ADAPTIVE STRUCTURATION OF COMMUNICATION AND RELATIONSHIP DEVELOPMENT IN GLOBAL VIRTUAL TEAMS

Relationships among team members in virtual environments have influenced the performance of a team to a very large extent. Previous attempts to study this phenomenon have made it possible for us to understand different factors which influence relationship development. However, how do the process of relationship development unfolds over the life of a virtual team is still unknown to a large extent.

This study focuses on understanding the process through which relationships develop over a period of time around communication. It focuses on the Adaptive structuration by analysing the structural and human agency elements of communication. This study follows a process approach while using group development theories and generative mechanisms as method tools to perform analysis of qualitative data collected over two years.

Study concludes that while performing different tasks, central to team members' performance is communication. The structures and human elements around communication play a significant role in relationship development. It provides an overview of the multiple processes based on group development models which influence the relationship development. Understanding these processes can help managers and team leaders to better manage their teams for optimal performance. Relationship development takes different trajectories during the life span of these teams. Relationships tend to develop positively and get reinforced over time, in the second case, relationships develop negatively and tend to get reinforced over time, in the third case relationships initially develop positively however in later stage take on a negative trajectory. In the last case, initially, relationships develop negatively but in later on take a positive trajectory.

INTRODUCTION

Relationships among team members in virtual environments have primarily influenced the performance of a team. Previous attempts to study this phenomenon have made it possible for us to understand different factors which influence relationship development. However, how does the process of relationship development around communication unfolds over the life of a virtual team is underdeveloped. Communication in such environments is one of the defining features of relationship development. The purpose of this study is to understand the unfolding of relationships among team members around communication.

At a broader level, relationships among team members are the ways in which they relate with each other. These interrelations among team members are an outcome of different aspects of relationships (Zimmermann, 2011). These are affective (satisfaction and interpersonal affect), behavioural (communication, conflict, knowledge sharing) and cognitive (Trust, team identity, subgroups, role expectation) aspects which define the relationship development among GVTs. Zimmermann (2011) argues that the interrelatedness of these aspects gives birth to multiple configurations which guide relationship development, while at the same time it is not possible to have an exhaustive list of such configurations. Project teams are formulated to achieve some end goal and during the process they perform activities around task at hand, communicate to achieve that task, and in case of GVTs, have to focus on coordination of activities around the globe in different time zones. Furthering Zimmermann (2011) argument, this study focuses on one of the core activities, communication of GVTs to establish how

relationships develop in GVTs while communication aspect interacts with the other aspects of relationship development.

Existing literature around GVTs focuses on different detriments of relationship building and is consistent with the above definition and antecedents. From the media choice viewpoint of communication, Pauleen & Yoong (2001) think that the GVTs with a higher the level of diversity, need a proportionately greater extent of relationship building, and should, therefore, use richer communication media. Consistent with this suggestion, Maznevski & Chudoba, (2000) found that as the level and number of boundaries GVTs crossed increased, effective GVTs spent more time and effort on boundary-spanning activities such as relationship building.

Similarly, in literature, we see the important role of trust in relationship building. Trust is considered to be important in any team (Newell, David, & Chand, 2007), but plays even more critical role in GVTs (Gibson & Manuel, 2003; S. L. Jarvenpaa, Shaw, & Staples, 2004). Some studies (O'Hara-Devereaux & Johansen, 1994) referred to trust as ''the glue of the global workspace,'' and identified the precedence which trust might take over technology when it comes to relationship building.

Relationships develop around interactions (Zimmermann, 2011) taking place through communication in virtual environments. Communication in itself is the exchange of information among different members of the team(s) while working on a particular project (Mesmer-Magnus & Dechurch, 1995). In GVTs, communication becomes critical due to the lack of face to face interactions. Interactions happening in virtual environments are heavily reliant on the communication tools. Communication in teams is defined in multiple ways; however, this study follows a broader approach

by Mesmer-Magnus & Dechurch (1995) whereby "Team communication is an exchange of information, occurring through both verbal and nonverbal channels, between two or more team members." Within the broader team's literature, both the quality (Charlier, Stewart, Greco, & Reeves, 2016; Sorrentino & Boutillier, 1975) and quantity (Mullen, Salas, & Driskell, 1989; Stein & Heller, 1979) of communication have been found to play a critical role in the development of team members' perceptions and subsequent relationship development.

It is essential to understand this difference between different types of communication because, instead of relying on a combination of visual, aural and physical facets of face-to-face communication; GVT members are often limited in one or more of these areas when interacting and behaving in virtual environments. Computer-mediated communication, which is a defining characteristic of virtual teams, can occur via several types of media, including video conferencing, phone, email, blogs, instant messaging, and text messaging. Although recent technological and infrastructural advances have made richer media options (like video conferencing) more accessible to employees, less rich media like email and texting still feature prominently in the day-to-day activities of virtual work (Hill, Kang, & Seo, 2014; Weimann, Hinz, Scott, & Pollock, 2010). Team communication is considered central to majority of team processes such as influence of communication on task performance (Sutanto, Kankanhalli, & Tan, 2004). Communication is considered to enhance team performance through conflict resolution(Fletcher & Major, 2006; Kankanhalli, Tan, & Wei, 2007), through disseminating and dealing with environmental and situational information(Macmillan, Entin, & Serfaty, 2004), coordination and proper information

distribution (Marlow et al., 2018). However, It influences not only the team processes but also interdependent team members' behaviors (Kankanhalli et al., 2007). All these influences are considered to impact teams in multiple ways (Espinosa, Nan, & Carmel, 2015; Marlow, Lacerenza, & Salas, 2017; Marlow et al., 2018). Process and behavioral Influence of communication ultimately lead to the development of team emergent states (Marlow et al., 2017; Salas, Sims, & Shawn Burke, 2005), where these emergent states are responsible for multiple outcomes such as team performance, relationship development and level of satisfaction among members.

To understand better the type of influences communication has on GVTs, there are structural aspects of GVTs which should be taken into consideration. Studies have emphasized the need for GVTs to set ground rules and develop consensus about when, how, and how often to communicate (James & Ward, 2001; Munkvold & Zigurs, 2007). These ground rules lie at the different constructs of communication structures within GVTs, e.g. 'when' takes into consideration the temporal distance among the team members, 'how' focuses on the channels of communication and "how often" deals with the availability of team members. However, these ground rules are dynamic, and therefore, teams shall adapt whenever there is a change in a team or project environment (James & Ward, 2001).

Other structures which influence the relationship development around communication are the technological and group structures. The group composition, members' geographical spread, the leadership roles and individual responsibilities shape the structure of communication within GVTs. From a technological perspective, the kind of media these teams employee to communicate formulates another structure

around communications. Teams' choice of media and parallel channels of communication are an outcome of the ease of use of such media, both the financial and time cost associated with those and the accessibility from all team members formulate a structure around communication. These three structures are appropriated with time to achieve final goals. In the case of project teams, when they move from one project to the other, they evaluate both the structure and human agency interacting with these structures to appropriate their actions and structures for the upcoming projects.

There are multiple human agency elements related to communication but most of these transpire in the shape of communication frequency, content and quality. In literature around communication in virtual environments, there are several measures of effective communication; among those, most commonly used measures include quality of communication, frequency of communication and content of communication(Marlow et al., 2017). Quality of communication is "the extent to which communication among team members is clear, effective, complete, fluent, and on time"(González-Romá & Hernández, 2014). Frequency of communication in teams refers to the volume or the number of times team members communicate with each other over different communication media (Marks, Zaccaro, & Mathieu, 2000). According to Keyton, (2010) in terms of content, communication in teams takes place at two levels; task-oriented communication (i.e., communication geared towards task accomplishment) and relational communication (interpersonal nature of communication). In such circumstances, different measures of communication such as frequency (Espevik, Johnsen, Eid, & Thayer, 2006), quality (González-Romá & Hernández, 2014) and content (Keyton, 2010) of communications have a significant

influence on the relationship development. This study argues that the measures mentioned above are heavily dependent on individual behavior e.g., within a particular team, individuals' language abilities, knowledge of communication technologies and communication apprehension, among other things, would influence the relationship development from communication perspective.

In the context of the above discussion, there are two distinct schools of thought which look at different influences of communication in GVTs. One school of thought is focused on the structural elements within such teams where much attention is on the influence of technology on teams' composition, modes of communication, influence on temporal and physical distance and conducting the task at hand. Another school of thought takes these structural elements as a given context and focuses on the human agency issues within such structural environments, mainly focusing on issues such as commitment, trust, cohesion, and conflict management due to the individual attitudes towards constructs of communication (Frequency, quality and content). However, it is evident that neither structures nor human agency within these structures, alone are responsible for the outcome, which in this case is relationship development among team members, but answer partially to the development process. We argue that to understand relationship development, we shall shift our focus and formulate a holistic understanding of both structural and human agency elements. We focus on the interplay of structural and human agency elements to develop a complete picture of the process of relationship development.

In the following section, this study develops on the structural and human factors responsible for relationship development around communication in GVTs from the perspective of adaptive structuration theory.

ADAPTIVE STRUCTURATION AROUND COMMUNICATION IN GVTS

Adaptive structuration theory (AST) (Mcphee, Decision, & Systems, 2019; Poole & DeSanctis, 1990) provides a broader framework to understand how the interactions between technology and individuals around communication lead to emergent outputs, in this case, relationship development among members of GVTs. AST, as the name suggests, is an adaptation of structuration theory (Giddens) which propagates that social systems comprise of structures and agents. Such systems evolve by the creation and reproduction of structures due to the active interaction of agents. AST contends that the group and organizational processes and outcomes are influenced by the structures embodied in the technology as well as the emergent structures that take shape because of members' interaction with and through technology (DeSanctis & Poole, 1994). The concept of appropriation lies at the base of AST. Appropriation refers to the production and reproduction of structure, which takes place because of the ongoing activities of members. Through appropriation, team members can customize the system according to their desires (Poole & DeSanctis, 1990). This appropriation of structures leads to the development of a social system within which the members operate. In this case, the structure of communication leads to the development of relationships within a broader social system.

Adaptive Structuration theory focuses on developing an understanding of such type of complex environments by proposing that it is the appropriation of these structures

and human agency elements which is responsible for the outcome. In the context of this study, it implies that on one side, it is the appropriation of structural aspects of communications and technology while on the other side it is the appropriation of the human agency along with the structural elements which guide the relationship development in GVTs. Using Adaptive Structuration Theory (AST) as a foundational theory and drawing on other method theories (Relational Control theory, Relational

Figure 1

About here

Dialectics, and Group Development Models) this study investigates the effect of the communication and its constituents on the development of relationships among team members in virtual environments.

Human Agency and Communication

In the context of global virtual teams, AST can be utilized to understand both the initial and emergent structures shaping up around communication due to interactions of team members. As mentioned above, human agency elements in communication frequency, quality and quantity of communication.

Figure 2 details the constructs of different human agency elements of communication in virtual environments.

Figure 2

About here

Communication frequency in virtual environments is a result of individual team members' communication apprehension and text-based communication ability (Charlier et al., 2016). Text-based communication ability is one dominant component of communication frequency. However, this study argues that it is necessary to use the overall communication ability of individuals because in this research, the teams under investigation use multiple media, including rich media such as video meetings through Skype.

According to Keyton (2010) as a result of communication, individuals create both task-oriented communication content and relationship-oriented communication content. It is necessary to understand these constructs of communication content. Such a necessity arises from the observation that both types of content is present in individuals' interactions and is produced simultaneously and therefore influence relationship development.

Lastly, communication quality is an outcome of frequency and content of the communication. Frequency in itself cannot be used as a measure for quality since the higher or lower level of frequency does not suggest anything, and therefore it has to be seen in the context in which that frequency level varies. This context is part of the communication content. Consequently, the combination of content and frequency of communication play a critical role in determining the quality of communication.

Following sections discuss these components from the perspective of AST and virtual settings of this research.

Communication Frequency
One of the common ways to assess communication in virtual environments has been to look at the communication volume or frequency. The communication frequency has to be distinguished from other elements of communication because earlier research shows inconclusive evidence to prove the relationship between frequency and team performance. A higher level of frequency does not necessarily translate to better performance. Many teams can demonstrate higher performance in a complex environment despite limited communication. Literature shows that in spite, of less frequency, teams' perform better due to other factors such as team members' familiarity with each other. This study argues that results around frequency are not consistent because it is an outcome of individuals' abilities to interact with different structures within the team. These abilities are different for every individual. Therefore it is not possible to establish singularity of results regarding frequency at team performance directly but one has to first understand the relationship development and frequency before judging performance.

Multiple measures are used to understand communication frequency. Specifically, in GVT literature, communication frequency is considered an outcome communication ability and communication apprehension of the individual members of the team. AST suggests that the appropriation of technology, and not the technology itself, is a primary force in determining socially relevant team outcomes (DeSanctis & Poole, 1994; Poole & DeSanctis, 1990). Therefore, it is logical to understand both constructs of

communication frequency in terms of their influence of appropriation of Communication technologies. Communication Apprehension is defined as a fear or anxiety that relates to real or anticipated communication with others (Craig Scott & Erik Timmerman, 2005; McCroskey, 1978). It implies that individuals with high communication apprehension are usually reluctant to communicate, which in turn can negatively influence their propensity to engage in conversations with others, which in turn, would influence the communication frequency negatively.

Charlier et al., (2016) suggest that since 80 percent of the communication among members in virtual teams takes place through asynchronous media such as email, therefore, text-based communication ability of the members shall be an appropriate measure for the communication frequency. This approach provides a good basis to develop a quantitative measure for frequency. However, it risks losing the understanding of communication happening through rich, synchronous media like video conferencing through tools such as Skype. This study argues that while looking at communication frequency, it is worthwhile to consider both types of media to understand better the Communication frequency because it would not only clarify the number of times GVT a particular member communicates but also answer why this frequency is at the level where it is. For example, is the ability to communicate low due to cultural and language apprehensions, technological know-how or because of both. Knowing this would also contribute to formulating a better understanding of communication quality among team members. In the context of this study, to measure communication frequency, we take a two-pronged approach. One, we calculate the frequency of text-based communication; two, we look into the content of the

communication to establish the reasoning why a particular volume of communication exists within GVTs.

Communication Content

Communication in virtual teams usually takes two forms around content. Task-oriented communication is focused on different stages of the task, such as task planning, work distribution, task completion, and task evaluation. Relational content is interpersonal rather than task focused. While task-content is necessary to achieve the results of a project, relational content has been found to influence relationships by enhancing trust and cohesion among team members over the life of the team through multiple projects.

This content is produced during both synchronous and asynchronous use of different media. Daft & Lengel, (1986) based on media richness theory, argue that media without cues capable of conveying information such as tone tends to obstruct relationship development. However, studies in GVTs argue that it is possible to share relational information in virtual environments (Chidambaram & Bostrom, 1997; Walther, 1995; walther & burgoon, 1992) and ultimately influence the relationship development (S. L. Jarvenpaa & Leidner, 1998). Marlow et al., (2017b) point out that although there is sporadic evidence about the role of content on relationship development, there is a need for extensive research on the role of communication content on team outcome.

This study argues and unearths the process of relationship development based on the premise that team performance is not an only a direct outcome of team communication, but the kind of relationships team members develop as a result of communication, also heavily influence the team performance. Therefore, along with communication

frequency as human behavior, it is essential to include the communication content and how it is created in virtual environments to develop a holistic understanding of the process of relationship development.

Both types of content shall be analysed through the lens of relationship development. Different studies discuss the relational aspect of communication. For example, S. Jarvenpaa & Leidner (1998) contend that the interpersonal nature of communication is integral to develop trust in GVTs. Zimmermann (2011) focuses on the interpersonal effect of communication, which would lead to conflict diffusion. These studies on GVTs focus primarily on the behavioral outcome of relational communication. However, how these different behavioral processes develop over time around communication is less evident in GVT literature. Marlow et al., (2017b) in their work highlight this issue and propose a conceptual framework of the communication process in GVTs. While this study develops on their work, this process model focuses on relationship development rather than performance management. Also, this study extends their conceptual work into the empirical world.

To frame a focused viewpoint on communication and relationship development, this study further explores the literature from the relational communication in groups rather than only in the context of GVTs. Here relational communication does not mean that the focus is on relational content only but also analyzes task content through relational communication lens. Relational communication theories are different from the interpersonal theories in the sense that in the former case, understanding of relations is formed on through relationship-centric approach rather than the latter case where individual's behavior is the center of attention(Littlejohn & Foss Book, 2009).

Relationship-centric approach dictates that relationships are a social unit of two or more members and therefore, the relationship perspective combined a view of these members rather than the one-sided description (Littlejohn & Foss Book, 2009).

Relational control theory (Welfare, Rogers, & Farace, 1973) focuses on how members interrelate with each other through their communication behavior. From a relationship point of view, this theory propagates that relationships are temporal, and they evolve based on communication messages over time. In this theory, three different message patterns exist, including symmetry, complementarity, and transitory. These patterns are defined based on sequentially ordered message combinations. When one assertion is followed by one-up, it is known as symmetry. Complementarity exists when messages different but they fit together. Transitory patterns are a combination of one-across messages combined with one-up or one-down messages. The matrix of these patterns shows the dynamic nature of relationship development in different entities (c.f. (Welfare et al., 1973).

In the context of GVTs, studying these messages provides us with a partial understanding of the dynamics and relationship development in those teams. It is so because the data collected is not entirely conversational. Therefore, this study combines relational control theory with Relational Dialectics to form a complete understanding of the development of relationships among members of a GVT around communication content.

Relational Dialectics theory was proposed by Baxter & Montgomery (1996) as an extension to the work of 20th-century Russian theorist Mikhail Bakhtin. It is an interpretive theory of how relationships shape around the meaning created by

communicators during their interactions(Baxter, 1988). Dialectics refers to the phenomena of creating meanings continuously as a struggle between competing and opposing labeled as a centripetal-centrifugal struggle. According to RDT, relationships are constructed socially by the dynamic interplay of opposing views (dialects) emerging in interactions. Since these are social constructions and therefore, they are always in the process of development rather than reaching an end state (c.f. (Baxter, Littlejohn, & Foss Book, 2009). These tensions in interactions are dealt with selection, cyclical alterations, neutralizing or reforming based on the dialects (autonomy-connection, openness-closeness, and novelty-predictability)(Baxter & Montgomery, 1996). RDT provides the opportunity to study the inter-group interactions happening within a set of structures and therefore, is also aligned with the adaptive structuration theory.

This study uses RDT with the Relational Control theory to formulate a complete understanding of the relational communication content. Partial communication content is available in dialogue form and is viewed through the lens of Relational Control Theory, while other reported content is seen through the lens of RDT. All in all, these theories are used to 1) Formulate the theoretical basis for relationship development around communication content in GVTs 2) formulate an understanding of the relational communication present in both types of communication content.

Communication Quality
Multiple studies provide different definitions of quality of communication. (Chang, Hung, & Hsieh (2014) synthesize the literature to the point out that communication quality corresponds to 'the content quality of the communication transferred among the virtual team.' Desanctis & Monge (1999) use message understanding to describe the

quality of communication among team members. Marlow et al., (2017) are of the view that the timeliness of communication, along with a closed-loop communication system represent communication argue. All these definitions of communication quality tend to deal with one or another aspect of it. To frame a holistic image of communication quality, this study follows González-Romá & Hernández (2014) where the quality of communication is "the extent to which communication among team members is clear, effective, complete, fluent, and on time."

This study argues that quality is an outcome of content and frequency. Following the above definition, clarity of communication is dependent on the content of the communication. It depends on the senders' ability to understand the situation and articulate the message accordingly. Similarly, to what extent the communication is effective, complete and fluent is dependent on the language understanding and comprehension abilities of the group members.

Timeliness of communication is partially dependent on the frequency of communication in the teams. High-quality communication involves the timely transmission of useful, clear information that is directly relevant to the task at hand. Providing unnecessary information risks overloading the listener with irrelevant information, reducing comprehension (Cruse, 1986). However, it is also important to note that while communication is mainly around the task, there is relation aspects involved as well. Therefore, it is important to differentiate what constitutes information overload and what enhances the relationship among the team members. Therefore to establish the quality of communication among team members, this study argues that

developing an understanding and knowing the dynamics of communication frequency and content is of utmost importance.

Structures around communication
Three dominant structures within GVTs influence communication and relationship development. These structures include group structure, technological structure, and communication structure. All these structures are dynamic and evolve with time. The power structure, team composition, and time zone difference play a role in establishing the initial group structure. Communication structure is defined by the virtual meeting times; tools used to communicate and accomplish tasks. The technological structure is established around the cost of using technology, ease of use of technology, and accessibility to technology. In the following section, this study discusses these structures.

Group Structure

One of the antecedents of GVT group structure is team composition. Team composition refers to the mix of attributes of team members and the combined effect of these on the performance of teams (Hackman & Wageman, 2005). Previous research on team composition takes two different stances. Traditional personnel-fit model of team development looks at the individual's capabilities required to fulfil a particular task. The fit is sought between individual and work (Chatman, 1989). As opposed to individual model, team-based models consider that contribution of individuals to team performance is not equally weighted but depends on few key individuals and how they facilitate the process of interpersonal relationships among team members (Mathieu, Tannenbaum, Donsbach, & Alliger, 2014).

In this research, since the initial team composition was based on multiple factors. Every team consisted of members from four different universities (see research design), with participants from Asia, Europe and Russia. Also, the participants included some members with substantial work experience while others with very little to none work experience. Similarly, they had different educational backgrounds before commencing with this project. The demographics of these teams were balanced in terms of gender and age with the inclusion of both male and female members within an average age bracket of 23-45 years old. This study followed the team-based model to ensure enough diversity within a single team while trying to maintain homogeneity across the teams. This initial group structure provided the teams a starting point and they were allowed to alter this structure if and when needed.

The power structure in GVTs is another antecedent of group structure. Both formal and informal power structures exist in GVTs. For this study, GVTs were divided into two groups. In one group, formal leadership roles were assigned based on the initial assignment from the individual members. In the other group, teams were not assigned formal leadership but were up to the members if they wanted to assign a team leader or if they wanted to work as a spontaneous work team. The rationale for this structural choice comes from the literature on GVTs. Tong, Yang, & Teo, (2013) discuss in their model the implications of hierarchy and spontaneity in virtual teams. They argue hierarchically imposed virtual teams and spontaneous virtual teams have different working norms in terms of level of formalization and coordination of daily activities, which would influence among other things the communication patterns in these teams resulting in different trajectories of relationship development.

Time zone differences play a substantial role in the group structure as it can be utilized to build 24/7 teams to increase productivity. However, in this study, the teams were formulated across participants in Finland, Russia, Latvia and Estonia, therefore, the time zone differences were not a structural factor. However, during the projects, it came out as a situational factor, when some of the members of some teams' were travelling to different time zones for personal/business reasons and therefore had a temporary but substantial influence on the communication patterns within their teams.

Communication Structure

Communication structure refers to different media which GVTs utilize to accomplish their final goal. In case of this research, members of GVTs contacted each other through the official email addresses provided by the program coordinators. It was up to the individual teams' to establish the initial communication structure for their future projects. The choice of media was left for the teams to decide for themselves. Media richness theory argues that media richness theory, argues that media without cues capable of conveying information such as tone and facial expressions tends to obstruct relationship development. However, studies in GVTs argue that it is possible to share relational information in virtual environments (Chidambaram, 1996; Walther, 1995) and ultimately influence the relationship development (Jarvenpaa & Leidner, 1998).

Participants of this research, without the background knowledge of media richness theory, chose multiple media to communicate. The tools used to formulate and further enhance the communication structure among individual team members varied according to the purpose of communication. The following table lists different tools along with their purpose used by GVTs.

Table 1

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When GVTs started to work on their projects, data shows that most of the teams used tools mentioned above to coordinate their communication around task to achieve the end goal in the form of a video presentation where they presented their solutions to different problems posed in the form of project work. These media choices played a substantial role in the establishment and development of relationships among members of GVTs.

Another structural element of communication among these GVTs came from the organization of work through meetings. Although not in direct communication, across teams, most of the teams came up with similar meeting structure. As soon as they would get a new project, they would hold a video conference to formulate an understanding of the problem. Afterward, most of them would agree to study the relevant information from different sources and brainstorm while writing their ideas in a single document. A second video conference would be held to debate different solutions and division of work. Teams would write a formal script for their proposed solution and few members would be assigned the responsibility to create a video presentation to present their solution.

Technological Structure

Technological structures are dependent on the communication structure in the sense that what technologies are employed by GVTs to achieve the end goal. However, the choice

of these technologies and resultant technological structures are an outcome of ease of use, accessibility and cost of using a technology (Zhang & Chen, 2010). In this research, it is visible from the communication tools discussion that most of the technological structure is an outcome of freely available tools. These tools do not cost financially to participants as those are available either freely or participating universities have a subscription to those tools. The only tools which participants had to find on their own, meeting the above-mentioned criteria were video recording and editing tools. Drawing on AST, this study argues that although the IT structures are the same across multiple GVTs, it is the internal social functioning of these GVTs which influences their interactions and ultimately the relationship development.

It is important to note that the group structure influences IT and communication structures. During interactions, the internal group structures (leadership, individual beliefs, atmosphere) influence the IT structures (Zhang & Chen, 2010) and communication structures whereby teams select and appropriate different media based on IT structures. These interactions of different structures influence the outcomes of different GVTs in different manners. The development of relationship among virtual team members' is a result of the interaction of these structures among themselves as well as with the human agency factors of communication.

CONCEPTUAL ILLUSTRATION OF RELATIONSHIP DEVELOPMENT AROUND COMMUNICATION

In the backdrop of the above discussion, relationship development around communication is an outcome of the communication structures and human agency elements. While these structures and agency elements are illustrated individually to formulate a theoretical understanding, it is essential to note that when GVTs are working on a specific project, these are at work simultaneously.

This study argues that different aspects of relationships among GVT members get influenced and in turn influence the communication aspect and therefore relationships are always in a flux and continuously evolving. While internal communication aspects (structural and agency) are interacting and evolving on their own they also get influenced by other aspects of relationships and therefore to better understand relationship development it is imperative to undertake one aspect as central and study its relationship with others. Since communication is one of the core aspects of GVTs therefore, this study considers it as central in nature and analyzes the process of relationship development around it.

Figure 3

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METHODOLOGY AND METHODS

Methodology

Background of relationship development forms the basis and provides the ontological setting of this study determining the connections with scientific research methodology. Multiple theoretical explanations and personal nature of the concept of relationship development requires a thorough framework compared and judged with the subjective perceptions of individuals who are part of GVTs performing on multiple projects. There is a need to interpret these different perceptions to which quantitative and statistical methods provide some limitations, and therefore, the study follows a qualitative approach.

The epistemological setting of this study is based on moderate constructionism approach (Järvensivu & Törnroos, 2010), which considers truth to be community-based and data-driven (Schwandt, 2000). Moderate constructionism and critical realism are very close in terms of their epistemological stance towards community-based truth. However, there is a significant difference in how data collection methods are applied to reach that end goal. Järvensivu & Törnroos, (2010) explained this difference that while in critical realism, the investigator tries to minimize the biases towards data collection, in moderate constructionism investigator is considered part of the process. They further purpose the use of abductive approach to reach the end goal is most suited for such studies.

In this process study, this approach is employed, where data collected from one year has been used to arrive at significant drivers of relationship development and later have been found to fit multiple theoretical frameworks. Two outstanding theoretical lenses

which explained the relationship development in GVTs included Emotion's research and structuration theory. Initially, the research was conducted within the framework of Emotions'. However, towards the final stages of analysis, it was discovered that even though theories of emotions, to a large extent, explain the relationship development, still there are a substantial amount of data-driven findings which were unexplained. Most prominent problem with employing emotions research framework was that it was only able to explain relationship management from individuals' affect emergence and management perspective. It could not provide explanations for the interaction of multiple structural elements of GVTs with human agency elements generated through individual members' actions.

Aldrich & Martinez, (2001) hold the view that process research is either outcome driven or event-driven. For our study, the focus is on the emergent nature of relationships where the outcomes are not known, and therefore, this study follows an event-driven process approach towards research. Event-driven explanations are built forward, from observed or recorded events to outcomes(Van de Ven & Engleman, 2004). The idea is to link different events to explain certain phenomena (in this case, the development of relationships).

This is a qualitative study by nature, where data collected through documentary evidence is analysed. Relationship development is an outcome of interactions of members of a team. These interactions result in a particular perception of one member in the other. Interpretation of such experiences and perceptions is the essence of relationship development. With this background, interpretive approach following Orlikowski & Baroudi, (1991), Walsham, (1995) and others provide a better

understanding of the phenomenon and is also in line with the epistemological setting of moderate constructionism. The interpretive approach is based on the understanding that reality is constructed socially and subjectively by individuals assigning meaning and researchers interpret the phenomena by understanding the meanings individuals assign to them (Orlikowski & Baroudi, 1991; Walsham, 1995). Further, these interpretations by the researcher are also subjective as propagated by moderate constructionism because the lenses through which research analyses these interactions are based on their own experiences and understanding of the phenomenon.

Research Design

This process-oriented research is longitudinal and qualitative multi-method (case study and abduction), multilevel (individual and team) in nature. The findings are presented using group development theories and generative mechanisms(Ahmed & Poole, 2017; van de Ven & Poole, 1995).

It is challenging to capture and observe a full process of GVTs coming together, working on different projects and then dismantling after the completion of specific tasks. In order to address this issue, a team of four course instructors and researchers, created and designed a reality-type of empirical context. This empirical setting allows us to design and conduct our investigation to fully understand the process. Specifically, in the context of this study, where the end objective is to capture the whole process of relationship development right from the start when GVTs are formulated to the conclusion where GVTs achieve the end goals multiple times, this environment is needed.

To accomplish this study, as a research group that I am part of, concluded in December 2017 with the fourth round of our data collection around GVTs. These data collection rounds were conducted around student GVTs from four universities in four different countries solving assigned projects. This is done to capture the whole process of relationship development right from the start when GVTs are formed. To serve the purpose, GVTs have been established as diverse as possible in terms of nationalities (more than 20), age groups (20-50), work experience (students, middle-level managers, and corporate managers) and physical location (Turku, Tartu, Riga and Pskov). To formulate such GVTs, course participants provided us with their background information and motivation to participate in the course as their first individual assignment.

Overall, the database consists of the sample from 2014 to 2017 includes 490 business students from more than 20 nationalities based in four Northern European countries divided into 90 GVTs. The students participated in 3 months long Masters level course on international business strategy and were assigned to fulfil 4 to 6 strategic consulting projects with the increasing difficulty level. This study uses data from year 2016 and 2017.

Since 2016, we observed a total of 248 graduate and MBA students (122 individuals in 2016 and 88 individuals in 2017) in 43 teams (23 teams in 2016 and 20 teams in 2017). All were participating in a master's level course on international business strategy, forming teams and solving complex problems with practically no involvement from course facilitators.

Most of the participants did not know each other beforehand and only got acquainted with each other one we created different teams. After putting them into teams, we informed them of their teammates and provided them with email addresses to contact each other. Throughout the course, we observed them executing different consultancy type task over three months for all rounds of data collection. This setting was similar to a social experiment where we got to observe teams execute tasks with minimum intervention closely.

Team Composition

Participants were divided into teams of five and six individuals ensuring as much diversity as possible in terms of age, cultural background, geographical location and work experience. We tried to ensure a similar composition for all the teams. Some teams lost some members along the way but that was rare and also close to the reality of organizations where members of teams sometimes leave.

Since we were interested in observing the emergence and development of relationships in these teams, we decided to have minimum interference on our part. As a result, these teams were at total freedom to organize their work, including communication channels, member roles and division of tasks. From us, the only requirement was that they deliver the results of their consultancy tasks within the allocated time frame.

Although a student environment is admittedly different from a firm context and there has been much discussion around student versus organization based teams in terms of validity of results. The JIBS Statement of Editorial Policy states that

"Empirical submissions utilizing undergraduate student samples are usually discouraged." The wording is important here – "usually" does not imply "always." This statement suggests that while student samples are appropriate, in principle, undergraduate ones are not, except in unusual situations" (Bello, Leung, Radebaugh, Tung, & Van Witteloostuijn, 2009).

However, it is argued that most of Masters and MBA participants are working individuals with previous experiences (ibid). Therefore our research setting is not only consistent with the research question but also addresses validity questions.

Data Collection

Once the GVTs were established, they operated under the premise that they are part of a consulting firm working on four different complex business cases taken as consulting projects (both in 2016 and 2017) during one semester. These teams presented their work in a video format (seven-minute videos) to the managers (researchers and teachers) who then evaluated their work in a panel format. Each task was the same for every team and was communicated to the teams three weeks before the deadline. The nature of tasks kept on changing from one task to the next. In all the data collection rounds, we started with standard case studies used in academics and business schools. These first cases were well structured focused on gauging the analytical and problem-solving skills of the participants. As the course progressed, the cases became more open-ended and less structured, requiring participants to be more creative with the increased workload.

The evaluation criteria were communicated to the teams at the start of the course. We used formal assessment tools along with written feedback for every case. This feedback

was provided in a timely fashion so that teams could use the feedback for upcoming cases. The videos were evaluated collaboratively to ensure fairness and consistency.

Before embarking on to solve the cases mentioned above, each team had to complete one assignment to come up with the initial charter of the team as well as to get acquainted with each other's capabilities. In addition to group tasks and initial assignment, each participant had to write a loosely structured reflection. This reflection was based on the dynamics of their team and their perception about team experiences, task organization and execution and their feelings towards other members of the team. Moreover, at the end of the course as part of the final exam, each member from every team based in Finland was asked to reflect on their experience of working in GVTs and what their views on building well-functioning team are.

Table 2

About here

Data Analysis

To make sense of process data is a difficult task and therefore following Langley (1999) used multiple strategies of analysis. In a single case, there are multiple processes taking place and therefore it is difficult to submit to one model or theory to find the explanations systematically without avoiding the danger of making the study overly simplistic. One of the objectives in such studies is to move beyond simple explanations of how and why and move towards theorizing.

This study did not start with a single theory in mind but instead started with an initial theoretical understanding of the phenomenon of relationships and GVTs. Researcher delved into the process of data collection and followed the teams and different events which unfolded over time. While conducting the course and writing feedback to the group tasks and individual reflective essays, the researcher was able to develop an initial understanding why and how different events take place in these teams and unfold over time (Langley, 1999). Based on these understandings researcher went back to existing literature and from a methodological perspective, in line with moderate constructionism approach (Järvensivu & Törnroos, 2010) and Langley (1999) used the abductive approach for analysis.

After formulating the initial understanding of dynamic of different GVTs, among different group development theories we used the framework advanced by van de Ven & Poole (1995) as a method theory (Lukka & Vinnari, 2014) to advance our analysis of relationship development in GVTs. The framework proposed by van de Ven & Poole (1995) brings theories of group development together in the form of four distinct "motors" which generate change. This framework proposed lifecycle model, Teleological models, dialectical models and evolutionary models are four types of group development models which explain and capture the change when it happens.

(van de Ven & Poole, 1995)

Model	Explanation
Life Cycle model	According to life-cycle theory, change is imminent and the developing entity possesses an inherent logic which regulates the

	process of change while the entity moves from a starting point towards a logical conclusion through different stages.
Evolutionary Model	Consists of a repetitive sequence of variation, selection, and retention events among entities in a designated population. Competition for scarce environmental resources between entities inhabiting a population generates this evolutionary cycle.
Dialectical Model	Dialectical models propose that the change and resultantly development is a result of conflict among different actors related to an entity. Confrontation and conflict between opposing entities generate this dialectical cycle.
Teleological Model	Development of an entity moves towards an end goal whereby it is assumed that the entity in itself is adaptive. Since the entity is adaptive, therefore, it does not necessarily go through different stages, as is the case in the life cycle model.

These models explain both first order and second order changes in any development process. Life-cycle and evolutionary models deal with the first order changes where 'first order change' processes build on what has happened before. The Future adaptations to any given scenario are founded on deterministic laws that have governed how things have operated in the past(van de Ven & Poole, 1995). This implies that these models follow an iterative path, learning from the previous patterns and making iterations to those to improve decision making. By contrast, 'second-order change' is 'constructive',

which means that it does not follow a pattern but is emergent in nature (ibid) and is explained by Dialectical and teleological models.

This method of understanding relationship development goes hand in hand with data collection and theoretical lenses of AST. The first two models come in handy to understand in role of structures in connection with the human agency factors. While, last two models help to understand the dominant role of human agency elements on the structural elements for understanding of process of relationship development.

At this stage, the researcher further developed on the initial understanding from the sample from 2016 and 2017 and started to look deeper into the dynamics of 9 selected teams around the communication while they were performing different tasks and how they were influencing their relationships through the lens of group development models. The data gathered from these teams was analysed using Nvivio V.11.

FINDINGS AND ANALYSIS

Relationship development in GVTs is an outcome of multiple processes taking place simultaneously. Processes around task, communication and team orientation are few to name, influencing the phenomenon. For this research data analysis was conducted around communication to study its influence on relationship development in GVTs. The empirical abductive process compliments the critical role of communication on relationship development through AST.

In total, 198 'sources' were analysed through NVivo V.11. First level of coding was conducted manually on these sources. These sources were the reflective essays submitted by the GVT members after the completion of every task. Materials from these sources were assigned to different 'nodes' at the second level of coding. These nodes included communication, trust, sub-groups, leadership, own expectations, expectations from others and conflict. Further, communication was coded to the third level to distinguish among communication frequency, quality, content and communication tools. Following table summarizes the number of 'references' found in all sources according to different nodes.

Table 3

About here

At this point, there were two questions to be answered to know how the relationships develop with the interaction of human agency and structural elements and also how does the process of relationship development unfold. To understand the process of unfolding, "Framework matrices" were used to formulate a timeline based understanding of relationship development where teams moved from one task to the

next. After developing this understanding, the data was arranged using "Framework matrices" in cross-tabulation format to understand the interlinks between human agency factors & relationship development and structural elements & relationship development. Following tables present an extract of the same findings.

Table 4 & 5

About here

Above tables show multiple interactions taking place simultaneously. There are interactions among multiple structural elements with multiple human agency elements. There could be endless iterations and combinations influencing different aspects of relationship development in GVTs. However, to understand these multiple processes better, this study uses group development models. These models act as a methodological tool to structure the findings of this study and unearth multiple ways in which relationships develop in GVTs around communication.

Through the use of group development models during the analysis phase, It was found out that relationships in GVTs are influenced by choice of communication tools in a lifecycle fashion where these teams already choose different tools to aid their task at the start of the process and keep on using those tools throughout the life of GVT. Communication frequency and quality influence the relationships from an evolutionary perspective where, over time, GVT members not only increase or decrease the frequency of communication but also focus on the quality of the content of the communication. Communication content takes more of a dialectical model approach towards relationship development when it comes to relational content, while task

content is predominantly teleological. It is important to note that these developmental models are not operating in isolation but simultaneously. Also, these models are not mutually exclusive to one component of communication, e.g., there are instances when teleological development is observable in relational content and vis-à-vis. Following, this study further discusses these relationship development models in detail.

Life cycle model of Relationship development in GVTs around Communication

Communication, technological and group structures in interaction with human attitude tend to influence relationship development among GVT members through a life-cycle approach. In line with the theoretical discussion, communication tools being part of the communication structure have a significant influence on relationship development. This life cycle around structures transpired in multiple ways towards relationship development.

During the coding process, It was observed that these tools take a life-cycle approach to shaping relationships. This life cycle is based on the different stages of the project, which a particular GVT is performing. Apart from this cycle approach, there was constant communication throughout the life of GVTs while performing different tasks. This communication was taking place on messaging and social media applications. The following table shows different stages of a single task and the associated tools of communication used to complete those stages.

Table 6

About here

Most GVTs agreed to communicate with each other through email as soon as they get a task. After developing an understanding of the task, individually, team members communicated through one of the social media platforms/messaging applications (Facebook messenger or WhatsApp messenger) to agree on a time for video group meeting through Skype. During the meeting task planning and brainstorming took place. Simultaneously these thoughts were put together on Google Doc. teams divided and allocated their task into sub-tasks during this meeting. After the meeting, team members performed their sub-tasks either individually or in smaller sub-groups and updated Google docs, so that the whole team is on the same page. Again, at this point, usually, a meeting was held through skype to finalize the results of the task before creating the final video presentation. In the end, after the presentation creation, the final output was discussed among team members before the final submission for evaluations. Throughout this cycle, team members kept in touch with each other through instant messaging applications.

Negative relationship Development cycle

During this cycle of using multiple tools, there have been instances which influence relationship development. In some cases, the members assigned to create presentation were not competent enough to make use of those tools but still took on the task without informing others about their capability limitations. This influenced their role expectation from others and left a negative image for others due to pressures of deadlines. On the other hand, those who took the workload of such members made the extra efforts to familiarize themselves with those tools and were appreciated by others. At a personal level, those putting the extra efforts found it to be extra workload and

their satisfaction level suffered in the long run. Similarly to such instances lead to the low level of trust among teams where members where high achievers were trying to take control of the situation.

Technological structure and communication structure had a negative influence on the team. The particular persistent problem was that most participants from Russia usually had accessibility problems around tools such as Skype and Facebook messaging. Such problems did not influence the relationship development in no small extent because others in the teams were considerate of the fact that such a situation is not under the control of individual members. However, it did influence the working methods of GVTs.

Group structures were the ones having the most negative influence on relationship development. Even though the GVTs were diverse within but homogeneous across teams, still there were many differences which emerged. The leadership decisions in GVTs around the formulation of communication and technological structures lead to negative relationship development in the instances where leadership was the only goal oriented and did not discuss in detail the personal opinions of others. This effect was more pronounced in GVTs with assigned leadership rather than where teams chose their leaders. Group structure had pronounced influence on the team identity and therefore, in cases where it was not considerate of the individual members, members did not feel the part of the team. This lead to negative relationship development.

The GVTs which were unable to address these issues through the adaptation process had negative relationships throughout the life of the GVT. One primary reason for such relationship development was that even when such GVTs made changes to their

technological structures, either they did not adapt their communication processes or the focus of their adaptation has been only for the achievement of the end goal. This process of suppressing the individual thoughts with a mere focus on end goal lead to a more profound feeling of aloofness among team members, and therefore, the relationships among team members grew only negatively.

Positive relationship Development cycle

GVTs, which experienced positive relationship development throughout their work on different tasks, made structural decisions differently than those experiencing negative relationship development. These teams started with open discussions about such structures with simple questions such as what would work, what might not work, and if it does not work, how do we deal with it. In these GVTs, the choice of media tools was an outcome of open communication processes where the members provided their inputs regarding the ease, access and (un)availability of technological choices influencing the technological and communication structure.

   In such GVTs, group structure was similar to the rest of the GVTs in terms of their composition. The difference was in terms of how members in these GVTs approached their roles. Leaders in such teams were not only focused on the structural elements of communication and technology but were considerate of the human elements. Most team members in such teams not only focused on what are their capabilities but also limitations. These GVTs, within their structural limitations, tried to understand others better. They acknowledged the issues around, e.g., pronunciation, put their efforts to have a snapshot of other members' cultural backgrounds. This awareness of structural

and human elements helped them to understand each other better and therefore was able to analyze their mistakes through open discussions rather than blaming each other.

Structural elements in such GVTs adapted in a positive way, where after every task completion, they reflected and tried to understand the technological, communication and group dynamics problems. Focusing on the resolution of such problems lead to better relationship development. This was achieved through peaceful conflict resolution, having an understanding of others at the interpersonal level by understanding each other's limitations and a level of trust was developed over time where members tried to fulfill their roles as expected by the others in teams.

Negative to Positive relationship Development cycle

During this research, it was observed that some GVTs, even though started with a low level of trust among themselves after the feedback on their first tasks, were still able to come together and perform better in subsequent tasks. These GVTs were able to turn around themselves by making structural changes and adapting their communication processes and resultantly developing positive relationships within their teams.

There have been issues in teams when it comes to the communication structure. These issues did not influence the relationship development heavily but did give rise to some conflicts in initial tasks, moving relationships among team members to a slightly negative direction. There have been instants where few team members did not show up for skype meetings, and other members considered this irresponsible behaviour since missing member(s) were unable to update others about their absence. In other instances, teams as a whole agreed that specific tools (mostly Facebook messenger) was not

working so well in terms of the flow of communication due to other distractions from their contacts and decided to shift to more mobile applications such as WhatsApp).

Before reaching to such consensus, there have been few instances where few members were criticizing others in the team for being irresponsible and not working in timely fashion giving rise to dissatisfaction and making others anxious about the deadline. This initial negative development however changed to neutral when teams realized that it is not an individuals' fault but rather the choice of communication tools. The above process of communication and technological adaptation helped GVT members to mend their relationships. It is evident here that adaptation of structures is only possible when GVT members are willing to communicate their concerns in a precise manner and therefore it is the adaptation process at both structural and communication sides which can help to turn around the relationships among members of such teams.

Positive to negative relationship Development cycle

Relationships in GVTs sometimes did take a nose dive due to the drastic structural settings changes. The GVTs where communication structures were altered substantially in the hope to improve the performance of the team further backfired. Few teams altered their video conferencing schedules in order to allocate more time to brainstorming and a better understanding of the task at hand. In such cases, GVTs operated under the premise that tasks to be solved are becoming more open-ended and therefore, it requires more time for real-time discussions. In such cases, few of the members were not able to participate in the process. This lead to interpersonal conflicts and also raised questions about the commitment of the team members.

Similarly, the cases where teams tried to change the tools related to video presentation production to achieve a better output in the hopes to elevate their performance ended up hurting their relationships with each other. Such technological capabilities were not asked for from the GVTs. However, doing so required them to dedicate more time to learn and master such tools. Due to the limited time available to solve the problems, it was simply not possible for members to undertake such technological structural changes and therefore the overall performance was reduced. This lead to dissatisfaction among team members.

A substantial role is played by the group structure when it comes to such situations. The members' willingness to look through the problem rather than blaming each other has been seen to save certain situations. The role of leaders is also essential. In cases, where the team leaders were able to detect the early signs of problems in the technological and communication structures, they were in a position to put the teams back on track. However, in many cases, it was a firefighting drill where leaders were trying to root out the dissatisfaction and dejectedness among team members through motivating them to work better next time without dealing with the actual issues, therefore leading to a nosedive in relationship development.

Another cause of such negative development was the rotation of leadership. Certain teams had agreed in the start that leadership roles would be switched and similarly individual roles would be dynamic. This translated into ever-changing group structures giving rise to confusions leading to dissatisfaction and role ambiguity. The end result of such activities was negative relationship development.

Evolutionary Model of Relationship Development in GVTs around Communication

Communication quality and communication frequency play a significant role in relationship development in GVTs. Both of these components tend to evolve over time. During this research, it was found that teams have to maintain an optimum, parsimonious level of communication frequency in order for the relationships to develop positively. Too much or too little frequency of communication can lead to negative emotions in these teams.

Frequency of communication influences the quality of communication too. When the frequency of communication was too low at the team level, members felt that they do not have enough information to complete the task at hand, creating confusion among members as to who is responsible for what. However, in specific cases, teams were able to resolve this issue by communicating openly. There have been cases where one or a few members show less communication, but it does not have a negative influence on relationship development. Instead other team members felt more responsible and tried to motivate non-participative members to participate more.

On the other hand, too high communication frequency has also been seen to have a negative influence on relationship development. It left members with information overflow, creating confusions among them regarding individual responsibilities. These confusions also influenced the group structures where initially decided roles were not applicable. As a result, a significant effort was required for both technological and communication adaptation. In instances where teams were not able to adapt these structures in time, lead to the negative feelings of distrust and dissatisfaction. At the individual level, a higher level of communication frequency also influenced the relationships among team members in a negative fashion. One member communicating too much at odd times and with many emails is usually considered too dominant while

micro-managing the team. In such instances, team members felt one-against-others leaving most of them dissatisfied, non-participative and demotivated.

In the teams, which experienced positive relationship development kept communication frequency to an optimum level while influencing communication quality. Teams have been able to achieve an optimum level of frequency by using multiple approaches. Few teams kept their communication related to the task at hand in the initial tasks while still being open towards each other about their other commitments. These teams used their time wisely by setting up fewer meetings and making sure that all the members showed up. The responsible behaviour from every member created an environment where other members did not feel the need to micro-manage things. Also, during initial tasks, such teams were able to identify and acknowledge the strengths of each other and divided their task more suitably. This provided them with more time to connect at a social level since members were able to create set roles for each other for task-related issues.

Dialectical model of Relationship Development in GVTs around Communication
Communication content tends to influence relationships among GVT members in a dialectical fashion. During this study, dialectical relationship development is observable both in task content and relational content of communications. Communication content was analysed using communication theories. It was found that communication content largely influences the role expectation, sub-group formation, trust, interpersonal effect and conflict aspects of relationship development in GVTs.

The basis of the dialectical model is rooted in conflict. Dialectical model propagates that decisions and end states among members of a group are reached through constant

challenging of each other's narratives until a common end goal is reached. It implies that conflicts are mostly dyadic, where two members engage in a situation at any given time.

In this research, the communication content shows both positive and negative relationship development around the aspects mentioned above. The difference between individual members' reported and actual capabilities cases the relationships to develop in multiple ways. Team members either took on or were assigned to different roles based on the capabilities which they claimed to have. However, in cases, where they were unable to perform their roles to the expected level, usually, they ended up having a conflict with other team members and team leaders. These conflicts did not surface right away after performing a single task but if the performance remained low after the second task as well, there were heated arguments. Task-related communication shows the instances where responsible members for a role are blaming situational factors such as time limitation whereas other members are looking to change the roles of such members through structural changes. Such instances lead to negative relationship development among team members.

Conflict among team members has not always been influencing the relationship development negatively. The analysis of communication content shows that the instances where conflict is around different approaches to the task have resulted in positive relationship development. It has been seen as a trait of open communication by GVT members. However, in cases where conflict is formed around relational content has influenced other relationship development aspects and tends to influence relationship development negatively. In some cases, sub-groups emerged in GVTs due

to the conflict with the added dimension of proximity. Members who felt uncomfortable culturally or disagreed on approaches to the task leaned towards suppression of their feelings. This resulted in the formulation of sub-groups. The conflict and resulting negativity were not visible right away; however, with time, members from these teams showed friction among themselves by writing in their reflections about why and how they tend to avoid conflict.

In the long run, these situations emerging from dyadic interactions have tended to influence the level of trust among members of GVTs. The instances where teams focused on the reasons for conflict, communicated their concerns concisely and politely helped to bond the members together. On the other hand, where members used different tactics to suppress their true feelings and did not communicate in a timely and concise manner, led to a trust deficit and ended up hurting the relationship development.

Teleological model of Relationship Development in GVTs around Communication

Teleology is used as a fundamental principle in describing and explaining actions. The basic concept of teleology is the assumption of an actor engaging in intentional, goal-oriented behaviour (Verlag, 2009). Goal setting is an outcome of the interaction of the internal motives of an individual and the environment in which it operates.

In the backdrop of the above explanation, it is imperative that the individuals working in GVT settings are not only focused on the team goals but through self-reflection, they are also aligning their personal goals to those of the team. In cases, when these personal goals are not in line with the team goals would lead to negative relationship development and Vice versa.

Since the focus of this study is on communication, therefore, it focuses on the communication-related issues to these goal discrepancies and their influence on the relationship development in such GVTs. GVTs group structure shows the sign of first teleological relationship development. Some teams with eastern European members faced this issue. These members stated in their reflections that culturally they do not trust the people in their teams, and it requires them to spend more time on the job to get to know the capabilities of others to formulate their trust. In such cases, these members were too critical of the work approach of other members where they did not trust the process but wanted to achieve the highest level of performance. In their reflections, they accepted that they did raise their concerns but at the same time did not force their ideas. In later tasks, these members were working individually on the whole task without informing other members of the team. They would present their solutions at the last moment and would try to convince their whole team to work around their proposed solutions. This leads to much dissatisfaction in other members of the GVTs, resulting in negative relationship development.

Role of leaders in such teams has been of utmost importance. In cases where leaders were able to convince such members about the wastage of time and effort while working individually, the relationships among team members improved. However, it was not just a matter of convincing, but leaders proposed a better solution of creating a conducive environment of open communication where members suspecting others were asked to put forward all their concerns and discuss with other members. Also, they were encouraged to put forward their solution to the tasks at an early stage for others to comment on those solutions. Such steps increased the level of trust among suspicious

members and they felt more inclusive and accepted in the process. Their solutions might or might not have been accepted but the effort to make them feel included and respected, helped them to align their personal goals with those of the team goals.

CONCLUSIONS

There are multiple processes underway in GVTs built around structural and human agency elements of communication shaping the overall relationship development. In a nutshell, these relationships develop in three different ways. In the first case, GVTs start with a very cautious mind towards each other where the level of trust is low and with time, because of performance, feedback and working in the groups; they develop positive relationships over time.

In the second case, GVTs start from a very neutral ground and take it as a professional job where they have to perform a particular task optimally while relying on each other. Such GVTs developed quick cognitive trust among themselves. Based on their performance, their relationship development took either a negative or a positive development path.

In the third case, the team members had a high level of cognitive trust among themselves based on the profiles which they had shared among themselves. When these GVTs came together to perform their first task, they started with getting to know each other a personal level, therefore initiating affect base trust, which grew with time. In such teams, the relationship development stayed mostly positive; however, there were instances when a drastic drop in performance, delays in communication, in some cases, total non-responsiveness of some members to others created a non-conducive environment. This led to a drop in satisfaction level, changed the perceptions of members towards each other, influenced the role assignment and expectation and

created a level of low trust moving the relationship development from Positive to negative.

With the help of AST, this study can provide directions for managerial steps which could help to develop better relationships among GVTs. Structural elements of relationship development around communication shall be thought out collectively to formulate harmonious environment. The technological know-how of the members shall be taken into consideration, and if needed, training opportunities shall be provided. Similarly, team composition in the group structure shall take into consideration both the professional and social skills of members. After the initial structuration, it is essential to revisit these structures either through keeping track of GVTs performance or periodic discussions.

Human agency factors are usually not controllable in project-based GVTs, however, encouraging open communication and looking for the root causes of conflicts rather than putting the blame on other members in GVTs is a good starting point to develop positive relationships. These attributes can be developed over a longer period, where members of GVTs have to be made aware of cultural differences and making it clear for the members that each member in the team does not possess the same level of capabilities could ensure better relationship development.

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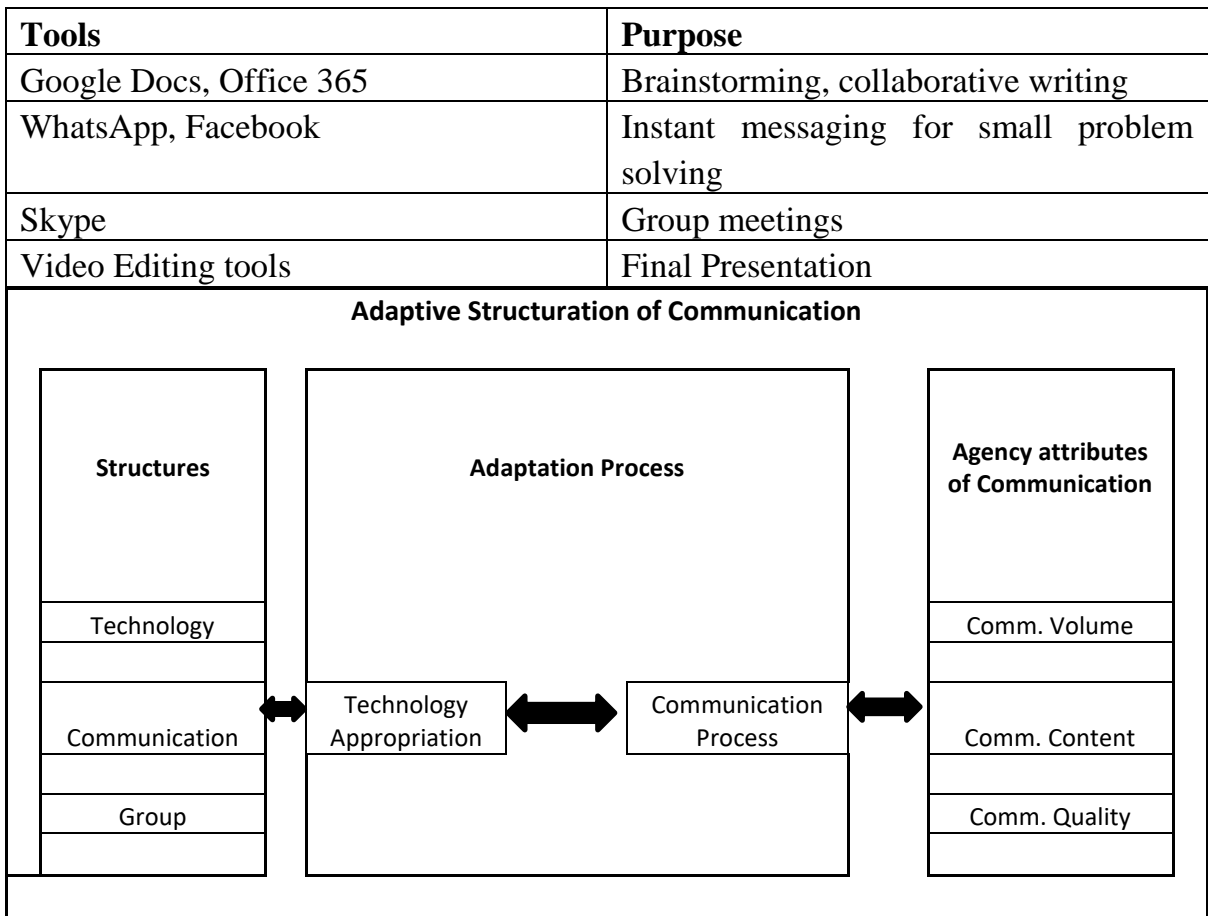
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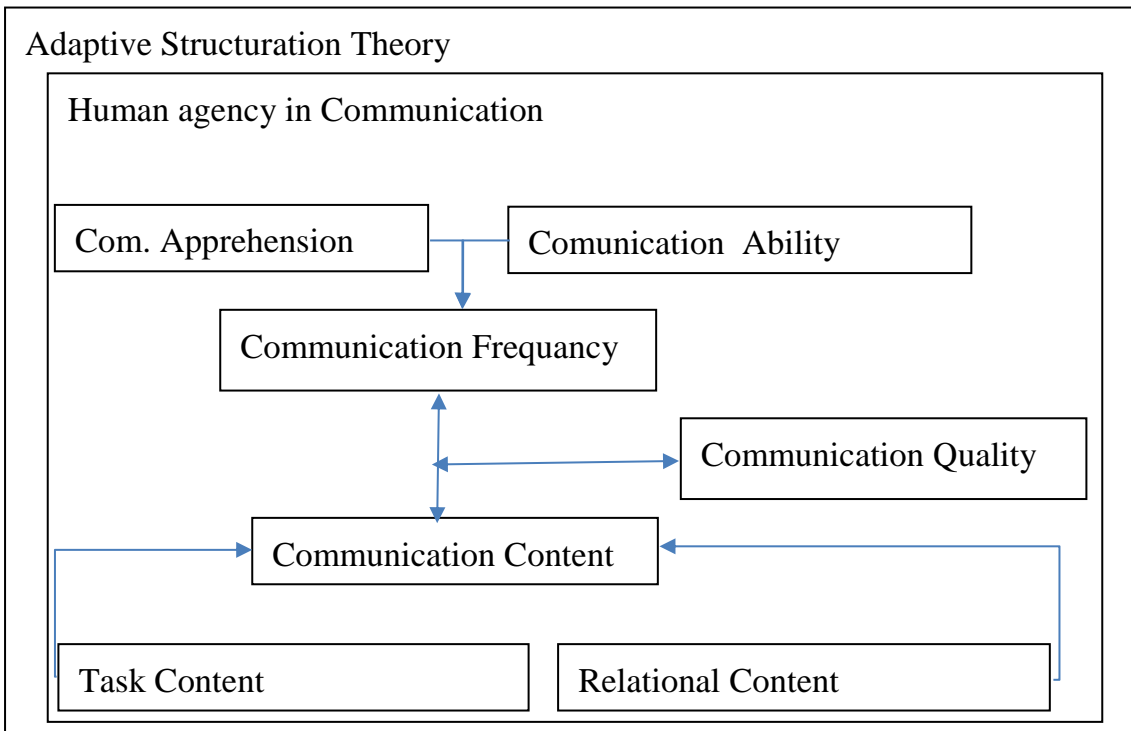
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Figures and Tables

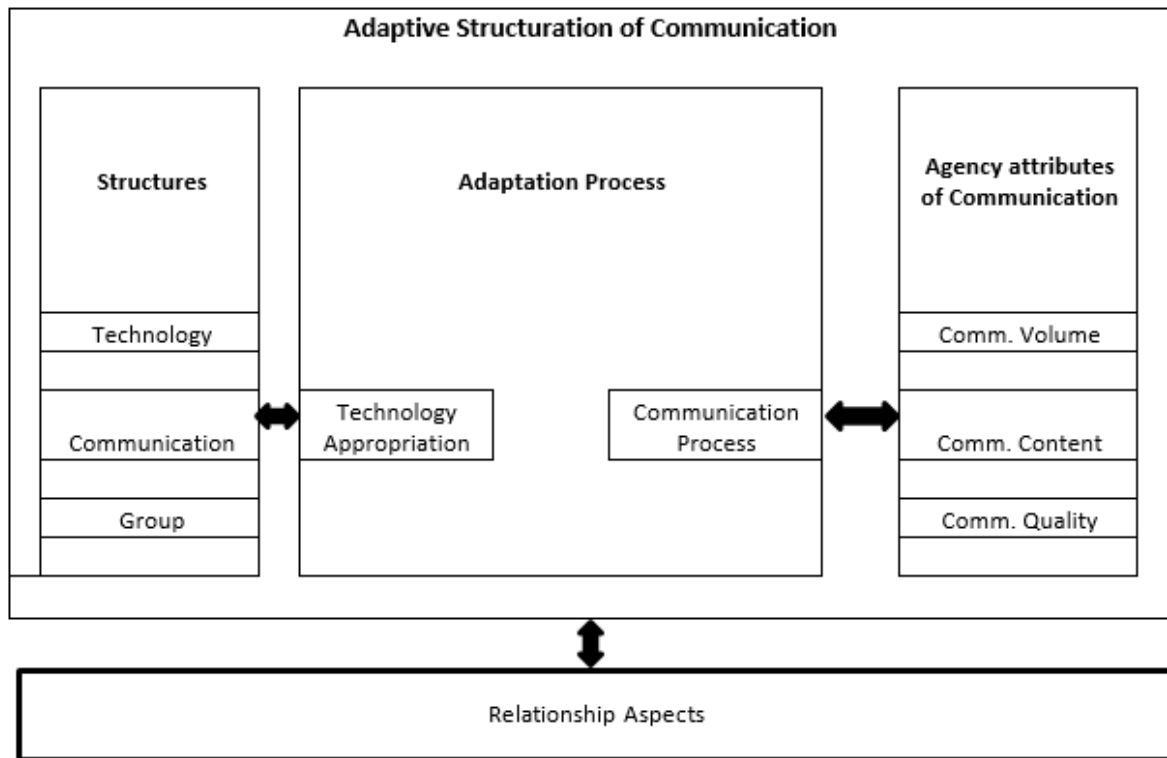| Tools	Purpose
Google Docs, Office 365	Brainstorming, collaborative writing
WhatsApp, Facebook	Instant messaging for small problem solving
Skype	Group meetings
Video Editing tools	Final Presentation

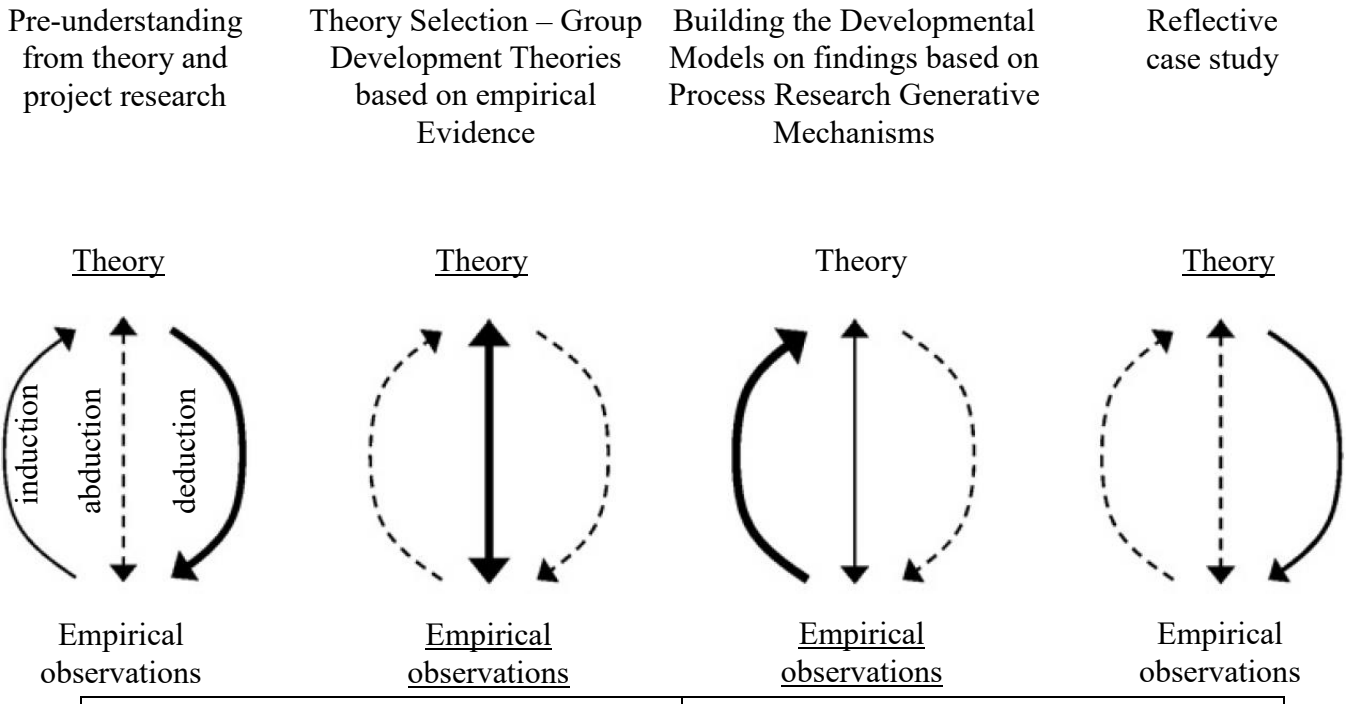**Figure 1 Adaptive Structuration of communication**

Figure 2 Human Agency of Communication in GVTs

Table 1 Communication tools and purpose

Figure 3 Relationship development around communication in GVTs

Empirical data source	Purpose	Level
Seven Minute videos (172 videos in 2016 and 2017)	To gauge task Performance	Team
Individual reflective Essays (four per participant, total 992)	To gauge team dynamics	Individual
Final Exams (120 in total)	To gauge overall learning around VTs	Individual
Field Observations (Emails, Facebook conversations, classroom interactions)	To gather fine grained information about teams	Team/Individual

Table 2 Empirical Data Sources

| Pre-understanding from theory and project research | Theory Selection – Group Development Theories based on empirical Evidence | Building the Developmental Models on findings based on Process Research Generative Mechanisms | Reflective case study |

Theory   Theory   Theory   Theory

induction   abduction   deduction

Empirical observations   Empirical observations   Empirical observations   Empirical observations

Figure 4 Research Process and Data Analysis (Modified from Järvensivu & Törnroos, 2010, 103)

- Frequency	- 105
- Content/quality	- 235
- Tools	- 235
Conflict	49
Sub-groups	32
Trust	121
Leadership	125
Own Expectations	25
Expectations of others	28

Table 3 Frequency table of Findings

Table 4 Human Agency and Relationship Development

	Trust	Sub-groups	role expectation	Satisfaction	Interpersonal affect	conflict
Comm. Frequency	Communication is the key in all group works… And again more in virtual teams! When you work with a team you need to communicate a lot to inform them of what you did or what you will be able to do (when you will be able to work ect). It's quite important because the others need to know how your work is advancing and when you are going to finish. It's the same thing in virtual teams but with higher proportions because the others don't know you and the only way for them to know you is your work.	During the meeting the case assignemnt was splitted to 3 pieces. Analytical, proposal and conclusion part, each part has 2 members. There was 1 week to complete three parts with three groups. Next was a skype again to link all three pieces into one document. Each group recorded their part into voice as well. One member made a visual presentation included recordes text-voices.	One aspect that made the teamwork a bit uncomfortable for me, was that it seems the other teammates are full time students and don't have a day job. Because of this a lot of the discussion took place during the day. Since I have a pretty demanding and intense job I was not able to actively participate in many of these discussions and could contribute more during the evenings when people were less active.	Everyone knows what to do and when to do because in the group there is a continuous communication on Facebook and a nice basic organization; the death-line, until now, have always been respected. We all row in the same side and I believe that this is the basic, maybe sometimes also to obviate our technical deficiencies.	Two of our team members were again missing almost the whole time during the case 2, which was not very nice, as I think that despite the other tasks one is required to carry out along with this course's projects, one should contribute even a little, or make clear when he/she is able to join and how much.	It wasn't too long before I noticed that even the seemingly most simple and straight-forward requests, schedules, and instructions can be misunderstood. People would just disappear out of reach for days with either letting everyone know at the last minute, or with not telling anyone anything (which ended with me letting out some steam on our team's Whatsapp group, and after that to a mutually respectful burial of weapons with one member).
Comm. Content	I would not employ anyone from my team. This idea often comes to my head when I analyse our work – all through the cases 1-3. Andres would be the best candidate so far and Kathrin has the right qualities, but her experience and knowledge are her main barriers. Nhan has the right ambition, but he lacks systemic approach. Hanna lacks nearly everything :)	We split into three groups of two people and divided the questions between the groups. Having answered the questions and done the analysis, we created slides and one person from every group narrated their part of the slides.	We all had an aspect of knowledge from the McKinsey case that we should analyze, which I did and so did the rest of the team. For Olga the 'content' was lacking in all of them. I tried to explain that given the timeframe left (8h to deadline) we would not have enough time to finish analysis on the final research question on how to 'better distribute' knowledge within the firm.	I was happy to notice, that also some others were too contributing in this case from the very beginning by searching articles and studies concerning the Knowledge Management and Organizational Learning.	when one member missed the conversation and the deadline was chasing fast, the others still worked to cover his/ her parts as much as possible, and then noted down all the discussion so that the other member could catch up with the group. We do not let anyone feel abandoned or misunderstood about the case. That is when I realize the significant value of friendship, sympathy, tolerance, loyalty and responsibility of a team, which can encourage and impulse our willingness, ambition and innovation for the task assigned	I was pretty upset, since I had to explain to him that none of us is familiar with the cases beforehand, and that is why everybody is expected to study the cases on their own before we start discussing them. I had just closed about 15 browser tabs related to KM and McKinsey, so the knowledge didn't actually fall into my head from the sky. I told him that I understand everyone is busy in their private life, and I don't expect equal contribution from everyone, but I expect every team member to take part in adding value to the project, and I asked him to read what he wrote about himself in our team presentation. He didn't answer.
Comm. Quality	Communication is the key in all group works… And again more in virtual teams! When you work with a team you need to communicate a lot to inform them of what you did or what you will be able to do (when you will be able to work ect). It's quite important because the others need to know how your work is advancing and when you are going to finish. It's the same thing in virtual teams but with higher proportions because the others don't know you and the only way for them to know you is your work. They can't trust you because they don't know you, so you need to inform them about our timetable and progress at any time.	I suggested that me, N and B would brainstorm together at XXX. Supporting her and overcoming the language barrier could be a lot easier face-to-face, where you can easily demonstrate, coordinate what the other is doing and use expressions as well as analyze the other's expressions.	As every team member can write anything to the Google Docs it was somewhat unorganized in the beginning. However all of the main concepts and ideas were visible. I now start to realize that our group consists of individuals that like to think before saying anything. This is why utilizing Facebook group chat and Google Docs is probably the best fit for our team rather than for example Skype! Yet, I would state that the main difference between teamwork in Case 1 and Case 2 was that we started to communicate more openly. Some jokes were stated during conversations. This is always good sign of enhanced team spirit.	A very good point in our team I mentioned in the first reflective essay and would like to repeat is the harmonious and positive atmosphere for teamwork. Everybody in our team always respects to other members or ideas. It helps us not hesitate to talk about our new ideas as well as giving comments for others. In case we have different opinions, we can find a peaceful way to explain for others and go to the conclusion together.	his time we had something more: everyone has actively participated to the video's realization, everyone has constantly and daily shared relevant and useful informations and the most important, everyone has expressed his/her own opinions and ideas without any kind of fear or reverence in order to obtain the best possible. In the previous reflective essay I underlined the fact that this last characteristic represented one of our weakness; that's why I'm really happy that this time, finally, each of us was determined to give his/her opinion just to improve our final work.	Right now, as I'm writing this IA on November 8th, I have gotten back Kata's, Sandra's and Kristers' answers. Bérenger emailed me today that he refuses to answer since my questions are not a part of the course officially, and "I'm sorry but I'm not involved in this course to please you". To be honest, I understand that my survey was extra work but I did it solely with the team's benefit on my mind, not for 'others to please me'. That is why I was actually really hurt by his email

Table 5 Structural Elements and Relationship Development

	Trust	role expectation	Satisfaction	Interpersonal affect	conflict
Technology Structure	Technological knowledge aside, If the team is inactive and incapable of purposeful conversation, it would be more difficult to complete assignments. It is also important to openly share ideas and not be afraid to commenting each others' work. As an example many of our team members openly said that if there is anything you would like to change, add or delete, feel free to do so. The fact that our team consisted of people that were not judging others helped me to grow as a team member. I also tried to provide feedback for others and contributed in order to enhance the team spirit.	I also had to make the video, as the member who is responsible for creation of the video experienced some conversion problems with audio files. Luckily this time audio was done by another person, so I only had to combine it with the slides.	saying that we still had time to improve this third video; not to be discouraged but trying to make our best. Moreover, I advised to recorder our own voices for this third video.	I feel like knowing your team mates better as a persons helps a lot with team work, because dividing tasks based on everyone's interests or experience give better results and motivate people to do the work better, not only for the team but also for personal reasons.	
Communication Structure	I had to rely on people who I do not trust, because they several times disappointed me with unmet deadlines and disappearance when they were needed.	Even though I felt that my team performance is decreased while doing the second case, but I feel confident that we as a team is still unity and can rely to each other, yet some aspect could be improve such as: the sense of belonging and responsibility from each member, the priority given for this assignment should be equal for all of us, determination, initiative, respect to the schedule and communication.	Unfortunately, Mr. x and Ms. y turned us down this time for not showing up at all, even on Skype meeting or Facebook chat, so that we have to cover their parts heavily.	Not only the International Business Strategy course, but also my team helped me to develop my communication, task management and strategy skills. Being a part of the Virtual Team showed me that arranging meetings can be difficult because of differences in university schedules but we still managed to create a great collaboration. I hope that my team mates could see my work ethic, creativity and my way of thinking in confusing and difficult situations. To sum up, it was a significant exchange of experience and knowledge and I am looking forward for the next teamwork.	
Group Structure	I feel that all the team members rely on me, so I took responsibility to confirm the material provided by other members.	I decided to take charge. I presented the group with four different types of industries we could pursue and a business model for each. I added links to our FB chat to peak interest but alas no answers, I kept pestering the group chat until we decided them to stick with one.	Even though through an indirect manner, our roles have changed a bit. Perceiving Alina's displeasure and a certain kind of discontent in the group, I've tried to encourage everyone.	I am very grateful to the members who tried hard and did their best despite missed deadlines and not perfectly done assignments. I also thanked them in group and personally, as I appreciate their help.	Our team leader is taking absolutely zero initiative to get the assignments started and X on the other hand is expecting us to do groundbreaking research into each field. When I tried to explain that these cases are intended to familiarize us with each other and creating a harmonious team atmosphere I was met with unsympathetic

Task Stage	Communication Tools
Initial Planning	Skype
Brainstorming	WhatsApp, Facebook, Google Docs
Task Distribution	Google Docs
Writing Task	Google Docs
Reporting/Presentation	Multiple Video Creation Tools

Table 6 Task Stages and Communication Tools