shachaf 2008). Satisfaction boosts employee morale and increases commitment towards the task in the longer term. Dissatisfied team members, on the other hand, may exhibit lower performance (Lin et al. 2008), which has a potential to start task conflicts (Maznevski et al. 2006) in the team. Previous research suggests that team satisfaction and conflicts are negatively related to each other (De Dreu and Weingart 2003). Hence, it can be understood that a lower team satisfaction may lead to virtual team conflicts. It is therefore hypothesised:

H6: Increased satisfaction reduces VT conflicts.

#### 2.3.4 Team Cohesion

Team cohesion is defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron et al., 1998, pg. 213 cited in Carron and Brawley, 2012). Team cohesion is highly desirable in virtual teams and has a capability to create better teams once the team members start pooling their expertise and skills (Sivunan and Valo 2006). In a cohesive team, the team members are aware of each other’s expertise and skills, and this may reduce the chances of task conflicts in the team (Maznevski et al. 2006; Sivunan and Valo 2006). Previous literature (Ensley et al. 2002, Tekleab et al. 2009) suggests that team cohesion is directly related with conflicts and vice-versa. The following hypothesis is proposed:

H7: Increased team cohesion reduces VT conflicts.

## 2.4 Theoretical Framework

Prior research on the role of communication tool in teams was limited to studying how distributed teams encounter more conflicts due to the reliance on technology (tools) (Hinds and Bailey 2003) and investigating the significance of spontaneous communication in countering team conflicts (Hinds and Mortensen 2005). Some other research (Bjorn and Ngwenyama 2009) discussed the role of shared meaning and translucence in relevance to communication breakdowns in virtual teams. To the best of researchers’ knowledge, no prior study has investigated the effect of social media tools on virtual team conflicts. To this end, a research model (figure 1) is proposed, which attempts to explain how the use of social media tools for VT communication can affect a reduction in conflicts in a virtual team.

Theory of Planned Behaviour (Ajzen 1991) states that attitude towards the behaviour and subjective norms, together with perceived behavioural control decide individual’s intentions to perform or not perform the behaviour. Extending the same concept to virtual teams, behaviour translates to the virtual team project in hand. In the research model (figure 1), the communication tool (includes feature richness), or the 1<sup>st</sup> stage factor resolves some of the communication problems and leads to an effective communication in VTs. The 1<sup>st</sup> stage factor and effective communication affect the 2<sup>nd</sup> stage factors, which in turn, positively affect individual’s attitude towards the behaviour. This is achieved by an introduction of participatory and collaborative virtual team work associated with the use of social media tools, as opposed to email where teams worked as independent entities.

Social media tools provide incentives in form of their feature richness (1<sup>st</sup> stage factor). These incentives are not found in case of some other communication tools such as email, videoconferencing and telephone. Email is associated with information clutter and overload, which have a potential to undermine individual’s actual behavioural control. Perceived behavioural control refers to the confidence in self-abilities to perform the behaviour with accuracy. In the research model (figure 1), the 2<sup>nd</sup> stage factors have an ability to raise team morale and make the team members confident of their and their co-workers’ abilities, and thus boost perceived behavioural control. This leaves the virtual team members motivated and confident, and positively affects their behavioural intention.

Finally, the team members may put in more effort and meaningful ideas while working on the project (performing the behaviour).

The actual behavioural control together with perceived behavioural control works towards reducing virtual team conflicts. They positively influence behavioural intentions of the virtual team members and all this leads towards good behavioural achievement, in this case, an improved team performance.

Feature Richness (Process)	Consequences	Implications- 1 <sup>st</sup> and 2 <sup>nd</sup> stage factors	Ajzen's (1991) Framework	Result
Participation, Transparency, and Collaboration	<p>Team members no longer work as independent units</p> <p>Central repository for project communication</p> <p>Collaborative team effort towards the task</p>	<p>Reduced communication problems, effective communication, increased trust</p> <p>Reduced communication problems</p> <p>Task satisfaction is boosted due to less information clutter and overload</p> <p>Increased team cohesion and trust</p>	<p><b>More actual behavioural control:</b> Project information is more accessible, less information overload, more organized information</p> <p><b>More perceived behavioural control:</b> Boosted team morale and self-confidence, and more confidence in others' abilities</p>	<p>Actual behavioural control and perceived behavioural control work towards reducing team conflicts</p> <p>Increased behavioural achievement (improved team performance)</p>

Table 2. Research framework

Based upon the research framework (table 2), a research model (figure 1) is proposed to provide an understanding of the effect of social media tools on virtual team conflicts.

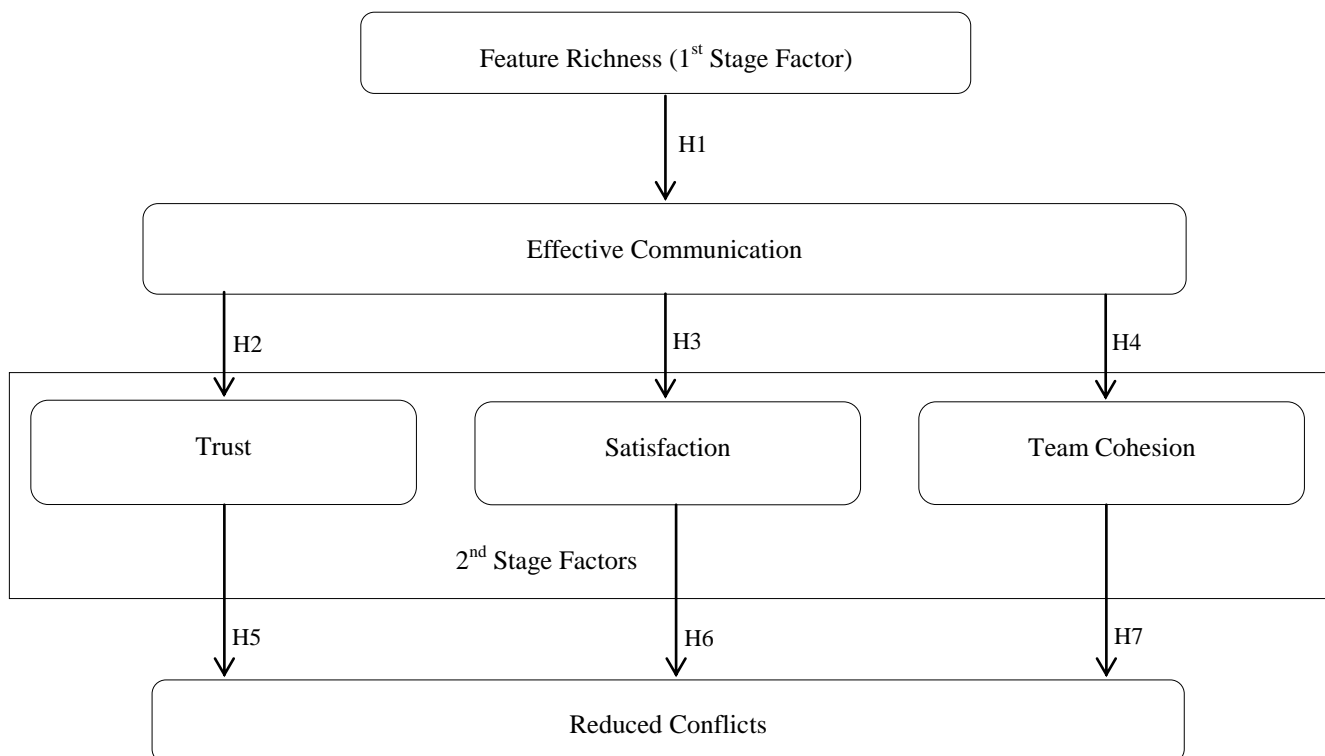


Figure 1. Research Model

The research model (figure 1) advances current knowledge on social media tools and virtual team conflicts.

### **3 RESEARCH METHODOLOGY**

The researchers relied on an exploratory approach (Stebbins 2001) due to a dearth of literature and frameworks to investigate the role of social media in virtual team conflicts. An in-depth literature review on virtual teams, conflicts and social media was conducted, which provided a starting point for this study. Secondary data was researched in journals, conference proceedings, databases such as ABI/Inform Global and Business Source Premier, whitepapers and keyword search on Google Scholar. The feature richness of social media tools and some important factors that lead towards conflicts in VTs were summarized. The factors which lead to conflicts in VTs and the feature richness of social media tools were constantly investigated in light of Ajzen's (1991) framework. Overtime, it led to the development of a research framework (table 2). The secondary data collection was done between June 2013 and February 2014. A 6-point Likert questionnaire was designed to collect the primary data. Measures for trust, satisfaction, reduced conflicts, effective communication and communication tool were researched in the existing literature. Existing measures for each of these constructs, trust (Brockner et al. 1997; Cummings and Bromiley 1996; Gillespie 2003; Mayer and Davis 1999; McAllister 1995; Robinson 1996; Shockley-Zalabak et al. 2000; Spreitzer and Mishra 1999; Tzafirir and Dolan 2004), satisfaction (Gladstein 1984; Smith and Barclay 1997), team cohesion (Widemeyer et al. 1985 cited in Carless and De Paola 2000), conflicts (Jehn 1995), and effective communication (Sullivan and Feltz 1993), which had been validated and used in previous research were then adapted accordingly to study the effect of social media tools on virtual team conflicts. Some measures for team cohesion, reduced conflicts, effective communication and communication tool were created from the literature due to a lack of measures for understanding the effect of social media tools on each of these constructs. Three feature richness items, one each for participation, transparency and collaboration were included in the measures created for the communication tool, since feature richness relates to the communication tool itself. A 6-point scale (Strongly Agree- Agree- Slightly Agree- Slightly Disagree- Disagree- Strongly Disagree) was used in this research. The 'neutral' response category was eliminated to get a definite response from the participants and it ensured that the primary data addressed the research question even with a small sample size. The Likert instrument once developed was pilot tested with a small sample (20 respondents) to ensure that the adaptations done to existing measurements worked well and the instrument produced satisfactory results in terms of gathering primary data for this research. Once the pilot testing was successfully completed, the instrument was ready to be used for a field study.

All potential participants were initially contacted and the use of social media tools for virtual team project work was confirmed. In this research, social media tools referred to internal blogs, wikis, internal discussion forums, WhatsApp and enterprise social media (e.g. Yammer, Jive, SocialCast, Confluence, Salesforce Chatter, Intranet Portals, Microsoft Lync, Asana, and Sharepoint integrated with wikis and social networks). Blogs, wikis and discussion forums are well known social media tools (Brown et al. 2007; Gupta et al. 2012). Enterprise social media (or Enterprise social software) tools are specifically designed to meet the needs of organisations (Cook 2009; McAfee 2006; McAfee 2009), and are increasingly being used by organisations to meet their work and non-work related needs. Organizations where any of these social media tools were not in use were dropped out during the initial screening done for this research.

Subsequently, the participants were invited to participate in this research and signed consent forms were obtained from them. The participants were then sent a unique questionnaire link from the Qualtrics survey software. This unique questionnaire link could only be used once, which also kept a check on re-taking of the questionnaire by the respondents. Participants of this research were executives, managers and CEOs of organizations across New Zealand, the United Kingdom, the United States and India. All of the participants were currently working in virtual teams and were using social media tools for communication and other project related activities such as document sharing, knowledge management, and progress reporting. The primary benefit of conducting primary data



collection across multiple organizations was that any organization specific bias will be reduced and the research findings would reflect the actual effect of the use of social media tools on virtual team conflicts.

Out of the 120 respondents who were sent questionnaire links, 115 completed the questionnaire, yielding a response rate of 95.8%. The participants were instructed to respond to the Likert questionnaire while thinking about their use of social media tools for communication and other project related activities in order to eliminate the effect of other communication tools used by the respondents. Administering this ‘control’ in the instrumentation ensured that any important constructs are not excluded from the domain of the research, and the research is informed as it progressed into the phase of theory testing. The measured scales employed for primary data collection were expected to reveal the naturally-existing state of the domain of this research.

## 4 RESEARCH FINDINGS

The Likert questionnaire data was retrieved from the Qualtrics survey software and a Partial Least Squares Structural Equation Modelling (PLS-SEM) was performed on the data. PLS-SEM was selected due to its statistical robustness and its capability to minimize the effect of statistical specification problems such as multicollinearity (Westlund et al. 2008).

### 4.1 Partial Least Squares Structural Equation Modelling

The Likert questionnaire data was analysed with the PLS-Graph software and the measurement and structural models were assessed. The data analysis resulted in the identification of the research model (figure 1). The results of the PLS structural equation modelling showed that social media tools, on account of their feature richness resulted in effective communication in virtual teams, due to a decrease in communication problems such as communication breakdowns and miscommunication. Accordingly, the communication tool construct was represented by the three feature richness items (participation, transparency and collaboration) (see table 3). Trust, team cohesion and satisfaction were boosted due to effective communication, which also resulted in a reduction in virtual team conflicts.

#### 4.1.1 Measurement Model Assessment

The measurement model was examined for reliability and validity of the constructs. All constructs were modelled to be reflective. Reliability, convergent validity and discriminant validity was examined, the results of which are discussed below.

Reliability was measured using internal consistency reliability (Hair et al. 2013). In order to measure internal consistency reliability, the composite reliability (CR) of the constructs was examined. The CRs ranged from 0.862 to 0.932 (see table 3), all of which were above the accepted 0.70 level (Chin 2010; Hair et al. 2013). Hence, internal consistency of all the constructs was established. Factor loadings of the constructs ranged from 0.728 to 0.936, all of which were above the recommended 0.70 cut-off (Chin 2010; Hair et al. 2013).

Construct/Item	Factor Loadings	CR	AVE
<b>Communication Tool</b>		<b>0.932</b>	<b>0.820</b>
Communication tool ensures participation from all team members	0.921		
The communication tool ensures transparency.	0.857		
The communication tool makes the team work together.	0.936		

<b>Effective Communication</b>		<b>0.917</b>	<b>0.735</b>
The team is able to respond to a communication breakdown well.	0.826		
Team members communicate their feelings honestly	0.855		
Team members display mutual respect.	0.866		
Team members communicate problems easily.	0.882		
<b>Trust</b>		<b>0.912</b>	<b>0.635</b>
Team members work carefully.	0.856		
Team members meet their obligations.	0.796		
Team members contribute to team tasks/success.	0.848		
Team members help resolve the problems in the team.	0.740		
Team members share important project information with me.	0.754		
Team members trust me.	0.782		
<b>Satisfaction</b>		<b>0.922</b>	<b>0.704</b>
I am satisfied with my team members.	0.851		
I am pleased with the way me and other team members work together.	0.895		
I am satisfied with team members' contribution to the team.	0.862		
The team likes working with me.	0.728		
The team members are satisfied with the team.	0.849		
<b>Team Cohesion</b>		<b>0.870</b>	<b>0.625</b>
I am happy with the team's level of task commitment.	0.819		
The team gives me opportunities to improve my performance.	0.760		
The team has a collective agreement on tasks.	0.827		
Team members get to know of individuals' contribution to the team.	0.754		
<b>Reduced Conflicts</b>		<b>0.862</b>	<b>0.610</b>
The team has a united approach towards the project.	0.812		
Team members remember critical project information.	0.785		
I have good relations with my team members.	0.731		
The communication tool helps my relationship with my team members work well.	0.794		

*Table 3. Factor loadings, CR and AVE*

Convergent validity was examined using the average variance extracted (AVE). Accordingly, a commonly adopted AVE cut-off value of 0.50 was used to establish that the construct explained more than half of the variance in its indicators (Chin 2010; Hair et al. 2013). In this research, the AVE values ranged from 0.610 to 0.820 (see table 3), and hence, convergent validity was established.

Finally, discriminant validity was measured to determine whether the construct is unique and explains a phenomenon which is not explained by any other constructs in the research model (Hair et al. 2013; Straub et al. 2004). Discriminant validity was measured by comparing the square root of the AVE

with the correlations among the constructs in the research model. The results revealed that the square root of the AVE for each construct was more than its highest correlation with any other construct (see table 4). Hence, discriminant validity was successfully established.

	<b>CR</b>	<b>AVE</b>	Communication Tool	Effective Communication	Trust	Satisfaction	Team Cohesion	Conflicts
Communication Tool	<b>0.932</b>	<b>0.820</b>	<b>0.905</b>					
Effective Communication	<b>0.917</b>	<b>0.735</b>	0.505	<b>0.857</b>				
Trust	<b>0.912</b>	<b>0.635</b>	0.560	0.732	<b>0.797</b>			
Satisfaction	<b>0.922</b>	<b>0.704</b>	0.499	0.720	0.785	<b>0.839</b>		
Team Cohesion	<b>0.870</b>	<b>0.625</b>	0.641	0.715	0.763	0.785	<b>0.790</b>	
Conflicts	<b>0.862</b>	<b>0.610</b>	0.646	0.697	0.779	0.733	0.734	<b>0.781</b>

Table 4. Correlations between constructs in the research model (square root of AVE on the diagonal)

It is noted that there may be an existence of a second-order latent construct (Schumacker and Lomax, 2004) which represents interactions between trust, team cohesion and satisfaction, since there is a high correlation between these constructs. This discussion is beyond the scope of this research but it may be examined by performing a confirmatory factor analysis and using a larger sample size.

#### 4.1.2 Structural Model Assessment

Following a successful measurement model assessment, the structural model was examined to address the hypotheses and perform an evaluation of the research model. Bootstrapping with 1000 samples was used to compute the strength of the structural paths. Bootstrapping also assessed the product-indicator approach in order to evaluate the interaction effect (Chin et al. 2003).

The results of the structural model analysis are shown in figure 2. The results show that the structural model accounted for 0.256 of the variance explained for effective communication. Feature richness of social media was positively related with effective communication (0.505,  $p < 0.001$ ) suggesting that, social media tools on account of their feature richness led to an effective communication in virtual teams in our sample. Hence, hypothesis 1 is fully supported.

The structural model accounted for 0.535 of the variance explained for trust. Effective communication was positively related with trust (0.732,  $p < 0.001$ ). This suggested that effective communication led to trust development in virtual teams in the sample organizations. Hence, hypothesis 2 is fully supported.

Similarly, the structural model accounted for 0.518 of the variance explained for satisfaction. Effective communication was positively related with satisfaction (0.720,  $p < 0.001$ ), which demonstrated that effective communication resulted in satisfaction in virtual teams. Hypothesis 3 is therefore, fully supported.

Moving ahead, the structural model accounted for 0.511 of the variance explained for team cohesion. Effective communication was positively related with team cohesion (0.715,  $p < 0.001$ ) suggesting that effective communication led to a better team cohesion in virtual teams in this research. This finding supports hypothesis 4 of this research.

Finally, the structural model accounted for 0.666 of the variance explained for conflicts. Trust (0.437,  $p < 0.001$ ), and team cohesion (0.247,  $p < 0.05$ ) were positively related with reduced conflicts as revealed by the structural model assessment. Hence, it can be concluded that these two 2<sup>nd</sup> stage

factors affected a reduction in conflicts in virtual teams in our sample. Hence, hypothesis 5 and 7 are fully supported. Contrary to what was initially expected, satisfaction was insignificant with respect to reduced conflicts (0.196). Hypothesis 6 is therefore, not supported.

Harman’s one factor test (Podsakoff et al. 2003) was conducted on all the items that were used to identify the research model. The results of Harman’s one factor test revealed that all of the items used to identify the research model did not load on one single factor in an unrotated solution when an Exploratory Factor Analysis was conducted on these items using the SPSS software. Further, out of all the resulting factors, no single factor accounted for more than 0.260 of the variance explained. These results point to the non-existence of any common method bias in this research.

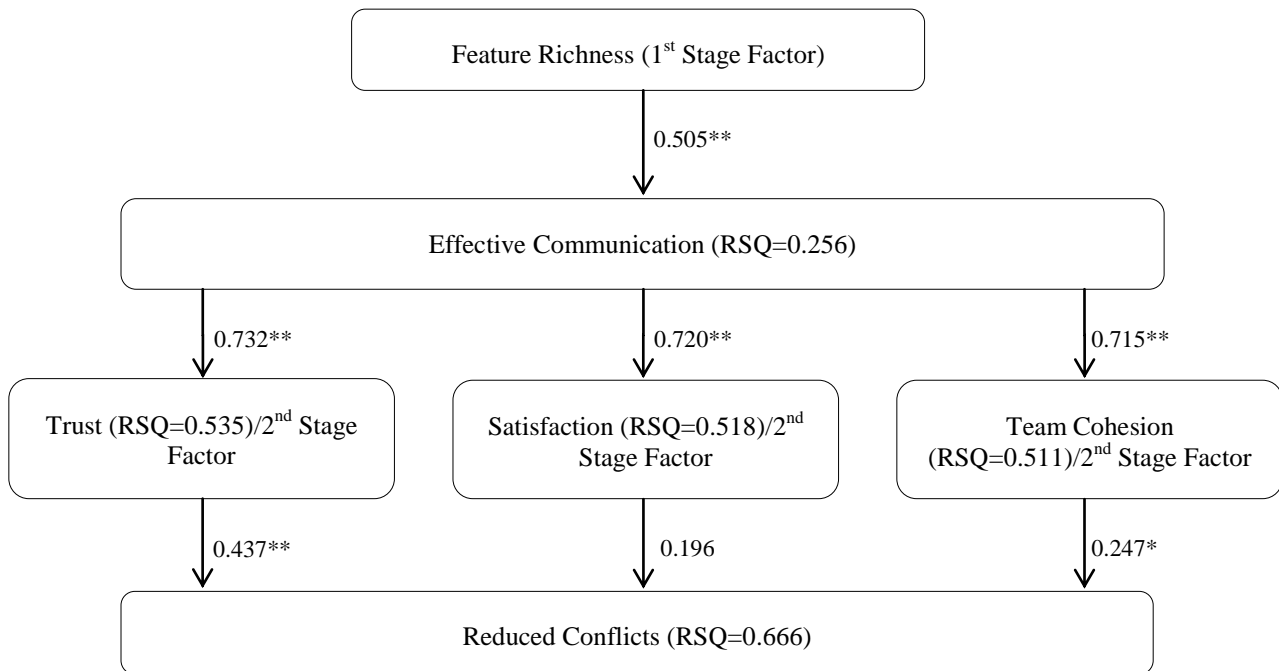


Figure 2. Structural Model Assessment (Key: \*\* $p < 0.001$ , \* $p < 0.05$ )

## 5 DISCUSSION

Social media tools were in use at the sample organizations for different project related activities such as communication, knowledge management, document sharing and progress reporting. It was discovered in this research that social media tools possessed feature richness in form of participation, collaboration and transparency. The research findings clearly demonstrate the feature richness of social media and its relevance to organizational virtual teams. This is an interesting and novel finding of this research which demonstrates the process nature (Dennis et al. 2008; van den Hooff and de Leeuw van Weenen 2004; van den Hooff and de Ridder 2004) of social media tools. The novel concept of feature richness draws upon the theories of media richness (Daft and Lengel 1986) and media synchronicity (Dennis et al. 2008), and demonstrates the relevance of social media tools to organizations. It was unknown how the use of social media tools affects conflicts in virtual teams, hence the research question for this study was: “Can the use of social media tools in virtual teams lead towards reduced conflicts?” The empirical findings suggest that the use of social media tools can be seen as a set of processes inherent in social media tools: participation, collaboration and transparency. These processes accounted for effective communication, which formed an antecedent to the development of trust, team cohesion and satisfaction in the virtual teams under consideration. The research findings revealed that social media tools helped resolve communication problems such as communication breakdowns and miscommunication, which have a potential to spark conflicts in VTs (Daim et al. 2012; Shachaf 2008).

Lack of trust is a major factor that can lead to conflicts in teams as suggested by the literature (Maznevski et al. 2006; Shachaf 2008). Social media tools accelerated trust development which had an effect in terms of reducing team conflicts.

Team cohesion is another factor that is associated with team conflicts as suggested by the literature (Maznevski et al. 2006; Shachaf 2008). The use of social media tools increased team cohesion in virtual teams in our sample, which contributed towards reducing conflicts in virtual teams.

The use of social media tools was associated with satisfaction as revealed by the research findings. Satisfied team members perform better (Lin et al. 2008) which is beneficial for the team. Previous literature suggests that team satisfaction and conflicts are negatively related to each other (De Dreu and Weingart 2003). However, satisfaction did not lead to a reduction in virtual team conflicts as suggested by the research findings. This was possibly due to a small sample size, since the research findings did reveal the existence of a path between satisfaction and reduced conflicts which was rejected on account of insignificance. It is recommended that the effect of satisfaction on virtual team conflicts be revisited, in light of social media tools.

It can now be established that the use of social media tools was a combination of different processes which established effective communication and resolved some communication problems in VTs. Effective communication was an antecedent to increased trust, team cohesion and satisfaction, the 2<sup>nd</sup> stage factors. These 2<sup>nd</sup> stage factors boosted actual behavioural control and perceived behavioural control (Ajzen 1991) in the VTs under consideration, which affected a reduction in virtual team conflicts.

Hence, the use of social media tools led to a reduction in virtual team conflicts in the sample organizations, a finding which answers the research question. Conflicts have been associated with a reduction in team morale and productivity by previous research (Griffith et al. 2003; Montoya-Weiss et al. 2001). Hence, a reduction in team conflicts would lead towards better team work, which ensures increased behavioural achievement (Ajzen 1991), in this case, an increased team performance.

## **6 CONCLUSION**

It was hitherto unknown how the use of social media tools in virtual teams can affect team conflicts. This empirical research used a quantitative research method to shed light on the feature richness of social media tools, which was unknown. Operationally, feature richness functioned as the process nature of social media tools, reduced communication problems and led to an effective communication in virtual teams. Effective communication boosted team trust, team cohesion and satisfaction. Finally, this research demonstrated that the use of social media tools leads to a reduction in virtual team conflicts. The research findings are novel, since to the best of researchers' knowledge no prior research has investigated the effect of social media tools on virtual team conflicts. Theoretically, this research has contributed to an improved understanding of the feature richness of social media tools, in terms of their process nature. This research adds value to the media richness theory (Daft and Lengel 1986) and the theory of media synchronicity (Dennis et al. 2008) and implements these theories in the context of social media tools. This research operationalizes the theory of planned behaviour (Ajzen 1991) in the context of social media tools and VT conflicts and adds value to it. The findings of this research are of value to researchers and academics and provide a new research direction for studying social media tools. For practitioners, this research demonstrates the benefits that social media tools offer to organizational teams, and also has implications in terms of the use and design of feature rich tools for virtual teams.

The limitation of this research is that the sample size was small. The use of PLS structural equation modelling, however, ensured that the research findings are reliable even with a small sample size. Future research can consider studying individual social media tools and their effect on virtual team conflicts, and can also consider studying focus groups. Feature richness and process nature of social media tools can also be investigated further using a Transactive Memory System (Wegner, 1986) approach.

## References

- Ajzen, I. (1991). The theory of planned behaviour. *Organizational behavior and human decision processes*, 50 (2), 179-211.
- Baan, A. (2004). Personal communication regarding virtual teams at Royal Dutch Shell and other companies.
- Bastida, R., Gupta, H. and Wingreen, S.C. (2013). A comparative study of the effect of blogs and email on virtual team performance. In *Proceedings of the 17 Pacific Asia Conference on Information Systems*, 18-22 June, Jeju Island, South Korea.
- Bertot, J. C., Jaeger, P. T. and Grimes, J. M. (2010). Crowd-sourcing transparency: ICTs, social media, and government transparency initiatives. In *Proceedings of the 11th Annual International Digital Government Research Conference on Public Administration Online: Challenges and Opportunities*, Digital Government Society of North America, 51-58.
- Bjorn, P. and Ngwenyama, O. (2009). Virtual team collaboration: building shared meaning, resolving breakdowns and creating translucence. *Information Systems Journal*, 19, 227-253.
- Brockner, J., Siegel, P. A., Daly, J. P., Tyler, T. and Martin, C. (1997). When trust matters: the moderating effect of outcome favourability. *Administrative Science Quarterly*, 42, 558-583.
- Brown, M.K., Huettner, B. and James-Tanny, C. (2007). *Managing virtual teams: Getting the most from Wikis, Blogs, and Other Collaborative Tools*. Wordware Publishing Inc., Sudbury, MA.
- Brown, H.G., Poole, M.S. and Rodgers, T.L. (2004). Interpersonal traits, complementarity, and trust in virtual collaboration. *Journal of Management Information*, 20 (4), 115-128.
- Canney Davison, S. and Ekelund, B.Z. (2004). Effective team process for global teams. In H.W. Lane, M.L. Maznevski, M.E. Medenhall and J. McNett. (eds), *The Blackwell handbook of global management: a guide to managing complexity*, 69, 227-249, Blackwell Publishers, Oxford.
- Canney Davison, S., Ward. K. (1999). *Leading International Teams*. McGraw-Hill International, Berkshire, England.
- Carless, S.A. and De Paola, C. (2000). The Measurement of Cohesion in Work Teams. *Small Group Research*, 31(1), 71-88.
- Carmel, E. (2002). Global software teams: opportunities and challenges of technology-enabled work. *Perspectives on Work*, 6 (2), 6-8.
- Carron, A. V., and Brawley, L. R. (2012). Cohesion Conceptual and Measurement Issues. *Small Group Research*, 43(6), 726-743.
- Chin, W. W., Marcolin, B. L., and Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, 14(2), 189-217.
- Chin, W. W. (2010). How to write up and report PLS analyses. In W. W. C. In V. E. Vinzi, J. Henseler, & H. Wang (Ed.), *Handbook of Partial Least Squares: Concepts, Methods and Application* (pp. 655-690). Heidelberg, Dordrecht, London, New York: Springer.
- Chudoba, K. M., Wynn, E., Lu, M. and Watson-Manheim, M. B. (2005). How virtual are we? Measuring virtuality and understanding its impact in a global organization. *Information Systems Journal*, 15 (4), 279-306.
- Cook, N. (2008). *Enterprise 2.0: How Social Software Will Change the Future of Work*, Gower Publishing Ltd., 164.
- Cummings, L. L. and Bromiley, P. (1996). The Organizational trust inventory (OTI): development and validation, in Kramer, R.M. and Tyler, T.R. (Eds), *Trust in Organisations: Frontiers of Theory and Research*, Sage, Thousand Oaks, CA, pp. 302-31.
- Curseu, P.L., Schalk, R. and Wessel, I. (2008). How do virtual teams process information? A literature review and implications for management. *Journal of Managerial Psychology*, 23 (6), 628-652.
- Daft, R.L. and Lengel, R.H. (1986). Organizational information requirements, media richness, and structural design. *Management Science*, 32 (5), 554-571.
- Daim, T.U., Reutiman, H.A., Hughes, S., Pathak, B., Bynum, U.W. and Bhatla, A. (2012). Exploring the communication breakdown in global virtual teams. *International Journal of Project Management*, 30 (2), 199-212.

- Darisipudi, A. and Sharma, S.K. (2008). Blogs: A Computer Mediated Communication Tool for Virtual Team Collaboration. In S Kelsey and K St. Amant (eds), *Handbook of Research on Computer Mediated Communication*, Information Science Reference, 2, Hershey, PA, 720-730.
- Dennis, A. R. and Valacich, J. S. (1999). Rethinking media richness: Towards a theory of media synchronicity. In *Systems Sciences, 1999. HICSS-32. Proceedings of the 32nd Annual Hawaii International Conference on* (pp. 10-pp). IEEE.
- Dennis, A. R., Fuller, R. M. and Valacich, J. S. (2008). Media, tasks, and communication processes: A theory of media synchronicity. *MIS Quarterly*, 32(3), 575-600.
- Dennis, A. R. and Kinney, S. T. (1998). Testing Media Richness Theory In The New Media: Cues, Feedback, and Task Equivocality. *Information Systems Research*, 9(3), 256-274.
- De Dreu, C. K., and Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: a meta-analysis. *Journal of applied Psychology*, 88(4), 741.
- Duarte, D.L. and Snyder, N.T. (2011). *Mastering Virtual Teams: Strategies, Tools and Techniques that Succeed*. John Wiley and Sons, San Francisco, CA.
- Edwards, H.K. and Sridhar, V. (2003). Analysis of the Effectiveness of Global Virtual Teams in Software Engineering Projects. In *Proceedings of the 36th Hawaii International Conference on System Sciences*, Hawaii.
- Ensley, M. D., Pearson, A. W., and Amason, A. C. (2002). Understanding the dynamics of new venture top management teams: cohesion, conflict, and new venture performance. *Journal of Business Venturing*, 17(4), 365-386.
- Ferrazzi, K. (2012). Retrieved 3 March, 2013 from [http://blogs.hbr.org/cs/2012/11/how\\_to\\_manage\\_conflict\\_in\\_virt.html](http://blogs.hbr.org/cs/2012/11/how_to_manage_conflict_in_virt.html)
- Gillespie, N. (2003). Measuring trust in working relationships: the behavioural trust inventory. Paper presented at the Academy of Management Meeting, Seattle, August 2003.
- Gladstein D. (1984). Groups in context: A model of task group effectiveness. *Administrative Science Quarterly*, 29, 499-517.
- Griffith, T.L., Mannix, E.A. and Neale, M.A. (2003). Conflicts and virtual teams. In Gibson, C.B. and Cohen, S.G. (Eds.) *Virtual Teams that Work: Creating conditions for virtual team effectiveness*, Jossey-Bass, San Francisco, CA.
- Gupta, H., and Wingreen, S. C. (2014). Understanding the Mediating Role of Social Media in Virtual Team Conflicts. In *Proceedings of the 18th Pacific Asia Conference on Information Systems*, Chengdu, China.
- Gupta, H., Nicholson, B. and Newman, M. (2012). Usage, impediments and attitudes towards social media in UK building societies. In *Proceedings of the 16<sup>th</sup> Pacific Asia Conference on Information Systems*, HoChiMinh city, Vietnam.
- Hair, J., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2013). *A Primer on Partial Least Squares Structural Equations Modeling (PLS-SEM)*: SAGE Publications.
- Henttonen, K. and Blomqvist, K. (2005). Managing distance in a global virtual team: The evolution of trust through technology-mediated relational communication. *Strategic Change*, 14, 107-119.
- Hertel, G., Geister, S. and Konradt, U. (2005). Managing virtual teams: A review of current empirical research. *Human Resource Management Review*, 15 (1), 69-95.
- Hinds, P. J. and Bailey, D. E. (2003). Out of sight, out of sync: Understanding conflict in distributed teams. *Organization Science*, 14 (6), 615-632.
- Hinds, P. and Mortensen, M. (2005). Understanding conflict in geographical distributed teams: the moderating effects of shared identity, shared context, and spontaneous communication, *Organization Science*, 16, 290– 307.
- Hoffman, D. L. and Fodor, M. (2010). Can you measure the ROI of your social media marketing. *MIT Sloan Management Review*, 52(1), 41-49.
- Horwitz, F.M., Bravington, D. and Silvis, U. (2006). The promise of virtual teams: identifying key factors in effectiveness and failure. *Journal of European Industrial Training*, 30 (6), 472-494.
- Jarvenpaa, S.L. and Leidner, D.E. (1998). Communication and Trust in Global Virtual Teams. *Journal of Computer-Mediated Communication*, 3 (4).
- Jehn, K.A. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40, 256-282.
- Joinson, C. (2002). Managing virtual teams. *HR Magazine*, 47 (6), 68-73.

- Jones, Q., Ravid, G. and Rafaeli, S. (2004). Information Overload and the Message Dynamics of Online Interaction Spaces: A Theoretical Model and Empirical Exploration. *Information Systems Research*, 15(2), 194-210.
- Kankanhalli, A., Tan, B.C.Y and Wei, K. (2006). Conflict and Performance in Global Virtual Teams. *Journal of Management information Systems*, 23 (3), 237-274.
- Kaplan, A., Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53, 59-68.
- Kirkman, B.L. and Mathieu, J.E. (2005). The Dimensions and Antecedents of Team Virtuality. *Journal of Management*, 31 (5), 700-718.
- Kirkman, B. L., Rosen, B., Gibson, C. B., Tesluk, P. E. and McPherson, S. O. (2002). Five challenges to virtual team success: Lessons from Sabre, Inc. *Academy of Management Executive*, 16, 67-79.
- Lanubile, F., Ebert, C., Prickladnicki, R. and Vizcaino, A. (2010). Collaboration Tools for Global Software Engineering. In *Proceedings of the IEEE Conference on Global Software Engineering*, 23-26 August, 2010, Princeton, NJ, USA.
- Leinonen, P., Jarvela, S. and Hakkinen, P. (2005). Conceptualizing the Awareness of Collaboration: A Qualitative Study of a Global Virtual Team. *Computer Supported Cooperative Work*, 14, 301-322.
- Lin, C., Standing, C. and Liu, Y.C. (2008). A model to develop effective virtual teams. *Decision Support Systems*, 45 (4), 1031-1045.
- Malhotra, A., Majchrzak, A. and Rosen, B. (2007). Leading Virtual Teams. *Academy of Management Perspectives*, 21 (1), 60-70.
- Mangold, W. G. and Faulds, D. J. (2009). Social media: The new hybrid element of the promotion mix. *Business Horizons*, 52 (4), 357-365.
- Mayer, R. C. and Davis, J. H. (1999). The effect of the performance appraisal system on trust for management: a field quasi-experiment. *Journal of Applied Psychology*, 84(1), 123-136.
- Maznevski, M.L. and Chudoba, K.M. (2000). Bridging Space Over Time: Global Virtual Team Dynamics and Effectiveness. *Organization Science*, 11 (5), 473-492.
- Maznevski, M., Davison, S.C. and Jonsen, K. (2006). Global virtual team dynamics and effectiveness. In Stahl, G.K. and Bjorkman, I. (Eds.) *Handbook of Research in International Human Resource Management*. Edward Elgar, Massachusetts, USA.
- McAfee, A. P. (2006). Enterprise 2.0: The dawn of emergent collaboration. *MIT Sloan Management Review*, 47(3), 21-28.
- McAfee, A. (2009). *Enterprise 2.0: New collaborative tools for your organization's toughest challenges*. Harvard Business Press.
- McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organisations. *Academy of Management Journal*, 38(1), 24-59.
- Montoya-Weiss, M.M., Massey, A.P. and Song, M. (2001). Getting it Together: Temporal Coordination and Conflict Management in Virtual Teams. *Academy of Management Journal*, 44 (6), 1251-1262.
- Mortensen, M. and O'Leary, M. (2012). Managing a Virtual team. Retrieved 22 February, 2013 from [http://blogs.hbr.org/cs/2012/04/how\\_to\\_manage\\_a\\_virtual\\_team.html](http://blogs.hbr.org/cs/2012/04/how_to_manage_a_virtual_team.html)
- Nardi, B.A., Schiano, D.J., Gumbrecht, M. and Swartz, L. (2004). Why we blog. *Communications of the ACM*, 47(12), 41-46.
- Nissen, M. E. and Bergin, R. D. (2013). Knowledge work through social media applications: Team performance implications of immersive virtual worlds. *Journal of Organizational Computing and Electronic Commerce*, 23 (1-2), 84-109.
- Paul, D.L. and Mc Daniel, Jr. (2004). A field study of the effect of interpersonal trust on virtual collaborative relationship performance. *MIS Quarterly*, 28 (2), 183-227.
- Peters, L. and Karren, R.J. (2009). An Examination of the Roles of Trust and Functional Diversity on Virtual Team Performance Rating. *Group Organization and Management*, 34 (4), 479-504.
- Peters, L.M. and Manz, C.C. (2007). Identifying antecedents of virtual team collaboration. *Team Performance Management*, 13, 117-129.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., and Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88(5), 879.



- Robinson, S.L. (1996). Trust and breach of the psychological contract. *Administrative Science Quarterly*, 41, 574-599.
- Rosen, B., Furst, S. and Blackburn, R. (2007). Overcoming Barriers to Knowledge Sharing in Virtual Teams. *Organizational Dynamics*, 36 (3), 259-273.
- Schuff, D., Turetken, O. and D'Arcy, J. (2006). A multi-attribute, multi-weight clustering approach to managing "e-mail overload". *Decision Support Systems*, 42(3), 1350-1365.
- Schumacker, R. E., and Lomax, R. G. (2004). *A beginner's guide to structural equation modeling*. Psychology Press.
- Shachaf, P. (2008). Cultural diversity and information and communication technology impacts on global virtual teams: An exploratory study. *Information and Management*, 45 (2), 131-142.
- Shockley-Zalabak, P., Ellis, K. and Winograd, G. (2000). Organizational trust: what it means, why it matters. *Organization Development Journal*, 18(4), 35-48.
- Short, J., Williams, E. and Christie, B. (1976). *The social psychology of telecommunications*, John Wiley & Sons, New Jersey.
- Sivunen, A. and Valo, M. (2006). Team Leaders' Technology Choice in virtual Teams. *IEEE Transactions on Professional Communication*, 49(1), 57-68.
- Smith, J.B. and Barclay, D.W. (1997). The Effects of Organizational Differences and Trust on the Effectiveness of Selling Partner Relationships. *Journal of Marketing*, 61(1), 3-21.
- Spreitzer, G. M. and Mishra, A. K. (1999), Giving up without losing control: trust and its substitutes' effects on managers' involving employees in decision-making. *Group & Organization Management*, 24(2), 155-87.
- Standing, C. and Kiniti, S. (2011). How can organizations use wikis for innovation?. *Technovation*, 31 (7), 287-295.
- Stebbins, R.A. (2001). *Exploratory Research in Social Sciences*, Sage Publications, Thousand Oaks.
- Straub, D., Boudreau, M.-C., & Gefen, D. (2004). Validation guidelines for IS positivist research. *Communications of the Association for Information Systems*, 13(24), 380-427.
- Sullivan, P. and Feltz, D.L. (2003). The Preliminary Development of the Scale for Effective Communication in Team Sports (SECTS). *Journal of Applied Social Psychology*, 2003, 33(8), 1693-1715.
- Tekleab, A. G., Quigley, N. R., and Tesluk, P. E. (2009). A longitudinal study of team conflict, conflict management, cohesion, and team effectiveness. *Group & Organization Management*, 34(2), 170-205.
- Tzafrir, S.S. and Dolan, S.L. (2004). Trust me: a scale for measuring manager-employee trust. *Management Research*, 2(2), 115-132.
- van den Hooff, B., and De Ridder, J. A. (2004). Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of knowledge management*, 8 (6), 117-130.
- van den Hooff, B. and de Leeuw van Weenen, F. (2004). Committed to share: commitment and CMC use as antecedents of knowledge sharing. *Knowledge and Process Management*, 11 (1), 13-24.
- Wegner, D.M. (1986). *Theories of Group Behaviour*. Springer-Verlag, New York, 185-208.
- Westlund, A. H., Källström, M., and Parmler, J. (2008). SEM-based customer satisfaction measurement: On multicollinearity and robust PLS estimation. *Total Quality Management*, 19(7-8), 855-869.