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# Chapter 1 - THE NATURE OF TRUST IN VIRTUAL ORGANIZATION

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## 1.1 Introduction

The needs of business to carry out their activities in virtual form are increasingly demanding in this global competition and economic knowledge era. Becoming virtual means creating some relationship virtually either internally or externally. Internal virtual relationship with employees brings to form a virtual workplace and external virtual relationship with customers and clients creates a virtual marketplace. Virtual employees, virtual products, virtual customers as well as virtual productions and marketing activities are becoming popular in this situation. Globalization, the needs of partnering and outsourcing will create some virtual teams to address market opportunities. In virtual context, business parties may occasionally meet or may never meet on face. Business in virtual environments therefore may offer the best points of operation within a trust-based culture, in that it enables meaningful virtual relationships with customers, suppliers, and employees. (Kanawattanachai and Yoo, 2002) give an understanding that trust becomes one of fundamental factors drive the success and failure of virtual business relationship. This is because trust functions like the glue that holds and links virtual workers together as they operate remotely from each other.

Trust within business members and partners is one factor that not easily apparent, but essential for accomplishing goal on time and within budget. Although trust is important in any type of relationship, trust is pivotal in preventing geographical distance from leading to psychological distance in global and non boundaries teamwork. Trust is even more essential in global virtual business. In addition, trust is antecedent of collaboration and coordination of the global workplace – and technology does not do much to create relationships as first, the global virtual context renders other forms of social control, such as direct supervision and leadership. Secondly, other factors known to contribute to social

control and coordination, such as geographical proximity, similarity in backgrounds, and experience, are often absent (Javernpaa, Knoll et al., 1998).

Recent researchers and discussions emphasize that trust is a necessary component of effective virtual organization. Nowadays, the growing of technological advances is one key fashion. As technology continues to develop, companies will re-design the way they work and relate with other parties. As a result, technological advances have increased the usage of self-managed teams, telecommuting, and virtual offices; in which it can decrease the amount of physical interaction between business members and partners. The combination challenging of advances in technology and less frequent physical interactions will make the issue of trust more salient (Mayer et al., 1995).

In fact, one of the most critical issues for virtual organization is developing and maintaining trust among members (Javernpaa, Knoll et al., 1998). When work relationships and interactions conduct via technology such as email, video/audio conferencing, fax and telephone, they lack of social cues that facilitate trust to develop. For instance, research shows poorer outcomes for the participants in computer-mediated negotiations compared to face-to-face negotiations (Arunachalan and Dilla, 1995; Moore, Kurtzberg et al., 1999). Lower amounts of trust and rapport have been shown to be causal factors in the negotiation outcomes in computer-mediated communications. This is because trust has traditionally been assumed to be based on a history of interactions, through which people come to 'know and trust' one another. However, in virtual organization, employees meet only occasionally, or not at all. They interacted through the use of computer-mediated communication (Javernpaa and Leidner, 1999). Unfortunately, there has been little research around understanding the development and maintenance of trust in a virtual context.

The shifting of economic activities from the physical environment to the digital environment has been acknowledged as bringing many benefits. Some specific advantages of conducting business in virtual environments include an increase in productivity, adaptability, flexibility, agility, and strategic competitiveness in providing and delivering product/service (Sieber and Griese, 1998; Grabowski, Ayyalasomayajula et al., 2007; Wietrzyk and Takizawa, 2003). Virtuality or virtualness is defined as 'the ability of the business entities to consistently obtain and coordinate critical competencies through its design of value-adding business process and governance mechanisms involving external and internal constituency to deliver differential, superior value in the marketplace' (Venkatraman and Henderson, 1998). Moreover, business in virtual environments can be defined as the delivery of work, products, and services using the advantage of Information and Communication Technology (ICT). Voss (Voss, 2003) defines 'service in a virtual environment (e-service) as the

delivery of service using new media such as the Web'. In virtual business, physical location is not important since network technology and the internet is used to link members or companies across the world. It allows them to share information, resources, and costs that enable them to compete on a global scale. This type of business provides many advantages over traditional methods of business, including the ability to bridge time and space, and offer better utilization of distributed resources without physical relocation.

However, the characteristics of virtual and physical relationships from a business perspective differ in several aspects. Interaction in virtual environments is characterized by anonymity, uncertainty, lack of familiarity, lack of face-to-face meeting, etc. Kanawattanachai and Yoo (2002) assert that trust is one of the fundamental factors that drive the success and failure of virtual business relationships. This is because trust functions like the glue that holds and links agents together in virtual environments as they operate remotely from each other. For instance, unlike the customers in a traditional business setting, e-business customers may have no opportunity to touch the product or see the service before they decide to purchase. Their purchase decision is based on their trust that the product and/or service that they will receive will be the same as what they see on the computer screen or a virtual medium. Selling and buying online can occur only if buyer and seller have a high level of trust in each other. Furthermore, (Chang, Dillon et al., 2006) state 'in a virtual environment, a trust relationship is established between two parties who normally have never met or may never meet and where communication takes place through a virtual interaction medium'. Chang et al (Chang, Dillon et al., 2006) also argue that trust makes one able to express opinions about products or services that they received from interactions in virtual environments. Hence, business in virtual environments may offer the best points of operation within a trust-based culture, in that it enables meaningful interactions between geographically dispersed parties, which was not possible prior to the birth of the internet.

Moreover, trust between entities in a networked economy is vital due to the expansion of service exchange (e-service) in virtual environments (Giannoutakis and Petrou, 2007; Debenham, 2009; Ping, Durresi et al., 2011). The new paradigm of interaction of business entities in virtual environments is built not only on transactions, but on establishing, sustaining, and improving relationships with existing or potential stakeholders (Jones, Wilikens et al., 2000; Ion, Danzi et al., 2008). Stakeholders are comprised of participatory, enabling and supervisory members. Participatory stakeholders could be business partners, customers, individual/end customers, and suppliers. Technology is an enabling stakeholder that supports the means of communication, while a supervisory stakeholder is a third party agent who regulates transactions or provides advice in some way (Jones,

Wilikens et al., 2000; Ion, Danzi et al., 2008). Hence, trust is always seen as something which strengthens a relationship. A successful relationship depends on the strength of the trust and commitment of the trusting agent and the trusted agent to deliver service according to the terms of a mutual agreement.

The establishment of an adequate level of trust in any interaction in virtual environments is neither simple nor quick, but is a lengthy and ongoing process. Therefore, once a sufficient level of trust has been established, it is a challenging effort to maintain it so that the relationship can be sustained. Both parties (trusting agent and trusted agent) need to take appropriate steps to ensure that a successful relationship that has already taken resources (such as time, effort, etc.) to establish will be sustained over time if that relationship is valuable to both of them. If both parties do not take the steps necessary to maintain this trust level, then it may result in a diminished trust level, or even distrust. Once distrust exists in a relationship, it cannot be rebuilt in a short time (Currall and Epstein, 2003; Babar, Verner et al., 2007). Therefore, constant effort is required from both parties in order to maintain the trust level. This is a research issue yet to be addressed in the existing literature. Although the literature indicates that much work has been conducted on the issue of building trust (Hussain, Chang et al., 2007; Jøsang, Ismail et al., 2007), there is no methodological framework for maintaining trust.

Additionally, research in the field of trust has been carried out by several researchers across a wide range of disciplines. Due to the unique nature of trust in virtual environments, that could be virtual marketplace, virtual workplace, virtual class or virtual business-to-business contexts, the important need to understand how it develops and is maintained provides an opportunity for trust researchers to discuss the mechanics of trust (i.e., how it is produced and maintained) in such contexts (Connolly, 2008). Connolly also states that research on the dynamic nature of trust, particularly in a virtual (technology-mediated) environment, is limited. However, the theory and application of trust in virtual environments is attracting increasing interest from many disciplines.

However, in the field of trust modelling, most of the research focus is on trust determination and trust prediction. By 'trust modelling', we mean a process to assign the value of trust from trusting agent to trusted agent. A formal definition of trust modelling is presented in Chapter 3. Trust determination is concerned with determining the trust condition or trust level after an agent has carried out an interaction with another agent (Raza, Hussain et al., 2010). It can be with subjective or objective information (Sawamura, Aikebaier et al., 2010; Sawamura, Barolli et al., 2010). On the other hand, trust prediction is the process of making use of the current trust value or trust condition or the previous trust values

of an entity to reliably predict its trust value at a future point in time (Raza, Hussain et al., 2010). For example, the Service Level Agreement (SLA) between service provider and service requester is agreed upon and signed during the current time slot, but the service delivery will occur at a future point in time. Therefore, a service requester may need to predict the level of trust in this service provider for the future point in time when the service will be delivered. Additionally, those two key researches have been acknowledged as providing an important step in trust management; however, the next important step is how to maintain the existing or the current value after it has been determined. By 'trust management' we mean a set of activities to manage the existence of trust in a relationship. Further, determination of trust value is neither a simple nor an easy task. An agent needs to assess all criteria and consider the service context before assigning a trust value to a trusted entity (Sawamura, Aikebaier et al., 2010). Therefore, once an agent holds or is assigned a trust value by another agent, it needs to maintain this trust, or preferably increase it after several further interactions, particularly if the relationship is beneficial to the agents.

Moreover, it has also been widely argued that trust is dynamic rather than static (Chang, Dillon et al., 2006). By 'dynamic' we mean that the value of the trust that is assigned to an agent may change dynamically due to a change in the performance or behaviour of the trusted agent. On the other hand, trust essentially has evolutionary phases in both physical and virtual environments (Currall and Epstein, 2003; Xiao and Wei, 2008). For instance, (Currall and Epstein, 2003) divide the trust evolution pattern into three phases: developing, maintaining, and destroying. The manner in which trust develops and is maintained has been recognized as a critical factor in certain relationships (Hexmoor, Wilson et al., 2006). (Javernpaa, Knoll et al., 1998) also argue that a significant and critical issue when carrying out business in virtual environments is the development and maintenance of trust among parties. The first step in the initial business relationship is the development and establishment of trust. However, once trust has been developed and established, the next logical step is to maintain the trust level. This is particularly true if the relationship is valuable to either the trusting agent or trusted agent or both. The building of trust is difficult and costly; however, it can be destroyed quickly with a simple misbehaviour that disrupts the component of trust. Distrust or negative trust is a part of trust dynamism that should be avoided at all times in business relationships. One can start an initial relationship with distrust or negative trust. With the passage of time, both parties harbour the hope that distrust may lead to positive trust. Once positive trust has been established, it needs to be maintained. If, however, both trusting parties do not take the initiative to maintain trust, the trust level decreases to distrust or reaches a negative level. A concerted effort is then required to convert negative trust to positive trust. Hence, the maintaining of trust

is a critical element in the trust management process (Xiao and Wei, 2008). In order to maintain such relationships in virtual environments, a demanding and significant effort is required to avoid decreasing the level of trust to distrust. Therefore, the trust maintenance stage needs significant attention from scholars to foster the sustainability of a networked economy.

Additionally, research in the trust field has been carried out by several researchers across a wide range of disciplines. Due to the unique nature of trust in the virtual environment, the important need to understand how it develops and is maintained provides an opportunity for researchers to discuss the mechanics of trust (i.e., how it is produced and maintained) in such a context (Connolly, 2008; Aikebaier, Barolli et al., 2009). Connolly also states that research on the dynamic nature of trust, particularly in a virtual (technology-mediated) environment, is limited. However, the theory and application of trust in virtual environments is increasingly attracting interest from many disciplines. Some studies also suggest the need for research on how to maintain the trust level in virtual relationships (Javernpaa, Knoll et al., 1998; Chang, Dillon et al., 2006; Abuelmaatti and Rezgui, 2008).

Recent researchers and discussions emphasize that trust is a necessary component of performance in virtual work relationship. Nowadays, the growing of technological advances is one key fashion. As technology continuously develop, companies attempt to re-design the way they do business and relate with other parties. As a result, the usage of virtual employee, e-product, e-service, and teleworkers have interested. It has argued to decrease the cost of physical relationship between business members. These issues make discussion about the importance of trust more prominent (Mayer et al., 1995). In fact, one of the most critical issues in virtual business environment is developing and maintaining trust among members (Javernpaa, Knoll et al., 1998). When work relationships and interactions conduct via technology such as email, video/audio conferencing, fax and telephone, they lack of social signals that facilitate trust to grow. For instance, research shows lower outcomes for the participants in computer-mediated negotiations compared to physical negotiations (Arunachalan and Dilla, 1995; Moore, Kurtzberg et al., 1999). Lower level of trust and bond has been shown to be causal factors in the negotiation outcomes in that computer-mediated communications. This is because the level of trust has widely argued grow based on the number of past direct interactions, in which people get in touch and know each other. However, in virtual relationship, business parties meet only occasionally, or not at all. They interacted through the use of computer-mediated communication (Javernpaa and Leidner, 1999). Unfortunately, there is lack of research in development and maintenance of virtual trust. More detail, there is also little discussion

on what types of trust (e.g., cognition-based trust, affect-based trust) that more plays a role to improve work performance in virtual environment and in what sort the different types of this trust influences. Nonetheless, the discussion on whether development and usage of trust in virtual work relationship is tasks oriented or personal oriented is limited or mixed. Therefore, in this chapter, we review and discuss the two types of trust (affective-based and cognitive-based) in virtual work relationships, analyse the existing research on this different type of trust, discuss the development process and the influence of these two types of trust toward work performance in virtual relationship.

## **1.2 The Dynamic Nature of Trust in Virtual Organization**

Research on trust can be categorized based on the various types of trust that have been studied. (Rousseau, Sitkin et al., 1998) suggest that early research conducted by social psychologists viewed trust as a static state where one party either trusts or does not trust other parties. Furthermore, (Rousseau, Sitkin et al., 1998) note that more recent research emphasizes the dynamic nature of trust. In these works, trust is no longer viewed as static in all times instead, stating that there are phases of trust (e.g., building, stability and dissolution) as well as varying levels and different types of trust. Moreover, trust essentially has evolutionary phases both in physical and virtual environment (Currall and Epstein, 2003; Xiao and Wei, 2008). (Currall and Epstein, 2003) divide trust evolution pattern into three phases: developing, maintaining and destroying. In the first stage of relationship, trust level starts from a baseline, either trust or distrust. However, as the relationship progresses, we may find that the level of trust may either increase or decrease (relative to the initial trust level). The direction of the movement of trust value (increase/decrease) and the amount of increase/decrease is dependent on the capability and willingness of the other interacting party. With the passage of time, one may find that trust between two parties reaches to a high level (which may greater than positive trust). At this stage is very beneficial period to maintain the relationship between parties as neither party take any action that erodes the trust.

Therefore, trust is not static rather than dynamic. Trust changes over time supporting the argument for incorporating a temporal dimension into theories of relational development in virtual environments (Chang, Dillon et al., 2006; Wilson, Straus et al., 2006). In the context of dynamic nature of trust, trust will evolve and change over time in relationships as knowledge and information about other parties' willingness and capability to deliver task will also evolve in those relationships. Hence, trust has a developmental pattern. In virtual business relationship, (Wilson, Straus et al., 2006) contend over time, trust in computer

mediated work relationship rose the levels that met or exceeded the levels of trust in face-to-face group. At the same time, some of temporary changes in trust accompanied in the communication medium changes from face-to-face to computer mediated communication and vice versa.

Moreover, the traditional models of trust explain the evolution of trust that mainly built upon accumulated personal knowledge while trust in virtual environments explain the high levels of trust observed in situations where personal and history based knowledge is not available (Javernpaa and Leidner, 1999). Initial high trust is more robust when the parties have frequent face-to-face interaction. However, in a virtual relationship, members may never meet and have a limited time to work on a complete task. They do not have ways to engage in more traditional, enduring forms of confidence – building activities that contribute to the development and maintenance of trust. Lacking the traditional sources of trust – familiarity, shared experience and reciprocal disclosure, people are expected to demonstrate low levels of trusting behaviours, however, yet studies have found the existence of high levels of trust during such virtual interactions (Coppola, 2004).

The traditional developmental view of trust evolution assumes that trust resides in personal relationship. Past or future membership in common social networks would define the shared norms of obligation and responsibility. Rapid development of virtual trust is helped by role-based interaction (rather than person-based interaction), and by the greater use of category-driven information processing. With insufficient time to build proper expectations from prior interactions, people in virtual trust relationship tend to use expectations built on categories reflecting roles, cultural cues, or occupation and identity-based stereotypes (Clases, Bachmann et al., 2003). This is clearly as the characteristics of cognitive-based trust.

Moreover, in collocated teams, members have the opportunity to easily develop social relationships. Face-to-face interactions in the physical location allow parties to interact socially and get to know each other. They can discuss each other and their reactions can be expressed verbally or non-verbally. Both the social bonds and the professional respect leading to trust can be developed during these interactions. On the other hand, when relationship parties are dispersed, it is more difficult to create emotional bonds that can lead to trust based on assessment of benevolence (Greenberg, Greenberg et al., 2007). Hence, in a virtual organization, where many of the traditional ways in which humans establish bonds through physical contact and socializing are absent or at best limited, cognitive based trust develops faster than affective based trust.



### **1.3 Typology of Work Relationship**

The characteristics of virtual and physical relationship at work business context in some parts are different. Virtual relationship is characterized by anonymity, uncertainty, lack of familiarity, lack face-to-face meeting, etc. Therefore, it needs more trust as a mental shortcut that can reduce the complexity of virtual work relationship. For instance, customers in e-commerce may have no opportunity to touch the product or see the service before they decide to purchase. Their purchase decision based on their trust that product and/or service that they will receive as same as what they see in computer screen. Another example, bank customers may have a high trust to interact with bank using online facilities. They have a willingness and capability to make an online transaction without any experience of a physical meeting with bank employees. Selling and buying online may only happen if buyer and seller have a high trust each other. Employees in virtual organization may able to finish a task that given by leader based on their trust to their leader, even they may never see the leader in face-to-face.

If we correlate the relationship situation in virtual environments with the theory of human relationship, we may refer to the typology of human relationship. Specifically in work relationship, it can be divided as utility relationship and personal relationship (Atkinson and Butcher, 2003). In utility relationship, human interacts based on the willingness and capability of other parties to deliver a task from starts to end. This view is grounded on a long history of social exchange theory. Person who argues their relationship with other persons by means of the end of a task, they view that this relationship is no need to broader to 'relational context'. In other words, there is low psychological attachment in this relationship as it is likely an incidental relationship. This utility relationship are not be 'experienced as close as committed' (Atkinson and Butcher, 2003). On the other hand, personal relationship is characterized by an intention of one party to other parties to give an attention on the 'relationship' rather than in 'person' or 'achievement of task'. It means that people who build a personal relationship want to have a yield in their relationship more than only a finishing of task. Loyalty and commitment is another outcome that they want in the end of some relationships.

Further, based on the two types of business work relationship, task-based competence and personal motive based, there are two principal bases of trust, namely competence based trust and personal motive trust. Competence based trust or cognitive based trust is trust that base on competencies of other entities to deliver a task. It is base on perception of others' competence and performance to deliver or fulfil task. (Atkinson and Butcher,

2003) argue that the development and maintenance of competence based trust, which is cognitive and task-based nature, is related with the limited number of social relationship between parties. High levels of competence-based trust may lead to a minimum number of social and face-to-face relationship. It is suitable with the characteristics of relationship in virtual work context. The second type of trust, personal motive trust, is trust that composes from close relationship between parties. One party may agree to build and maintain their trust only with other party that they can get on personally. This party may only can work and build business relationship with certain parties that they believe has same motive in personally. The levels of this trust may need close, interactive, and physical relationship to build as well as to maintain it.

Based on the above arguments, it clears that relationship in virtual context refers to utility relationship. It is because relationship in virtual context may lack of physical relationship or frequent face-to-face meeting. Trust that builds and develops in this situation is more depend on the willingness and capability to achieve a task. A virtual manager may build a trust relationship with his virtual worker based on the deliverability of task that they agreed to finish. There is lack of time and space to create personal relationships. Customers in online shop may trust the virtual shop based on the capability of shop to deliver a product that they advertise over the Internet. Online bank customers may able to provide their personal information such as email address or credit card number because they trust that bank will not forward this information to other parties. Hence, the development of trust that influence work performance in virtual business may refer to competence-task based trust than motive based trust.

## **1.4 Type of Trust in Virtual Relationship**

There are two theoretical foundations in trust which is cognitive theory and affective theory either in physical or virtual environments (McAllister, 1995; Noteboom, 2006). McAllister is one of trust scholars that attempt to proof the different types of trust. By collecting data and make an observation of managers and professionals work behaviour in his study, he argues that there are two types of trust: cognition-based trust and affect-based trust. 'Cognition-based trust, is grounded in cognitive judgments of the trustor's competence or ability, and is argued as an antecedent of affect-based trust. On the other hand, affect-based trust is grounded in the affective bonds between the trustor and trustee. Based on his research, McAllister found strong support for these two different bases of trust. Cognitive trust is 'beliefs about others' competence and reliability whereas affective trust arises from emotional ties among group members and reflects belief about