



Provided by the author(s) and University of Galway in accordance with publisher policies. Please cite the published version when available.

Title	The Affects of Behaviour Control Mechanisms On Trust in Virtual Teams
Author(s)	Owen, Lydon
Publication Date	2007
Item record	http://hdl.handle.net/10379/351

Downloaded 2024-04-23T21:33:20Z

Some rights reserved. For more information, please see the item record link above.



The Affects of Behaviour Control Mechanisms
On
Trust in Virtual Teams

Department: Department of Information Systems

Faculty: Commerce

Head of Department: Dr. Willie Golden

Research Supervisor: **Dr. Willie Golden**

Submitted by: **Owen Lydon**

A Research Dissertation Submitted in Partial Fulfilment of the Degree of Master of
Science in Technology Management.

September 3rd, 2007

Signed Statement

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Master of Science in Technology Management, is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

Student ID Number: 05119812

Name of Candidate: Owen Lydon

Signature of Candidate:

Date: September 3rd, 2007

Table of Contents

Chapter 1: Introduction	1
1.1 Research Rationale.....	2
1.2 Significance to Real World Field Study	3
1. 3 Research Question	4
1. 4 Constructs	4
Chapter 2: Literature Review	7
2.0 Introduction.....	8
2.1 Virtual Teams.....	9
2.1.1 Introduction.....	9
2.1.2 Key Areas and Early Research on Virtual Teams	11
2.1.3 Conclusion	12
2.2 Trust and Virtual Teams	13
2.2.1 Introduction.....	13
2.2.2 Varieties of Trust	16
2.2.3 Organisational Trust.....	16
2.2.4 Trust and Control	18
2.2.5 Distrust in Virtual Teams.....	19
2.2.6 Conclusion	21
2.3 Communication and Control in Virtual Teams.....	21
2.3.1 Introduction.....	21
2.3.2 Electronic Communication: media richness, social context and email negativity	23
2.3.3 Control Modes in Virtual Teams	28
2.3.4 ICT and Control in Virtual Teams	30
2.3.5 Control and Trust in Virtual Teams	32
2.3.6 Behaviour Control Attributes and Mechanisms.....	35
2.3.7 Conclusion	37
2.4 National Culture and Virtual Teams	38
2.4.1 Introduction.....	38
2.4.2 Hofstede’s Influence	40
2.4.3 Beyond Hofstede.....	42
2.4.4 National Culture & Trust in Virtual Teams	44
2.4.5 National Culture, Communication and Control in Virtual Teams.....	45
2.4.6 Organisational Work Culture and Virtual Teams in India.....	46
2.4.7 Summary and Conclusion	48
Chapter 3: Research Methodology	53
3.1 Introduction.....	54
3.2 Selected Research Approach: Case Study	54
3.3 Method of Sampling	56
3.3.1 Method of Data Collection.....	61
3.4 Method of Data Analysis	63
3.5 Limitations of Data	66
3.6 Conclusion	66

Chapter 4: Findings	68
4.1 Introduction.....	69
4.2 Findings Related to Constructs	69
4.2.1 Virtual Teams.....	69
4.2.2 Trust and Virtual Teams	70
4.2.3 Communication and Control in Virtual Teams.....	71
4.2.3.1 Behavioural Control Mechanisms.....	72
4.2.3.2 Silence.....	72
4.2.3.2 Negative Escalation	74
4.2.4 National Culture and Virtual Teams	77
4.2.4.1 National Culture and Trust in Virtual Teams	80
4.2.4.2 Organisational Work Culture and Virtual Teams in India.....	80
4.3 Conclusion	80
Chapter 5: Discussion	82
5.1 Introduction.....	83
5.2 Trust and Virtual Teams	83
5.3 Communication and Control in Virtual Teams.....	85
5.3.1 Behaviour Control Mechanisms	86
5.3.2 Silence.....	87
5.3.3 Negative Escalation	89
5.4 National Culture and Virtual Teams	94
5.5 Summary of Findings.....	96
Chapter 6: Conclusion	97
6.1 Introduction.....	98
6.2 Summary of Main Findings	99
6.2.1 Existing Constructs are real	99
6.2.2 Silence in Virtual Teams Empirically Supported and Extended to National Culture.....	100
6.2.3 Negative Escalation exists as a new phenomenon.....	100
6.3 Limitations of Research	101
6.4 Implications for Practice	102
6.5 Recommendations for Further Research.....	102
References	104
Appendices	125
Appendix A: email Data	126
Appendix B: introductory email	128
Appendix C: email breakdown per participant	129

Table of Figures

Figure 1.0: Four Key Constructs of Study	6
Figure 2.0 Early Research into Virtual Teams (Powell et al, 2004: 8).....	11
Figure 2.1: Model of Trust in a Global Virtual Team.....	15
Figure 2.2: Obstacles to Virtual Team Effectiveness	22
Figure 2.3: Continuum of Communication Media (re: Information Richness & Social Presence) (Neufeld et al. 2001:2).....	25
Figure 2.4: Virtual Software Team Environments.....	31
Figure 2.5: Trust and Control as Substitutes (Gallivan 2001:287)	33
Figure 2.6: The use of Interorganizational Systems (IOS) to support control and trust.	34
Figure 2.7: Example of Hofstede’s Country Value Dimensions	41
Revisited: Figure 1.0: Four Key Constructs of Study.....	50

List of Tables

Table 2.0: Virtual Team Subject Emphasis by Author	9
Table 2.1: Theoretical Perspectives on the Negative Social Effects of Email Use. .	27
Table 3.0: Participant Metrics.....	58
Table 3.1: Breakdown of Sample Participants (Indian).....	59
Table 3.2: Breakdown of Sample Participants (South African)	59
Table 3.3: Breakdown of Sample Participants (Irish).....	60
Table 3.4: Coding and Categorisation Guidelines	65
Table 3.5: Participant ID and # of emails (excluding threads)	65
Table 4.0: Behavioural Categories and Instance Frequency.....	70
Table 4.1: Data for Multiple Construct EMT29	73
Table 4.2: Bar Graph of Silence as a Multiple Construct (EMT29).....	74
Table 4.3: Negative Escalation as a Multiple Construct (EMT15).....	76
Table 4.4: Bar Graph of Negative Escalation as a Multiple Construct (EMT15)....	77

List of Exhibits

Exhibit 4.0: Example of Vigilance.....	71
Exhibit 4.1: Example of Negative Escalation	75
Exhibit 4.2: Example of Corrective Behaviour.....	78
Exhibit 4.3: Example of Corrective Behaviour (2).....	79
Exhibit 5.0: Empirical Evidence of Reneging	84
Exhibit 5.1: Empirical Evidence of Silence	87
Exhibit 5.2: Empirical Evidence of Negative Escalation.....	91
Exhibit 5.3: Empirical Evidence of Confrontation	95

Acknowledgements

I would like to thank Eoin Higgins and my supervisor Dr. Willie Golden in NUIG for their constant support and enlightenment over numerous coffee and lunches at Friars. Special thanks also go to my Galway classmates and my parents for listening.

However, I would not have made it this far without the constant encouragement and understanding of my loving wife Ciara, who stood by me from day one through thick and thin, putting her life on hold for two years; watching me studying from the ferry boat drifting down the Backwater Canals of Kerala, India to those numerous wet weekends in Spiddal.

Finally, to my darling son Fintan, I look forward to putting the laptop away and enjoying every minute with you and your Mammy.

Abstract

Virtual Team members are characterised by a lack of face to face interaction resulting from the globally distributed nature of multinational networked organisational structures. This research examines the affect that behavioural control mechanisms used to monitor and control team member's task and performance within organisations has on trust in Virtual Teams. The objective of this research is to provide real world, empirical evidence to support key academic findings which indicated that behavioural control mechanisms do have a negative affect on trust in Virtual Teams.

The research focuses on a single case study, based on Virtual Teams with members distributed in Ireland, South Africa and India. The research scope examines four key areas of Virtual Team research. In order to validate this research, a qualitative approach based on content analysis of project escalation emails was used. A sample was created using participant escalation emails logged over a four month period which were then coded and categorised according to behavioural attributes defined in the academic literature. Principal data findings of the email content analysis concluded that trust in Virtual Teams is affected by behavioural control mechanisms and in particular communication context relating to national culture.

The main contribution of this research is it provides empirical support to existing theory and defines a new emerging phenomenon which is unique to Virtual Team theory, known as Negative Escalation, whereby email is used for malicious intent by Virtual team members resulting in the complete erosion of trust and subsequent emergence of distrust in Virtual Teams.

“Trust dies but mistrust blooms”

-Sophocles

Chapter 1: Introduction

1.1 Research Rationale

The 21st century business organisation exists in a global networked, knowledge based economy where information communication technology (ICT) provides the foundation for the development of virtual networks. These virtual networks are comprised of computer mediated organisational solutions which, according to Jarvenpaa & Tanriverdi (2003) are transient, boundary-less and lateral.

The term “virtual” not only applies to the digitalised products and services being offered, but also to the distributed, global workforce of the organisation, known as the ‘virtual team’. Academic research into this key work unit of the virtual network, the ‘virtual team’ has become most prevalent (Schiller & Mandviwalla 2007). The two main drivers of an organisation’s virtual network are the ability to coordinate across space and time, (making physical location and boundaries irrelevant through technology) and secondly, the ability to transition away from tangible products and goods towards digital, knowledge based products, processes and service offerings. The Virtual Team is thus the integral component of the virtual network for multinational ICT organisations that seek to sustain competitive advantage through lower cost and distributed project development (Jarvenpaa & Leidner, 1999) (Lipnack & Stamps, 1997).

However, this distributed nature of Virtual Teams, characterised by the absence of daily face to face interaction, can result in unique challenges, typically around effective communication and trust. (Jarvenpaa & Leidner, 1999). A view also supported by Malhotra (2003) who summarises the limitations of virtual teams as being communication, cultural and task challenged. Previous research has called for future study to extend these aspects of the existing Virtual Team literature. Therefore, this study answers these calls, by focusing the research specifically on four key constructs, as identified by notable academics. The four constructs are significant as they act as the overall drivers for the research that connect the literature to this study, by mapping the key academic themes and theory, serving to extend the previous research on Virtual Teams. The literature review maps directly to each construct, thus reinforcing and

justifying its selection by identifying the main connections to the theory. The structure and scope of this literature review has therefore been organised into sections that relate to the four key constructs, by identifying significant themes and seminal academic theory as it relates to the research question. Each section has an introduction and conclusion that provides additional focus by reiterating the scope and justification for the grouping and selection of theory and academic work.

Finally, further justification for selection of these constructs can be found in the literature which calls for additional research in Virtual Teams, in particular around communication and organisational behaviour control (Rudy, 1996), (Piccoli & Ives (2003), trust and distrust within the virtual context (Jarvenpaa et al. 1998:59), and national culture (Massey et al. 2001).

1.2 Significance to Real World Field Study

The literature on Virtual Teams is vast, and as such any study can only provide an analysis of limited scope. This study therefore sets out to examine only certain subcomponents of the overall literature on Virtual Teams. This research contributes to the existing research on Virtual Teams by adding further empirical evidence, through a case study, linking disparate academic approaches while providing real world indicators of the affects on trust in Virtual Teams. The study provides a valuable contribution to the academic literature as it is based on a study of 'real world' projects and Virtual Teams. Non-field Virtual Team research has inherent limitations, as indicated in Furumo & Pearson (2006) where they noted that their studies involving business students had significant limitations. It is fair to extrapolate similar limitations throughout the literature, however this is not meant to undermine the academic research done to date, but rather highlight the need to extend research towards more 'real world' organisational based field studies of Virtual Teams.

The case study setting is based on Virtual Teams within Intec Billing, a telecom retail billing provider with project development and implementation responsibility shared between Galway, Ireland and Bangalore, India. This case study is concerned with examining how Interorganizational Systems (IS) in the form of Information Communication Technology (ICT) control mechanisms affects organisational trust in Virtual Teams, specifically how the use of internal email communication, acting as an unintended mechanism for behaviour control impacts Virtual Team trust. Finally, this study incorporates academic theory and commentary from numerous disciplines in an attempt to provide a practical and realistic interpretation of the dynamic nature of trust as it exists within organisational Virtual Teams.

1. 3 Research Question

The research question of this study is:

“How do behaviour control mechanisms affect trust in Virtual Teams?”

1. 4 Constructs

This study examines Virtual Teams from four key constructs which mirror important aspects of key academic research areas. Powell et al. (2004:8) identify four key areas of academic research on Virtual Teams, as illustrated in Figure 2, grouping them into Inputs, Outputs, Task Processes and Socio-Emotional Processes. (These are examined in more detail in Sec 2.1.1 of this study).

The constructs for this study are indicative of these main research areas in Virtual Teams:

- **Virtual Teams** provides the contextual basis for the organisational structure central to the research.
- **Trust** is the significant construct as it is the dependant variable and basis for the research.
- **Communication and Control** is reflected as behavioural control within organisational systems, ICT systems and communication tools such as electronic mail act as the predominant method and conduit of communication for the Virtual Team. The extant literature indicates that communication can promote goals that reinforce trust, however conversely communication may also result in conflict that erodes trust.
- **National Culture** plays a significant role in this study as modern Virtual Teams are characterised as multicultural and geographically diverse.

The study examines the significance of the four constructs and their affect on the functional dynamic of the Virtual Team. Figure 1.0 reiterates the significance of these constructs in a hierarchical structure, illustrating their significance in both this study and relevance in the overall academic literature on Virtual Teams. Trust is positioned as the central construct due to its direct behavioural relationship and influence on the remaining three constructs.

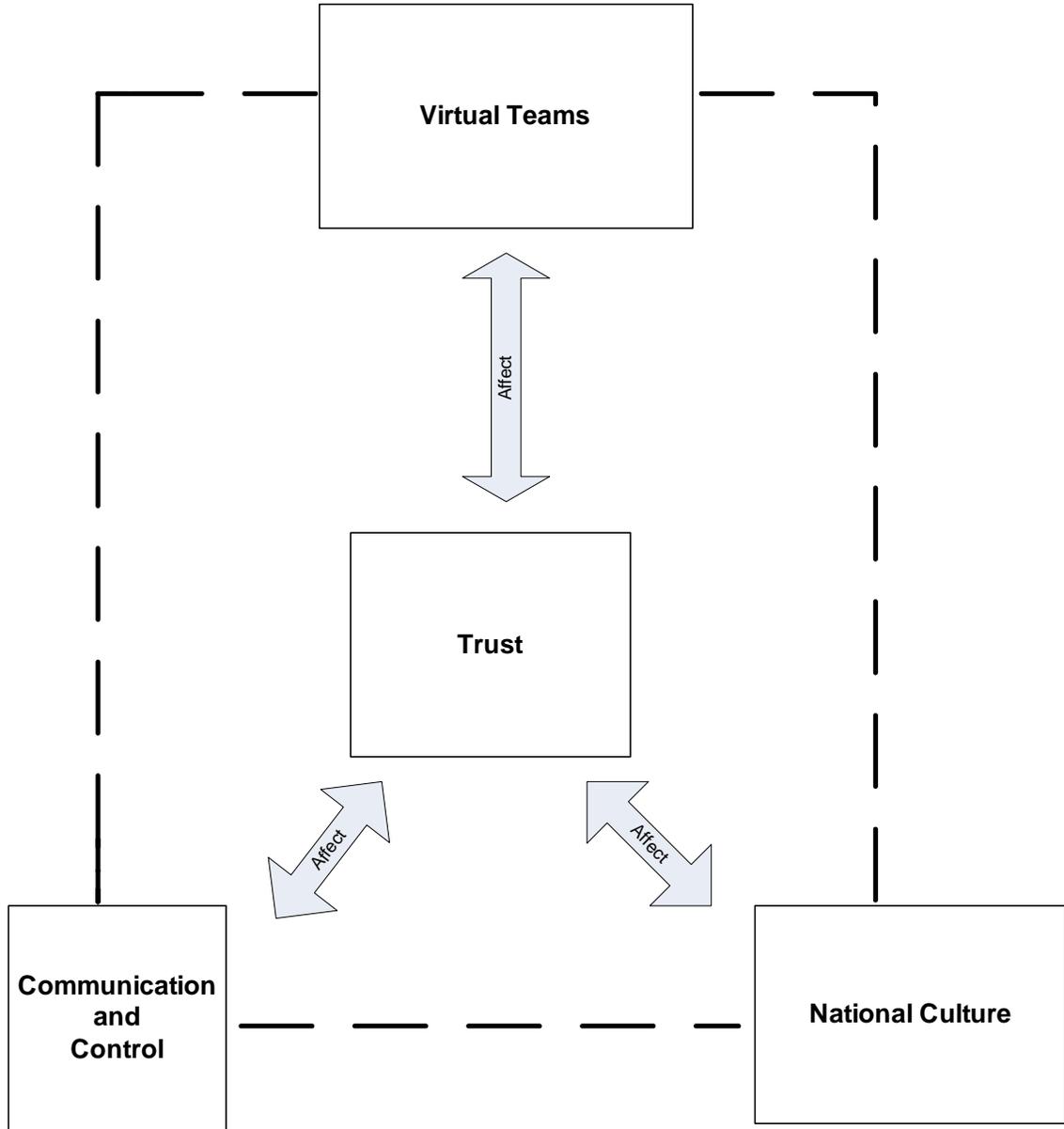


Figure 1.0: Four Key Constructs of Study

Chapter 2: Literature Review

2.0 Introduction

The evolution of virtual team research can be traced back to seminal work by Sarker & Sahay (2002), Lipnack & Stamps (1997) and Jarvenpaa & Leidner (1999) whose work defined the relationship of the Virtual Team to the organisation. Jarvenpaa & Leidner (1999) in particular, address the important role of communication and trust in virtual teams, extending the research to examine the potential of emotional conflict within the team as well as focusing on the need for timely and accurate information. This relates specifically to the research question and in turn to the Control construct which examines how team behaviour is communicated and monitored, further addressing the need for organisational awareness of the tasks and challenges that face distributed teams.

Organisations can mobilise Virtual project teams for rapid deployment almost instantly, however, as Horwitz et al. (2006) point out, the downside to this flexibility is that there is the potential that team members with vastly differing levels of trust, expectations, experiences, cultures and personalities can clash (2006:475).

The study examines this downside and in particular how trust can be affected by communication, cultural differences and behaviour control monitoring. The concept of trust in organisational studies has evolved from the general (Deutsch, 1958) to the specific (Meyerson et al. 1994) while others (Rousseau et al. 1998) have adopted a multidisciplinary view in an effort to consolidate the numerous viewpoints and disciplines in an attempt to formulate a more meaningful consensus around the nature of trust and implications for organisations. Organisational trust theories are abundant (Kramer and Tyler, 1996; McAllister, 1995; Jones and George, 1998) however, a general consensus is lacking amongst academics around the exact nature and role of trust within organisations. This lack of consensus results from the dynamic nature of constructs such as trust and control, constructs that are far too broad to be confined to a particular discipline or method of interpretation (Das & Teng, 1998).

2.1 Virtual Teams

2.1.1 Introduction

A similar dilemma exists with the academic literature on virtual teams, as again there is no one unifying theory or application. There are many features and definitions of Virtual Teams in the academic literature, that include a focus on specific factors or characteristics such as ‘common purpose’ (Pare & Dube, 1998), ‘distance’ (Johnson et al., 2001) ‘relationship to technology’ (Majchrzak et al. 2000) and ‘team performance’ (Horwitz et al. 2006). Table 2.0 illustrates further samples of some of the subject headings that academics have focused on, ranging from ‘trust’ (Lipnack & Stamps 1997) to ‘shared values, teams and organisational process’ (Haywood 1989).

Table 1 Subject emphasis by the authors

Emphasis	Lipnack and Stamps (1997)	Duarte and Snyder (1999)	Henry and Hartzler (1997)	Fisher and Fisher (1997)	Haywood (1989)
1. Goals, objectives	✓	*	✓	✓	✓
2. Leaderships and team member roles	✓	✓	*	✓	✓
3. Communication	✓	✓	*	*	
4. Shared values, team, and organisational process		✓	✓	✓	✓
5. Reward and performance measures		*			*
6. Trust	✓	*	*		*

Notes: ✓, included in the model/principles; *, partly addressed by the author(s)

Table 2.0: Virtual Team Subject Emphasis by Author

(Bal & Teo, 2001:209)

In an effort to narrow the scope and perspective around the topic, other academics (Powell, Piccoli & Ives (2004), Schiller & Mandviwalla (2007) encourage a holistic approach to the study subject of Virtual Teams, embracing theories from numerous disciplines such as organisational behaviour, economics and social-psychology to broaden the understanding of these concepts, allowing for a deeper examination of the case study through the application of varying disciplines.

This approach mirrors the findings of Schiller & Mandviwalla (2007) who indicate that, “A single theory cannot hope to address the large number of issues identified by previous research. Therefore, we encourage researchers to continue to theorize to develop original theories and to continue to embrace theories from reference disciplines such as organizational behaviour, economics and psychology. For the short term, it does not make sense to devote resources to identifying and creating a single unified theory.” (2007:27). This approach is shared by Powell et al. (2004) who indicate that focusing on a specific theory only serves to ignore other interesting areas of virtual team research. (2007:41).

The literature distinguishes between virtual teams and ‘global virtual team’ a term used to qualify those teams that are comprised of members that work and live in different countries and are culturally diversified. (Powell et al. 2004). For the purpose of this research the term ‘virtual team’ represents any cultural variation or geographic location, specifically India and Ireland in the case study, thus making the term ‘global virtual team’ an oxymoron as the modern working assumption in ICT organisations is that a virtual team is distributed globally. This assumption is based on time to market, cost and competency. Furthermore, the term ‘global’ implies culturally diverse and geographically dispersed (Jarvenpaa & Leidner 1999:791) and thus can be inferred by the modern context and usage by multinational ICT firms (such as Microsoft, Oracle, Cisco and Nortel) of the Virtual Team in the 21st century.

For the purpose of this study, Powell et al. (2004) definition of Virtual Teams is selected as it encapsulates the main components of the Virtual Team from an ICT perspective, defined as, “groups of geographically, organizationally and/or time dispersed workers brought together by information and telecommunication technologies to accomplish one of more organizational tasks.”; (Powell et al. 2004:7). This definition is further aligned to the existing literature which is in agreement that virtual teams have three key features, specifically: “(a) Members interact through interdependent tasks guided by common purpose, (b) they use CMC or telecommunication media substantially more than face-to-

face communication, and (c) they are geographically dispersed from each other”; Schiller & Mandviwalla (2007:13).

2.1.2 Key Areas and Early Research on Virtual Teams

Powell et al. (2004) identify four key areas of academic research on virtual teams, as illustrated in Figure 2.0 grouping them into Inputs, Outputs, Task processes and Socio-Emotional Processes.

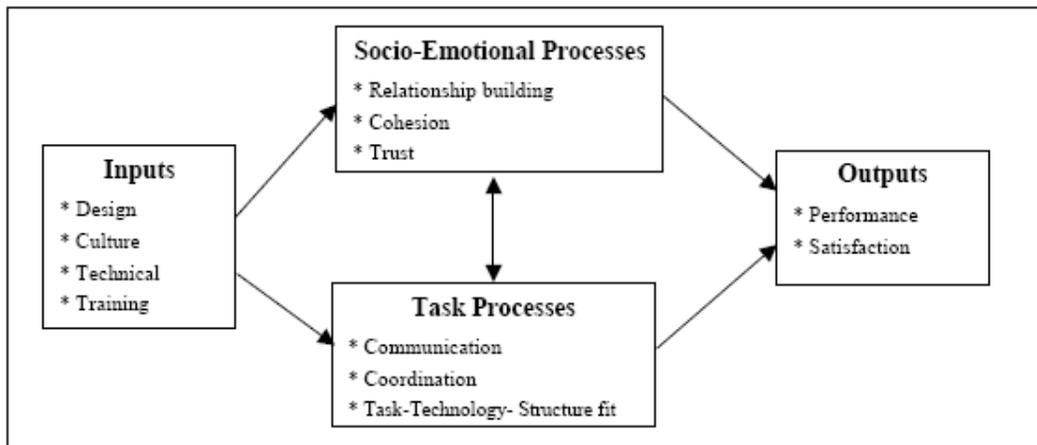


Figure 2.0 Early Research into Virtual Teams (Powell et al, 2004: 8)

The links between the four research areas are categorised under **Inputs** (for example, culture) which has a direct influence on the day to day effectiveness of **Task Processes** (i.e. ICT communication); ineffective communication by email triggers **Socio-emotional Processes** (conflict and trust issues) which in turn has a direct influence on **Outputs** (performance and degree of confidence/satisfaction). Inputs such as the National Culture construct (see Sec. 5 for more analysis) has become a topical issue in the literature, while Task Processes relates to the communication and ICT (see Sec 2.5.) Research on Socio-emotional processes has been focused primarily on team cohesion and trust (see Sec 3.0 for a detailed review on Trust in Virtual Teams) while finally, Outputs refers to team performance relating to the terms of control mechanisms (i.e. how performance is

monitored in Sec.4.2). These key research topics in the literature identified in Figure 2.0 relate to this study as the four constructs in Figure 1.0: Virtual Teams, Trust, Control & Communication (ICT) and National Culture align to the key areas of research.

2.1.3 Conclusion

In summary, the academic literature on Virtual Teams is broad and rather than focus on any one particular discipline or approach to the topic, the study will take a particular focus based on four key constructs. These constructs will be framed and supported by the literature with organisational trust and IS control mechanisms and the effect they have on trust in virtual teams. This study will use defined constructs to frame the existing academic writings that will provide the context and theoretical justification for the research question:

“How do behaviour control mechanisms affect trust in Virtual Teams?”

The study has introduced some of the key themes and academic research on aspects of Virtual Teams. The concept has been defined and basic foundation of the virtual team, its evolution and the central importance of trust, communication and ICT within these teams.

In order to investigate this relationship further the next section examines the academic literature in more detail providing central theories and seminal academic works around Trust and Virtual Teams.

2.2 Trust and Virtual Teams

2.2.1 Introduction

The research question focus is on the impacts that affect trust within virtual teams.

Do behaviour control mechanisms affect trust within Virtual Teams?

Before this can be answered, a clear understanding of the role and nature of trust within organisations must be ascertained. Shapiro (1987) indicates that there is a “confusing potpourri of definitions” applied to a host of units and levels of analysis (1987:624) a view also supported by Creed & Miles (1996) and Hosmer (1995), who indicates that although there is widespread agreement on the importance of trust in the academic community, there is a most notable lack of consensus around a suitable definition of the construct (1995:380). Academia provides a rich analysis of aspects of trust, and in order to narrow the scope and provide a direction for this research, Bigley & Pearce (1998) provide this study with a practical solution: they recommend that researchers narrow their approach to understanding trust by focusing on specific questions or issues (1998:417) which will allow for a more comprehensive focus, by applying academic theory as needed rather than forcibly integrate theory to a particular construct. Thus, a deeper analysis of the trust construct can be taken from numerous disciplines, including psychology (Larzelere & Huston 1980), sociology (Lewis & Weigert 1985) and transaction/economics (Williamson 1993).

From an organisational perspective, and for the purpose of this study, the most suitable examination of trust can be ascertained from an application of psychology (Deutsch 1958), organisational science (Mayer et al. 1995) and philosophical ethics (Hosmer 1995) as they are considered seminal authorities on the subject. Each provides a degree of clarity around the numerous factors of trust that exists in academia. Deutsch (1958) provides a starting reference point, indicating that the term trust “refers to expectations with regard to an event whose occurrence is not detrimental to the individual

i.e. in reference to a benevolent or desired event.” (1958:267). Deutsch (1958) refers to ‘suspicion’ as a key component or factor affecting trust, whereas Mayer et al.(1995) seminal work extends the construct further by incorporating ‘risk’ as a key component of trust. Finally, Hosmer (1995) provides a moral interpretation of trust based on philosophical ethics, whereby he ascertains that trust is the result of “proper” decisions or actions (i.e. ethical actions) that benefit the good of society not just the individual. Hosmer (1995) combines organisational science and philosophy to create a definition of trust based on the expectation that morally correct decisions or actions will be made by others in a joint endeavour (1995:399). This combined analysis of trust in the literature provides greater clarity when applied to the Virtual Team, as trust underpins the effective functioning of the Virtual Team, it is the glue that hold the virtual team together as virtual team members cannot “see what their team mates are doing; they can only see the outcome” (Powell et al 2006:306). Thus, trust is seen as most critical in virtual teams (Jarvenpaa & Leidner, 1999) than in the conventional face-to-face team.

Moving to the academic literature on trust in Virtual Teams, the literature predominantly concerns itself primarily with the pre-conditions and situations that assume that trust is in place. Academic studies on the antecedents and development of trust in virtual teams has been considered by both Iacono & Weisband (1997) and Jarvenpaa et al. (1998). The literature on the antecedents of trust is a popular construct, however, there are gaps in the literature on trust in Virtual Teams, in particular around other socio emotional aspects, for example, Ridings et al. (2002) point out that the existing academic literature on trust in virtual organisations has gaps around the understanding of the role of motivation when applied to trust. This gap serves to both illustrate and remind one that the topic of Virtual Teams is broad. This study does not attempt to pursue the many nuances of socio emotional behavioural predictors any further, as they lie beyond the scope of this research.

Figure 2.1 provides insight into the more prevalent aspects of trust in Virtual Teams, which can be linked to the study’s construct, as real world organisations often do not have the budget nor inclination to ensure that Virtual Project teams are given time to

build up personal relationships to bolster trust; the reality is that virtual teams are often thrown together due to resourcing constraints and business pressures (Jarvenpaa et al. 1998).

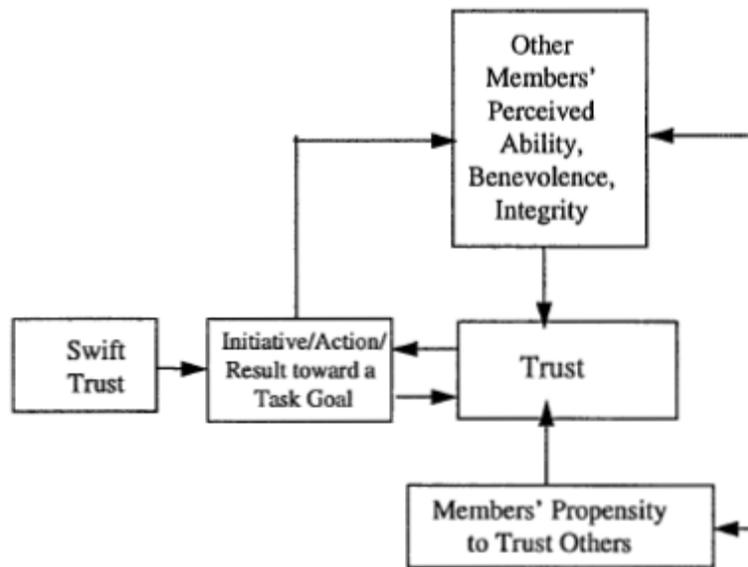


Figure 2.1: Model of Trust in a Global Virtual Team

(Jarvenpaa et al.1998: 58)

Figure 2.1 highlights benevolence, integrity and propensity as key variables that affect perceptions around trust in Virtual Teams. Trust is both a receptor and driver as indicated by Jarvenpaa and Leidner (1998). As indicated, the extant literature focuses heavily on the antecedents of trust (see Jarvenpaa & Leidner 1999) and Iacono & Weisband (1997). Meyerson et al. (1998) concept of “swift trust” plays an important role in early Virtual Team research, as also illustrated as the starting point in Figure 2.1 whereby trust was considered fragile and fleeting, (i.e. “swift”) due to the urgency of project delivery and short duration, thus there was not enough time for team members to access team mate ability and thus gauge the levels of trust in the team. Swift Trust still has its advocates in more recent research (Coppola et al.2004). However, some academics have moved beyond this concept as evident in Powell et al. (2004) as

organizations embrace long term project Virtual Teams, thus making the concept of swift trust obsolete.

2.2.2 Varieties of Trust

Gallivan (2001:280) indicates that the literature categorises five styles of trust:

1. **Knowledge-based trust:** trust based upon a history of transactions between two parties;
2. **Characteristic-based trust:** trust is assumed, based on certain attributes of the other party;
3. **Institutional-based trust:** a trusting environment, as ensured by guarantor agencies;
4. **Justice-based trust:** related to the concept of procedural justice (i.e. ensuring fair procedures);
5. **Swift trust:** a 'fragile' form of trust that emerges quickly in virtual workgroups and teams and then dissipates;

This relates to an even wider selection of views on trust in the academic literature, such as 'role based trust' (Meyerson et al, 1996), 'dispositional trust' (Rotter, 1980), 'risk based trust' (Das & Teng, 1998) and 'integrated trust', (Lewicki & Bunker, 1997). Although this study recognises the myriad of classifications identified by Gallivan (2001) the specific focus for this study is based on organisational trust, as it relates specifically to the natural environment of the Virtual Team.

2.2.3 Organisational Trust

This study focuses on the particular nature of organisational trust, taking its perspective from Mayer et al. (1995) who define trust as "The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a

particular action important to the trustor, irrespective of the ability to monitor or control that other party” (1995: 712). The key addition to the literature is this aspect of vulnerability, as trust is not taking risk per se as originally described by Deutsch (1958), but as Mayer et al. (1995) contend it is a *willingness* to take risk. It is this willingness to risk exposure that permeates the Virtual Team.

From the organisational perspective, trust refers to the degree of trust between business units of an organisation or between organisations themselves. (Cummings & Bromiley 1996:302). Virtual Teams are central to organisational structures and by definition lack face to face interaction within the organisation, resulting in project team members placing trust in persons that they have never met. As a result of this each team member has visibility of their own allocated work, while the team lead or line manager has to oversee the entire project through virtual methods (email, shared spreadsheets). It is this formalisation of roles that is typical of organisations and as such it is the nature of virtuality (distributed technology dependent, non-face to face interaction) within organisations that place a significant emphasis on the need for trust within teams.

Mayer et al. (1995) differentiate between the trustor and the trustee, formalising the roles of each from an organisational perspective. The Virtual Team depends on each trustor and trustee to work on the allocated task and is dependent on the completion of the task assignment. Jarvenpaa & Tanriverdi (2003) stress that trust in the Virtual Team is important for avoiding conflict and managing disputes, most importantly, without trust, virtual networks will unravel. (2003:407), trust also serves to eliminate issues around geographic and psychological distance (Snow et al. 1996 cited in Jarvenpaa et al, 1998:30).

Furthermore, as Handy (1995) recognised, the significance of trust in virtual teams is central to its survival and made a generic call to arms for organisations to embrace the challenges of virtual organisations, warning against undermining the society and workers which are the core of the structure. Handy (1995) advocated an approach based more on trust than control as the essence of Virtuality requires trust to make it work, the

technology by itself is insufficient” (1995:44). Taken from an organisational context, Handy (1995) ignores the economic consequences and costs of a dysfunctional, unchecked virtual team. Ouchi (1980) by contrast argues control is essential to guarantee cost and organizational efficiencies as also advocated by Eisenhardt, (1985).

Another argument put forth by Handy (1995) and Iacono & Weisband (1997) that ‘trust needs touch’ have been disputed as Krebs et al. (2006) who have indicated that trust can develop in the absence of face to face interaction over time. Jarvenpaa & Tanriverdi (2003) disagree, as although trust provides certainty, stability and reduces opportunism in teams, they stress that “When people are limited to virtual forms of communication, social relationships may not strengthen and often decay over time. Weakened social relationships increase the temptation to engage in hit and run behaviour, which plants the seeds for distrust among parties.” (2003:407). This is also supported by Crisp & Jarvenpaa (2002) whose research indicates that trust does in fact decline over time. However as a caveat, many of these studies focused on graduate business students (Iacono & Weisband (1997), (Jarvenpaa & Leidner (1999) and when applied to real world empirical evidence, the conclusions can be scrutinised as being generalised and ignorant of critical factors such as task hierarchy, culture and consequences of inaction.

2.2.4 Trust and Control

Lipnack & Stamps (2000) argue that the success or failure of virtual teams depends on the level of trust, since trust functions as the glue that holds and links virtual teams together. This view is predominant throughout the academic literature as Ouchi noted that, “people must either be able to trust each other or to closely monitor each other if they are to engage in cooperative enterprises.” (1979:846). But trust through cooperation requires some degree of vulnerability as Mishra (1998) contends that trust is one party’s willingness to be vulnerable to another party based on the belief that the latter party is a) competent b) open c) concerned and d) reliable. (Mishra 1998:265) Mishra (1998) focus on vulnerability closely relates to the belief that trust and control

are closely connected. (Gallivan & Depledge 2003). This connection is discussed in more detail in Sec 2.4.6.

2.2.5 Distrust in Virtual Teams

Distrust has been defined as a “lack of confidence in the other, a concern that the other may act so as to harm one that he does not care about one’s welfare or intends to act harmfully, or is hostile”. (Grovier 1994:240) as referenced in Kramer (1999:587). If trust can be defined as one party’s willingness to be “vulnerable to another party based on the belief that the latter party is a) competent b) open c) concerned and d) reliable”. Mishra (1996:265), then one could infer from Mishra (1996) that distrust can be seen as the opposite of this (i.e. incompetent, closed, unconcerned and unreliable). However, this is based on the assumption that distrust and trust are opposites.

This is one of the key debates in the literature on trust in Virtual Teams: whether trust and distrust exist as opposites or complements. The academic theory on the relationship between trust and distrust in Virtual Teams is thus divided into opposing camps, Kramer (1997) contends that trust and distrust are part of the same continuum while others, most notably Lewicki et al. (1998) argue the opposite, indicating that trust and distrust are separate dimensions and are not opposite ends of the same continuum but exist as distinctly bi-polar constructs (1998:444 & 448). Luhmann, 1979:71 (cited in Mishra 1996:281) offers arguments from both perspectives as he argues that:

- Continued, repeated violations of collaborative agreements (for example between an organisation and supplier) would turn existing trust into distrust. Thus trust in this sense is based on an opposing end/ continuum approach.

Or:

- Social complexity can be reduced by trust and distrust used amongst suppliers and thus can be seen as complementary.

In general, the research indicates that trust and distrust can be related to a myriad of topics. Bigley & Pearce (1998: 409) provide an exhaustive list of the academic literature on the topic of trust and distrust based on a problem focus construct. While there is a significant volume of academic research focusing on the particular causes of trust violation and erosion or betrayal of trust (see Elangovan et al. (2006), Elangovan & Shapiro (1998) and Lewicki & Bunker (1996) this study does not concern itself with the causes of violation, as the construct is more concerned with the affect of distrust, (if any) on Virtual Teams, rather than the actual causes.

Academics have examined distrust from varying organisational perspectives, Distrust therefore takes on many guises however, Lewicki et al. (1998) provide a useful analysis of the concept of distrust, whereby they indicate that distrust (High Distrust) is characterised by fear, scepticism, cynicism, wariness, watchfulness and vigilance. (1998:445). These characteristics are supported by Piccoli & Ives (2003) who examine distrust as a result of control monitoring which is examined in Sec.2.4. Distrust can evolve due to lack of face to face contact as Sitkin & Stickel (1998) indicate, also they note that as a result of this lack of contact, that In-Group perceptions of the Out- Group can result in negative stereotyping, the extreme being manifested as a “group –think*” mentality whereby the out-group are deemed incompetent, while the in-group have a self perception of the opposite (i.e. that they themselves are highly competent). *[Janis, 1972 is accredited with the term group think.]

Furthermore, Sitkin & Stickel (1998:213) indicate that negative interactions with out-group members may be perceived by the in- group to be intentional, thus reinforcing distrust. Unfortunately, the academic literature does not seem to expand on the In – Group vs. Out-Group relationship as applied specifically to Virtual Teams. This is a notable gap in the literature.

2.2.6 Conclusion

This study has examined Trust in Virtual Teams, focusing on the literature and background research relating to the construct from an organisational trust perspective. Differing views on the nature of trust in the literature (trust and distrust as complements vs. opposites) was presented, as well as perceptions from In –Group and Out-Group research. Lack of contact plays a significant role in distrust formation (Sitkin & Stickel 1998) and this can be either alleviated or exacerbated by the level of communication and control within an organisation. The next section examines how communication and control interaction in Virtual Teams affects trust, by focusing on the academic literature relating to ICT communication and control.

2.3 Communication and Control in Virtual Teams

2.3.1 Introduction

Communication is a broad topic within the realm of Virtual Teams. This study focus will be specifically on ICT email communication, used as an unintended control mechanism to internal project teams. Face-to-face is the communication of choice within organisations (Neufeld et al. 2001:2), however, the nature of Virtual Teams requires speedy communication due to the global distribution of team members and the context of organisational work. Te'eni (2001) indicates that communication can be used to promote various task and relationship orientated goals while Feldman (1986:82) indicates that electronic mail as a medium can assist in bolstering weak ties within organisations. This is supported by research by Markus (1994b) who identifies three main benefits of using email, as it: transcends time and distance, reaches multiple parties simultaneously and serves to document the communication (1994b:124), characteristics which are essential to a functional Virtual Team.

However, communication can also result in organisational conflict as indicated by Te'eni (2001). The academic literature thus highlights the significance of conflict in organisations and in particular its relationship to communication, but this analysis resides outside the constructs selected for this study and is therefore not considered for in-depth analysis, as although conflict is a Socio-Emotional Process, trust is considered more integral to the attributes of the study of the Virtual Team (i.e. for the purposes of this study trust is deemed the most relevant of the Socio-Emotional Processes relating to the Virtual Team as defined in Sec 2.1.).

Figure 2.2 provides insight into some of the obstacles that impact the effectiveness of Virtual Teams such as lack of responses to communications and poor communication quality, thus it is important to investigate the literature on electronic communication as it relates to the construct under study, as electronic communication is the preferred media for communication by Virtual Teams.

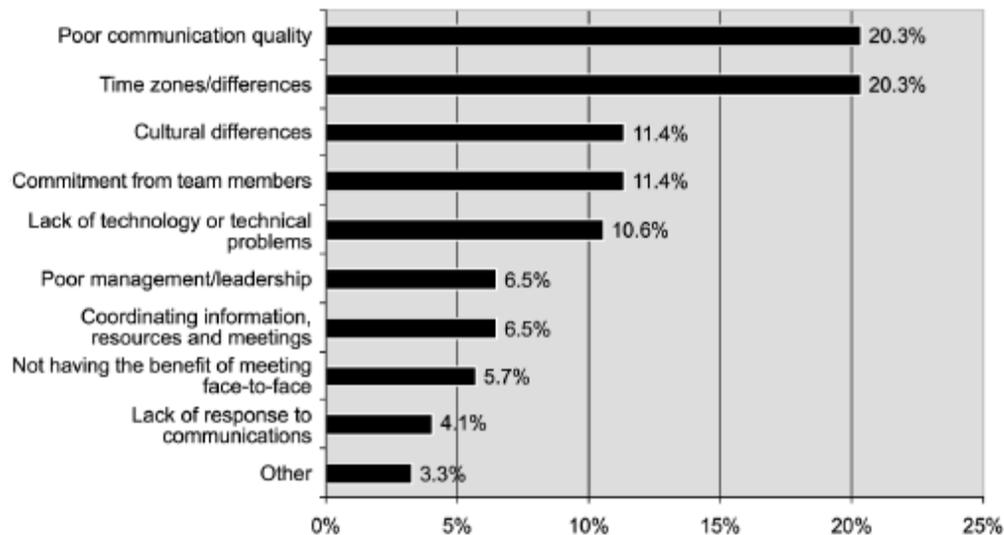


Figure 2.2: Obstacles to Virtual Team Effectiveness
(Horwitz et al. 2006:486)

Figure 2.2 further illustrates that poor communication quality is considered the most significant obstacle to the effectiveness of Virtual Teams as according to Horowitz et al. (2006) empirical study. Likewise, other research by Jarvenpaa et al. (2004) indicates that email response times can impact trust in Virtual teams, if trust is strong then a delayed response will be acceptable, conversely a slow response will be perceived as non cooperative behaviour when trust is low. (2004:252). The literature thus suggests that communication issues arise due to the media (such as electronic mail) and the social context (such as social cues) which will be examined in the next section.

2.3.2 Electronic Communication: media richness, social context and email negativity

An important review of the existing academic literature on electronic communication by Rudy (1996) stresses the importance of ‘contextuality’ in understanding the impact and effectiveness of email communication within an organisation. Rudy (1996) in particular references work done by Erlich (1987) who indicated that it is essential to understand the local rules, taboos, expectations and roles of the organisation in order to gauge the features of the email system in use.(i.e. the context). This relates to this study construct on Virtual Teams as distributed team members often have different cultures, are located in different offices and do not have any face to face interaction. (Jarvenpaa et al. 1988). The existing literature on email communication is limited at best (Rudy 1996:206) (Ngwenyama, & Lee 1997) and surprisingly has not progressed significantly since Rudy’s work over ten years ago. Rudy (1996) identifies limitations of existing theories and literature, significantly the lack of any meaningful non-quantitative studies or empirical surveys of real organisations.

However, the literature on electronic communication for teams in general, is more developed and as such, significant work has been carried out. The extant literature is divided into two distinct camps. One viewpoint as advocated by Daft & Lengel (1984) and Sproull & Kiesler (1986) establishes media richness and social context focus as key

components, thus reducing socio-emotional presence, while the other camp (Walther 1995) advocates that socio-emotional cues will develop over time and eventually reach the same level of relationship experienced by face to face teams. (Chidambaram, 1996:144). This study favours the media richness/social context camp as it is the most cited in the literature and applicable to Virtual Teams. Daft & Lengel (1984) describe a theory of information richness which places communication media on a continuum based on several factors including feedback capability as well as visual /audio nature of the selected media, while Sproull and Kiesler (1986) indicated that the social context of communication is ascertained through static and dynamic cues.

Static cues come from a person's visual appearance and physical artefacts (such as a person's office or business card) while Dynamic cues emanate from a person's non verbal behaviour during the course of an interaction, for example body language such as arm folding or frowning (1986:1495). It is the combination of static and dynamic cues that generate cognitive interpretations as well as emotional responses. When social context cues are strong people's behaviour is self regulated or controlled, conversely if social context cues are weak, then people become more impulsive and irregular in their behaviour. Figure 2.3 illustrates these combined theories (Daft & Lengel 1984, Sproull & Kiesler 1986) as related to technological communication options. The commonly held assumption in the academic literature is that communication media can be measured along a continuum, ranging from lean (regular mail) to rich (actual face to face communication). Email resides in the centre of this continuum as illustrated in Figure 2.3.

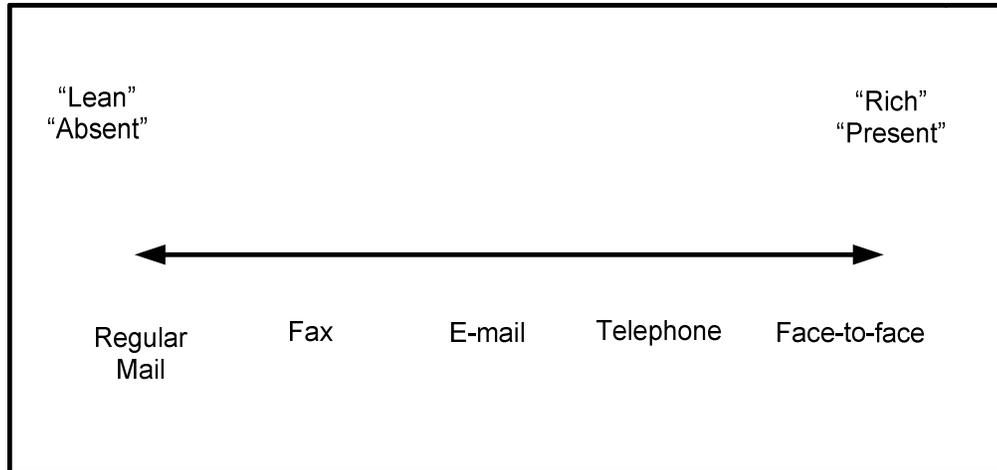


Figure 2.3: Continuum of Communication Media (re: Information Richness & Social Presence) (Neufeld et al. 2001:2)

However, research by Panteli (2002) refutes this media richness theory associated with email, by indicating that in fact email is richer than initially expected, due to its ability to emphasise hierarchal levels and social cues in an organisation (2002:83). Although this conclusion was drawn from research done in an academic setting, it has significance to this study, as it establishes that email as a communication medium can in fact have a detrimental impact, by reinforcing existing status and power dynamics (2002:84), which supports conclusions made by Sarbaugh-Thompson & Feldman (1998). DeSanctis and Monge (1999) argue that media richness theory (this continuum theory) is not supported by the empirical research data, (1999:697), a claim also supported by Ngwenyama & Lee (1997) who in particular urge researchers to move on from media richness even though it remains a popular theory.

Although email is perceived as a 'rich' form of media (Neufeld et al. 2001) it still has limitations when applied to Virtual Teams, as indicated by DeSanctis and Monge (1999) who state that communication styles often fail to "gel" or comply with standard norms, thus increasing potential for conflict. As a result of this, hierarchical structures can manifest within Virtual Teams according to Ahuja & Carley (1999), however this claim

contradicts a more dominant theory in the research by Jarvenpaa et al. (1988) and Sarbaugh-Thompson & Feldman (1998) who argue that email actually removes social hierarchy and creates an assumption of equality, while further analysis indicates that email can also result in a notable increase in negative expression (email flaming). (1998:686).

Staying with this topic, key academic work on negativity in email by Markus (1994b), Friedman & Currell (2003) and Romm & Pliskin (1999) contributes to the literature and more importantly to this study's construct by examining the negative impact of email within organisations. In particular, Markus (1994b) identified three distinct theoretical perspectives on the negative social effects of email use that can be applied to the communication and control and trust constructs in this study. Table 2.0 provides three perspectives (Technological Determinist, Rational Actor and Emergent Process) which help to explain why email produces negativity (i.e. negative social effects) in organisations. The technological determinist perspective focuses on the absence of social cues, as a result of the actual characteristics of the media. Thus, the nature of the technology media (email) creates negativity as by nature it deregulates and desensitises communication (which aligns to conclusions made by DeSanctis and Monge (1999)).

The Rational Actor perspective on the other hand, believes that negativity results from the user's intentions and behaviours: thus email is only the conduit (not the catalyst) as in the technological determinist perspective.) This is similar to Romm & Pliskin (1999) study of the 'office tyrant' who used email to socially control colleagues in a university setting. The third perspective, Emergent Process combines elements of the other two perspectives, concluding that it is a combination of elements of the technology media and user intentions/behaviour which creates unintended negative effects. When applied to the construct of Virtual Teams these perspectives are useful in helping to explain why negative behaviour can emerge.

Perspective	Explanation of Negative Effects/ Predictions about Behavior
<p><i>Technological Determinism</i></p> <ul style="list-style-type: none"> —Social effects are determined by the characteristics of technology, regardless of users' intentions. —Relevant technological characteristics of electronic media include “cues filtered out” and “new capabilities.” 	<ul style="list-style-type: none"> —Negative outcomes occur when email is used, because email filters out the cues that people need to regulate their social interaction. —Negative outcomes occur when email is used, because email has new capabilities that deregulate or depersonalize social interaction.
<p><i>Rational Actor</i></p> <ul style="list-style-type: none"> —Social effects result from intended human actions within the constraints and enablements afforded by technological characteristics. —People may intend negative outcomes, when private motives differ from socially desirable outcomes. —People may anticipate negative outcomes and take steps to avert them. 	<ul style="list-style-type: none"> —Negative outcomes occur because people occasionally engage in “bad uses” of email. While some bad uses of email may result from ignorance, some may be deliberate, that is, people may actually intend to bring out negative social effects, such as increased interpersonal distance. —People may know that using email entails the risk of negative social outcomes, because the technology clearly filters out some important social cues. However, using email may also produce benefits that users desire. Therefore, people who use email may take steps to avoid email’s potential negative “side effects” on social interaction.
<p><i>Emergent Process</i></p> <ul style="list-style-type: none"> —The effects of technology use result from unpredictable interactions among technological characteristics, users’ intentions and behaviors, and social definitions of good and bad uses. 	<ul style="list-style-type: none"> —When negative effects occur, they are often unintended and unanticipated; they may even be the ironic result of actions people take to avoid the potential negative effects of using email.

Table 2.1: Theoretical Perspectives on the Negative Social Effects of Email Use.
(Markus 1994b:126)

All three perspectives have resonance when applied to Virtual Teams, furthermore, contributing factors such as physical distance, differing time zones, cultural nuances and lack of any face to face interactions can create social distance, and result in any of the negative outcomes illustrated in Table 2.1. A significant finding by Markus (1996b) was that email was the preferred medium when communication involved dislike or intimidation. Furthermore, email was preferred when communicators were angry or fearful that the recipients would object to the content of their communication, thus email was used as a means of filtering out any social cues or personal interaction. (1994b:136).

This is interesting when applied to this study, as we have seen that Virtual Teams by nature are predominantly dependent on email as the preferred medium of choice.

Jarvenpaa et al. (1988). Email begets email, as it is the predominant medium within Virtual Teams. Markus's (1996b) findings infer that email invites social distance, and when added to the existing physical distance of Virtual Teams, creates a potential for negative interaction communication which impacts on trust, as suggested by Jarvenpaa & Leidner (1999). Friedman & Currall (2003) indicate that email serves to amplify or trigger escalation due to the lack of social cues (2003:11), as emails result in greater bias towards the recipient, less empathy and can be curt in both context and content.

In summary, academics cannot agree as to whether or not social hierarchy is elevated or flattened by email, they do agree that it creates the potential for negative actions such as flaming, or reinforcing social status. (Marcus 1994b, Romm & Pliskin 1999) and Sproull and Kiesler (1986), thus in order to ensure communication is effective, it needs to be controlled in order to avoid these impacting the functioning of the Virtual Team as indicated by Sitkin & Stickel (1996). This is discussed in detail in the next section.

2.3.3 Control Modes in Virtual Teams

Gallivan & Depledge (2003) state that control, like trust has no single, clear definition, thus for the purpose of this study, a broad definition of control has been taken from Leifer and Mills (1996) who indicate that control is “a regulatory process by which the elements of a system are made more predictable through the establishment of standards in the pursuit of some desired objective or state.” (In Gallivan & Depledge 2003:165). In the instance of this research, the ‘desired objective and state’ refers to organisational control at the project level, whereby a lack of such control will result in cost over runs and impact company performance and profitability, thus control is essential to ensure compliance and maintenance of quality and cost efficiency.

Another useful definition is provided by Henderson & Lee (1992:757) who define control as “the organization’s attempt to increase the probability that employees will behave in ways that lead to the attainment of organizational goals.” Finally, control is an

essential component of a functioning organisation and the process of control according to Ouchi (1977) is basically:

“A process of monitoring something, comparing it with some standard, and then providing selective rewards and adjustments, it suggests a very simple scheme. In controlling the work of people and of technologies, there are only two phenomena which can be observed, monitored and counted: behaviour and the outputs which result from behaviour” (Ouchi 1977:97).

Seminal work by Ouchi and Maguire (1975), Ouchi (1977, 1979 and 1980) and Eisenhardt (1985) builds a foundation for understanding how organisational control and IS are linked to the performance and level of trust within Virtual Teams, themes that are significant to the study construct. The Communication & Control construct in this study examines the behavioural aspects that affect trust. Ouchi's (1977, 1979, and 1980) real world studies of retail department stores and parts distribution divisions within companies provided the basis for his theory of organisational control, illustrating (simplistically) a basic tenet that control is a process based on measurement and evaluation.

While Ouchi (1977) and Eisenhardt (1985) focused more on the managerial aspect of this control, Henderson & Lee (1992) extend the concepts of Ouchi (1977) by proposing alternative control modes, based on a coexistence of managerial and team-member control (1992:759). This a significant extension of the literature and relates to the study construct by recognising the importance of the low level team member in policing or monitoring control in I/S projects, where managers often lack the technical expertise or awareness. This study is thus concerned with the focus on the individual Virtual Team member, rather than the managerial level.

Kramer (1999:591) indicates that organisations that use overt technology remedies to monitor and control employee behaviour may actually end up undermining trust and creating behaviour patterns that they originally sought to eliminate. This is supported by

Sitkin & Roth (1993) who found that formal control systems instituted by managers to enhance trust by increasing performance reliability served to undermine trust and acted instead as a deterrent to the goals they were put in place to serve. (in Sitkin & Stickel, 1996: 197). Thus, the role of technology and control in Virtual Teams is an important area of research for this study, as will be examined in the next section; Virtual Teams have a dependency on technology in order to function correctly. However, it is this actual dependence on technology within the virtual structure that creates limitations on the organisation's ability to manage, monitor and control employees, resulting in a critical dependence on the ability of the virtual team to work as a functional, cohesive unit. (Sitkin & Stickel 1996, Kramer, 1999).

2.3.4 ICT and Control in Virtual Teams

ICT can be viewed from multiple disciplines and levels. ICT acts as the conduit for communication in Virtual Teams. Traditionally, Virtual Team research has been on the effectiveness and use of email (DeSanctis & Monge (1999) and on the use of lotus notes databases (Massey et al. (2001), and Suchan & Hayzak (2001). Malhotra et al. (2001) point to this as a limitation of the existing academic literature for failing to consider multiple media and knowledge portal technology, as in reality, each organisation has its own internal communication plan, and technologies. Some organisations are heavily dependent on email while others are more dependent on shared portals.

Casey & Richardson (2006) illustrate in Figure 2.4 an example of a typical Virtual Team environment. Distance acts as a negative impact on team co-ordination and visibility as well as communication and cooperation. Furthermore, distance by nature introduces added complexity and barriers to the team when compared to face to face teams.

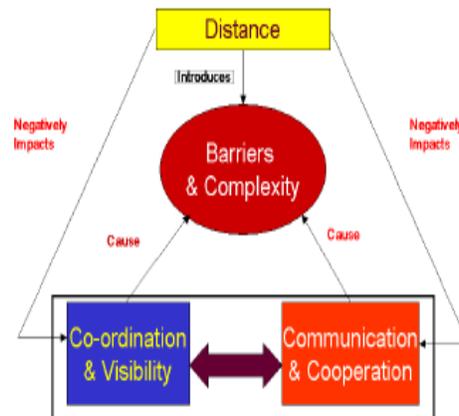


Figure 2.4: Virtual Software Team Environments

(Casey & Richardson 2006:68)

The academic literature predominantly reiterates that face to face communication is the preferred method of communication. As indicated in Sec. 2.4.2, email is the most common media for Virtual Teams. George et al.(1990), and Wiesenfeld et al. (1999) in their study of communication patterns within virtual organisations, noted that email and phone communication were not as ideal for conveying social context cues as compared to face-to-face communication (as indicated previously see: Daft & Lengel (1984) and Neufeld et al. (2001) in Sec. 2.4.2). There are dissenting views on this topic as DeSanctis & Monge (1999) and Straus & Miles (1998) propose alternatively that the removal of visual cues may actually improve the quality of message understanding, at least in some cases, by removing “the distraction of irrelevant stimuli.” (1999:696). The literature does agree however that modern development in ICT allows Virtual Teams an ever increasing choice of communication technology; communication through Video-Teleconferencing, Instant Messaging, Skype Chat (VOIP) and mobile texting are as common and frequent as email and traditional voice communication. Significantly, communication in Virtual Teams is both a trigger and outgrowth of the virtual relationship, as suggested by DeSanctis & Monge (1999).

Finally, Powell et al. (2004) makes an interesting observation that communication in Virtual Teams is in fact more frequent than traditional, face-to-face teams; however, unpredictable communication (which undermines the coordination and ultimate success of virtual teams) may also be prevalent. While Langevin (2004) stresses that “The written word can be harsher than the spoken word; even a critique needs to be phrased positively” Langevin (2004:11) in Horwitz et al. (2006:476). Thus communication must be carefully cued and effective. According to Kayworth & Leidner, (2000) effective communication within the team hierarchy (line managers, team lead, team members) plays an important role in reinforcing group cohesion. Other issues relating around Virtual Team communication include the impact of culture, Multiple Time zones, delays and silence which may be perceived as avoidance and have a negative effect on trust and team effectiveness. Communication within virtual teams must be effective, otherwise frequency and context become irrelevant. (Kayworth & Leidner, 2000). In order for communication to be effective there is a need to ensure some layer of control over the team as will be examined in the next section.

2.3.5 Control and Trust in Virtual Teams

Ouchi (1979) defines control as, “the mechanism through which an organization can be managed so that it moves towards its objectives.” (1979:833) however, Ouchi concedes that the actual mechanism of control is more complex than originally thought. Govindarajan and Fisher (1990) however, refine the work of Ouchi by creating a modified model which combines elements of organization control and agency theory. According to Kirsch (1996), this new model indicates that behaviour observability, outcome measurability, and task programmability are all antecedents of the type of control strategy. Kirsch (1996) expands on the literature with a specific focus on control in information systems development (ISD). This extension to the literature is important as it extends the simplistic view of Ouchi and agency theory of Eisenhardt (1985), providing a practical example of control within ICT organisations. Furthermore, Kirsch (1996) argues that the complexity and technical specialisation of ICT requires that

managers must become more involved with the technology in order to ensure control through organisational compliance, “...the more controllers understand the systems development process and the more observable the steps taken by the project leader are, the more likely the controllers will use behaviour controls” (1996:14).

Ouchi (1979) indicates that, “...people must either be able to trust each other or to closely monitor each other if they are to engage in cooperative enterprises” (1979:846). This illustrates the significance of trust and control to the overall constructs presented so far in this study. Figure 2.5 illustrates this relationship whereby trust and control can be seen as substitutes in an organisational setting.

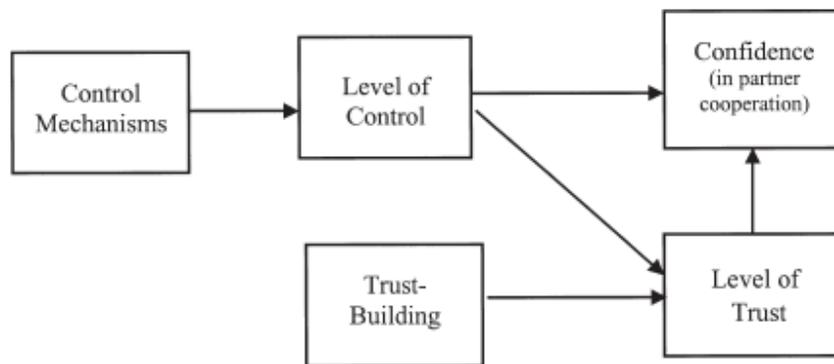


Figure 2. Preliminary conceptual framework. Trust and control as substitutes (based on Das & Teng, 1998).

Figure 2.5: Trust and Control as Substitutes (Gallivan 2001:287)

Gallivan (2001) argues that trust and control are substitutes, supporting work by Das & Teng (1998) where they conclude that the level of control has a direct influence of levels of trust and vice versa, hence these constructs can act as substitutes. (Gallivan 2001:287).

Trust and control act as dual constructs that define the parameters enabling Virtual Teams to function effectively within ICT organisational settings. Gallivan & Depledge (2003) extend earlier research by acknowledging this relationship by further stressing the “uncertain interactions” between control and trust (illustrated as a question mark in

Figure 2.6). Interorganisational systems (IOS) provide the means to both monitor (control) and reinforce collaboration (trust) within the organisation. When applied to the study, this emphasises the importance of the IOS for Virtual Team, as the Virtual Team is dependent on technology to monitor activity and performance.

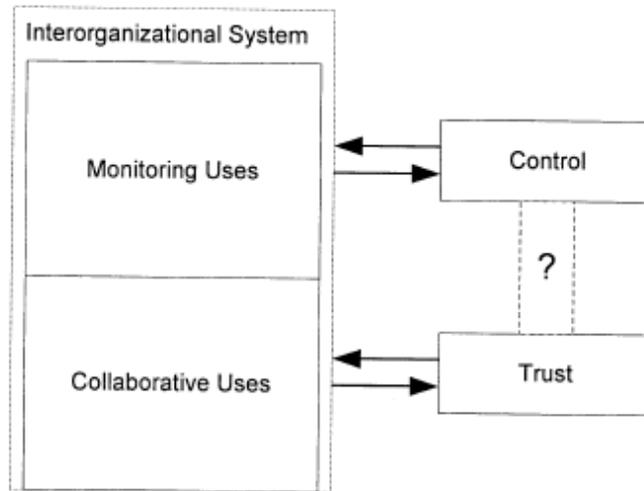


Figure 2.6: The use of Interorganizational Systems (IOS) to support control and trust.

(Gallivan & Depledge 2003:163)

Monitoring and control can also occur from within Virtual Teams (Henderson & Lee, 1992) whereby the individual team member exercises control from within a team, as supported by Henderson & Lee (1992) in their study of I/S design teams. This is of particular significance to the construct as Virtual Team members may use control as a formal or informal means of compensating for the lack of face-to-face interaction, and as a means of peer-to-peer control. Research on control and monitoring from the managerial experience by Sitkin & Roth (1993), whose analysis of trust/distrust in organisations where employees contracted AIDS/HIV, suggested that legalistic ‘remedies’ (i.e. controls, contracts, HR policy) can expedite distrust amongst employees when applied to cultural fit within an organisation. These two studies illustrate the broad spectrum of analysis of IOS in organisations. This use of Interorganizational systems for monitoring and control are clarified even further by Powell & Ives (2003), whose

seminal work on trust and the unintended effects of behaviour control mechanisms in Virtual Teams, examines the complexity of behaviour control through ICT. These are key components of the study constructs and as such warrant further analysis in the next section.

2.3.6 Behaviour Control Attributes and Mechanisms

The nature of Virtual Teams requires a stronger focus on formalised control mechanisms from the managerial perspective, as there is a legitimate fear that Virtual Teams self-direction and lack of face-to-face interaction may not be as effective or efficient as traditional teams. (Piccoli & Ives (2000:567). Thus, control mechanisms are considered essential for the continued functioning of the Virtual Team (Piccoli & Ives, 2003). Henderson & Lee (1992) explain that typical behaviour control mechanisms found in organisations include work assignment definition, process and procedures, project reports and updates. Virtual Teams in real world organisational settings face the reality of project deliverables and deadlines; team members use behaviour controls to ensure assignments and targets are reached, thus behaviour control mechanisms act as a catalyst for increased monitoring and vigilance. (Piccoli & Ives 2003:369)

Piccoli & Ives (2003) indicated that behaviour control in this situation had a negative effect on trust, especially in relation to project deadlines; “We conclude that as the final deadline nears, when attention to the project is at a peak, incidents are most likely to be detected, renegeing and incongruence may have the strongest impact on trust decline.” (2003:387). Furthermore, Piccoli & Ives (2003) explain that behaviour control mechanisms are associated with active behaviour (attributes) and as such there are four behaviour attributes associated with control mechanisms that are central to this study as identified by Piccoli & Ives (2003):

- **Reneging** occurs when others, recognizing that an obligation exists, knowingly fail to follow through on that obligation.
- **Incongruence** arises when the perception of obligations differ between some team members and the individual responsible for meeting them.
- **Saliency** is defined as the degree to which a stimulus stands out from its context.
- **Vigilance** refers to active behaviour whereby team members monitor counterparts' actions.

According to Piccoli & Ives (2003) incongruence and reneging play key roles in trust decline, and the managerial control mechanisms put in place actually serve to increase distrust by making incidents more easily detectable (2003:389), which supports conclusions made by Kramer (1999) as already discussed in Sec.2.4.3. Herein lies the dilemma: the nature of Virtual Teams requires the use of behavioural control mechanisms to supervise task completion and reinforce trust amongst teams, yet the very use of these control mechanisms undermines the trust it strives to support. Piccoli & Ives (2003) research indicates that Virtual Teams that use behaviour control mechanisms are more likely to experience significant trust decline (2003:369) as a result of instances of saliency and vigilance. So for example, should a Virtual Team member be made aware (either intentionally or accidentally) of an instance of reneging or incongruence by Virtual Team colleagues, then the level of trust will be impacted. The saliency of an event leads to increased vigilance, which impact the levels of trust within the team.

Elangovan et al. (2006) indicate that even one violation will result in trust erosion and an increase in distrust (2006:18). The saliency (or frequency) then for distrust to occur can be triggered by a single incident. Robinson (1996), in Piccoli & Ives (2003), indicate that when reneging or incongruence occur individuals tend to make “attributions of malevolence, thus leading to the conclusion that team-mates are not willing to respect their commitments and that trust has been misplaced.” (2003:367). The behaviour

control mechanism construct for this study can extend beyond the initial subset used by Piccoli & Ives (2003), as indicated by recent work by Panteli & Fineman (2005), who provide another important behavioural control mechanism which is central to two of this studies central constructs of Virtual Teams and communication: silence.

According to Panteli & Fineman (2005) the existing literature on silence in Virtual Teams is limited; however, their research provides some background on silence as a behavioural attribute which relates to the construct of this study.

- **Silence** is the opposite of presence and as such silence in emails creates a communication vacuum and increases polarisation within Virtual Teams* (2005:349)
*(Panteli & Fineman (2005) also indicate that cultural interpretations of silence play a significant role, as will be examined in more detail in Sec 2.5.5)

Another key finding by Panteli & Fineman (2005) concludes that silence, when associated with email communication in Virtual Teams, serves to erode trust. This conclusion is also supported in the literature by Jarvenpaa & Leidner (1999).

2.3.7 Conclusion

In summary, behaviour control mechanisms play a significant role in creating distrust in Virtual teams, research by Piccoli & Ives (2003) indicates that behaviour control mechanisms may unintentionally contribute to trust decline, as Virtual team members focused on task completion, become more aware of incidents of renegeing and incongruence. Piccoli & Ives (2003), as well as Kramer (1999) and Jarvenpaa & Leidner (1999), conclude that the behaviour control mechanism put in place to assist team trust in fact have the opposite effect. The use of these behaviour control mechanisms in Virtual teams generate behavioural attributes such as renegeing, incongruence, salience, vigilance

and silence, which relates to our construct as it has a direct link to control, communication and trust in Virtual Teams.

2.4 National Culture and Virtual Teams

2.4.1 Introduction

The rise of Globalisation has been characterised by predominance within organisations to seek out low-cost offshore resourcing models to drive competitive advantage. This trend has resulted in the growth of Virtual Teams, embedded in many culturally distinct regions, such as in the new tiger economies of Asia, particularly India (Nicholson & Sahay 1999:2). Although globalisation and outsourcing are common themes within the literature on Virtual Teams, key constructs such as cultural background and language have generally been ignored by the academic literature (Schiller & Mandviwalla 2007:22). The topic of National Culture and specifically its prevalence to organisational research has been comprehensive yet contentious. Hofstede's (1980) work based on his IBM research has been cited as the definitive work on national culture. His analysis however, has been severely criticised (see Jacob 2005, Ford et al. 2003, McSweeney 2002 and Walsham 2002) on the grounds that his theory is simplistic, stereotypical and ignorant of the nuances that comprise a culture. The term 'national culture' is viewed as problematic and crude according to Walsham (2002) as it ignores the complexity of heterogeneity within nation-states and the added difficulty of "relating national cultural values to work-related actions and attitudes" (2002:373). Walsham (2002) suggest that a more dynamic view of culture is required, such as Brannen & Salk's (2000) negotiated culture theory, referring to the evolving attitudinal shifts that occur over time between two distinct cultures (Germany and Japan in their case study).

Some academics however, downplay the significance of culture in Virtual teams, most notable being Jarvenpaa and Leidner (1999) who admitted that there was a lack of

cultural effects in their study of communication and trust in virtual teams. They suggest a number of reasons for this, most notably that electronic based communication eliminates any evidence of cultural differences, (for example, by removing accents), thus reducing the salience of dysfunctional instances resulting from cultural differences in Virtual Teams (1999:811). This claim is contested however by the evidence of other academics, particularly recent work by Horwitz et al. (2006) who indicated in Figure 4.0 that Cultural Differences play a notable role in affecting Virtual Teams (2006:486). Nicholson & Sahay (2001) longitudinal study of British software firms outsourcing experience with Indian software development firms in Chennai, India, indicates that cultural differences were central to the concern that the Indian developers were 'culturally compliant' (Nicholson & Sahay, 2001:11). While Oertig & Buerger (2006) analysis of US, Japanese and European Virtual Team interaction, highlighted how even simple statements as "Yes" and "No" varied in context according to cultural nuances, (2006:28), (this also relates to communication as per social context, as discussed in Sec 2.7.2), and Walsham's (2002) empirical study of a collaborative Jamaican and Indian software development project indicated that there were significant issues related to negativity around project monitoring and control. These serve as examples that stress the importance of culture in virtual teams and real world organisational/project settings.

The academic literature suggests that cultural differences are actually made more evident through electronic communication. Jarvenpaa & Leidner (1999) ignore cultural expression, context, phraseology and colloquialisms made evident in the written form, assuming virtual teams express homogenous communication as highlighted by Schiller & Mandviwalla (2007) who indicate that the typical virtual team is in fact multi-cultural and globally distributed, thus constructs such as language and cultural background need to be the focus of future research and theory (2007:22). It is important to note that the research by Jarvenpaa and Leidner (1999) focused on graduate business students and they indicate one key limitation of their research was a complete lack of clearly defined roles within the teams, as well as an absence of any measure of effectiveness or perceived risk and reward. Finally, their sample study lacked exposure to the concept of Virtual Teams. Academics have called for further study of the cultural aspects of Virtual

Teams (Schiller & Mandviwalla 2007, Walsham 2002) and to this study in particular, thus a more detailed analysis on the role and impact of national culture on Virtual Teams is developed over the following sections.

2.4.2 Hofstede's Influence

Hofstede's (1980) seminal work on National Culture has an uneasy relationship with academics, being both revered as the de-facto theory on culture (Zorn 2005, Harrison & McKinnon 1999) and ridiculed as being implausible (McSweeney 2002), illustrating how the topic of National Culture is highly controversial in academic circles. A significant number of academics (such as Powell et al. 2006:314) choose to take Hofstede at face value rather than challenge his influence.

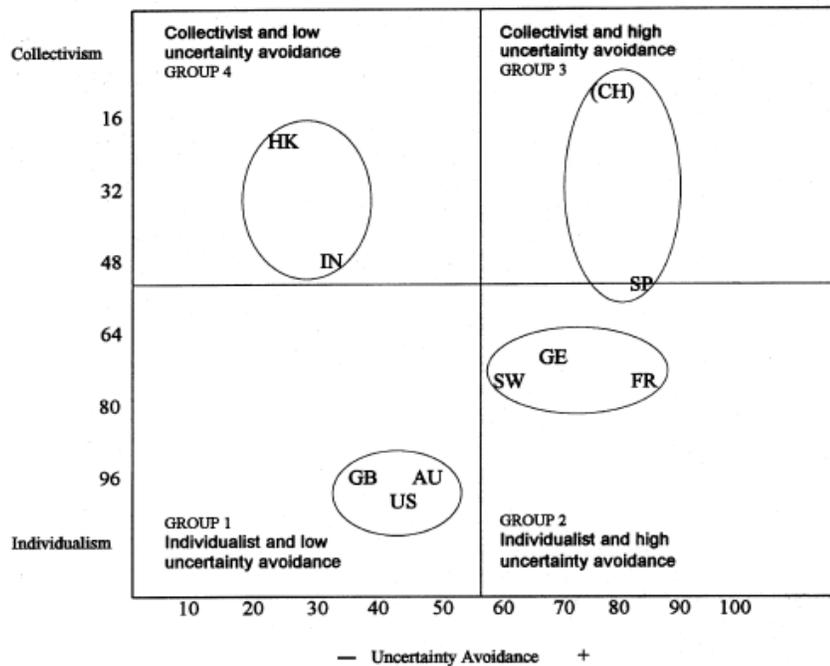


Figure 1 Country positions on Hofstede's value dimensions of uncertainty avoidance and individualism-collectivism
 Note: GB (British), US (American), AU (Australian), SW (Swiss), GE (German), FR (French), HK (Hong Kong Chinese), IN (Indian), CH (P.R. Chinese), SP (Spanish). Scales approximate to Hofstede's (1980) indices. The position of P.R. Chinese is an estimate as no data from Hofstede (1980) exists.

Figure 2.7: Example of Hofstede's Country Value Dimensions

Jackson (2001:1269)

Figure 2.7 illustrates the core premise of Hofstede's research, conducted on international IBM teams during the 1980's. Hofstede's dimensions recognised that each specific country or national culture could be ranked according to four distinct variables, two of which are most notable for virtual team study: 'uncertainty avoidance' and 'individualism-collectivism' as illustrated in Figure 2.7. Uncertainty Avoidance refers to "the degree to which people in a country prefer structured over unstructured situations. Structured situations are those in which there are clear rules as to how one should

behave.” (1993:89). According to Hofstede (1983:83), Uncertainty Avoidance implies that aggressiveness and the desire for truth belong together under the same construct. Individualism refers to, “the degree to which people in a country prefer to act as individuals rather than as members of groups.” The opposite is collectivism, which infers low individualism (1993:89). Hofstede clarifies that Individualist societies are loosely integrated, while Collectivist societies are more tightly integrated (1983:78).

For example, Figure 2.7 categorises India as having a strong collectivist culture and low uncertainty avoidance, while Great Britain is listed as a strong individualist culture with low uncertainty avoidance. Some academics use Hofstede’s works as a foundation or spring board for extending the literature on culture; Jackson (2001) researches an empirical ten nation study, Harvey (1997) uses Hofstede’s cultural characteristics as indicators of cultural values but not of cultural practice (1997:144), Chen et al. (1998) focused on national culture and cooperation, Tan et al, (1998) use Hofstede’s theories relating to Computer-Mediated Communication and individualism/collectivism. Even more significant to this study, are those academics that use Hofstede for extending the literature relating to the study of Virtual Teams (Massey et al. 2001) (Oertig & Buergi 2006) which will be examined in more detail in Section.2.5.6.

2.4.3 Beyond Hofstede

Due to the highly contentious nature of Hofstede’s research, it is important to look beyond Hofstede’s theories, as although his work is considered seminal, it has been criticised along the grounds of generality (McSweeney 2002:109), while Jacob (2005) disputes Hofstede’s analysis of Indian culture for failing to take into account the heterogeneous make up of the entire population (2005:518).

Walsham (2002) provides a more suitable approach to the culture construct by focusing on cross-cultural studies by examining culture from an IS perspective which is closer aligned to the constructs of this study. By moving away from Hofstede-based theory,

Walsham (2002) allows for a richer approach which avoids generalities by focusing on the specific cultural relationships associated with Structuration theory. Structuration theory examines the “nature of human action and social organisation”, Walsham (2002; 361), meaning that culture can be observed through human interaction and empirical analysis, rather than Hofstede stereotypes (Nicholson & Sahay 2001:7). Team interaction has an important role in understanding team dynamics, especially within Virtual Teams.

Traditionally the literature assumes either team homogenous or heterogeneous interaction, however, the concept of team interaction has been extended beyond this in the literature by Earley & Mosakowski (2000) who examine “hybrid team culture”, whereby the varying national cultures of a team develop a shared and simplified set of rules and actions that shape the team after mutual interactions (2000:27). This serves to illustrate the evolving theories associated around national culture which can be applied to Virtual Teams. Earley & Mosakowski (2000) conclude in their research that heterogeneity (i.e. cultural/national diversity) is characteristic of dysfunctional teams (2000:47).

Diversity within national culture, added to distance, technology barriers and complexity of Virtual Teams (as seen in Figure 2.2), can result in negative impacts on the team structure and effectiveness. For example, Walsham’s (2002) case study of Jamaican and Indian software team interaction provides an empirical analysis of team interaction and the negative effect of national cultural on teams, although not a specific case study of a Virtual Teams, it does provide insight into cultural conflict which is useful for this study when applied to the central socio-emotional process of this study, trust. Surprisingly, Walsham (2002) produced empirical examples of racial stereotyping between the Jamaican and Indian team members which illustrated how cultural assumptions can be ingrained in organisational settings (2002:365).

Other themes that emerge in the literature regarding cultural constraints and affect on trust can be found in Nicholson & Sahay (2001) who found that caste for example plays

a role in perception of task ability (2001:11), which is also supported by Kumar & Sankaran (2007) in their study of TQM and Indian culture. Research into Indian context sensitivity within organisational behaviour by Sinha & Kanungo (1997) reveals the deep layered complexity associated around cultural applications to theory, as they indicate that Hindu traditions shape the complex nature of Indian interactions (1997:97).

Finally, it is more constructive to focus on a social structure approach to such a complex construct as culture, as Nicholson & Sahay (2001) indicated that social structures (rather than the sweeping cultural generalities of Hofstede) were more suitable for explaining cultural instances. Their study of a collocated software team (they do not use the term virtual team) based in the UK & India, illustrates issues around perception and trust which can be attributed to cultural differences (2001:12). Trust is a key construct in this study and therefore it is important to examine the role of national culture and trust in more detail within Virtual Teams.

2.4.4 National Culture & Trust in Virtual Teams

Although Doney et al. (1998) adopt Hofstede's taxonomy, in an attempt to extend the existing academic literature on trust (as discussed in Sec 2.2) with a focus based on a national culture perspective. Unfortunately, their work is inconclusive, as it makes inferences and suppositions by means of a framework rather than empirical evidence (1998:616). The academic literature is limited on the topic of national culture and trust (Cannon et al. 1999:10); however at least, Oza et al. (2006) provide an empirical study of national culture and trust, based on a study of an Indian outsourcing company. This study provides insights into the nature of culture within organisational settings. Oza et al, (2006) indicate that transparency of task is important to project success, and most importantly, communication is considered essential for project success (2006:352). The link between the study constructs can be extended further by an application of Krishna et al. (2004), who conclude that particular societies and cultures have distinct ways of working, which can prove to be problematic when applied to cross-cultural

teams and outsourcing projects. Krishna et al. (2004) recommend that in order to mitigate any potential cross cultural issues, it is wise to populate projects with people who can bridge cultures; they provide the example of Western educated Indian managers who can be reposted to India to work as expatriate managers (2004:65). They also suggest that cultural training is essential for the success of any project as we live in an increasingly Globalised world.

2.4.5 National Culture, Communication and Control in Virtual Teams

Massey et al. (2001:208) indicates that a particular technology can either enable or hinder the ability of the individual to use a particular communication style inherent to a culture. They refer to “country of origin culture”, and how it is essential for organisations to understand each countries national culture and nuances of communication style when related to Global Virtual Teams. Borrowing heavily from Hofstede (1980), Massey et al, (2001) identify three distinct dimensions of culture that explain differences in cross cultural communication in Virtual Teams. The three dimensions are Individualism-Collectivism, Communication Contextuality and Uncertainty Avoidance.

Massey et al. (2001) indicate that Communication Contextuality is the most significant cultural variable for Virtual Teams as it is the context of communication which influences the ability of the group to perform within an organisation. Furthermore, Massey et al. (2001) add a cultural explanation from a Hofstede basis, whereby individuals from Low-context cultures prefer and provide minimal information as necessary or as required in their communication with team members, while conversely, High-context cultures prefer and provide more detailed, yet subjective or opinion based communication to team members. Massey et al. (2001:209) infer that low-context cultures prefer (or feel more comfortable with) leaner technology which facilitates task orientated communication. Thus, interactions between Low and High-context cultures may result in differing levels of communication expectation, potentially increasing the

risk of miscommunication or misunderstanding due to contextual confusion. This is significant with the study constructs as it relates to the work done by Erlich (1987), in Rudy (1996) on contextuality in email communication as discussed in Sec 2.4.2.

A further extension of work done by Gudykunst & Ting-Toomey (1998) on verbal communication is referenced by Massey et al. (2001) and extended to “electronic textual” communication, in an effort to understand how communication style and culture relate to Virtual Teams. Massey et al. (2001) indicate that cultural nuances or differences indicate the preference or “fit” between communication tasks and technology, as Massey et al. (2001) identify that Virtual Team Members are not in fact homogenous but rather are heterogenous, and culture plays a significant role in communication (2001:210). This view is also recognised by Panteli & Fineman (2005) who provide a valuable extension to the literature by examining the role of silence in Virtual Teams; their study indicates that although silence is a necessary and acceptable component of virtual teams (due to geographical distance/time zone differences between team members), it can have a negative impact (as a result of prolonged, unexplained silence). Panteli & Fineman (2005) recognise the significance of the interaction of culture and communication in Virtual Team research, and as such they recommend that cultural differences and considerations be included for future research on silence in Virtual Teams (2005:351).

2.4.6 Organisational Work Culture and Virtual Teams in India

The Virtual Teams for this study are comprised of team members of the same organisation based in India and Ireland. Thus, it is important to provide academic support for the basis and analysis of Indian culture, to avoid any stereotypes or generalities. Furthermore, from the control construct it is important to understand Indian culture and how it exists within organisations. As a starting point of reference, Kumar & Sankaran (2007) provide an interesting overview of Indian work culture, building on the academic research of Sinha (1997), where they argue from a typical Hofstede approach

that indicators such as high collectivism are major cultural values for Indian managers and employees. However, their key contribution to the literature is the addition of the concept of 'hierarchical perspective', which is considered a central social value that affects organisational effectiveness within India.

Kumar & Sankaran (2007) argue that Indian culture is traditionally hierarchically based, as Hindu culture and the caste system arranges almost everything in Indian society hierarchically. Sinha (1997) thus argues that this hierarchical perspective influences or permeates Indian culture at every level, explaining the necessity to organise and function according to strict social structures. Kumar & Sankaran (2007) argue that this hierarchical perspective is ingrained in the Indian culture and is therefore manifested in organisational interactions, Kumar & Sankaran (2007:179). Thus, 'hierarchical perspective' adds a new dimension to the traditional Hofstede's model and is useful for this study as it helps to illustrate a unique characteristic of Indian culture not found in Western (i.e. Irish) culture. Furthermore, it provides an example of a cultural difference that could impact communication and effectiveness of the Virtual Team as already discussed by Panteli & Fineman (2005).

Cultural nuances that impact at the organisational level are also reported by Nicholson & Sahay (2001:12) who provide empirical examples of Indian software engineers, whereby they noted a common theme amongst interviewees that Indians desire to please, and avoid confrontation in the workplace:

“When presented with a piece of work and asked if they can meet the deadline the Indians will always say “yes”, even when it can't be done.” (ibid.)

Further examples of differences in culture that can affect the organisation and the Virtual Team in particular, can be found in the empirical study of a GIS implementation in India conducted by Walsham & Sahay (1999) revealed that cultural attitudes, perceptions and

social structure were deeply implicated in implementation problems arising from cross cultural interaction (1999:62). This study by Walsham & Sahay (1999) provides further field-based credence to the theoretical basis of national culture impacting at the organisational level. The literature has thus shown that culture does influence and play a role at the organisational interaction level, although stereotypes and generalities must be avoided, the influence of culture cannot be ignored as it relates to the construct of the Virtual Team.

2.4.7 Summary and Conclusion

Academia recognises that national culture is a significant construct, however it is important to avoid generalisations or reinforce stereotyping; culture does play a significant role in Virtual Teams (Massey et al. 2001, Oertig & Buergi 2006). However, although the literature is unsure as to the best approach to capture this; Walsham (2002) is appealing, as he focuses on the structure and interaction between cultures moving firmly away from Hofstede's generalities.

This study has presented four key themes or constructs supported by the academic literature. The study has examined Virtual Teams from the perspective of trust, control & communication and National Culture, as indicated by this literature review.

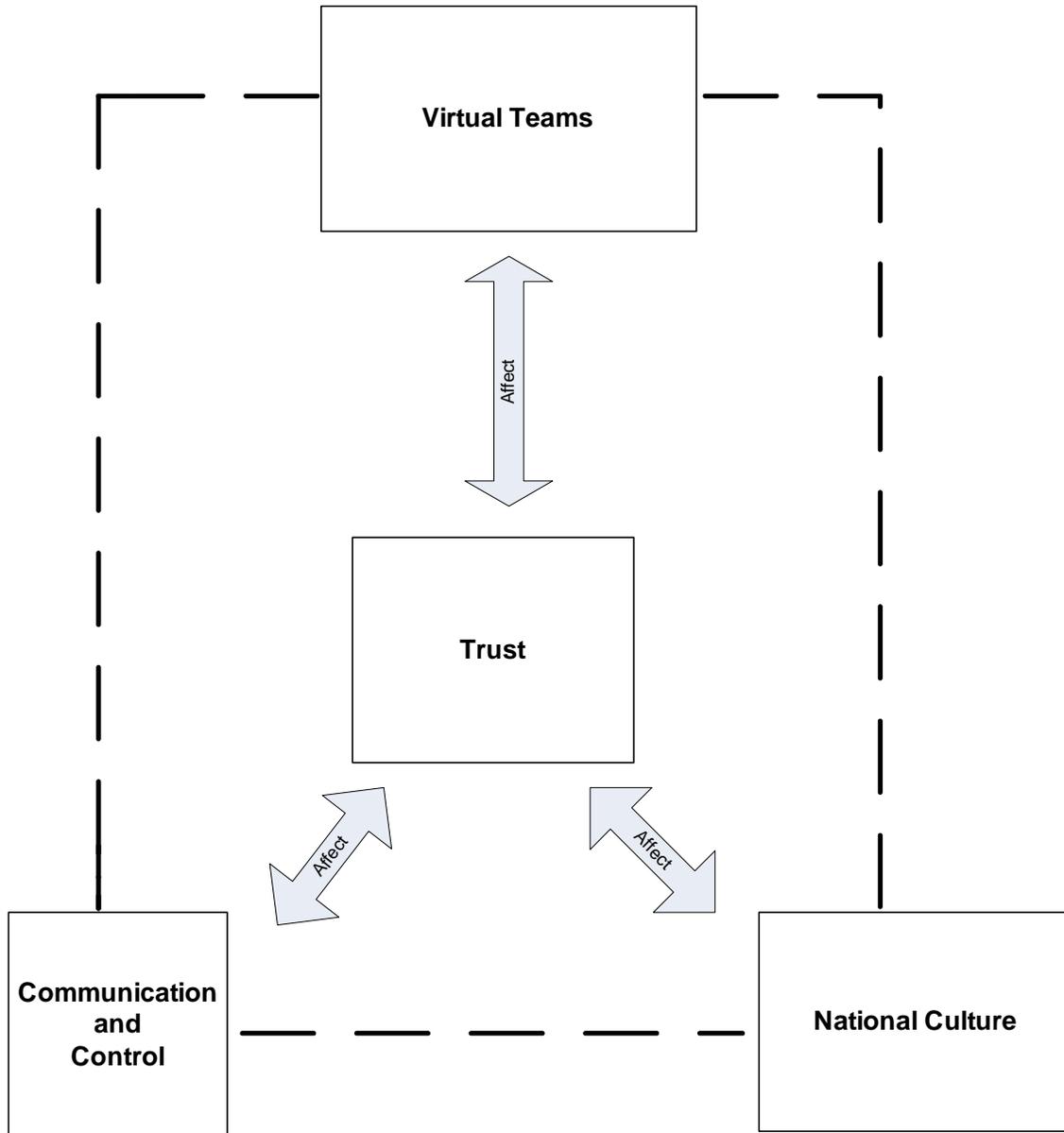
These four themes are:

1. **Virtual Teams** as the key unit within organizations, thus setting the context of the Virtual Team as the key sub unit of the modern global organisation. The evolution, key movements and theories in the academic literature was reviewed providing a basis for understanding the role, central themes and characteristics of Virtual Teams.
2. **Trust within Virtual Teams** whereby the concept of organisational trust and distrust was examined and discussed, revealing the complex interactions that

result from socio-emotional processes within Virtual Teams. Key theories on trust and distrust were presented illustrating that there is lack of consensus around key concepts.

3. **Communication and Control within Virtual Teams** was examined as applied to existing theories on electronic communication; behavioural control and trust in relation to Virtual teams were reviewed.
4. **National Culture in Virtual Teams** provided a summary of the importance of culture in Virtual Team study, highlighting the contentious debates about national culture and generalisation.

By revisiting Figure 1.0, the relationship and integration of these constructs can be further explained:



Revisited: Figure 1.0: Four Key Constructs of Study

Figure 1.0 emphasises the hierarchical relationship and connection between the constructs for the purposes of this study, thus **Virtual Teams** are positioned as the most significant construct, as providing the organisational context of the overall research. The **Virtual Team** construct has a direct affect and is affected directly by the remaining

constructs as illustrated in Figure 1.0. However, **Virtual Teams** are most affected by **Trust** directly, and hence Figure 1.0 illustrates this by positioning the **Trust** construct directly below **Virtual Teams**. This serves to further illustrate the important connection that exists between **Trust** and the **Virtual Team** construct. Trust affects the stability of the Virtual Team, as indicated in Sec 2.2; distrust for example can turn a team from being a highly effective, functional unit, into a challenged, dysfunctional group. Conversely, a strong functional Virtual Team can also affect trust (positively) within the structure.

For example, a positive instance of email communication (a control mechanism) can affect both the level of trust and the Virtual Team simultaneously. Figure 1.0 illustrates this by using two separate 2 directional arrows, one linking **Communication and Control affecting Trust**, and the converse reaction: the affected **Trust** in turn influencing **Communication and Control**.

Affects can be either positive or negative on each construct, depending on the circumstances, thus the two-way directional arrows in Figure 1.0 are used to indicate and represent the multi dimensional nature of the construct interaction. Thus, each construct can interact with each other. This study acknowledges that the Virtual Team are affected by both National Culture and Communication and Control constructs, illustrating this as a dotted-line relationship in Figure 1.0, the primary focus of this study is on trust. Likewise, the connection between **National Culture** and **Communication and Control** constructs are acknowledged and represented as a dotted-line relationship as they too can act directly on each other, as indicated by the literature in Walsham (2002) and Walsham & Sahay (1999) who have shown that communication and control can affect national culture, and conversely, national culture can affect communication and control within an organisation, as they can, “reciprocally influence each other” (Massey et al, (2001:212). However, they are represented in Figure 1.0 as secondary in consideration to the central construct of this study.

In conclusion, this academic literature review has presented an analysis based on these key constructs which is supported by key noted academics. However, this review has also revealed aspects of Virtual Team research that has notable gaps or is underdeveloped in the existing literature. Furthermore, certain aspects of Virtual Team research have emerged from this literature review that requires further study and analysis. These gaps in the literature justify the need to extend the existing research in an attempt to add to the existing literature and theory.

Chapter 3: Research Methodology

3.1 Introduction

Bonoma (1985) suggests that a researcher has to consider the purpose of the research and nature of the phenomenon under investigation before deciding on an appropriate research methodology. This researcher is uniquely positioned by working in an organisational environment where he is privy to the multiple layers of virtual team project interaction. This level of direct access to ICT environments, controls and observations within an organisation, supports the adoption of a qualitative approach to research. Kitchenham & Pickard (1994) indicate that in ICT research, case studies can show the effects of a technology in a particular situation, but cannot be generalised for every situation. This research is focusing on specific instances of trust decline using constructs originally defined by Piccoli & Ives (2003).

3.2 Selected Research Approach: Case Study

The Qualitative research methodology selected for this research is the single case study. The most noted advocate of the case study approach is Yin (2003), who indicates that a Case Study is “a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence.” The research question posed by this study is:

“How do behaviour control mechanisms affect trust in Virtual Teams?”

The justification for the selection of the case study lies in its ability to address this question by providing empirical evidence of real Virtual Teams, and analysis of the affect that behaviour control mechanisms has on levels of trust within the teams. Therefore, it is this unique ability of the case study in providing the grounds for direct empirical analysis that justifies it as the correct research approach for answering the research question.

To clarify, the reference to single case study in this instance refers to a single organisational study, rather than a case study on an individual person. The power of the case study lies in its ability to provide resonance and insights framed in the real world. According to Bonoma (1985), the benefit of studying the “phenomena of interest” is in its natural environment by providing contextual significance through direct observation of managerial behaviour. Rather than mirror reality, the single case study provides a fresh real-world perspective from the inside looking out.

One risk to consider is that the case study illustrates an idiosyncratic phenomenon or that they are steeped in generalities. However, this is overshadowed by key important strengths including novelty, testability and empirical validity, resulting from the intimate linkage with the empirical evidence (Eisenhardt 1989:548). Smith (1990) also indicates that, “Selecting cases for study will not, as a consequence, therefore rest on how typical the case may be, but on its explanatory power. Indeed, the deviant cases may be chosen, as analytical induction suggests, demonstrating the limits to generalization” (Smith 1990:129).

This research considered the merits of other methodologies such as ethnography, which uses an anthropological approach to examining and observing the participant culture in the field and although Genzuk (2003), summarises the benefits of ethnography as enhancing field work by providing personal experience and participation, its application to this research was rejected on the grounds that case study analysis, specifically around content analysis of email escalation, would focus a better understanding and analysis of the constructs from a behaviour control or IT perspective. Researchers must be formerly trained as ethnographers, a luxury which was not available to this particular researcher or study.

Hammersley (1992) criticises the ethnographic research technique on the grounds that the data collection process is biased as it is structured around the researcher’s assumptions of the social world, meaning that the researcher predefines the nature and focus of the research environment, rather than independently observing what unfolds in the field.

A key demerit against ethnography as a suitable research methodology for this particular research and most relevant to this study, is that ethnography does not take into consideration the impact of group interaction (1992:11). Therefore, application of an ethnographic methodology would not be suitable for this Virtual Team study.

In general, this research has two key constraints: time limitation, as this dissertation did not allow for a more sizeable sample of quantifiable data analysis, due to the submission date and secondly, the lack of research assistants. Data collection and analysis was limited entirely to the endeavours of the author, as no additional resources were available to provide assistance in terms of collecting, coding and review of data. Thus, these realities of logistical constraints in real world fieldwork dictates that a single case study is the correct approach under the circumstances as supported and justified by Patton (1990). This position is also supported by Smith (1990) who contends that case studies are suitable for purposes of description over correlation, as they concentrate on instances where the phenomenon under investigation actually occurs. Finally, as indicated in the literature review in Chapter 2, academic research on trust in virtual teams has been predominantly based on graduate studies, and academics such as Powell et al. (2004) and Jarvenpaa & Leidner, (1999) have called for more instances of real world empirical research, thus the potential and opportunity to verify and in particular expand the theories within this study justifies this as the correct research approach.

3.3 Method of Sampling

The case study sample came from a participant selection criteria based on Virtual Team members engaged in implementation projects based in India and Ireland. All team members belong to the same organisation but worked on five separate customer implementation projects. Team members were geographically distributed with members located in Galway Ireland, Bangalore India and Cape Town, South Africa. Participants were selected based on the sole criteria of being a member of any Virtual Team. Team roles varied from Developer, Project Manager, Tester, Team Lead and Consulting

Manager. It was felt that this would provide a greater opportunity to sample a wider cross-section, rather than narrow the focus to one specific project implementation team, project or role.

This scientific approach was endorsed by Eisenhardt (1989) who indicates that research should avoid random sampling and instead should concentrate on specific situations or specified sampling which will assist in extending emergent theory. Strauss (1987) in Robson (2003) refers to this as ‘purposive sampling’, whereby the criteria for selection is the researcher’s own judgement to typicality or interest. A sample is built up to allow the researcher sufficient data to meet the needs of the research, unlike Qualitative research which endorses specific (non-random) sampling. In purposive sampling, the sample is not randomly generated but rather is specified or pre-defined, thus as the emphasis is not statistical, a significant volume of data is not required. Sampling progresses according to the relevance of the cases rather than their representativeness.

Further justification for this method of selecting a suitable sample for this case study was based on insight from Flick (1998), who indicated the suitability of defining the structure of the group to be sampled in advance, taking into account before data collection that, “sampling decisions aim at the material which promises the greatest insights, viewed in the light of the material already used and the knowledge drawn from it” (1998:65). When applied specifically to this study, this refers to the selection of project team members’ email communication and the details emerging from the subsequent content analysis.

The sample participants were sent an introductory email (Appendix A) which outlined the basis of this research requesting that potential participants voluntarily forward on any emails that illustrated instances of renegeing, vigilance or salience within their day to day project email communication. The introductory email was sent to 50 participants who comprised the three main internal email group aliases: ~Project Managers-EMEA, ~Testers-EMEA, and ~Dev- EMEA. These three email groups comprise all of the resources assigned directly to the implementation projects. The sample group for this

study comprised of 50 members, however 10 participants did not reply with initial emails but are noted in chain mails (the ratio of EMT to participants was not 1:1 for example, as clarified in Table 3.5). These metrics serve as background information only and as such are not considered for the analysis of the case study.

<p>The breakdown metrics of the sample (50 participants) is as follows:</p> <p><u>Invited Participants:</u> Irish: 25 Indian: 20 South African: 5</p> <p><u>Respondents:</u> Irish: 23 Indian: 14 South African: 3</p> <p><u>Response rate: 80%</u></p>

Table 3.0: Participant Metrics

Participants were solicited according to the single criteria of being assigned to a project with a Virtual Team. The specifics of the participant group are outlined in Table 4 (a) (b) and (c). **EMT** refers to the Email Topic which is discussed in more detail in Sec 3.4, **Role** refers to the employee's designation within the team (**T**=tester, **TL**=team leader, **PM**=project manager, **CM**=consulting manager and **D**=developer). Virtual team members are geographically distributed in three locations: Galway, Bangalore or Cape Town, while finally, national culture indicates the person's cultural background (**IN**=Indian, **Ir**= Irish, **SA**=South African).

EMT	Role	Location	N. Culture
EMT1	T	CT	IN
EMT2	T	B	IN
EMT3	PM	B	IN
EMT10	PM	B	IN
EMT14	PM	B	IN
EMT15	PM	G	IN
EMT17	T	B	IN
EMT21	TL	CT	IN
EMT22	D	B	IN
EMT26	T	B	IN
EMT27	TL	B	IN
EMT31	T	B	IN
EMT32	D	B	IN
EMT33	D	B	IN

Table 3.1: Breakdown of Sample Participants (Indian)

14 instances (35% of sample total)

EMT	Role	Location	N. Culture
EMT19	CM	CT	SA
EMT20	PM	CT	SA
EMT25	TL	CT	SA

Table 3.2: Breakdown of Sample Participants (South African)

3 instances (7.5% of sample total)

EMT	Role	Location	N. Culture
EMT4	PM	G	Ir
EMT5	TL	G	Ir
EMT6	TL	G	Ir
EMT7	TL	G	Ir
EMT8	PM	G	Ir
EMT9	TL	G	Ir
EMT11	PM	G	Ir
EMT12	PM	G	Ir
EMT13	CM	G	Ir
EMT16	T	G	Ir
EMT18	T	G	Ir
EMT23	PM	G	Ir
EMT24	PM	G	Ir
EMT28	PM	G	Ir
EMT29	PM	CT	Ir
EMT30	D	G	Ir
EMT34	PM	G	Ir
EMT35	PM	G	Ir
EMT36	T	G	Ir
EMT37	PM	G	Ir
EMT38	PM	G	Ir
EMT39	T	G	Ir
EMT40	TL	G	Ir

**Table 3.3: Breakdown of Sample Participants (Irish)
23 instances (57.5% of sample total)**

As indicated, these tables provide background information into the case study sample and as such, no further statistical inference is made beyond the initial calculation of instances provided, as this research is more concerned with identifying and illustrating behaviours, rather than attempting to generate broader theory from statistical interpretation.

To summarise, Tables 3.1, 3.2 and 3.3 provide visibility into the background and frequency of email communication. It should be noted that Irish participants account for 57.5% of the overall email topics, followed by Indians (35%) and South Africans (7.5%).

In summary, case study sampling should focus on a pre-ordained group for the purpose of focusing the data collection on the particular rather than general concepts. This study therefore uses this method as advocated by Flick (1998) as justification for the basis of collecting data which is discussed in more detail in the next section.

3.3.1 Method of Data Collection

The data chosen for the case study was secondary data (documentation), specifically internal project emails. The decision to use secondary data is suitable considering the ICT organisational setting and context of virtual teams. Documentary data is permanent and open to scrutiny, as the researcher collects the data themselves thus providing validity and reliability, Yin (1984) supports this approach, indicating that case study research can involve qualitative data only, thus justifying this study's selection of documentary secondary data. Academic support for this method can be found in Yin (2003), Eisenhardt (1989) and Mason (2001) who outlines three guiding principles for the use and justification of text based forms of evidence:

Ontologically: documentation/text is more meaningful than verbal utterances, and in the Intec case study, email is particularly relevant as it is the formal method of communication within the project virtual teams, thus it represents a living example.

Epistemologically: the email documentation is the concrete evidence. It is exact and contains specific details that can be viewed and interpreted.

Degree of Relevance: The existence of the documents in the organisational context (i.e. real world) setting and the access justifies inclusion.

Therefore, using documentation as the primary data through content analysis has two main benefits for this study, specifically, it is a direct rather than indirect form of data (when compared to surveys or interviews) and it can be considered an unobtrusive

measure, as the documentation has already been created (i.e. it is non-reactive), thus the nature of the document is not affected by the fact it is being used for research as indicated in Robson (2003). The specific criteria for email selection for the study were defined under the broader category of Escalation email. For this study, the term escalation is defined from the organisational perspective of the case study company as “any incident, action or inaction which, if not addressed creates risk to the daily or long term success of the project”. Thus any issue related to project performance, task, deadline, and resources fits under this definition. This qualifies the behaviour control construct (as discussed in Sec.2.3.6) and the 1st research sub-question **“How do communication and control affect trust in Virtual Teams?”**

To clarify further, escalation emails were selected as specific criteria in line with the key constructs and research questions of this study. This study is not concerned with the day-to-day events of the Virtual Team but rather instances of significance which may indicate dysfunctional behaviour within Virtual Teams, hence the justification of the filtering criteria focus on escalation. At the end of the four months all emails (total of 220, including threads) were printed and stored in a reference document which would be used as the basis for the data analysis.

Email sampling ceased once ‘theoretical saturation’ had been achieved. Theoretical saturation occurs when no additional data or insights are being found whereby the researcher can develop properties of the research category. Sampling ends when nothing new emerges. The decision around theoretical saturation was made after the four month cut-off date, as determined by the constraints of time limitation. At the end date of the fourth month, a follow-up email was sent to participants thanking them for their assistance, indicating that the research collection was now finished. This researcher received two further emails from participants after this date, which were deleted upon receipt and are not included in this study. Thus at the end of the four months, 40 specific escalation emails were received from participants. The 40 varied in size from a single email to an email with numerous threads attached (see Appendix A for detailed breakdown).

The total number of emails collected after four months was 220.

3.4 Method of Data Analysis

This study was set up so as to investigate one type of ICT communication, specifically email used within a Virtual Team, and as such email was selected as primary data source.

Justification for this can be qualified according to the research sub question:

“How do communication and control affect trust in Virtual Teams?”

And

“How does national culture affect trust in Virtual Teams?”

As content analysis of email communication against specific criteria (as outlined in Piccoli & Ives (2003), is the correct approach for this study in providing an answer to these questions. Content analysis examines email contextuality, which plays an important role in understanding the communication and control construct and relationship of national culture to Virtual Teams as indicated in Sec 2.4.5.

Therefore, this study is concerned with a qualitative study (content analysis) rather than quantitative (statistical) study. Each printed email was codified and categorised according to the following criteria based on process defined by Strauss & Corbin (1998) in Saunders et al. (2007:501):

- Emails were assigned unique identifiers according to Topic (for example, the 1st email was labelled EMT#1, email topic 1).
- The length of any email ‘thread’ (i.e. more than 1 reply) associated with the conversation was calculated and noted (see Appendix A)

- Names have been removed from emails to protect anonymity and were replaced with the persons Team Role for this study.
- No other alteration to emails has been added or removed.

The data was coded and categorised according to the behavioural attributes defined by Piccoli & Ives (2003) and discussed in some detail in Sec 2.3.6. Thus, the key criteria for selection were to identify behavioural instances of renegeing, incongruence, vigilance and salience from within the email content analysis. Each initial email topic was printed in the reference document and assigned a unique email topic (EMT) which was read, and the content analysed and used as primary data.

‘Thread’ email was exempt from this process, due to the nature of repetition/duplication resulting from any preceding or following email in the ‘thread’. Although Threads are outside the scope of primary coding and categorisation for this study, they are used to provide empirical evidence and data around the frequency of email response per EMT. Each email topic (EMT) was read and classified according to the behavioural constructs taken from Piccoli & Ives (2003) and Panteli & Fineman (2005). The classification and coding guidelines were based on 11 constructs (See Appendix A for detailed data breakdown). The coding guidelines in Table 3.0 were used to provide reliability and consistency in categorisation. The “Explanation” refers to the most common definition or terms that can be used to categorise behaviours. For example, the behavioural category ‘Silence’ in common terms means ‘ignoring’, while ‘Confrontational’ equates to any ‘aggressive’ words or phrases within the emails. These coding guidelines allow other potential researchers to examine the emails and code using the same understanding and interpretation of the criteria and behaviour.

Furthermore:

- As each line of each EMT group was read, any instances of behaviour relating to the constructs was coded and categorised according to Table 3.4. A simple Microsoft excel spreadsheet was then used to capture the instances of each behavioural attribute per line, per email topic, which was coded accordingly. (Appendix A).

- In order to ensure consistency of coding, this exercise was repeated twice over the space of one week and any discrepancies were noted, a further review was completed two days afterwards and a final decision was made based on the previous review(s). As indicated, due to time and resource constraints, the study was unable to rely on any external coder or reviewers.

Code	Behaviour Categories	Explanation
R	Reneging	Not doing
S	Silence	Ignoring
I	Incongruence	Doing it incorrectly
E	Emotive	Emotional
T	Transference	Not my problem
V	Vigilance	Awareness
Sa	Salience	Relevance
N	Negative Escalation	Name and Shame
CF	Corrective	Do it this way
U	Unprofessional	Unprofessional
C	Confrontational	Aggressive

Table 3.4: Coding and Categorisation Guidelines

Although the collected data provides a limited sample, it is broadly representative of the Virtual Teams. As indicated, 80% of participants responded, and a high-level overview of the email sample in Table 3.5 illustrates that the collected email data came from more than 1 participant* and as such has a high degree of validity.

ID # of emails

PM JT	3
PM DK	2
PM AC	2
PM OL	2
TL GV	4
TL LP	2
TL NR	2

Table 3.5: Participant ID and # of emails (excluding threads)

* All remaining emails in the sample were evenly distributed with 1 email per participant (see Appendix C)

3.5 Limitations of Data

The main limitation of this data is that it is focused on only one data source (email). Research in Virtual Teams should incorporate broader analysis of ICT systems including Skype, IM, Video conferencing and Unified Communication Systems, such as Presence. Although communication in Virtual Teams is predominantly be email, it is not exclusive, and therefore by examining these other forms of communication media, other patterns of behaviour may emerge. Other limitations can be found in sampling mechanism, which although robust, can be considered limited when applied to other studies of Virtual Teams. However, the purportive sampling approach provides justification for the use of this method. The use of interview and survey would provide a deeper source of data for qualitative analysis; however time constraints made this option unrealistic. Regardless of these limitations, the researcher feels that this content analysis was the correct choice for this study as it reveals a rich layer of interaction which served to qualify the constructs and associated research questions.

3.6 Conclusion

In summary, the single case study is the correct approach for answering the research questions as this research requires a detailed empirical knowledge of the concepts and constructs which is best provided through empirical analysis in a field based setting. Content analysis of Virtual Team email documentation within this setting adds to the validity of this approach. This case study in particular is supported by the physical evidence of the data collected and coded from the study sample.

The sample participants for this research all belong to active, organisational based Virtual Teams comprised of employees of different national culture located in three different geographical regions. Emails were collected over a four-month period according to defined criteria. After the four-month window, each email was coded and categorised according to Strauss & Corbin (1998) in Saunders et al. (2007:501).

Specific criteria, related to the constructs and research questions of this study were presented and qualified. Furthermore, the empirical evidence of the email sample clearly established the existence of the Virtual Team construct as indicated through origin, content and organisational authenticity. Finally, a guideline was created for coding and categorisation which allowed for future researchers to replicate the study. The next chapter presents the findings taken from the data collection and analysis.

Chapter 4: Findings

4.1 Introduction

This chapter presents the scientific findings of the data using Piccoli & Ives theoretical framework on the unintended affect of behaviour control mechanisms on trust in Virtual Teams as a background framework. Content analysis provided the opportunity to examine the behaviours of real-world Virtual Teams based in Ireland, South Africa and India, working on software implementation projects. This chapter reproduces the factual findings from the collected data sample, presenting patterns that emerge from it. The patterns are supported with data and empirical evidence including excerpts from the Email logs. The focus of this chapter is on significant, specific results, however a brief overview of general findings will be presented so as the overall context can be viewed in relation to the constructs of this study.

Finally, these findings are based on a single case study and as such provide empirical evidence of certain behaviour in a particular instance of a real-world organisation; they do not reflect general trends nor claim to be examples thereof. Finally to reiterate, the purpose of this chapter is to present the findings in a factual manner, while Chapter 5 will then take these findings and discuss and present them in a more detailed structure.

4.2 Findings Related to Constructs

4.2.1 Virtual Teams

The previous chapter has established that all email data used in the study was quality checked and verified at the coding and categorisation stage as being specific to Virtual Teams. This authenticity is further verified through the fact that all email was either sent or received through MS Outlook on an internal company email server. Thus, the existence of the Virtual Team construct for this study is general to the findings, and as such has been satisfactorily established through the empirical evidence (Appendix A).

4.2.2 Trust and Virtual Teams

At the general level, the existence of the data sample, based on email content analysis, stands as empirical evidence that trust can be affected by the inherent characteristics of the Virtual Team. Table 4.0 reveals the overall empirical evidence of instances which indicate that trust is challenged within the sampled teams. In particular, the data revealed a high correlation between instances of Vigilance and trust decline in the Virtual Teams. Although Vigilance accounted for 8.25% overall, the significance lies in the fact that it exists in the data, rather than frequency.

Reneging	15	7.28%
Silence	16	7.76%
Incongruence	28	13.59%
Confrontation	25	12.13%
Transference	10	4.85%
Negative Escalation	19	9.22%
Corrective	31	15.04%
Unprofessional	16	7.76%
Emotive	25	12.13%
Vigilance	17	8.25%
Salience	4	1.99%
	206	100%

Table 4.0: Behavioural Categories and Instance Frequency

Exhibit 4.0 provides an example of Vigilance from the data. In this example Vigilance occurred when PM DK, a Galway based PM, monitored email flight requests for his project as the cost goes against the project budget. Rather than booking the train from London to Norwich, T GB booked flights from London to Amsterdam then Amsterdam to Norwich at a more notable cost. PM DK reprimands the Bangalore PM's for booking this ticket.

EMT4

From: PM DK

To: PM VT, T GB

Subject: RE: Flight Costs for GB

PM VT,

Please ask S again to book what was requested, that is to re-route his London to Bangalore flight to: LONDON to CHENNAI.

*It would be completely ridiculous to fly from **Norwich** to **Amsterdam** and then from **Amsterdam** to **London**....*

Please also clearly instruct S not to rebook and Norwich/Amsterdam or Amsterdam/London flights. These flights are not needed for GB to fly from London to Chennai because he will use a train to get from Norwich to London.

Regards,

PM DK

Exhibit 4.0: Example of Vigilance

4.2.3 Communication and Control in Virtual Teams

Although email is the preferred communication media within the Virtual Team environment, the data revealed that email was used primarily for monitoring and control rather than for pure communication. Virtual Team members spent significant time correcting the work tasks or behaviours of colleagues, as evident in the significant

number of corrective instances (15.04%). In general, the primary data illustrates the broad application of control (as made self evident by the very nature of the existence of the escalation emails used as data). A more detailed examination of the data associated with behaviour control is presented in the next section and is discussed in Chapter 5.

4.2.3.1 Behavioural Control Mechanisms

As indicated, Table 4.0 presents the breakdown of behavioural categories as identified by the coding criteria discussed in the previous Chapter. The data reveals a general distribution of behaviour across the email samples. Piccoli & Ives (2003) constructs are evident with Reneging (7.28%) and Vigilance (8.25%) evenly represented.

Incongruence is more frequent at 13.59% while Saliency is minimal at less than 2%. The primary data revealed other behaviour categories beyond the sub-section used by Piccoli & Ives (2003). In particular, instances of Corrective behaviour stood out with 15.04% while Confrontation and Emotive behaviour is also notable within the data. A deeper presentation of the findings resulting from these behavioural control categories is presented in more detail in the following sections.

4.2.3.2 Silence

The general primary data findings on Silence indicates that 7.76% of the total EMT instances which provides empirical evidence that it exists as a real phenomenon within the Virtual Team environment. By extending the data findings to examine the role of Silence within multiple constructs, this research reveals that silence has an influence on confrontation and the number of threads associated to an EMT as illustrated in Table 4.1 and 4.2.

Reneging	1
Silence	3
Incongruence	1
Confrontation	2
Transference	0
Negative Escalation	1
Correction	1
Unprofessional	1
Emotive	1
Vigilance	0
Saliency	0
Threads	12

Table 4.1: Data for Multiple Construct EMT29

The existence of Silence in email indicates that Silence can be correlated to a significant number of Threads, as illustrated in Table 4.1 where 12 Threads exist (EMT4 provides a further example, with 17 Threads in Appendix A). As indicated, the data found that instances of Confrontation are higher when silence is present, as illustrated in Table 4.2. The significance of this relationship will be discussed in the next chapter.

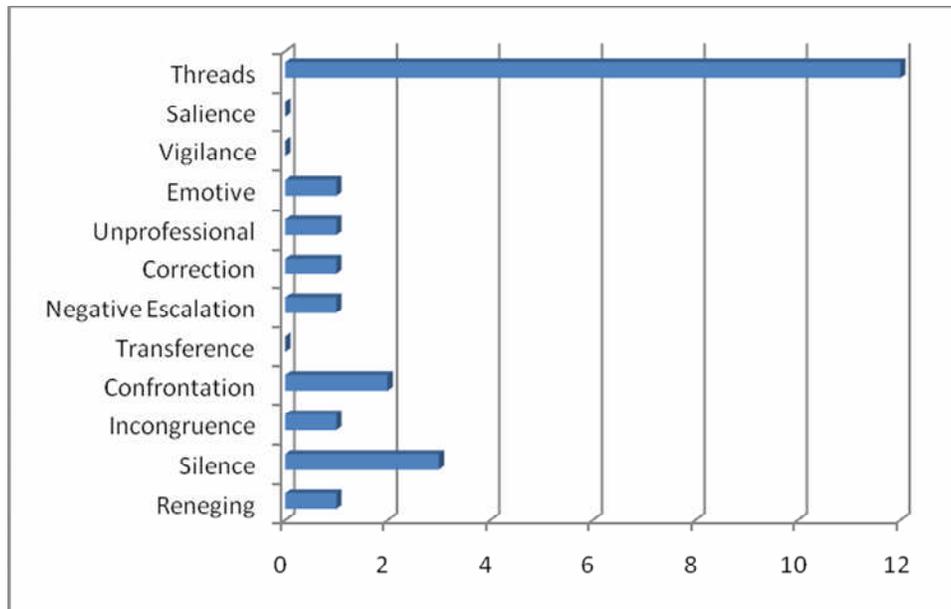


Table 4.2: Bar Graph of Silence as a Multiple Construct (EMT29)

4.2.3.2 Negative Escalation

One of the key findings in the primary data is the existence of what this researcher has coined “Negative Escalation”. Negative Escalation occurs when traditional email escalation is misused for the specific purpose of incriminating or blaming another. The purpose of the email is malicious by nature and intended to ensure the recipient is chastised or intimidated into capitulating on a particular issue of contention between the two parties. Email is the media for capturing Negative Escalation as it provides a documented copy of the ‘conversation’ and is easier to escalate than say, a telephone call.

Exhibit 4.1 provides a rich exemplar of Negative Escalation, whereby the Managing Director of the Galway office and Vice President of the Bangalore office are purposefully “CCed” in the email communication as discussion escalates into mutual accusation and condemnation. PM DK has to justify the actions and wording of his email, clarify the intention and reprimand PM SV (who was the initiator of the Negative Escalation).

EMT15

From: PM DK

To: PM SV

Cc: MD Galway, VP Bangalore, CM Galway, T HLR, D SB

Hi PM SV,

Before you start making inaccurate statements like the following you should try and get some basic facts right:

“I have seen them sitting idle for weeks without any communications from Galway”

When I took over responsibility for Project N in Nov.2006 I instigated video conference sessions on Tuesday, Thursday, and Friday-every week.

During the rest of the week there are very frequent communication exchanges using: Email, Telephone (landline or Skype), and Skype Chat. I made it very clear to the team when I started in Nov'06 that if they finish their tasks before we expect (that is they are idle) that they must contact us immediately. This is a very simple concept to convey and they all confirmed that they understand what I was saying. I would not expect to have to point this out to any professional, but because we are working remotely and cannot just walk over and see what is going on, I felt it was prudent to make that clear to the Bangalore team. I believe that these are the type of basic business practices that need to become a part of business in Bangalore. I suggest that you address some of these basic business practices and that this could be a very beneficial use of your time, rather than sending these inaccurate emails, which means that I have to consume my time pointing out the blatantly obvious. I had previously responded to PM SJY on this topic-see a copy of my email below.

Regards,

PM DK

Exhibit 4.1: Example of Negative Escalation

The data for EMT15 in Table 4.3 is illustrated as a bar graph in Table 4.4. The findings indicate that with the exception of Silence, all the individual behavioural categories are prevalent in EMT15. By using a multiple construct analysis of EMT15 however, patterns emerge. Most notable is when Negative Escalation is present there is a corresponding high correlation with Corrective behaviour and Confrontation. The data findings also reveal that significant instances of Emotive behaviour are also present (as per EMT2 and EMT10 in Appendix A).

Reneging	3
Silence	0
Incongruence	2
Confrontation	6
Transference	1
Negative Escalation	3
Correction	5
Unprofessional	2
Emotive	2
Vigilance	1
Saliency	1
Threads	10

Table 4.3: Negative Escalation as a Multiple Construct (EMT15)

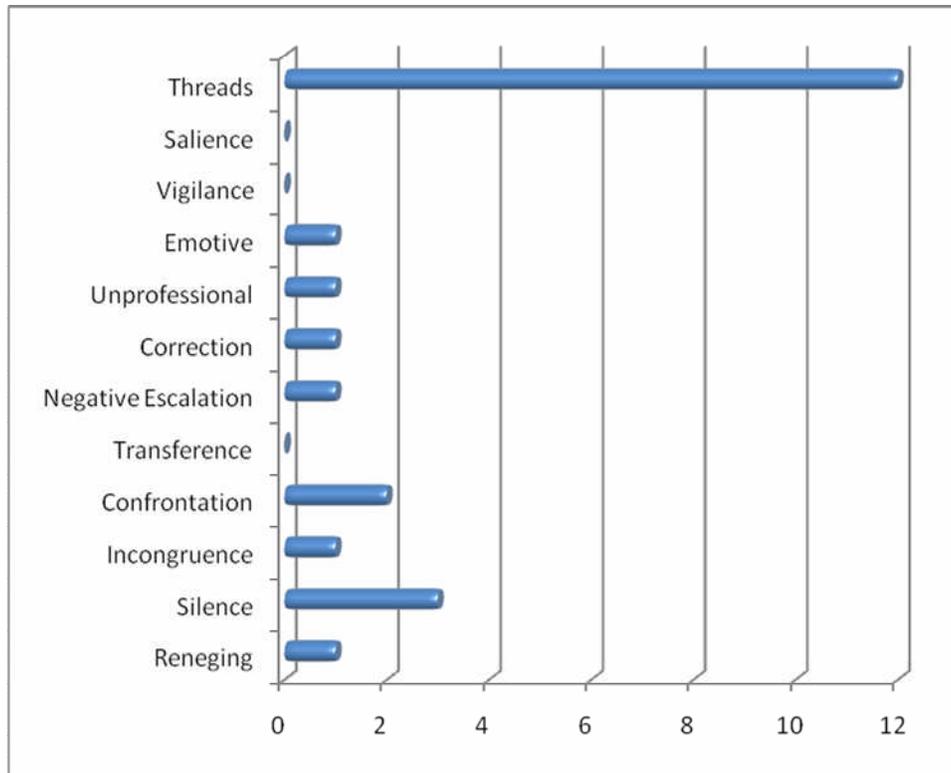


Table 4.4: Bar Graph of Negative Escalation as a Multiple Construct (EMT15)

Negative Escalation is a new phenomenon which has emerged as an extension of the existing constructs and as such will be further analysed and discussed in more detail in the next chapter.

4.2.4 National Culture and Virtual Teams

At a general level, the data findings in relation to the National Culture Construct revealed that Virtual Team members from Ireland and India experienced significant instances of Corrective behaviour. The data provided the following results: An overall 15% of the email topics focused on Corrective behaviour between the two cultures, the majority of “corrections” emerged from Irish Virtual Team members correcting the behaviour of Indian employees. The nature of the Corrective behaviour varied from

misinterpretation of task (EMT33) to resulting from a direct consequence of renegeing (EMT20).

Exhibit 4.2 provides an example from the email escalation logs whereby the content analysis revealed that the Bangalore-based Virtual Team member was unknowingly focusing on the incorrect task (renegeing). T TOF provides Correction by indicating:

“What you are supposed to have been concentrating, as per my other emails to you , is the process of promoting completed test cases/suites so as they can be used later to provide pass/fail warning statistics on valid test runs.”

EMT36

From: T TOF

To: T SN

Subject: RE: LOE

Hi S,

It would appear that you have totally forgotten what was it was that you were assigned to do for the past week. You were not assigned the same task as V. V and M are working on the Automation Framework together. What you are supposed to have been concentrating, as per my other emails to you, is the process of promoting completed test cases/suites so as they can be used later to provide pass/fail warning statistics on valid test runs. What we need is the process that allows a system tester to promote a valid test run and then the process that reports on these. Do you understand?

Your LOE should have been completed by now and should be based on the blank template I sent you...

Exhibit 4.2: Example of Corrective Behaviour

The presence of instances of Corrective behaviour was significant in communication between Indian and Irish Virtual Team members; while the data findings could not provide any example of corrective behaviour found between Irish to Irish or Irish to South African Virtual Team members, data did provide instances of Indian to Irish correction and South African to Indian corrective behaviour (EMT20), as illustrated in Exhibit 4.3, whereby PM WB indicates to T AB that he has not submitted his timesheet (renegeing) and tells him to “Kindly submit your timesheets urgently.” (Correction)

EMT20

From: PM WB

To: T AB

Cc: GC; HC; LV; OL

Subject: Timesheet incomplete

Hi A,

After several requests to complete your timesheet for last week, I noticed that you have yet to complete your timesheet. Please note that it is mid financial year-end and you are holding up our entire approval process. Kindly submit your timesheets urgently.

Regards,

PM W

Exhibit 4.3: Example of Corrective Behaviour (2)

In summary, Corrective behaviour permeates the data sample and is thus indicative of the nature of the email escalation and although correction is a dominant theme within the data, this research acknowledges its existence, but it lies outside the immediate scope of the study constructs to warrant further investigation.

4.2.4.1 National Culture and Trust in Virtual Teams

The primary data sample is limited as it does not provide clear factual indicators of the influence or prevalence of national culture. Acquiring such concise data is unattainable within such a broad construct. Furthermore, this research acknowledges that attempts to collect and interpret data along these grounds is open to considerable and justifiable scepticism and have thus been avoided. The data provided in the participant metrics (Table 3.0 through to Table 3.3 in the previous chapter) are sufficient for providing findings corresponding to instances of EMT per cultural grouping. The data is limited beyond identifying the national culture of participants and frequency of email. This data does find that escalation emails between different national cultures within the Virtual teams as presented in Sec 4.1 and Sec 4.3.1 do exist.

4.2.4.2 Organisational Work Culture and Virtual Teams in India

The instances of Transference in the data, although low (4.85%) are directly linked to actions by Indian Virtual Team members, (EMT22) and as such the nature of Indian work culture compared to Western-based cultures warrants analysis. The next chapter expands on these initial findings and provides discussion based on correlations between the behavioural constructs in the data and the overall constructs and research questions of this study.

4.3 Conclusion

The primary data has revealed several findings. At a general level, the data supports the existence of the study's four constructs, and in particular the findings illustrate that the behavioural categories of this study exist in a field-based environment. Patterns emerge from the analysis of multiple constructs, particularly the combination of behavioural attributes such as Silence and Negative Escalation. The data illustrates specific instances

whereby trust breaks down as a result of Virtual Team monitoring and behavioural control mechanisms. Although the data provides limited insight into national culture patterns, Tables 3.0, 3.1 and 3.2 show the breakdown of participant response according to national culture. Chapter 5 will discuss these emerging patterns from the multiple constructs and expand on these findings to examine how they relate to the academic theory on Virtual Teams.

Chapter 5: Discussion

5.1 Introduction

In general, the primary data findings from the previous chapter indicate that the levels of trust within the Virtual Teams in this case study are affected by behavioural control mechanisms. This supports the use of the study constructs and provides a solid justification for examining this behaviour in more detail. The existence of trust decline within this research can be attributed to two key empirical realities: the predominance of email as the medium of communication and control within the study organisation, and secondly, the predominance of real-world pressures such as the threat of project failure within the study organisation. This is significant to the overall discussion and is highly prevalent for the Virtual Team employees, as rewards such as bonus, performance review and salary (and potentially job security) relies on the successful completion of target and quality milestones. Failure to deliver on time or with poor quality has serious repercussions for the organisation, project and ultimately each member of the Virtual Team. Therefore, the need to be able to trust Virtual Team members is critical within the context of the Virtual Team and consequently, any instance of mistrust or perception of trust decline, becomes automatically heightened. This chapter expands on the general findings from Chapter 4, applying them to the key constructs and the academic literature which have guided this research. This discussion will provide analysis of the central findings from the previous chapter and relate them to the constructs and the key research question.

5.2 Trust and Virtual Teams

This researcher found that in general, instances of renegeing, salience and vigilance permeate the primary data indicating trust decline as outlined in the academic literature and made evident by the data findings.

EMT19

From: Test TL HC

To: Tester AB

Subject: RE: Request to do knowledge transfer about Project X

Hi AB,

Rating has only been assigned to you on 20/03/2007 (see attached email) already, but you mention in yesterday's email that you're only starting to read the Rating ED now. I've specifically asked you to arrange a hand-over with tester M and follow-up with him if you have any questions. This was over 2 weeks ago!! What have you been doing all this time? The test objectives are due back on 14/04/2007, so you need to get going on this to ensure that you meet the deadline. No excuses! Tester M is back in the Bangalore office, so get him to sit with you and answer your questions...

Exhibit 5.0: Empirical Evidence of Reneging

Exhibit 5.0 illustrates an example of how an instance of renegeing can result in trust decline. In this example, Tester AB in Bangalore did not start the work assignment as expected by TL HC based in Cape Town. The use of exclamation points in the body of the email and general tone further reflects the urgency of the task to be completed. The research in this instance is in agreement with the literature, as the empirical data found in this study is able to reproduce the behaviour associated around trust decline. The trust construct is affected by Communication and Control as illustrated in Figure 1.0 which will be discussed in the next section.

5.3 Communication and Control in Virtual Teams

The findings in the previous chapter provide an answer to this research sub-question:

“How do communication and control affect trust in Virtual Teams?”

This research answers this research question by providing empirical data that trust can be negatively affected by communication and control. To elaborate, this study found that email communication was used for monitoring purposes rather than purely as a mechanism for information exchange, as indicated by the data. This case study found that escalation emails evolved from the traditional role of information conduit to being unintentionally used for monitoring and control of Virtual Team members. The primary data identifies instances whereby confrontation and vigilance resulted directly from email communication. The literature has shown that email is the preferred form of communication media for Virtual Teams, providing instant conveyance and a permanent document which can be easily edited, shared and distributed.

However one key negative aspects of email is its lack of social context richness. As indicated in the literature review, academia is divided, some argue that email acts as an equaliser allowing for a levelling of role and greater cultural cohesion, others share a contrasting view that email serves to increase cultural gaps and creates a strain on trust in Virtual Teams. This researcher has found that email can do more harm than good in a dysfunctional team, as it serves to erode trust at a rapid rate as supported by the findings. Furthermore, variants in the literature are chiefly centred on student-based research, this researcher argues that empirical organisational studies reveal a greater urgency and intolerance around factors that influence communication and control within project teams and therefore have more resonance in relation to the construct and overall research questions. Finally, behaviour control is central to the overall trust construct and subsequent research question and is examined in the next section in more detail.

5.3.1 Behaviour Control Mechanisms

The literature indicates that behavioural attributes, coupled with organisational control mechanisms, can result in heightened monitoring and auditing of work tasks. Behaviour Control mechanisms are central to this study and to the research question,

“How do behaviour control mechanisms affect trust in Virtual Teams?”

The literature indicates that behaviour control mechanisms are essential to the success of any project, and the inclusion of a Virtual Team, rather than the traditional face-to-face team creates organisational challenges which require specialised monitoring and control.

Thus, behaviour control mechanisms within an organisation can be intended or unintended; unintended when behavioural instances reveal risks and challenges to the project, and intended for the purpose of monitoring and auditing tasks and actions. In this case study, the behaviour control mechanisms were unintended; however control mechanisms existed in the projects (i.e. roles were assigned, schedules and plans were put in place). The behavioural control emerged as a by-product of the instances of escalation. To elaborate, the case study Virtual Teams had no formal behavioural control policy or practice in place, hence they were unintended by design. Team members were not instructed or directed by line management, how or when to escalate issues. The emergence of monitoring and control therefore arose through necessity in the research Virtual Teams as a result of the trust erosion experienced between team members. This is reflected in the data findings in the previous chapter as instances of Vigilance and Saliency. The overall percentage of these instances is relatively low in the data. However, more importantly, the significance lies in the actual existence in the data sample rather than the frequency.

The data findings in this research support the academic literature and contend that behavioural control mechanisms in general affect the level of trust within Virtual Teams. The research findings illustrate typical instances of behavioural control attributes (such as renegeing and vigilance) as endorsed by the literature, however this research has also

uncovered extensions to the traditional behavioural control subsets, which warrant further, more detailed analysis as presented in the next two sections.

5.3.2 Silence

The literature on Silence, although limited, indicates that silence can be associated with negative behaviour in Virtual Teams, depending on the level of familiarity and trust that exists within the team itself. This researcher found specific examples of Silence behaviour in the primary data (Appendix A) as illustrated in the previous Chapter. The prevalence of Silence within the Communication and Control is significant, as Virtual Teams by nature rely on consistent and continuous communication. The literature indicates that reasonable levels of Silence is acceptable and expected within functional Virtual teams, as used in the context of time zone differences, (as for example, Bangalore is +5 GMT). However, as illustrated in the previous chapter, the primary data reveals that the instances of Silence behaviour in this case study are in fact directly related to trust decline. Silence in this studies instance refers to unscheduled, unintended and unwelcome gaps in team communication, particularly associated around control mechanisms (such as project or task deliverables).

EMT 9

From: TL GV

To: TL AP

Subject: FW: Test Cases sampling for 2 scenarios

Hi guys –could you please send short reply=> YES or NO or whatever...after 3 hours?

If you do not reply, I do not know what's going on-I am not in BL.

We are all working on the same Project, for the same customer, with same goals, in the same company.

Cheers,

TL GV

Exhibit 5.1: Empirical Evidence of Silence

For example, Exhibit 5.1 illustrates how Silence can affect trust within the Virtual Team setting. Threads from EMT 9 indicate that TL GV made a request which did not receive a response for two days; this email (Exhibit 5.1) is the third successive attempt made by TL GV based in Galway, to team members based in Bangalore. No reply is forthcoming even three hours after it was sent. He reiterates that “*We are all working on the same project, for the same customer, with same goals in the same company.*” in an attempt to create a sense of teamwork or common ground.

When Silence is examined with multiple constructs (EMT29 as an example in Appendix A), there is a notable correlation between the instances of Silence and Confrontation, as project control mechanisms such as deliverables dictate that resolution must be forthcoming and urgent. The lack of reply or communication invariably results in an increase in the frequency of emails. As continued Silence impacts control mechanisms such as project deliverables, behaviour can evolve into grounds for instigating Negative Escalation emails as evident in EMT29 (for more on Negative Escalation please refer to the next section). From a cultural perspective, Silence could be interpreted as deference to the email originator, whereas some cultures prefer to wait rather than reply, or refrain from replying in an attempt at appeasement rather than convey bad news, this cultural appeasement has a negative effect by only further annoying the email originator.

This is consistent with the literature on email context and culture; however there is not enough academic literature to expand on this any further with relation to the literature on silence. In summary, the literature on Silence in organisations and in particular in Virtual Teams is severely lacking. This research extends the study of silence by providing empirical support for the existing albeit sparse literature by incorporating silence as a key mechanism that affects control and behaviour, and thus trust within the Virtual Team.

5.3.3 Negative Escalation

As indicated in the previous Chapter, one of the key findings in the primary data [see Sec 4.3.2 and Table 4.2 & 4.4] is the existence of what this researcher has coined “Negative Escalation”. To reiterate, Negative Escalation occurs when traditional email escalation is misused for the specific purpose of incriminating or blaming another. The purpose of the email is intended to ensure the recipient is chastised or intimidated into capitulating on a particular issue of contention between the two parties. The significant difference from traditional negative email is in the premeditated distribution of the escalation to a wider audience, compared to the traditional negative flame mail escalation between two parties. Negative escalation is therefore malicious by nature as it is deliberate and premeditated. The research has shown that email is the primary media for capturing Negative Escalation as it provides a documented copy of the ‘conversation’ and is easier to escalate than say, a telephone call. Negative Escalation is unique to email media, and as such has a greater chance to occur within the milieu of the Virtual Team. Email allows a degree of distance and anonymity, whereby the instigator can trigger a negative Escalation from the relative safety of their desk or laptop. Once the email is sent it takes on a life of its own. If an instigator were forced to use another, richer media (for example, telephone or in person) negative escalation would not occur, as anonymity is removed and the instigator would have to provide immediate justification and support for their claims. Email allows for a pre-emptive strike as the recipient may be completely unaware of what lies in their Inbox. Thus email provides the conduit and power for the Negative Escalation to exist.

Another central characteristic of this phenomenon of Negative Escalation is the active inclusion of a senior manager, typically the recipient’s manager or managing director in the “Cc:” field of the email. Negative Escalation can be overt (by including the superior/line manager in the “To:” field) or covert, by either forwarding on the email afterwards or including the superior manager in the “Cc:” field of the email reply. The “Cc:” field can grow exponentially as others are pulled in to serve as rebuttal witnesses

or silent observers. This research data found that negative escalation invariably results in numerous email threads as the “accused” tries to counter the claim with either a lengthy justification/clarification of their actions, comprehensive alibi or a counter recrimination, as discussed in relation in the previous chapter. By including a senior manager in the email distribution, the instigator automatically chooses the timing and conditions of the Negative Escalation; therefore complete control resides with the instigator. This researcher argues from this research that the very existence of Negative Escalation is as a result of complete trust breakdown (mistrust) and as such is the tipping point from distrust to mistrust. Thus once triggered, a negative Escalation email rapidly spirals from initial trust erosion to complete mistrust and cannot be recovered.

The literature refers to negative social effects of email use (as seen previously in Table 2.1) and in particular the literature on Rational Actors reflects certain aspects of Negative Escalation, such as the intended negative outcomes and filtering of social cues. However, Negative Escalation has unique properties that are outside the scope of the existing literature. Another key characteristic that separates Negative Escalation from negative email (flame mail) is the planned distribution to a wide audience; flame mail remains a one-to-one exchange and does not escalate to a wider audience. Purposeful escalation is another key differentiator from flame mail.

The literature has revealed varying degrees of trust and the concept of a trust continuum. The use of vigilance and salience in the Virtual team case study is an empirical example of this. Negative Escalation is an extreme extension of vigilance and salience; extreme as it is solely used for malicious intent, whereas vigilance and salience are benevolent activities for the “good” of the project. The literature has presented how email monitoring is used as an unintended control tool within organisations. Negative Escalation resides firmly within the Behavioural Control Construct of this study; however it exists as a method of individual control (for the purpose of manipulation) rather than organisational group or team control. Organisational control is hijacked for the purpose of controlling the individual (the recipient) by the instigator. The instigator’s sole interest is to ensure that the recipient is targeted for reprimand by senior

managers. Negative Escalation emails do not provide the recipient any manoeuvring room or clarification clause.

This research data found that negative escalation invariably results in numerous email threads as the “accused” tries to counter the claim as evident in Exhibit 5.2 where mistakes (perceived or real) are exposed and allegations are made. In Exhibit 5.2 TL R is explaining his actions as a response to an earlier email from T RH who triggered the negative escalation by highlighting discrepancies with the work performed by TL R.

EMT2

From: TL N

To: Project Manager

Cc: Senior PM Bangalore, Resource Manager Bangalore

Subject: RE: System Test Release 3

Hi James,

The below observations by RH are good points. But we all know why this happened. I never asked R to send his “Observations to me” on Release 3.

That also he mailed this to all managers.(PM AC and PM SV)

Now PM SV is not related to our project anymore.

If I did wrong, please let me know.

With this mail, I am feeling bad about myself.

Can you please assign Release 3 Test Lead to RH only.

Thanks &Regards,

TL N

Exhibit 5.2: Empirical Evidence of Negative Escalation

The effect of Negative Escalation on trust within Virtual Teams is significant, as in the example provided (Exhibit 5.2) whereby TL N (an Indian member of the Virtual Team) became so demoralised that he formally requests to be taken off the project. He handed in his resignation notice two weeks later.

Negative Escalation as a new construct also supports the views on national culture within the literature, and specifically can be applied to the literature on Indian organisational culture. The literature has shown differences in culture can create different expectations and perceptions in terms of behaviour and control responses. Returning to Exhibit 4.1, where the perception was that Indian colleagues would rather sit and do nothing only infuriated the Galway managers; in turn Indian managers blamed the Galway managers for failing to instruct the Indian employee sufficiently. Thus cross-cultural gaps are heightened within the Virtual Team structure. This researcher contends that Negative Escalation is common within the organisational culture of Indian Virtual Team members. The primary data supports this consideration. This case study reveals that Negative Escalation could be seen as a repercussion of 'hierarchical perspective' as discussed in Sec 2.5.6, whereby Indian cultural systems such as caste still permeate Indian organisations

This researcher worked in the Bangalore office for four months in 2006 and observed some instances whereby caste determined employee response to organisational tasks. The background of the conflict in Exhibit 5.2 is a direct result of friction over caste and role assignment within the team. This researcher has witnessed Indian Virtual team members rebel against taking instruction or direction from colleagues of a lower caste, and in one particular instance, a team refused to take orders from a newly promoted Team Lead due to the fact she was a woman. Although the rituals and beliefs of the Hindu majority permeates Indian organisational life, this researcher prefers to avoid making sweeping generalisations, as caste is only applicable to Indians of Hindu belief. However, this researcher argues that the nature of Negative Escalation suits the hierarchical nature of Indian organisational society as evident in the literature and Exhibit 5.2, where Negative Escalation was used to reinforce caste and role within the

Indian Virtual Team members. Although the Bangalore office was typically heterogeneous, and included Indians of different backgrounds and religious beliefs including Christian, Sikh, Hindu and Muslim, caste still permeated the organisational structure. The findings around National Culture and Virtual Teams are discussed in more detail in the next Section (5.4).

Patterns emerge when Negative Escalation strongly interacts with other behavioural attributes such as Corrective behaviour and Confrontation when analysed as a multiple construct. In particular a pattern of Emotive instances are noted in the findings which are significant, as Emotive responses are indicative of a complete collapse in organisational civility and professionalism. This researcher contends that the existence of Emotive instances in Negative Escalation is indicative of the damage that such a construct can do to the level of trust within a Virtual Team. Furthermore the existence of Negative Escalation within Virtual team communication signals the tipping point where trust erosion has evolved into complete mistrust. The multiple construct analysis from the previous chapter suggests that any combination of Emotive behaviour with Negative Escalation, Confrontation or Silence can result in a detrimental erosion of trust, affecting the functional ability of the team.

In summary, Negative Escalation exists within the Behavioural Control Construct and this research suggests that once present, trust is now impossible to recover. It exists as a phenomenon associated specifically with email communication, due to the lack of social cues and presence afforded to the media. This research suggests that negative Escalation is unique to Indian organisational structures, specifically email dependent structure such as found in Virtual Teams.

5.4 National Culture and Virtual Teams

Culture and its affect on trust in Virtual teams is a key construct of this study. The data findings are not of enough detail to draw conclusions based on national culture theory which by nature is controversial as indicated by the literature. However, empirical observations are sufficient to provide examples from this case study only which will attempt to answer the research sub-question:

“How does national culture affect trust in Virtual Teams?”

Content analysis revealed that cultural nuances and their impact were found in the escalation log, and in particular around instances of Confrontation, whereby virtual team members were challenged on either statements or work tasks based on perceptions around ability. Negativity and ambiguity of task increased frustration as illustrated in Exhibit 5.3 which reveals an instance where Indian managers in particular were quick to appease and provide Irish managers with “what they wanted to hear”. This nuance of national culture (i.e. what the literature refers to as the existence of a predisposition to appease and ‘affective reciprocity’, as discussed in Sec 2.5.6) has a negative affect on Virtual Teams by eroding trust in the eyes of the Irish manager.

The statement, in Exhibit 5.3 ***“How can you assure me that anyone knows what they are doing?”*** in this context is damning and evident of a complete collapse in trust within the project and the Virtual Team structure as a whole. The email Threads for Exhibit 5.3 reveal that previously, Indian managers had communicated that progress was on target and there were no issues around test targets or metrics. Analysis revealed that the figures had been “adjusted” so as to present a positive message. The reasoning for this is not known from the data analysis, one could surmise that the discrepancy could be deliberate or as a result unintentional human error around project metric gathering, however, this researcher agrees with the prevalent view in the literature that affective reciprocity exists in this organisational context. This supports the conclusions in Figure 2.2, that cultural differences are significant obstacles to Virtual Team effectiveness.

EMT13

From: CM MJ

To: PM M

Subject: FW: System Test Start for Project Y

Hi PM M,

Two weeks ago we were led to believe that there was zero risk associated with the start of System test on the PKT project.... I have good reason to believe that none of the test Scenarios is complete, i.e. many of the constituent test cases are still not even written...as of today nothing meaningful has been provided. Now some questions, some of them rhetorical: How much like amateurs do you think we look in THE CUSTOMER'S eyes when we can't even provide them with a complete, meaningful test scenario four days after system testing was supposed to commence?...How can you assure me that anyone knows what they are doing? There is no discipline around document management and the use of Domino and it is almost impossible to find any information that is reliable in the relevant repositories.

I could go on...

CM MJ

Exhibit 5.3: Empirical Evidence of Confrontation

5.5 Summary of Findings

Overall these findings reflect what emerged during the course of this research. At the general level, this research has found that the study constructs are in fact real as supported and justified by the primary data. Trust in Virtual Teams is affected by behavioural control mechanisms. Email in particular acts as a conduit and catalyst for behavioural control as it is the de facto communication media choice of the Virtual Team. This overdependence on email, which is low in media richness, heightens the potential for miscommunication through cultural nuance and reduced contextuality. The research has also illustrated how email can be used for negative escalation which acts to severely debilitate levels of trust within the Virtual Team. Conversely, the lack of email in the instance of silence can also cause damage to trust within the Virtual Teams.

Furthermore, the reality of aggressive time lines for project deliverables and lack of face-to-face interaction amongst globally distributed Virtual Team members, puts added pressure on all to perform. Behavioural instances such as renegeing and silence increase the prevalence of vigilance and salience within the control structure of the team. Email is used for monitoring and correcting behaviour, rather than for its intended purpose of pure communication and collaboration. Any potential instance once identified, acts in a negative manner, eroding trust and replacing it with mistrust within the Virtual Teams. This research has found that national culture, along with communication and control mechanisms, all interact to affect the level of trust within the Virtual Team.

Chapter 6: Conclusion

6.1 Introduction

The purpose of this research was to examine how behaviour control mechanisms affected trust in Virtual Teams in a real world organisational setting. The research findings relating to the four key constructs and associated research question(s) on Virtual Teams revealed through the existence of empirical evidence that these four constructs do exist in organisations. The central research question: **“How do behaviour control mechanisms affect trust in Virtual Teams?”** was answered by analysis and discussion of the primary data, whereby the research revealed that the use of behaviour control mechanisms in a Virtual Team setting can impact trust in a negative manner, resulting in trust erosion and culminating in complete mistrust.

The 1st research sub-question: **“How do communication and control affect trust in Virtual Teams?”** revealed that Virtual Team members use communication in the form of email as a method of monitoring and controlling the output of colleagues. The research showed that team members use email as a tool for escalation resulting in mistrust.

In particular the presence of different national cultures amongst team members impacted trust throughout the team, as a lack of awareness, and or understanding of cultural nuances affected the functional ability of the Virtual Teams. The 2nd research sub-question, **“How does national culture affect trust in Virtual Teams?”** is addressed by the research findings and discussion in that the national culture does in fact have an affect on trust within Virtual Teams due to the lack of homogeneity of the distributed Virtual Team members. Differences between Western and Indian culture are manifested in the communication and organisational behavioural control responses (such as silence and negative escalation) found in the data.

This concluding chapter summarises these main findings, discusses the implications for practice and makes further recommendations for future research based on the extensions to the literature.

6.2 Summary of Main Findings

This research has revealed three key findings which are applicable to the existing research on Virtual Teams:

6.2.1 Existing Constructs are real

This research set out to find if the constructs defined by Powell & Ives exist in a real world setting. The analysis of the primary data revealed that the behavioural control mechanisms as outlined by Powell & Ives are in fact real, as made evident in the case study. ICT Organisations are dependent on functional Virtual Teams to ensure that project deliverables are managed effectively and quickly. Project control mechanisms provide managers and team members the ability to monitor and control progress. It is this same ability to monitor and control which ensures the Virtual Team exists as a functional entity within the organisation. The lack of face-to-face interaction in Virtual Teams therefore requires a surrogate form of management, which is manifested through control and monitoring. Divergence from assigned goals and tasks through vigilance and salience results in trust erosion and this research has shown that it impacts negatively on the success of the Virtual Team and thus the organisation suffers as a whole. The pressure to deliver on time, budget and quality permeates the day-to-day actions of the Virtual Team member. Trust is critical to the success of the functional team due to the inherent lack of face-to-face interaction.

Email communication dominates Virtual Team interaction and as such is affected by cultural nuances and media richness and contextuality. This research has found that the combination of the behavioural control constructs in particular (multiple constructs) results in trust erosion and this is magnified by the use of email as the main form of media as found in the case study sample. This research indicates that email acts as a conduit and catalyst for distrust, as evident in primary data findings. The added national culture dimension serves to provide a greater potential for miscommunication and

misunderstanding. The research provides empirical support for the general view in the academic literature that behavioural control mechanisms affect trust in Virtual teams.

6.2.2 Silence in Virtual Teams Empirically Supported and Extended to National Culture

Silence plays a significant role in understanding communication and functionality in Virtual Teams. This research has established that the organisational silence construct as defined by Panteli & Fineman exists in Virtual Teams and its significance can be extended and applied to include influence on national culture, behavioural control mechanisms and control within the Virtual Team setting. Silence is a central characteristic of Virtual Teams, and is tolerated especially due to geographical distance/time zones; however the cultural impact of unplanned or extended silence as often seen as cultural appeasement, is significant, as it has a negative impact on the performance and functional ability of the Virtual Team. This research found that instances of Silence resulted in increased concern and distrust amongst team members. The pressure on Virtual team members to deliver project work requires open, clear communication channels. Silence as the absence of communication results in distrust amongst team members, in particular when work assignments are shared or co-dependent, as is common in the Virtual Team milieu. National Culture and the existence of silence within multiple constructs in particular, were found to be of significance in this research, as cultural appeasement had a negative impact on trust within the Virtual Team.

6.2.3 Negative Escalation exists as a new phenomenon

Finally, the most important finding in this research is the existence of Negative Escalation. Negative escalation appears as a subset of behavioural control mechanisms but it is media dependent on email. The lack of both media richness and personal

accountability afforded by email allows Negative escalation to thrive. This research has found that negative escalation can be linked to cultural nuances such as caste and as such is relevant to Virtual Team members that are linked to Indian organisational structures. This researcher believed initially that the existence of Negative Escalation within Virtual Team communication illustrated dysfunctional behaviour, and as such is symptomatic of complete trust erosion. However, this researcher clarifies this argument by concluding from this research that the existence of Negative Escalation is as a result of complete trust breakdown (mistrust) and as such is the tipping point from distrust to mistrust.

Furthermore, the research data supports each instance of negative behaviour as it specifically correlates to behaviour associated with Indian Virtual Team members. This researcher concludes that negative escalation in the instance of this case study is unique to Indian Virtual Team members.

6.3 Limitations of Research

Although the choices and decisions made for this study provided a fruitful research question and subsequent investigation by using email data, the exclusion of alternative research approaches coupled with the inherent limitations of any single research project remains. Content analysis coupled with in-depth interviews of participants could have generated a deeper data source for findings and analysis; however time constraints made this prohibitive. A final limitation of this research is the fact that a single case study organisation was used and as such the scope of the research is limited to the data analysis and findings from the one organisation. However, although this researcher acknowledges these limitations, the overall research method, data gathering and analysis of findings from the real-world setting, justifies the selection of this research and case study approach.

6.4 Implications for Practice

The real-world, organisational implications of this research, in particular to the case study organisation, warrant a deeper analysis of the role of the project based Virtual Teams in the three geographical locations. The level of distrust as revealed in the content analysis should be revisited by Senior Management as well as the project stakeholders in order to identify what actions are required in order to rebuild trust and reduce the instances of escalation and dysfunctional behaviour illustrated in this research. Managerial assumptions around cultural and organisational fit need to be realigned so as improvements can be made in the team performance. Furthermore, efforts must be made to ensure that assumptions and clarifications around mutual roles and mutual team support are examined to ensure cohesion for future Virtual Teams.

A key implication for both academia and organisations is the impact of the existence of Negative Escalation within trust in Virtual Teams. This researcher has concluded that the existence of Negative Escalation is a symptom of complete mistrust within the dysfunctional Virtual Team. Negative Escalation indicates the tipping point whereby trust has been lost entirely and mistrust emerges as the dominant socio emotional process within the now dysfunctional Virtual Team. The implications of this are important, as any antecedents or symptoms of negative escalation, such as the potential for conflict between Virtual Team members should be monitored and addressed immediately in order to avoid the emergence of this phenomenon in Virtual Teams.

6.5 Recommendations for Further Research

The benefit of field-based empirical case studies will provide future researchers with a means to extend Virtual Team theory. A greater analysis of managerial and team member roles in affecting Virtual Teams (in particular in-group and out-group behaviour) would allow for a greater understanding of the relationships of Team members based on technical experience, seniority and role within the team environment

and overall organisation. A key recommendation for future research in particular, based around the empirical data found on Negative Escalation, calls for a broader analysis and application of this new phenomenon. An analysis of conflict and Negative Escalation would be beneficial to the overall Virtual Team theory. In particular, this case study research illustrates that Negative Escalation needs to be examined from a homogenous (culturally collocated) perspective as well as from a heterogeneous Virtual Team perspective, to fully understand what application this new finding has to the overall research on Virtual Teams. This researcher found evidence of Negative Escalation within Indian Virtual Team members, and as such future research is warranted on the existence of this phenomenon within Virtual Teams comprised of other national cultures.

This researcher also calls for a greater analysis of Silence as a construct when applied to email communication and Virtual Teams. The lack of literature on this topic belies the growing significance of this construct when one considers its close alignment to cultural and organisational nuances in Virtual Teams. A deeper understanding of the causes and effects of Silence in relation to trust and national culture should be examined in more detail by future researchers. Silence should thus be given more consideration in the overall academic literature on behavioural control in relation to Virtual Teams.

Finally, the use and uptake of other communication media, particularly Skype, IM and Unified Communication (Presence) would broaden the literature and force academics to align with changes in technology as they occur. The functional ability of Virtual Teams will evolve as new technologies become available and adopted by organisations seeking competitive advantage. The assumption that email will remain the preferred media of communication for Virtual Teams in the future needs to be addressed by researchers, and in particular the implications that new technology will present on trust needs to be examined in more detail.

References

- Abrams, L.C., Lesser, E., and Levin, D.Z., (2003) "Nurturing interpersonal trust in knowledge -sharing networks." *Academy of Management Executive*, Vol.17, No.4, pp.64-77.
- Ahuja, M.K., and Carley, K.M., (1999) "Network Structure in Virtual Organizations", *Organization Science*, Vol.10, No.6, pp.741-757.
- Bal, J., and Teo, P.K., (2001) "Implementing Virtual Team Working: Part 2 – A Literature Review", *Logistics Information Management*, Vol.14, No.3, pp.208- 222.
- Balthazard, P., Potter R.E, and Warren, J., (2004) "Expertise, Extraversion and Group Interaction Styles as Performance Indicators in Virtual Teams" *The DATA BASE for Advances in Information Systems*, Winter, Vol.35, No.1, pp.41-64.
- Bies, R.J., and Tripp, T., (1996) "Beyond Trust: Getting Even and the need for revenge." In R.M. Kramer and T.R. Tyler (Eds.), *Trust in Organizations: Frontiers of Theory and Research*, pp.246-260. Thousand Oaks, London. ISBN 0-8039-5740-8.
- Bigley, G.A., and Pearce, J.L., (1998) "Strained for Shared Meaning in Organization Science: Problems of Trust and Distrust." *Academy of Management Review*, Vol.23, No.3, pp. 405-421,
- Bonoma, T.V., (1985) "Case Research in Marketing: Opportunities, Problems and a Process", *Journal of Marketing Research*. Vol. XXII, pp.199-208.
- Butler, J.K. (1991) "Towards Understanding and Measuring Conditions of Trust: Evolutions of a Conditions of Trust Inventory", *Journal of Management* Vol. 17 No.3 pp.643-663.

- Cannon, J.P., Doney, P.M., and Mullen, M.R., (1999) "National Culture and the Development of Trust: The Need for More Data and More Theory." *Academy of Management Review*, Vol.24, No.1, pp.10-11.
- Casey V., and Richardson, I. (2006) "Uncovering the Reality within Virtual Software Teams", *GSD ACM*, pp.66-72.
- Cascio, W.F., (2000) "Managing a Virtual Workplace" *Academy of Management Executive*, Vol.14, No.3, pp. 81-90.
- Chidambaram, L. (1996) "Relational Development in Computer-Supported Groups," *MIS Quarterly*, Vol.20, No.2, pp.143-165.
- Chenail, R.J., (1995) "Presenting Qualitative Data" *The Qualitative Report*, Vol.2, No. 3, pp.1-8.
- Coppola, N.W., (2004) "Building Trust in Virtual Teams" *IEEE Transactions on Professional Communication*, Vol. 47, No.2, pp.95-104.
- Creed, W.E.D, and Miles, R.E., (1996) "Trust in Organizations: A Conceptual Framework Linking Organizational Forms, Managerial Philosophies, and the Opportunity Costs of Controls." in Kramer, R.M. and Taylor, T.R. (EDs), *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, California, pp.16-38.
- Crisp, B., and Jarvenpaa, S. (2006) "Control Enactment in Global Virtual Teams" *Proceedings of the Academy of Management Conference*. University of Texas, Austin.
<https://dspace.lib.utexas.edu/handle/2152/31>

- Daft, R.L., and Lengel, R.H., (1984) "Information Richness: A New Approach to Management Behavior and organizational Design", *Research in Organizational Behaviour*, pp.191-233.
- Dani, S.S, Burns, N.D, Backhouse, CJ and Kochhar, (2006) "The Implications of Organizational Culture and Trust in the Working of Virtual Teams." *Journal of Engineering Manufacture, Institute of Mechanical Engineers*, Vol. 220 Part B, pp.951-959.
- Das, T.K, and Teng, B.S., (1998) "Between trust and control: developing confidence in partner cooperation in alliances." *Academy of Management Review*, Vol.23, pp.491-512.
- Das, T.K, and Teng, B.S., (2004) "The Risk-Based View of Trust: A Conceptual Framework", *Journal of Business and Psychology*, Vol.19, No.1, Fall, pp.85-116.
- Dennis, A., (1996) "Information Exchange and Use in Group Decision Making: You Can Lead a Group to Information, but You Can't Make It Think." *MIS Quarterly*, Vol. 20 pp.433-458.
- DeSanctis, G., and Monge, P., (1999) "Introduction to the Special Issue: Communication Processes for Virtual Organizations." *Organizational Science*, Vol.10, No.6, pp.693-703.
- Deutsch, M. (1958) "Trust and Suspicion", *The Journal of Conflict Resolution*, Vol.2, No.4, pp.265-279.
- Dirks, K.T., and Ferrin, D.L, (2001) "The Role of Trust in Organizational Settings", *Organizational Science*, Vol.12, No.4, pp.450-467.
- Doney, P.M., Cannon, J.P., and Mullen, M.R. (1998) "Understanding the Influence of National Culture on the Development of Trust", *Academy of Management Review*, Vol.23, No.3, pp.601-620.

Earley, P.C. and Mosakowski, E., (2000) "Creating Hybrid Team Cultures: An Empirical Test of Transnational Team Functioning.", *Academy of Management Review*, Vol.43, No.1, pp.26-49.

Elangovan, A.R., Auer-Rizzi, W., and Szabo, E. (2007) "Why don't I trust you know? An attributional approach to erosion of trust", *Journal of Managerial Psychology*, Vol.22, No.1, pp.4-24.

Elangovan, A.R, and Shapiro, D.L., (1998) "Betrayal of Trust in Organizations", *Academy of Management Review*, Vol.23, No.3, pp.547-566.

Eisenhardt, K.M., (1989) "Building Theory from Case Studies", *Academy of Management Review* Vol. 14, No. 4 pp. 134-150.

Eisenhardt, K.M., (1985) "Control: Organizational and Economic Approaches", *Management Science*, Vol.31, No.2, pp.134-149.

Feldman, M.S., (1986) "Constraints on Communication and Electronic Media." *Proceedings of the 1986 ACM Conference on Computer Supported Cooperative Work*. pp.73-90.

Fisher, C., (2004) *Researching and Writing a Dissertation for Business Students*, FT Prentice Hall, ISBN-10:0273 68334 9

Flick, U., (1998) *An Introduction to Qualitative Research*, Sage Publications, CA, USA. ISBN 0 7619 5588 7.

Friedman, R.A. and Currall, S.C., (2003) "E-mail Escalation: Dispute Exacerbating Elements of Electronic Communication", *Human Relations*, pp.1-40.

Ford, P.D., Catherine, E.C., and Meister, B.D. (2003) "Information Systems Research and Hofstede's Culture's Consequences: An uneasy and incomplete partnership" *IEEE Transactions on Engineering Management*, Vol. 50 No.1 pp. 8-25.

Fulk, J., and DeSanctis, G., (1995) "Electronic Communication and Changing Organizational Forms, *Organization Science*, Vol.6, No.4, pp.337-349.

Furst, S., Blackburn, R., and Rosen, B. "Virtual Teams Effectiveness: A Proposed Research Agenda", *Information Systems Journal*, Vol.9 No.4 pp.249-269.

Furumo, K., and Pearson, J.M., (2006) "An Empirical Investigation of how Trust, Cohesion, and Performance vary in Virtual and Face-to-Face Teams", *Proceedings of the 39th Hawaii International Conference on Systems Sciences, IEEE*, pp.1-10.

Genzuk, M., (2003) "A Synthesis of Ethnographic Research", University of Southern California, Center for Multilingual, Multicultural research. pp1-10.

http://www-rcf.usc.edu/~genzuk/Ethnographic_Research.pdf

Gallivan, M.J., (2001) "Striking a balance between trust and control in a virtual organization: a content analysis of open source software case studies." *Info Systems Journal*, 11, pp.277-304.

Gallivan, M.J., and Depledge, G., (2003) "Trust, control and the role of Interorganizational systems in electronic partnerships." *Information Systems Journal*, 13, pp.159-190.

Gambetta, D., (1988) *Trust: Making and Breaking Cooperative Relations*. Blackwell Publishers; New York, ISBN: 0631155066.

Gersick, C., (1988) "Time and Transition in Work Teams. Towards a New Model of Group Development.", *Academy of Management Journal*, Vol. 31 pp.9-41.

Govindarajan, V., and Fisher, J., (1990) "Strategy, Control Systems, and Resource Sharing: Effects on Business-Unit Performance." *Academy of Management Journal*, Vol. 33, No.2, pp. 259-285.

Gudykunst, W.B and Ting-Toomey, S. (1998) *Culture and Interpersonal Communication*, Thousand Oaks, CA: Sage Publications, 1988.

Gudykunst, W.B, Ting-Toomey, S. and Nishida, T. (Eds.) (1996) *Communication in Personal Relationships Across Cultures*. Thousand Oaks, CA: Sage Publications, 1996.

Hammersley, M., (1992) *What's Wrong with Ethnography? Methodological Explorations*, Routledge Press, London, ISBN 0-415-05476-1.

Handy, C., (1995) "Trust and the Virtual Organization," *Harvard Business Review*, Vol.73 pp.40-50

Harrison, G.L., and McKinnon, J.L., (1999) "Cross-cultural research in management control systems design: a review of the current state." *Accounting, Organizations and Society*, No. 24, pp. 483-506.

Henderson, J.C., and Lee, S., (1992) "Managing I/S Design Teams: A Control Theories Perspective" *Management Science*, Vol.38, No.6, pp. 757- 777.

Hinds, P.J. and Bailey, D.E., (2003) " Out of Sight, Out of Sync: Understanding Conflict in Distributed Teams" *Organization Science*, Vol.14, no.6, pp.615-632.

Hinds, P.J., and Mortensen, M., (2005) "Understanding Conflict in Geographically Distributed Teams: The Moderating Effects of Shared Identify, Shared Context, and Spontaneous Communication", *Organization Science*, Vol.16, No.3, pp.290-307.

Hofstede, G., (1980) *Culture's Consequences: International Differences in Work-Related Values*. Beverley Hills/London: Sage Publications, 1980.

Hofstede, G., (1983) "The Cultural Relativity of Organizational Practices and Theories", *Journal of International Business Studies*, Fall, 1983, pp. 75- 89.

Hofstede, G., (1990) "A Reply and Comment on Joginder P. Singh: Managerial Culture and Work-related values in India" *Organization Studies* 11/1, pp.103-106.

Hofstede, G., (1991) *Culture and Organizations: Software of the Mind*. McGraw Hill Cambridge, UK.

Hofstede, G., (1993) "Cultural Constraints in Management Theories", *Academy of Management Executive*, Vol.7, No.1 pp. 81-94.

Hofstede, G., (2002) "Dimensions do not exist: A reply to Brendan McSweeney." *Human Relations*, Vol.55, No. 11, pp. 1-7.

Horowitz, 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*, Vol.30 No.6 pp.472-494.

Hosmer, L.T., (1995) "Trust: The Connecting Link between Organizational Theory and Philosophical Ethics", *Academy of Management Review*, Vol.20 No,2, pp.379-403.

Hung, Y.T., Dennis, A.R., and Robert, L., (2004) "Trust in Virtual Teams: Towards an Integrative Model of Trust Formation", *Proceedings of the 37th Hawaii International Conference on Science Systems*, pp.1-11.

Iacono, C.S., and Weisband, S.P., (1997) "Developing Trust in Virtual Teams", in *Proceedings of the Thirtieth Hawaii International Conference on System Sciences, IEEE Computer Society Press*, pp.1-9.

Jacob, N., (2005) "Cross-Cultural Investigations: Emerging Concepts", *Journal of Organizational Change Management*, Vol.18, No.5 pp. 514-528.

Jaegur, A.M., (1986) "Organizational Development and National Culture: Where's the Fit?" *Academy of Management Review*, Vol. 11, No.1 pp. 178-190.

Jarvenpaa, S.L., Rao, V.S., and Huber, G.P., (1988) "Computer Support for meetings of Groups Working on Unstructured problems: A Field Experiment", *MIS Quarterly*, Vol. 12, No.4, pp. 645-666.

Jarvenpaa, S.L., Knoll, K. and Leidner, D.E. (1998) "Is Anybody Out There? Antecedents of Trust in Global Virtual Teams." *Journal of Management Information Systems*, Vol. 14, No.4, pp.26-64.

Jarvenpaa, S.L., and Leidner, D.E., (1999) "Communication and Trust in Global Virtual Teams" *Organisational Science*, Vol. 10 No. 6 pp.791-815.

Jarvenpaa, S.L., and Tanriverdi, H. (2003) "Leading Virtual Knowledge Networks" *Organizational Dynamics*, Vol.31, No.4, pp.403-412.

Jarvenpaa, S.L., Shaw, T.R., and Staples, D.S., (2004) "Toward Contextualized Theories of Trust: The Role of Trust in Global Virtual Teams." *Information Systems Research*, Vol.15, No.3, pp.250-267.

Jones, G.R., and George, J.M. (1998) "The Experience and Evolution of Trust: Implications for Cooperation and Teamwork." *Academy of Management Review*, Vol.23, pp.531-546.

Johnson, P., Heimann, V., and O'Neill, K., (2001) "The Wonderland of Virtual Teams", *Journal of Workplace Learning*, Vol.13, No.1, pp. 24-29.

Kanawattanachai, P., and Yoo, Y. (2005) "Dynamic Nature of Trust in Virtual Teams" *Sprouts: Working Papers on Information Environments, Systems and Organisations*, Vol.2 Issue 2 Article 4, pp.42-58.

Kankanhalli, A., Tan, B., and Wei, K.K., (2007) "Conflict and Performance in Global Virtual Teams", *Journal of Management Information Systems*, Vol.23, No.3, pp. 237-274.

Kasper-Fuehrer, E.C., and Ashkanasy, N.M., (2001) "Communicating Trustworthiness and Building Trust in Interorganizational Virtual Organizations" *Journal of Management*, 27, pp.235-254.

Kayworth, T. and Leidner, D., (2000) "The Global Virtual Manager: A Prescription for Success," *European Management Journal*, Vol.18, No.2, pp.183-194.

Keil, M., Tan, B., Wei, K.K., Saarinen, T., Tuunainen, V., and Wassenaar, A., (2000) "A Cross Cultural Study on Escalation of Commitment Behaviour in Software Projects" *MIS Quarterly*, Vol.24, No.2 pp 299-325.

Kipnis, D., (1996) "Trust and Technology" in Kramer, R.M. and Taylor, T.R. (Eds), *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, California, pp.39-50.

Kirsch, L.J., (1997) "Portfolios of Control Modes and IS Project Management", *Information Systems Research*, No.8, pp.215-239.

Kirsch, L.J., (1996) "The Management of Complex tasks in Organizations: Controlling the Systems Development Process." *Organizational Science*, Vol.7, No.1, pp.1-21.

Kitchenham, B., Pickard, L., and Pfleeger, S.J., (1995) "Case Studies for Method and Tool Evaluation", *IEEE Software*, July, pp.52-62.

Kramer, R.M., (1999) "Trust and Distrust in Organizations: Emerging Perspectives, Enduring Questions," *Annual Review of Psychology*, Vol. 50 pp.569-598.

Kramer, R.M., and Tyler, T.R., (1996) *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, London. ISBN 0-8039-5740-8.

Krebs, S. A., Hobman, E.V. and Bordia, P., (2006) "Virtual Teams and Group Member Dissimilarity, Consequences for the Development of Trust", *Small Group Research*, Sage Publications, Vol.37, No.6, pp.721-741.

Krishna, S., Sahay, S., and Walsham, G. (2004) "Managing Cross-Cultural Issues in Global Software Outsourcing" *Communications of the ACM*, Vol. 47, No.4 pp.62-66.

Kumar, K., and van Dissel, H.G. (1996) "Sustainable Collaboration: Managing Conflict and Cooperation in Inter organizational Systems" *MIS Quarterly*, September pp.279-300.

Kumar, M.R., and Sankaran, S., (2007) "Indian Culture and the culture for TQM: a comparison." *The TQM Magazine*, Vol.19, No.2, pp.176-188.

Lewicki, R.J., and Bunker, B.B., (1996) "Developing and Maintaining Trust in Work Relationships", in Kramer, R.M. and Taylor, T.R. (Eds), *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, California, pp.114-139.

Lewicki, R.J., McAllister, D.J., and Bies, R.J., (1998) "Trust and Distrust: New Relationships and Realities", *Academy of Management Review*, Vol.23, No.3, pp.438-458.

Lewicki, R.J., Weiss, S.E., and Lewin, D., (1992) "Models of Conflict, Negotiation, and Third Party Intervention: A Review and Synthesis." *Journal of Organizational Behaviour*, Vol.13, pp.209-252.

Lipnack, J., and Stamps, J., (2000) *Virtual Teams: People Working Across Boundaries with Technology*, 2nd Edition. New York, NY: John Wiley and Sons, 2000.

Markus, M.L., (1994) "Electronic mail as the Medium of Managerial Choice.", *Organization Science*, Vol.5, No.4, pp.502-527.

Markus, M.L., (1994b) "Finding a Happy Medium: Explaining the Negative Effects of Electronic Communication on Social Life at Work", *ACM Transactions on Information Systems*, Vol.12, No.2, pp-120-149.

Mason, J., (2001) *Qualitative Researching*, Sage Publications, CA, USA. ISBN: 0-8039-8985 7.

Massey, A.P., Yu-Ting, C.H., Montoya-Weiss, M.M., and Ramesh, V. (2001) "When Culture and Style Aren't About Clothes: Perceptions of Task-Technology "Fit" in Global Virtual Teams" *GROUP*, Sept 30-Oct.3, 2001, Boulder, Colorado, USA.

Massey, A.P., Montoya-Weiss, M., and Hung, Y., (2003) "Because Time Matters: Temporal Conditions in Global Virtual Project Teams." *Journal of Management Information Systems*, Vol.19, No.4, pp.129-155.

Majchrzak, A., Rice, R., Malhotra, A., King, N., and Ba, S. (2000) "Technology Adaptation: The Case of a Computer-Supported Inter-Organizational Virtual Team," *MIS Quarterly*, Vol.25, No.2, pp.229-249.

Malhotra, A., Majchrzak, A., Carman, R., and Lott, V. (2001) "Radical Innovation without Collocation: A Case Study at Boeing-Rocketdyne," *MIS Quarterly*, Vol.25, No.2 pp.229-249.

Mayer, R.C., Davis, J.H., and Schoorman, F.D., (1995) "An Integrative Model of Organizational Trust", *Academy of Management Review*, Vol.20, No.3, pp.709-734.

Maznevski, M. L., and Chudoba, (2000) "Bridging Space Over Time: Global Virtual Team Dynamics and Effectiveness", *Organization Science*, Vol.11, No.5, pp. 473-492.

McAllister, D.J., (1995) "Affect and Cognitions Based Trust as Foundations for Interpersonal Cooperation in Organizations", *Academy of Management Journal*, Vol.38, No.1, pp. 24-59.

McKnight, D.H., Cummings, L.L., and Chervany, N.L., (1998) "Initial Trust Formation in New Organizational Relationships", *Academy of Management Review*, Vol.23, No.3, pp.473-490.

McSweeney, B., (2002) "Hofstede's Model of National Cultural Differences and their Consequences: A triumph of faith- a failure of analysis." *Human Relations*, Vol.55, No.1, pp.89-118.

Meyerson, D., Weick, K.E., and Kramer, R.M. (1994) "Swift Trust and Temporary Groups", in Kramer, R.M. and Taylor, T.R. (Eds), *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, California, pp.166-95.

Mishra, A.K., (1996) "Organizational Response to Crisis: The Centrality of Trust" " in Kramer, R.M. and Taylor, T.R. (Eds), *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, California, pp.261-287.

Montoya-Weiss, M.M., Massey, A.P., and Song, M. (2001) "Getting It Together: Temporal Coordination and Conflict Management in Global Virtual Teams", *Academy of Management Journal*, Vol.44, No.6 (Dec., 2001), pp.1251-1262.

Morrison, E.W., and Milliken, F.J., (2000) "Organizational Silence: A Barrier to Change and Development in a Pluralistic World, *Academy of Management Review*, Vol.25, No.4, pp.706-725.

Mylonopoulos, N.A, and Theoharakis, V., (2001) "Global Perceptions of IS Journals." *Communication of the ACM*, Vol.44, No.9, pp.29-33 I

Narayanaswamy, R., and Henry, R., (2005) "Effects of Culture on Control Mechanisms in Offshore Outsourced IT Projects" *SIGMIS-CPR*, April 14-16, Atlanta, Georgia, USA.

Neufeld, D.J., Dyck, B., and Brotheridge, C.M., (2001) "An Exploratory Study of Electronic Mail as a Rich Communication Medium in a Global Virtual Organization." *Proceedings of the 34th Hawaii International Conference on System Science.*"

Ngwenyama, O.K., and Lee, A.S., (1997) "Communication Richness in Electronic Mail: Critical Social Theory and the Contextuality of Meaning." *MIS Quarterly Review*, June, pp.145-167.

Nicholson, B. and Sahay, S. (2001) "Some Political and Cultural Issues in the Globalization of Software Development: Case Experience from Britain and India." *Information Organization*, 11, pp.25-43

Oertig, M, and Buergi, T. (2006) "The Challenges of Managing Cross-Cultural Virtual Project Teams" *Team Performance Management*, Vol. 12, No. 1/ 2, pp.23-30.

Orlikowski, W.J., and Barley, S.R., (2001) "Technology and Institutions: What Can Research on Information Technology and Research on Organizations Learn From Each Other?" *MIS Quarterly*, Vol.25, No.2, pp.145- 165.

Orlikowski, W.J., and Robey, D., (1991) "Information Technology and the Structuring of Organizations." *Information Systems Research*, 2:2, pp.143-169.

Ouchi, W.G., (1977) "The Relationships between Organizational Structure and Control" *Administrative Science Quarterly*, Vol. 22 No.1, pp. 95-113.

Ouchi, W.G., (1979) "A Conceptual Framework for the Design of Organizational Control Mechanisms", *Management Science*, Vol.25, No.9, pp.833-848.

Ouchi, W.G., (1980) "Markets, Bureaucracies and Clans", *Administrative Science Quarterly*, Vol.25, No.1, pp.129-141.

Ouchi, W.G., and Maguire, M.A., (1975) "Organizational Control: Two Functions" *Administrative Science Quarterly*, Vol.20, No.4, pp.559-569.

Oza, N.V., Hall, T., Rainer, A., and Grey, S., (2006) "Trust in Outsourcing Relationships: An Empirical Investigation of Indian Software Companies." *Information and Software Technology*, Vol.48 pp.345-354.

Panteli, N., and Fineman, S., (2005) "The Sound of silence: the case of virtual team organising", *Behaviour and Information Technology*, Vol.24, No.5, pp.347-352.

Panteli, N., (2002) "Richness, power cues and email text." *Information & Management* Vol. 40. pp. 75-86.

Pare, G., and Dube, L., (2001) "Virtual Teams: An Exploratory Study of Key Challenges and Strategies", Ecoles des Hautes Etudes Commerciales de Montreal, Quebec, Canada. pp. 479-483.

Paul, D.L., and McDaniel R.B (2004) "A Field Study of the Effect of Interpersonal Trust on Virtual Collaborative Relationship Performance", *MIS Quarterly*, Vol. 28 No.2, pp.183-227.

Piccoli, G., and Ives, B. (2000) "Virtual Teams: Managerial Behaviour Control's Impact on Team Effectiveness." *International Conference on Information Systems Proceedings of the twenty first international conference on Information systems*. ISBN:ICIS2000-X, pp.575-580.

Piccoli, G., and Ives, B. (2003) "Trust and the Unintended Effects of Behaviour Control in Virtual Teams", *MIS Quarterly*, Vol.27 No.3, pp.365-395.

Piccoli, G., Powell, A., and Ives, B., (2004) "Virtual Teams: Team Control Structure, Work Processes and Team Effectiveness", *Information Technology and People*, Vol.17 No.4 pp.359-379.

Powell, A., Piccoli, G., and Ives, B. (2004) "Virtual Teams: A Review of the Current Literature and Directions for Future Research," *The DATABASE for Advances in Information Systems*, Vol. 35, No.1, pp.6-31.

Powell, A., Galvin, J., and Piccoli, G. (2006) "Antecedents to team member commitment from near and far: A comparison between collocated and virtual teams." *Information Technology & People*, Vol.19, No.4, pp.299-322.

Potter, R., Balthazard, P.A., and Cooke, R.A. (2000) "Virtual Team Interaction: Assessment, Consequences and Management", *Team Performance Management*, Vol. 6, No.7-8 pp. 131-137

Rattleff, P., (2005) "The reliability of content analysis of computer conference communication." *Computers & Education*, (49) pp.230-242.

Ridings, C.M., Gefen, D. and Arinze, B., (2002) "Some antecedents and effects of trust in virtual communities." *Journal of Strategic Information Systems* 11, pp. 271-295.

Ritzer, G., (1996) *The McDonaldization of Society*, 2nd edition, Pine Forge Press , Thousand Oaks, CA, in Gallivan, M.J., and Depledge, G., (2003) "Trust, control and the role of Interorganizational systems in electronic partnerships." *Information Systems Journal*, 13, pp.159-190.

Robson, C., (1993) *Real World Research*, Blackwell Publishers, Oxford, UK. ISBN: 0-631-17689-6.

Romm, C.T., and Pliskin, N., (1999) "The Office Tyrant-Social Control Through e-mail", *Information Technology & People*, Vol.12, No.1, pp.27-43.

Rourke, L. and Anderson, T., (2004) "Validity in Qualitative Content Analysis" (2004) *ETR&D*, Vol.52, No.1, pp.5-18.

Rousseau, D.M., Sitkin, S.B., Burt, R.S. and Camerer, C., (1998) "Introduction to Special Topic Forum: Not so different after all: A Cross-Discipline View of Trust.", *Academy of Management Review*, Vol.23, No.3, pp.393-404.

Rudy, I.A., (1996) "A Critical Review of Research on Electronic Mail", *European Journal of Information Systems*, Vol.4, pp.198-213.

Ryan, P.K, Giblin, M., and Walshe, E., (2004) "From Subcontracted R&D to Joint Collaboration: The Role of Trust in Facilitating This Process", *International Journal of Innovation and Technology Management*, Vol.1, No.2, pp.1-27.

Sahay, S., (2007) "Social Structure and Managerial Agency in India" *Organizational Studies*, Sage publications, summer, 1997, pp.1-17.

- Sarbaugh-Thompson, M., and Feldman, M.S., (1998) "Electronic Mail and Organizational Communication: Does saying 'Hi' Really Matter?" *Organization Science*, Vol.9, No.6, pp.685-698.
- Sarker, S., and Sahay, S., (2002) "Understanding Virtual Team Development: An Interpretive Study", *Journal of the Association for Information Systems*, Vol.3, pp. 247-285.
- Saunders, M., Lewis, P., and Thornhill, A., (2007) *Research Methods for Business Students*, Fourth Edition, FT Prentice Hall, ISBN-13:978-0-273-70148-4
- Schiller, S.Z., and Mandviwalla, M., (2007) "Virtual Team Research: An Analysis of Theory Use and a Framework for Theory Appropriation." *Small Group Research*, Sage Publications, Vol.38, No.1, pp.12-59.
- Shachaf, P., Meho, L.I., and Hara, N., (2006) "Cross-Cultural Analysis of E-mail Reference" *The Journal of Academic Librarianship, Science Direct*, pp.1-19.
- Shapiro, S.P., (1987) "The Social Control of Impersonal Trust", *American Journal of Sociology*, Vol.93, No.3, pp.623-658.
- Sinha, J.B.P., and Kanungo, R.N., (1997) "Context Sensitivity and Balancing in Indian Organizational Behaviour" *International Journal of Psychology*, Vol.32. (2), pp.93-105.
- Sitkin, S.B., and Roth, N.L. (1993) "Explaining the Limited Effectiveness of Legalistic 'Remedies' for Trust/Distrust. *Organization Science*, Vol. 4, No.3, Focused Issue: The Legalistic Organization, pp.367-392.
- Sitkin, S.B., and Stickel, D., (1996) "The Road to Hell: The Dynamics of Distrust in an Era of Quality" in Kramer, R.M. and Taylor, T.R. (Eds.), *Trust in Organizations:*

Frontiers of Theory and Research, Sage Publications, Thousand Oaks, California, pp.196-215.

Smith, N.C, (1990) “The Case Study: A Useful Research Method for Information Management”, *Journal of Information Technology*, No. 5 pp. 123-133.

Sproule, L., (1986) “Using Electronic Mail for Data Collection in Organizational Research”, *Academy of Management Journal*, Vol.29, No.1, pp.159-169.

Sproule, L., and Kiesler, S., (1986) ‘Reducing Social Context Cues: Electronic Mail in Organizational Communication”, *Management Science*, Vol.32, No.11, pp. 1492-1512.

Steinfeld, C., Chyng-Yang, J., and Pfaff, B., (1999) “Supporting Virtual Team Collaboration: The TeamSCOPE System.” *ACM*, pp.81-90.

Strijbos, J.W., Martens, R.L, Prins, F.J., and Jochems, W., (2006) “Content analysis: what are they talking about?” *Computers & Education*, (46) , pp.29-48.

Suchan, J., and Hayzak, G., (2001) “The Communication Characteristics of Virtual Teams: A Case Study.”, *IEEE Transactions on Professional Communication*, Vol.44, No.3, pp. 174- 186.

Te’eni, D., (2001) “Review: A Cognitive-Affect Model of Organizational Communication for Designing IT.”, *MIS Quarterly Review*, Vol.25, No.2, pp.251-312.

Tyler, T.R., and Kramer, R.M., (1996) “Whither Trust?” in Kramer, R.M. and Taylor, T.R. (Eds), *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, California, pp.1-15.

Walsham, G., (2002) “Cross-Cultural Software Production and Use: A Structural Analysis”, *MIS Quarterly Review*, Vol.26, No.4, pp.359-380.

Walsham, G., and Sahay, S., (1999) "GIS for District-Level Administration in India: Problems and Opportunities", *MIS Quarterly Review*, Vol.23, No.1, pp.39-65.

Warkentin, M.E., and Beranek, P.M., (1999) "Training to Improve Virtual Team Communication," *Information Systems Journal*, Vol.9, No.4. pp.271-289.

Wiesenfeld, B.M., Rahguram, S., and Garud, R., (1999) "Communication Patterns as Determinants of Organizational identification in a Virtual Organization", *Organization Science, Special Issue: Communication Processes for Virtual Organizations*, Vol.10, No.6, pp.777-790.

Williamson, D., (2002) "Forward from a critique of Hofstede's model of national culture.", *Human Relations*, Vol.55, No.11, pp. 1373-1395.

Wilson, F., (1999) "Cultural control within the virtual organization", *The Editorial Board of the Sociological Review*, pp.672-694.

Yin, R., (1981) "The Case Study Crisis. Some Answers", *Administrative Science Quarterly*, No 26, pp.58-65.

Yin, R., (1984) *Case Study Research*, Sage Publications, CA, USA.

Yin, R., (2003) *Case Study Research, Design and Methods*, Applied Social Research Methods Series, Volume 5. Third Edition, Sage Publications, CA, USA. ISBN 0-7619-2552-X.

Yin, R., (2003a) *Applications of Case Study Research*, Second Edition Applied Social Research Methods Series, Vol.34, Sage Publications, CA, USA. ISBN 0-7619-2551-1

Zaheer, A., McEvily, B., and Perrone, V., (1998) "Does Trust Matter? Exploring the Effects of Interorganizational and Interpersonal Trust on Performance." *Organization Science*, Vol.9, No.2, pp. 141-159.

Zand, D.E., (1972) "Trust and Managerial Problem Solving" *Administrative Science Quarterly*, Vol.17, No.2, pp. 229-239.

Zolin, R., Hinds, P.J., Fruchter, R., and Levitt, R.E., (2004) "Interpersonal Trust In Cross-Functional Global teams: A Longitudinal Study.", *Information and Organization*, Vol. 14, No.1 pp,1-26.

Zorn, I., (2005) "Do Culture and Technology interact? Overcoming technological barriers to intercultural communication in virtual communities." *SIGGROUP Bulletin*, Vol.25, No.2, pp.8-13.

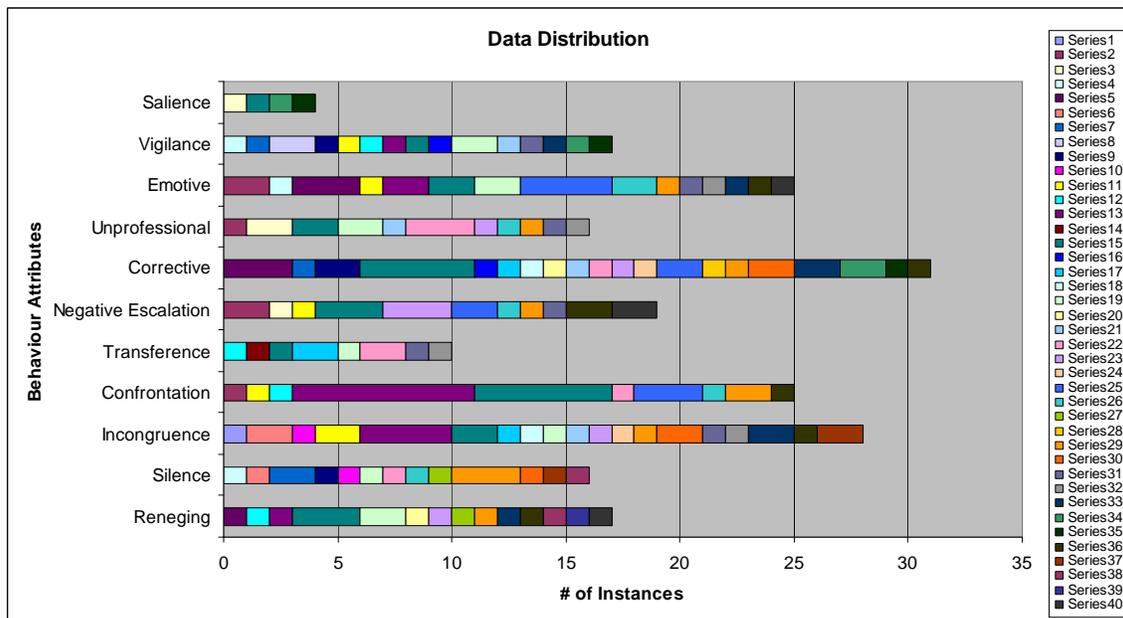
Zucker, L.G., (1986) "Production of Trust: Institutional Sources of Economic structure,1840-1920," in B.M. Staw and L.L Cummings (Eds.), *Research in Organizational Behaviour*, Vol.8, pp53-111, Greenwich, CT: JAI Press

Appendices

Appendix A: email Data

Email Topic	Renegé	Silence	Incongruence	Confrontation	Transference	Negative Escalation	Corrective	Unprofessional	Emotive	Vigilance	Saliency	Threads
EMT1			1									5
EMT2				1		2		1	2			11
EMT3						1		2			1	8
EMT4		1							1	1		17
EMT5	1						3		3			5
EMT6		1	2									5
EMT7		2					1			1		9
EMT8										2		3
EMT9		1					2			1		5
EMT10		1	1									6
EMT11			2	1		1			1	1		6
EMT12	1			1	1					1		3
EMT13	1		4	8					2	1		5
EMT14					1							2
EMT15	3		2	6	1	3	5	2	2	1	1	10
EMT16							1			1		2
EMT17			1		2		1					4
EMT18			1				1					1
EMT19	2	1	1		1			2	2	2		4
EMT20	1						1					1
EMT21			1				1	1		1		3
EMT22		1		1	2		1	3				2
EMT23	1		1			3	1	1				11
EMT24			1				1					2
EMT25				3		2	2		4			6
EMT26		1		1		1		1	2			1
EMT27	1	1										2
EMT28							1					3
EMT29	1	3	1	2		1	1	1	1			12
EMT30		1	2				2					2
EMT31			1		1	1		1	1	1		8
EMT32			1		1			1	1			6
EMT33	1		2				2		1	1		15
EMT34							2			1	1	9
EMT35							1			1	1	9
EMT36	1		1	1		2	1		1			2
EMT37		1	2									5

EMT38	1	1											4
EMT39	1												2
EMT40	1					2				1			4
Total:	15	16	28	25	10	19	31	16	25	17	4	215	
As %	7.28	7.76	13.59	12.13	4.85	9.22	15.04	7.76	12.13	8.25	1.99	100%	



Graphical Presentation of Data

Appendix B: introductory email

To: Undisclosed Recipients

From: Owen Lydon

Subject: email research

Hi all,

I am conducting my Masters research on the day to day ability of our distributed (a.k.a Virtual Teams) based in Bangalore, Galway and Cape Town. I am collecting emails over the next four months that relate to any instance of project escalation related directly to the team members on your project.

Escalation email include(e.g.: tasks not getting done, done incorrectly, lack of communication, lack of updates, incorrect process/ procedures, omissions, reminders, work/task corrections)

The purpose of this collection is purely for research statistics etc, so no emails will be used for any internal audits or forwarded to anyone else. All submissions are therefore confidential; names and events will be changed to protect the innocent. Could you forward on any project escalation emails that you have or encounter over the next while as they would be deeply appreciated.

Thanks in advance,

Owen

Appendix C: email breakdown per participant

Email Topic	From
EMT1	TL LP
EMT2	TL NR
EMT3	PM AC
EMT4	PM DK
EMT5	TL GV
EMT6	TL GV
EMT7	TL GV
EMT8	PM AF
EMT9	TL GV
EMT10	PM AC
EMT11	PM JL
EMT12	PM FB
EMT13	CM MJ
EMT14	PM SV
EMT15	PM DK
EMT16	T MM
EMT17	T VJ
EMT18	T BF
EMT19	CM GC
EMT20	PM WB
EMT21	TL LP
EMT22	PM MR
EMT23	PM OL
EMT24	PM OL
EMT25	TL HC
EMT26	T AP
EMT27	TL NR
EMT28	TL RN
EMT29	PM LV
EMT30	D MO
EMT31	T AS
EMT32	PM KR
EMT33	D RB
EMT34	PM JT
EMT35	PM JT

EMT36	T TO
EMT37	PM PB
EMT38	PM JT
EMT39	T KM
EMT40	TL AC