

# UNDERSTANDING THE MEDIATING ROLE OF SOCIAL MEDIA IN VIRTUAL TEAM CONFLICTS

Hritik Gupta, Department of Accounting and Information Systems, University of Canterbury, Christchurch, New Zealand, hritik.gupta@canterbury.ac.nz

Stephen C. Wingreen, Department of Accounting and Information Systems, University of Canterbury, Christchurch, New Zealand, stephen.wingreen@canterbury.ac.nz

## Abstract

*Communication technology is recognized as an important component of a virtual team (VT). Communication technologies other than social media have been linked to VT conflicts by prior research. This research in progress explores using social media to see if any improvements can be made to conflicts in VTs. The researchers emphasize on the “feature richness” of social media which is understood as affordances of social media and it distinguishes social media from other commonly used communication technologies in a VT environment. The researchers theorize that “feature richness” rather than “media richness” of the communication technology can be more beneficial for a virtual team since it is hoped to simultaneously work towards reducing VT conflicts. The researchers propose a conceptual research model that contributes to understanding the mediating role that social media can play in virtual team conflicts.*

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

# 1 INTRODUCTION

A virtual team (VT) is understood 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). Virtual teams are different from co-located teams and the most recognizable difference is that in most of the cases, the virtual team’s members are based in different geographic locations. Team members may not ever meet face to face but continue to collaborate on organisational projects (Caney-Davison and Ward 1999; Jarvenpaa et al. 1998). The basis for a virtual team is the communication technology that is used to co-ordinate the tasks. Virtual team performance depends on the effectiveness of communication between the team members (Bjorn and Ngwenyama 2009; Lanubile et al. 2010). Communication technologies used in a virtual team environment include telephone, email, blogs, wikis and videoconferencing (Brown et al. 2007; Duarte and Snyder 2011; Jarvenpaa and Leidner 1998). Email is regarded as the universally accepted communication technology in VT communications as it is easy to use and most of the team members can effectively use it (Bastida et al. 2013; Brown et al. 2007; Jarvenpaa and Leidner 1998). Generally, telephone, email and videoconferencing are regarded to be the core VT communication tools (Brown et al. 2007). A loss in VT communication can have severe consequences including loss of productivity (Daim et al. 2012). It can therefore, be established that communication is a vital aspect of a VT and is largely associated with the success or failure of a VT.

The relationship between VT members is ‘virtual’ and is based on communication between the members. Prior research suggests that virtual team members form an impression about each other during the first few communications (Mortensen and O’Leary 2012). VTs are often marred by conflicts, which have a tendency to lower the team’s morale and affect the productivity measures of the team (Griffith et al. 2003; Montoya-Weiss et al. 2001). Conflicts can occur for any reason within a VT such as miscommunication (Shachaf 2008) and can intensify once sparked (Canney Davison and Ekelund 2004; Paul and McDaniel 2004). The reliance of a VT on the communication technology is huge and hence, the communication technology has been linked to 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). There are gaps in literature in terms of the effect of social media usage on VT conflicts. The main research question for this study is:

RQ: Can social media usage for VT communications lead towards reduced conflicts?

This research focuses on some of the concepts that are found in the literature and play a major role in VT conflicts. These include trust, transparency, satisfaction, collaboration and miscommunication. In the next section, we present a review of the literature which is followed by a conceptual framework. In the last section, we lay down the intended approach for data collection.

## 2 LITERATURE REVIEW

This section presents a comprehensive literature review of the subjects: conflicts, virtual teams and social media.

### 2.1 Conflicts in a VT Context

A virtual team environment is such that the team members may or may not know each other personally as they may not have met face-to-face (Caney-Davison and Ward 1999; Chudoba et al. 2005; Jarvenpaa et al. 1998). Face-to-face meetings provide an opportunity to know more about each other (Mortensen and O’Leary 2012) and this generates a feeling of trust among the team members. In a VT, the development of trust has to be done through the communication tool and long-distance communication and hence, it takes time to develop (Henttonen and Blomqvist 2005).

Virtual teams are exposed to conflicts between the team members (Brown et al. 2004; Griffith et al. 2003). A conflict in a VT can often take a much longer time to tackle when contrasted with co-located teams. Co-located teams have an advantage because the manager can attempt to resolve the conflict between the team members through face-to-face communication (Carmel 2002; Joinson 2002). Virtual teams often lack this ability as the team members and even the manager may be based in different locations and hence, it might get difficult to communicate in order to resolve the conflict. Further, the VT members might not know each other's day to day problems which can lead to a misunderstanding between the team mates (Brown et al. 2007). Virtual teams are also prone to encounter more conflicts than co-located teams on account of the cultural diversity of the team (Baan 2004). Cultural diversity is a major factor that has a potential to spark conflicts, which may deteriorate the relationships between the team members and could intensify further to damage team trust and communication (Kankanhalli et al. 2006). Functional diversity is another form of diversity that exists in a VT and this leads to task-related conflicts in a VT (Kankanhalli et al. 2006). Conflicts can have severe consequences for the firm including lowering the productivity and efficiency of the firm. Conflicts can also put the morale of the team members at stake and can potentially reduce their motivation levels. In the presence of VT conflicts, the outcomes of the project can be severely compromised (Griffith et al. 2003; Montoya-Weiss et al. 2001).

Conflicts can be categorized into relationship and task conflicts (Maznevski et al. 2006). Relationship conflicts affect the relations between the team members and task conflicts leave a VT divided on their viewpoints and with no specific defining strategy. A significant challenge that emerges out of a VT environment is that the team members are much unaware about their co-workers' working styles. They are also unfamiliar with their co-workers' skill set and areas of expertise. This might lead to task-related conflicts in a VT and in such cases, it is beneficial to have a sense of 'collaboration awareness' which is a key criterion for the success of a VT project and is understood as the ability of the team members to remember project related information and how well they do so (Leinonen et al. 2005). As discussed earlier, the VT communication tool has a major role to play in VT communications and hence, the same concept applies to conflicts since, the communication tool is the primary means of contact in a VT. This demonstrates the importance of communication tool to a VT.

## **2.2 Factors Related to Conflicts in VTs**

VT conflicts can be potentially caused by any reason or action of a particular team member. There are a number of factors associated with conflicts which if addressed can lead to better co-ordination in VTs:

### *2.2.1 Trust in VTs*

Trust is regarded as a major factor that leads to the success or failure of a VT (Maznevski et al. 2006). The level of trust among the team members is a serious cause of concern for a VT (Horwitz et al. 2006), since this has a potential to undermine team effectiveness. The development of trust among the team members is attributed to repeated communications and sharing of information and key resources (Henttonen and Blomqvist 2005; Kirkman et al. 2002) and thus, heavily relies on the communication technology. Development of trust in a VT environment is complicated, since the team members do not meet each other face-to-face most of the times. Trust is directly linked to the levels of collaboration in a VT (Peters and Manz 2007) and accordingly, trust is an antecedent condition to VT collaboration. In absence of trust, the team members behave as independent units and there is little collaborative effort towards the project. The team becomes vulnerable to miscommunication and conflicts (Shachaf 2008). Trust building also accounts for relationship building in teams (Horwitz et al. 2006). Hence, trust can be understood as an important component of a virtual team.

### *2.2.2 Communication Breakdowns*

Communication is at the core of a VT since, in the absence of communication technology, a VT would not have existed. Communication breakdowns are common in VTs (Malhotra et al. 2007;

Rosen et al. 2007) and they lead to severe consequences for the VT such as loss of productivity as a team member might keep waiting for some information from the other team members which could be delayed due to the breakdown and he might not be able to proceed further. Repeated communication breakdowns might lead to conflicts in the virtual team. Communication technology and trust are understood to be the major factors associated with communication breakdowns (Daim et al. 2012).

### 2.2.3 *Miscommunication*

Miscommunication is another downside to effective communication that can occur frequently in a VT environment and can lead to deteriorated relationships among the team members (Shachaf 2008). Damaged relationships are a source of conflicts and reflect negatively on team performance. Ferrazzi (2012) suggests that the use of online tools ensure transparency of information which reduces the room for miscommunication.

### 2.2.4 *Satisfaction*

Satisfaction is important for a virtual team as the team members tend to be more committed and perform better when satisfied (Lin et al. 2008). Satisfaction is dependent on the communication technology used in the VT (Edwards and Sridhar 2003) and raises the overall team performance. Satisfaction in virtual teams is lesser when contrasted with face-to-face teams because communication in VTs is time consuming and little information is exchanged (Hertel et al. 2005). Satisfaction can thus be understood as an important component of a virtual team with a potential to improve team performance (Curseu et al. 2008; Shachaf 2008). Satisfaction is linked to boosting employee morale and commitment towards the task in the longer term.

## **2.3 Feature Richness of Social Media**

Prior research (Kirkman and Mathieu 2005) suggests that richer media (Daft and Lengel 1986; Short et al. 1976) such as videoconferencing gives the team members a feeling of being co-located. However, the researchers propose that ‘feature richness’ of the communication media rather than ‘media richness’ is more desirable in the context of a VT where communication is the primary means of contact among the team members. Feature richness is understood as ‘the set of features that the communication medium offers to encourage participation, collaboration, transparency and information organization’. The researchers refer to 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), without targeting any specific form of social media, for example, blogs, wikis or social networks. Different forms of social media offer different capabilities (Nissen and Bergin 2013) but the feature richness is common to most of the social media. Social media is ‘feature rich’ when compared with traditional VT communication tools such as email, videoconferencing and telephone since, social media encourages effective communication on account of feature richness as discussed below:

### 2.3.1 *Participation*

Participation is important in a virtual team as an antecedent for virtual team collaboration. Participation is brought about by increased information sharing among the team members and initiation of meaningful team dialogue (Henttonen and Blomqvist 2005; Kirkman et al. 2002). A greater degree of participation among the team members leads to formation of trust among the team members (Maznevski and Chudoba 2000; Peters and Manz 2007). Social media has good capabilities to encourage team participation due to some striking features such as likes which can be used to support a chunk of information and comments that generate dialogue between the team members (Hoffman and Fodor 2010).

### 2.3.2 *Collaboration*

Collaboration can be viewed as a rich process that creates values which could not be achieved through communication or teamwork alone (Peters and Manz 2007). Virtual team collaboration can lead towards more productive results than could have been achieved through mere communication. Collaboration begins within a virtual team as soon as the team members start seeking ideas and information from their co-workers. This initiates a meaningful dialogue leading towards information exchanges and understanding between the team members. Overtime, the team develops sort of an influence amongst each other and an ability to work with minimal supervision. Team members also develop mutual trust (Peters and Karren 2009) and support each other during the project. Social media provides a highly collaborative environment to the users (Goodwin-Jones 2003; Standing and Kiniti 2011) and increases the level of interaction between the team members. Collaboration features of social media allow the team members to develop a “shared meaning” - a synergy where the team members are able to judge other’s thoughts and perceptions and are able to make sense out of minimal information (Bjorn and Ngwenyama 2009).

### 2.3.3 *Transparency of Information*

Transparency of information is very important for a VT as it ensures equitable access of information and encourages equal participation of all team members. Traditional tools such as email are often associated with providing little transparency due to the non-existence of a common pool of information, and most of it residing with individual members (Bjorn and Ngwenyama 2009). Social media offers transparency in communications and information sharing as suggested by prior research (Bertot et al. 2011; Kaplan and Haenlin 2010). Transparent records of communication help the team members and management in resolving any potential problems that plague the VT (Ferrazzi 2012). Transparency of information in a VT is heavily dependent on the communication tool because it stores all previous records of communication and also provides a medium for all future communications.

### 2.3.4 *Information Organization*

Information organization is vital for a virtual team as unorganized information tends to lower the productivity of the team. Traditional communication technologies such as email are associated with information clutter and loss of critical project information along chain of emails (Darisipudi and Sharma 2008). This downgrades the overall collaborative effort and takes its toll on the performance of the team in complex virtual projects where the amount of information is huge (Bjorn and Ngwentama 2009). Social media offers capabilities for information organization and retrieval: as an example, most of the information on a blog is organized under topics and the information also has links which makes navigation easier (Juch and Stobbe 2005).

Social media is a ‘feature-rich’ media as opposed to videoconferencing which is a richer and synchronous media. Social media might not be as synchronous as videoconferencing, but it allows instant dissemination of information to a wider audience (Mangold and Faulds 2009). Further, social media has advantages in form of its ‘feature richness’, as discussed above, which is not found in the case of videoconferencing. This makes social media more suitable for communication than email which is a bit asynchronous and videoconferencing which is more synchronous. Feature richness can be attributed to the “process” nature (van den Hooff and de Leeuw van Weenen 2004; van den Hooff and de Ridder 2004) of social media and each of the components of features richness such as participation, collaboration, information organisation and transparency can be viewed as individual processes that are facilitated by social media usage.

### 3 CONCEPTUAL FRAMEWORK

Technology mediation has been studied in the context of other technologies in prior studies. Hinds and Bailey (2003) suggest that distributed teams encounter more conflicts on account of reliance on technology mediation and Hinds and Mortensen (2005) demonstrate the significance of spontaneous communication on virtual team conflicts. Bjorn and Ngwenyama (2009) highlight the importance of shared meaning and translucence in the context of communication breakdowns in VTs. However, there is a lack of understanding of technology mediation in the context of social media and its feature richness and the outcomes in terms of VT conflicts. The researchers put forth a research model (figure 1) and their rationale as in why social media usage can lower conflicts in a VT environment.

In figure 1, the antecedents or 1<sup>st</sup> stage factors refer to the feature richness of social media. These are embedded in the technology, social media, and hence are treated as antecedents to the 2<sup>nd</sup> stage factors. The 2<sup>nd</sup> stage factors arise in a VT on account of features offered by the technology, social media in this case. The 1<sup>st</sup> and 2<sup>nd</sup> stage factors are related to each other in a sense that the 2<sup>nd</sup> stage factors are dependent upon the 1<sup>st</sup> stage factors (antecedents), which in turn are a mediating variable in VT communication. The 2<sup>nd</sup> stage factors relate to the virtual team and team members and play a major role in VT conflicts as discussed in the literature. In other words, social media plays a mediating role in virtual team conflicts and is hoped to reduce them.

Ajzen (1991) states that attitude towards the behaviour, subjective norm and perceived behavioural control account towards individual's intentions to perform behaviour. Extending this to virtual teams, behaviour is the project that the virtual team is working on.

The 1<sup>st</sup> and 2<sup>nd</sup> stage factors positively impact individual's attitude towards the behaviour since they generate a sense of participatory and collaborative team work and team members no longer work as independent entities as seen in the case of email.

Social media provides incentives in form of its feature richness (1<sup>st</sup> stage factors). These 1<sup>st</sup> stage factors are not included in some of the commonly used technologies such as email where information clutter and information overload can severely undermine individual's actual behavioural control.

Perceived behavioural control refers to the confidence in self-abilities to perform the behaviour with accuracy. In our research model, the 2<sup>nd</sup> stage factors have an ability to boost the morale of the team, make them confident of their and others' abilities and hence, boosting the perceived behavioural control. Additionally, motivated and confident VT members are hoped to put in significant effort and meaningful thoughts while performing the behaviour.

The actual behavioural control and perceived behavioural control hence, work towards minimizing VT conflicts and positively impact behavioural intentions of VT members. This ultimately leads towards higher team performance (behavioural achievement).

It is possible that some or all of the 1<sup>st</sup> and 2<sup>nd</sup> stage variables may be indicators of a latent 2<sup>nd</sup> order factor (Bollen 2002; Schumacker and Lomax 2004). Although at this stage of the research, this cannot be ruled out, neither can it be confirmed, since more data will be required. An examination of the correlation matrix may provide initial evidence of this, since a second-order effect would manifest itself in correlations between the first-order effects. The researchers now propose their research hypotheses based upon the conceptual research model (figure 1):

**H1: Social media usage leads to an increased trust between VT members.**

**H2: Social media usage boosts VT satisfaction.**

**H3: Social media usage leads towards reduced miscommunication in VTs.**

**H4: Social media usage reduces communication breakdowns in VTs.**

**H5: Social media usage increases VT co-ordination.**

**H6: 2<sup>nd</sup> stage factors lead towards reduction in VT conflicts.**

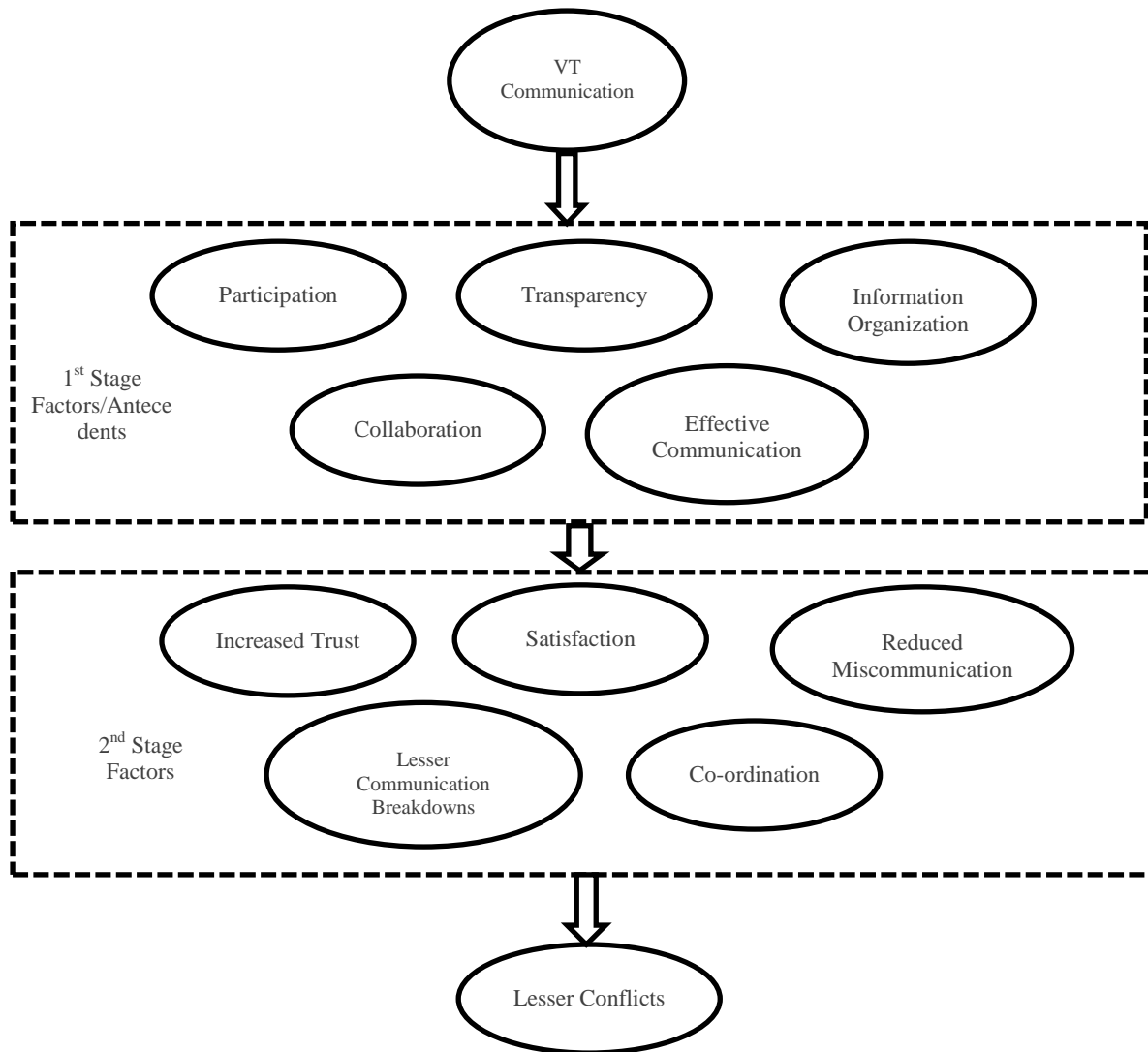


Figure 1. Conceptual Research Model

The conceptual research model shown in figure 1 is novel since, to the best of researchers' knowledge, no prior study has investigated the mediating role that social media can play in VT conflicts and also, no prior study has considered how the feature richness of social media impacts the factors that can spark conflicts in VTs.

#### 4 RESEARCH METHODOLOGY

The subject has not been studied in much detail by any of the previous studies and hence, the authors intend to rely on an exploratory approach (Stebbins 2001). An exploratory approach is deemed suitable since there is a lack of any established framework to study the role of social media in virtual team conflicts. The researchers conducted an in-depth literature review on virtual teams, conflicts and social media which provided a starting point for this study. The researchers relied on journals, conference papers, databases such as ABI/Inform Global and Business Source Premier and keyword search on Google Scholar to study relevant literature. This gave the researchers an impression about the important factors that lead to conflicts in VTs and the feature richness of social media. The researchers then investigated the factors that lead to conflicts in VTs and the feature richness of social media with Ajzen's (1991) framework. This process led to the development of a conceptual research model which is shown in figure 1. The secondary data collection was done between June 2013 and

February 2014. For the purpose of primary data collection, the researchers intend to develop measures for each of the 2nd stage factors, which would lead to the development of a strong research framework. Primary data collection is intended to be performed using a mixed method of research (Creswell 2014) where a Likert-style questionnaire would be succeeded by follow-up semi-structured interviews (Myers and Newman 2007). Mixed method of research (Creswell 2014; Johnson et al. 2007) would allow the researchers to consider multiple viewpoints on the subject and aim at reaching a confirmation of the research findings through collection of quantitative and qualitative data (Miller and Gatta 2006). Different types of data could be collected simultaneously (concurrent design) or one type of data collection could be preceded by another (sequential) (Small 2011). In this research, a sequential design is intended to be followed since, the quantitative phase is expected to give the researchers an impression about how social media can mediate virtual team conflicts and the qualitative phase would facilitate the collection of much more details about the phenomenon of interest and finally, 'complement' the quantitative data. Likert-style questionnaire will be developed and pilot-tested to operationally implement and measure each of the variables in figure 1. The Likert questionnaire will allow an examination of correlations between the constructs represented in figure 1, and ultimately, statistical tests of their interrelationships. Likert questionnaire is hoped to record the experiences of the participants with social media communication in the context of stage 1 and stage 2 factors, which is expected to uncover most of the facts related to the research question. Semi-structured interviews will be performed to explore the adequacy of the research model to explain the domain of the research. Semi-structured interviews are hoped to provide a deeper insight into the collected questionnaire data and help the researchers understand the relationships between the factors in the context of social media technology mediation. Semi-structured interviews will function both to assure that the domain represented by the research model does not exclude any important constructs, and to add a level of richness that will inform the research as it moves from its exploratory phase into a phase of theory testing. The combination of measured scales, with semi-structured interviews, is expected to reveal the naturally-existing state of the domain, which will then form the basis of theory development about the domain, and also support the revision of the instrumentation to a better fit with the theory. The theory and newly-revised instrumentation, once developed, will then be subsequently employed in a primary data collection effort, and the results analyzed using similar, but more rigorously-controlled methods as in the pilot study phase. The sample size would be determined by the principle of "theoretical saturation", according to which the researchers would conclude primary data collection once there is no new contribution to their knowledge from existing questionnaire responses and interviews (Eisenhardt 1989). The participants would be contacted and requested to participate in this research. Participants for the purpose of this research would be executives, managers and CEOs' of corporate organisations from a variety of sectors (e.g. IT, banks, telecommunications etc.) from around the world, who work in virtual teams and communicate via social media (fully or partially) with their team members. Primary data collection across different organisational virtual teams would reduce organisation specific bias and help the researchers understand the effect of social media usage on virtual team conflicts.

## **5 CONCLUSION**

This research attempts to explore using social media to see if improvements can be made to virtual teams' work by reduction in VT conflicts. This study will provide an understanding and a framework for studying the effects of social media usage on virtual team conflicts and would be of value to academics and practitioners who work in virtual teams and with social media. This research would extend the work of Hinds and Bailey (2003), Hinds and Mortensen (2005) and Bjorn and Ngwenyama (2009) into social media and conflicts in organisational virtual teams. As a theoretical contribution, this research would operationalize Ajzen's (1991) framework in the context of virtual teams, social media and VT conflicts. This research would be of value to practitioners, as it would point to the benefits offered by social media in terms of its feature richness and demonstrate the relevance and importance of feature richness to organisational VT communication and team work.



## 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.
- Bollen, K. A. (2002). Latent variables in psychology and the social sciences. *Annual review of psychology*, 53 (1), 605-634.
- 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.
- Carmel, E. (2002). Global software teams: opportunities and challenges of technology-enabled work. *Perspectives on Work*, 6 (2), 6-8.
- 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.
- Creswell, J.W. (2014). *Research Design – Qualitative, Quantitative and Mixed Methods Approaches*. Sage Publications.
- 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.
- 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.
- Eisenhardt, K.M. (1989). Building theories from case study research, *Academy of Management Review*, 14(4), 532-550.
- 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)
- Goodwin-Jones, R. (2003). Blogs and Wikis: Environments for On-Line Collaboration. *Language Learning and Technology*, 7 (2), 12-16.

- 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.
- 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).
- Johnson, R. B., Onwuegbuzie, A. J. and Turner, L. A. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research*, 1 (2), 112-133.
- Joinson, C. (2002). Managing virtual teams. *HR Magazine*, 47 (6), 68-73.
- Juch, C. and Stobbe, A. (2005). Digital economy and structural change. *Deutsche Bank Research*, Frankfurt am Main, 53.
- 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.
- 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.
- Miller, S. I. and Gatta, J. L. (2006). The use of mixed methods models and designs in the human sciences: problems and prospects. *Quality & Quantity*, 40 (4), 595-610.
- 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)

- Myers, M. and Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17 (1), 2-26.
- 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.
- Rosen, B., Furst, S. and Blackburn, R. (2007). Overcoming Barriers to Knowledge Sharing in Virtual Teams. *Organizational Dynamics*, 36 (3), 259-273.
- 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.
- Short, J., Williams, E. and Christie, B. (1976). *The social psychology of telecommunications*, John Wiley & Sons, New Jersey.
- Small, M. L. (2011). How to Conduct a Mixed Methods Study: Recent Trends in a Rapidly Growing Literature. *Annual Review of Sociology*, 37, 57-86.
- 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.
- 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.