CREATING VALUE THROUGH VIRTUAL TEAMS: A CURRENT LITERATURE REVIEW

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ABSTRACT

Globally, virtual teams (VT) as ICT-enabled emergent network organisation forms have gained international validity by innovative organisations, with a corresponding surge of interest in understanding how organisations can leverage VT to create business value. Despite growing deliberations in VT literature on managing VT, tasks and outcomes, however, creating business value through VT remains an unresolved theoretical and pragmatic conundrum. A review of prior relevant literature is essential to advancing knowledge. The paucity of published review articles seems to have impeded the field's accumulation of VT knowledge. This research, therefore, reviews the current literature on case studies of VT to address the question: What are organisational challenges in creating business value through VT in the organisation? The key challenges found in the literature are effective communication, knowledge sharing, trust, and interpersonal skills in the new virtual boundary-less environment. Drawing on the IT business value model, we also discuss their resource-based implications.

Keywords: Virtual teams, business value creation, organisational challenges, resource-based implications, literature review

INTRODUCTION

In the digital economy both private-sector and public-sector organisations alike increasingly depend on smart information technology (IT) infrastructure for timely information sharing, effective operational control, rapid innovation, speed to market, and customer satisfaction. On the other hand, recent global financial crisis and economic recessions encourage trends for increased managerial scrutiny to reduce

IT spending and to increase business value of IT investments (Coleman and Chatfield, 2011). Globally, virtual teams (VT) as ICT-enabled emergent boundary-less network organisation forms (Jarvenpaa et al., 1997) have gained international validity by innovative organizations to leverage geographically and culturally dispersed knowledge and expertise worldwide, with a corresponding surge of interest in understanding how organisations can leverage VT to create business value.

In literature on VT, there are various terms in use such as VT, global virtual teams, multinational and multicultural distributed teams, ICT-mediated dispersed teams among others. While all these terms and their conceptions share common characteristics with those of traditional face-to-face teams, the former differ significantly from the latter with regard to their high-level virtuality. Moreover, even among the existing definitions of VT, there are differences in focus. In a literature review research on early VT, a virtual team is defined as "a group of geographically, organisationally and/or time dispersed workers brought together by information technologies to accomplish one or more organisation tasks" (Powell et al. 2004, p.7). As this definition suggests, IT is central in facilitating tasks performed through VT. Like many other similar definitions of VT, however, it seems to focus on task-level, team-level analysis, and hence failing to view VT as a new *organisational resource* for creating business value through investments in developing and deploying VT in the organisation.

With the increasing workplace trends for VT deployment options over the recent years, there has been a corresponding surge of interest in understanding how organisations can leverage VT to create business value. Despite growing deliberations in information systems literature, however, creating business value through VT in the global workplace remains an unresolved theoretical and pragmatic conundrum. To reduce the gap in the literature, we aim to address one central research question: What are the key organisational challenges in creating business value through leveraging VT in the organisation? In this research, we will answer the question by conducting a systematic review of the current literature on VT, directing our attention specifically to published case studies on VT in an organizational setting. A review of prior, relevant literature is essential to advancing knowledge. In IS literature, there are few published review articles, which seem to have impeded the field's accumulation of IS knowledge (Webster and Watson, 2002). The same problem seems to exist with VT literature. This study provides a systematic review of previously published journal or review articles on the findings from current virtual team research in an effort to develop a better understanding of the key challenges in creating business value through leveraging virtual teams as the ICT-enabled emergent network organisation forms. Our review examined the publications over the recent years from 2004 to 2012. Our review of the case studies on VT found the key organisational challenges: effective communication, knowledge sharing, trust, and interpersonal skills in the virtual environment. The review findings are categorized according to issues/challenges, tools in use for VT, and organization forms of VT. We draw on prior conceptual framework, "an Integrative Model of IT Business Value" (Melville et al. 2004) to discuss the key organizational challenges in creating business value through VT: effective communication, knowledge sharing, trust, and interpersonal skills and to discuss their resource-based implications for the future of organizational practice through leveraging VT.

The remainder of this paper is structured as follows: the next section presents a brief description of our methodology used to conduct a systematic review of the current literature on VT with our research focus on case studies of VT in the organisation. The third section presents our review findings on VT research. The fourth section draws on the IT Business Value Model (Melville et al., 2004) as our guiding conceptual framework to organise and discusses the key organisational challenges found in the literature in creating business value through VT. This discussion and conclusion section also identifies our research limitations and directions for future research.

METHODOLOGY

In this research we have addressed the central research question: What are the organisational challenges in creating business value from leveraging virtual teams in the organisation? In order to answer this question, we first conduct a systematic review of the existing literature on VT to identify the key organisational challenges and then we draw on the IT Business Value Model (Melville et al., 2004) to organize and discuss these key challenges. A systematic search accumulates a relatively complete census of relevant literature (Webster and Watson, 2002). There are three structured approaches recommended by Webster and Watson (2002) to determine the source material for review, (1) the major contributions are likely to be in the leading journals; (2) going backward by reviewing the citations for the articles identified in step 1 to determine prior articles we should consider, and finally (3) going forward by using any journal database to identify articles identified in the previous steps. In academic practice, the usefulness of a piece of research often is evaluated by its uptake by other researchers and not by the fact it has been published. One, albeit very imperfect, way of looking at this is the use of citation counts (Ginieis et al., 2012). So in this study, we use citation counts provided by academic databases to evaluate the usefulness of a given VT publication.

Previously literature review studies of early VT were published in 2004 or earlier (for example, Powell et al. 2004). So in this study, our review is directed to review and analyse the literature in consecutive years from 2004 to 2012. In contrast to the prior review work on VT by Powell et al. (2004), where 67% of VT reviewed were student teams, we explored the literature on VT operating in organisational settings by focusing primarily on case studies. We draw on the methodology suggested by Webster and Watson (2002) and Moustaghfir (2008). First, we used “virtual team” as the relevant primary keyword and “case study” as the secondary keyword for our search strategy. Second, we identify five major academic databases through which we search highly cited journal articles on VT: SCOPUS, Web of Science, IEEE, Springer, and AIS. Therefore, while there exist the differences in search engines in use across the databases, we consistently employed the following generic query strategy: (Title OR Abstract) CONTAINS ("virtual team") AND (Publication Year) = (2004-2012) AND (Publication Type) = (Journal Article), which was constrained by the use of secondary keyword ("case study"). This search strategy result in 132 published journal articles. Then, after reviewing the abstract of these articles, 12 case studies have been selected for further analysis because these case studies focused on key organisational challenges that are relevant to answer our central research question.

Although the concept of VT is still new and emerging, the literature has been rapidly growing over the past decade. So we have decided to exclude conference papers and books from our systematic review and analysis. We further excluded published journal articles written in other languages than English.

LITERATURE REVIEW

Recent Trends in VT Research: 2004-2012

Using the search strategy discussed in the Methodology section but without further constraint, namely the use of secondary keyword (“case study”), we identified 254 journal articles and conference papers across the five major academic databases. They were published in *IEEE Transactions on Professional Communications* (20 articles, or 8%), *Group Decision and Negotiation* (9 articles, or 4%), *Proceedings of the American Conference on Information Systems* (AMCIS) (8 papers, or 3%), *Behavior and Information Technology* (5 articles, or 2%), *Business & Information Systems Engineering* (5 articles, or 2%), *Information Systems Frontier* (5 articles, or 2%), *Journal of Business Ethics* (5 articles, or 2%) and other journals which published 4 or less articles on VT (197, or 78%).

In summary, Figure 1 shows a bar graph for an overall trend in VT research published over nine years from 2004 to 2012. The bar graph shows the frequency distribution of these published VT studies for the five databases. Of the five databases we examined, with 90 published case studies, Springer leads

the number of publications, which is followed by SCOPUS (66), Web of Science (52), IEEE (29) and AIS (17).

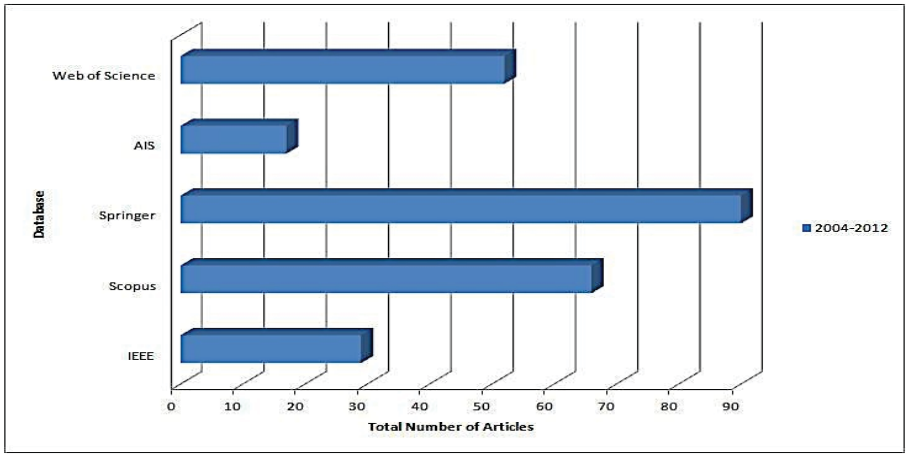

Figure 1: Overall trend in published VT studies across major academic databases: 2004 – 2012

In contrast, Figure 2 shows time series graph for dynamically changing trends over the same period across the five databases. The graph shows that overall research interests in VT are on the rise, showing the three (Springer, SCOPUS and IEEE) out of the five databases are publishing more studies in the recent years (2011-2012) vis-à-vis the earlier year (2004), even though conceptions and definitions of VT are still new and emerging in the literature.

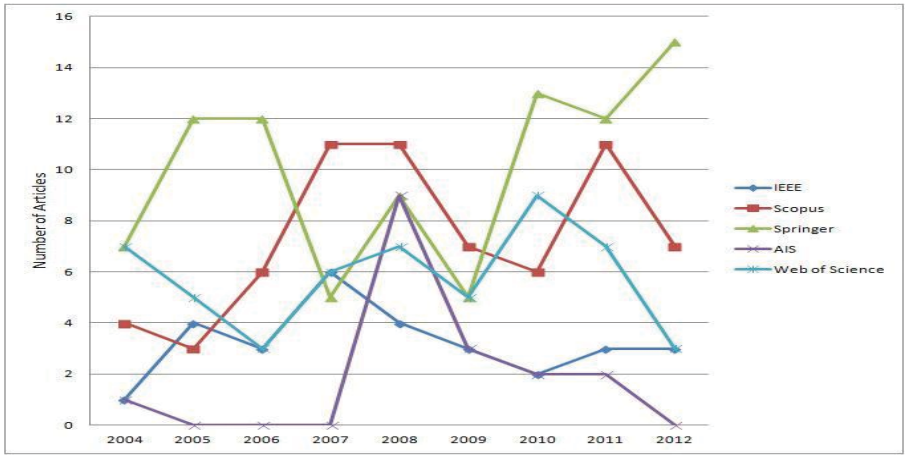

Figure 2: Yearly trend in published VT studies: 2004 - 2012

Definitions of VT

As Figures 1 and 2 have shown, the concept of VT has gained significant and growing research attention during the last decade. Moreover, VT as ICT-enabled emergent network organisation forms have gained international validity by innovative organizations worldwide. However, defining what constitutes a VT or a global VT has been challenged in the literature partly due to many different terms in use: virtual teams, global virtual teams (Jarvenpaa and Leidner, 1999), geographically distributed teams (Hertel et al., 2005) and ICT-mediated teams. However, in early VT literature the term “virtual team” refers to “groups of people who work closely together even though they are geographically separated by miles

or even continents" (Henry and Hartzer 1998, p. 5). This earlier definition refers neither to the virtual team's temporary nature nor to the critical role of ICT for facilitating the communication across VT members. In contrast, one of the most cited definitions of a VT is "a group of geographically, organisationally and/or time dispersed workers brought together by information technologies to accomplish one or more organisation tasks" (Powell et al., 2004, p. 7). Although this definition refers to the central role of ICT, it does not underscore the temporary nature of VT. The recent literature on global VT shows that VT are temporary in nature and they are assembled in an ad hoc basis to meet the business needs in an agile manner in the dynamically changing global business environment (Shachaf, 2008). The literature on global VT also identifies the strategic nature of tasks for which VT are particularly in demand. They are typically assigned tasks that are strategically important and highly complex (Maznevski and Chudoba, 2000).

Finally, the literature is mixed with regard to the use of face-to-face meetings by VT. On the one hand, VT members rarely meet in person, conducting almost all of their interaction and decision making using ICT (Maznevski and Chudoba, 2000). On the other hand, case studies on global VT show that VT members also are involved in traditional teams and also are involved with collocated face-to-face project meetings (May and Carter, 2001). In consequence, there have been calls for defining VT as having high-level virtuality based on four dimensions of temporal, spatial, cultural, and organizational dispersion (Shin, 2004; Hertel et al., 2005).

Benefits and Challenges of Virtual Teams

A large number of studies explored advantages and disadvantages relating to virtual teaming (Jarvenpaa and Leidner, 1999; May and Carter, 2001; Breankek and Martz, 2005; Anderson et al., 2007; Munkvold and Zigurs, 2007; Rosen et al., 2007; Lee-Kelley and Sankey, 2008; Ebrahim et al., 2009). VT often operate under such time-compressed schedules that they need to perform tasks and projects more rapidly than traditional face-to-face teams, because they do not work at the same time or place (Munkvold and Zigurs, 2007). In consequence, in their study on virtual team meetings, Anderson et al. (2007) argue that the effective use of communication technologies plays an important enabling role in providing the flexibility (reducing relocation time and cost) of agile VT. Moreover, ICT-mediated VT perform well and reduces time-to market, which is one of the significant successful keys in some organisations (May and Cater, 2001). Lee-Kelley and Sankey (2008) found that mangers were willing to use technology because of their propensity for self-management and interpersonal awareness. On the other hand, Jarvenpaa and Leidner (1999) found that managers felt uncomfortable with ICT-mediated VT concept because it implied new challenges in using technology as new methods of supervision.

However, VT have produced higher quality outcomes because VT permit the highest qualified members for a particular job to join VT regardless of their location (Ebrahim et al., 2009). In contrast, Munkvold and Zigurs (2007) found that cultural or language diversity within VT leads to differences in the members' thinking process, which will affect their performance negatively. Similarly, implementing VT could impact on trust negatively because of the geographical distance, difference in time zone, and other characteristics (Khazanchi and Zigurs, 2006).

Articles	Issues				Tools for VT								Forms of VT			
	Effective Communication	Knowledge Sharing	Trust	Interpersonal Skills	Email	Instant Messaging/Chat	Web Conferencing	Telephone	Groupware/Shared Services	Remote Access Control	File Transfer	Video conferencing	Teleworkers	Remote Team	Matrixed Teleworkers	Matrixed Remote Team
Daim et al. 2012	x		x	x	x	x	x	x	x		x	x				x
Pazos et al. 2012				x						x				x		
Vorakulpipat et al. 2010	x	x		x				x								x
Ebrahim et al. 2009	x			x						x	x			x		
Shachaf 2008	x			x	x	x	x	x	x	x		x				x
Lee-Kelley & Sankey 2008	x		x		x		x	x				x				x
Malhotra et al 2007	x	x	x	x	x		x	x				x				x
Kanawattanachai & Yoo 2007	x	x	x				x							x		
Anderson et al 2007	x					x			x			x		x		
Lawley 2006	x	x	x	x	x											x
Paul & McDaniel Jr. 2004			x					x			x					x
Breu & Hemingway 2004		x	x		x			x		x	x					x

Table 1: Summary of Case Studies with Organisational Challenges

Finally, Table 1 lists the key organisational challenges discussed in the literature on case studies of VT in organisational settings. They are effective communication; knowledge sharing; trust; and interpersonal skills in the virtual workplace environment. These four challenges are discussed more fully in the next section. Table 1 also identifies ICT tools in use (Thissen et al., 2007) to mediate virtual team task/project processes and performance in the 12 published case studies we reviewed in this study. While some of the case studies do not discuss ICT tools, those case studies that identified specific ICT tools show that synchronous ICT such as email, instant messaging/chat, web conferencing and telephone as well as asynchronous ICT such as groupware/shared services, remote access control, file transfer, and video conferencing.

More recently, synchronous ICT have been increasingly used to facilitate effective and immediate communication across VT members. Finally, Table 1 also identifies four distinct organisational forms of VT proposed by Cascio and Shurygailo (2003): telework (one manager and one location), remote team (one manager and multiple locations), matrixed telework (multiple managers and single location), and matrixed remote team (multiple managers and multiple locations). Across the case studies reviewed in this study, all the VT have shown organisational forms of remote teams or matrixed remote teams, while none of the VT showed the other organisational forms of telework and matrixed telework.

DISCUSION

In contrast to the prior review work on VT (Powell et al., 2004), where 67.4% of VT reviewed were student teams and the publication years ranged from 1988 to 2002, with the mode in 2001, our review has focused on more recently published reviews or articles (2004-2012) on case studies on VT operating in the real organizational settings. In this section we will discuss the four key organizational challenges in creating business value through VT in the virtual environment.

Effective Communication

Communication is a powerful tool that can directly influence the social dimensions of VT and performance of VT, which in turn has a positive impact on satisfaction with VT (Ebrahim et al., 2009). Collaboration within the virtual team across time and space is enabled by a heavy reliance on computer mediated communications (Kanawattanachai and Yoo, 2007). On the one hand, the communication among virtual teams is very complex, requiring a detailed analysis of both the team members and the social dimensions of the shared common technology being used (Burlea, 2007). Communication breakdown can wreak havoc on a project as VT members struggle to effectively communicate and work with one another (Daim et al., 2012). On the other hand, communication complexity is also the result of diverse competences of the virtual team members (Rich, 1997). While communication can be viewed as a traditional face-to-face team issue, effective communication problems and challenges within VT can be magnified by distance, time, and increased cost of interaction due to the slower pace of nonnative speakers' communication (Shachaf, 2008). Furthermore, cultural diversity had a negative impact on communication (Shachaf, 2008) and cultural differences seem to affect VT performance poorly in maintaining effective cross-functional communication (Daim et al., 2012). Finally, communication difficulties (Lee-Kelley and Sankey, 2008) are commonly found in the case studies depicted in Table 1 even where those firms and industries leveraged the technology and embraced VT as a new organization form.

According to Hollingshead et al. (1993), both advances in ICT and well-designed organisational arrangements will enable well-prepared virtual team members to communicate more effectively and more clearly across time and across different geographical locations than traditional face-to-face teams (Hertel et al., 2005). May and Carter (2001) in their case study of VT working in the European automotive industry have shown that enhanced communication and collaboration between geographically distributed engineers at automotive manufacturer and supplier sites make them get benefits are better quality, reduced costs and a reduction in the time-to-market (between 20% to 50%) for a new product vehicle. Vorakulpipat et al. (2010) highlighted the need for a shared project knowledge base in a virtual team context to promote value creation through improved communication. VT need norms that describe how communication technology will be used (Malhotra et al., 2007) where VT need frequent and effective communication (Kanawattanachai and Yoo, 2007) and where VT need to avoid miscommunications (Daim et al., 2012). Finally, Anderson et al. (2007) observe that organisations which adopt VT must not only ensure good communication among all members of the dispersed team but also provide regular and timely communication feedback. Similarly, the importance of implementing governance guidelines, rules and policies must be clearly understood (Jarvenpaa and Leidner 1999). Importantly, having a well-defined strategy relating to VT is imperative to overcome these communication challenges.

Knowledge Sharing

In the 21st century, the most valuable organizational resources are knowledge, knowledge workers and their productivity, replacing the most valued asset of capital and equipment in the 20th century (Drucker, 1999). Similarly, Davenport (1997) holds that the most valuable asset firms have is the knowledge of their employees as knowledge workers. Boeing-Rocketdyne established special VT, which are known as Virtual Cross-value-chain Collaborative Creative teams (or VC3 teams) for creatively and rapidly designing a new innovative low-cost engine (Malhotra et al., 2001). VT faced many challenges in creative work, non-routine problem-solving and unpredictable solutions without the merit of having face-to-face meetings. However, they were successful in producing new ideas/designs quickly and continuously throughout the project life cycle. The outcome was new innovative engine design created under budget and achieving the goal of VT. To create business value, collaborative technology called 'Internet Notebook' was used as knowledge repository for recording and sharing knowledge, ideas, designs and comments. In addition, teleconferencing was held twice a

week to share 'Just-in-Time' analysis findings during these teleconference meetings and provide immediate feedbacks about problem solutions and feasibility of a design idea. These IT resources and adaptive working processes drove the performance of this radical innovation project.

Another study found that maintaining "mutual knowledge" was a central problem of geographically dispersed virtual collaboration. Based on 13 case studies of geographically dispersed teams, Cramton (2001) identified five types of problems related to failures of maintaining mutual knowledge: "failure to communicate and retain contextual information, unevenly distributed information, difficulty communicating and understanding the salience of information, differences in speed of access to information, and difficulty interpreting the meaning of silence".

In terms of value creation, knowledge, which is distributed throughout VT environment, could create value when it is identified and transferred from a source location and applied where it is needed (Alavi and Tiwana, 2002, p.1030). From a resource-based view of the firm, knowledge can sustain long-term competitive advantage as it is not easy to imitate and socially complex (Alavi and Leidner, 2001). The groupware and ICT such as electronic discussion forums and repositories can support knowledge storage/retrieval, knowledge sharing and knowledge transfer, whereas workflow systems support knowledge application (Alavi and Leidner, 2001).

Trust in VT

Within any organisational context, trust is a pervasive global challenge. Therefore, not surprisingly, trust has received much attention in various research fields, confirming the importance of trust in sustaining the effectiveness of organisations during the past decade (Jarvenpaa et al., 2004; Mayer et al., 1995; Colquitt et al., 2007; Baruch and Lin, 2012). In contrast, there has been little theoretical work that explains the effect of trust on VT task performance in IT-enabled interpersonal relationships in the virtual environment (Jarvenpaa et al., 2004). The definition of trust that has been offered by Mayer et al. (1995) is: "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trust or, irrespective of the ability to monitor or control that other party". Another study suggested that trust can be defined as a belief that increases the vulnerability and reliance between members and between team and their leader (Baruch and Lin, 2012).

Literature on VT shows that trust has been found as more critical in global VT, whose members are separated by location, culture, and time, than the traditional teams because of the absence of face-to-face interactions (Jarvenpaa et al., 2004). In a study on VT performance it is found that trust is necessary for adding value to VT performance as an important determinant of the team member's decision for cooperation with or competition against other team members in the virtual workplace environment, where team members work independently (Baruch and Lin, 2012).

A case study of Orange Group illustrates the difficulty of establishing trust in VT, even though the organization has been actively using VT. Orange is a fast moving business in the highly competitive mobile communication market and a branch of France Telecom and one of the UK's leading mobile phone service providers, with services to 57 million customers across 17 countries. As a consequence, most of their traditional face-to-face team members also are involved as members of VT (Lawley, 2006). The case study finds that a lack of trust among VT was a major hindrance to new product development, because collaboration among VT was often absent. The key challenge facing Orange is to improve their business performance by developing and maintaining trust within their VT. The knowledge management team found that their VT were performing in several different forms of organisational structures, requiring Orange to develop a framework for best practice in VT (Lawley, 2006).

Interpersonal Skills in the Virtual Environment

For effective VT, it is critical to understand the importance of the relationship between people, processes and technology (Bal and Gundry, 1999; Ebrahim, 2009). According to Pazos et al. (2012) model, and from a management and skills, the model represents an important way to enhance VT effectiveness, which discovered that teams managed effectiveness while the teams were given more constant feedback (Pazos et al., 2012). Therefore, the mechanisms of the collaboration and coordination of the teams are more preferred than a controlled style, which were more effective in reaching their goals (Pazos et al., 2012). An important finding was that leaders were there to merely create the environment for their teams to gain the best out of their collaborative skills (Pazos et al., 2012). Therefore, the impact of leadership style and VT effectiveness is one of the significant organisational challenges in VT (Daim et al., 2012; Pazos et al., 2012; Ebrahim, 2009; Malhotra et al., 2007; Bell and Kozlowski, 2002; Pauleen, 2003). In addition, the relational links among group members is a critical and a fundamental component of VT processes and their ability to exchange information that positively affects the group's performance (Daim et al., 2012; Bell and Kozlowski, 2002; Burke and Chidambaram, 1995). Although, Bell and Kozlowski (2002) showed that VT provides the capability for more flexible organisational response, they also found that VT could also create conflicts of the roles attributed to VT members. However, understanding goals, objectives, task requirements, roles and responsibilities among team's members lead to an effective VT (Ebrahim et al., 2009; Daim et al., 2012).

Another underlying problem with interpersonal skills mentioned by Daim et al. (2012) and Malhotra et al. (2007), which is organisational and cultural barriers are perhaps serious barriers as the technological barriers are among VT members to the effectiveness of VT. However, Melville et al. (2004) model also showed that value is being created autonomously within each team and then processed as value through the technology resources as the human recourses are. Moreover, it is critical to the leaders of VT to understand the unavoidable need to rely on technological rather than personal resources of communication (Malhotra et al., 2007; Daim et al., 2012; Pazos et al., 2012). Furthermore, Powell et al. (2004) also mentioned in their study that some researchers who have investigated the impact of members' technical expertise have found evidence of its effect on team performance. Therefore, by using emerging technology, the VT environment allows working effectively and also creates competitive advantages by enabling several parties to work together under a more consultative leadership rather than a single layered team (Malhotra et al., 2007; Daim et al., 2012). Overall, it is essential to promise a greater understanding of alignment in a virtual and traditional fashion from interpersonal skills perspective.

Organisational Challenges in Creating Business Value through VT

We have discussed the four key organisational challenges found in the case studies on VT: effective communication, knowledge sharing, trust, and interpersonal skills in the emergent virtual environment. In discussing these organisational challenges in creating business value through the deployment of VT, it is useful to draw on the IT Business Value model developed by Melville et al. (2004). Figure 3 shows this integrative model. The model was built on Jay Barney's resource-based view of the firm that integrates the various findings on how business value can be created through IT investments. The integrative model (Melville et al., 2004) holds that IT is valuable in creating business value in the organisation but the extent and dimensions of IT roles are contingent on internal and external resources, including complementary organisational resources of the firm and its trading partners, as well as the competitive dynamics of macro environment.

This model is particularly relevant to organize the literature on VT because, as we have discussed earlier in the Literature Review section, VT represent emerging boundary-less network organization forms (Jarvenpaa et al., 1997) and hence they as organizational resources can potentially generate new

business value through leveraging dispersed knowledge and expertise beyond the traditional firm boundary.

On the one hand, as we summarized our findings in Table 1, VT literature identifies various types of IT resources that have been deployed in the organizations to support VT. Specifically, asynchronous such as Lotus Groupware (Shachaf 2008), electronic discussion threads (Malhotra et al., 2007), basic knowledge management solution (Vorakulpipat et al., 2010), intranets (Breu and Hemingway, 2004), file transfer (Paul and McDaniel Jr., 2004) and synchronous such as e-mail, telephone, video-conferencing (Hertel et al., 2005; Lee-Kelley and Sankey, 2008; Anderson et al., 2007;Daim et al., 2012), NetMeeting (Lee-Kelley and Sankey, 2008), TEAM technology (Anderson et al., 2007), E-Meetings (Shachaf, 2008), remote access (Breu and Hemingway, 2004; Pazos et al., 2012), text-based computer mediated communication (Shachaf, 2008) have been found to be in use by VT in the literature.

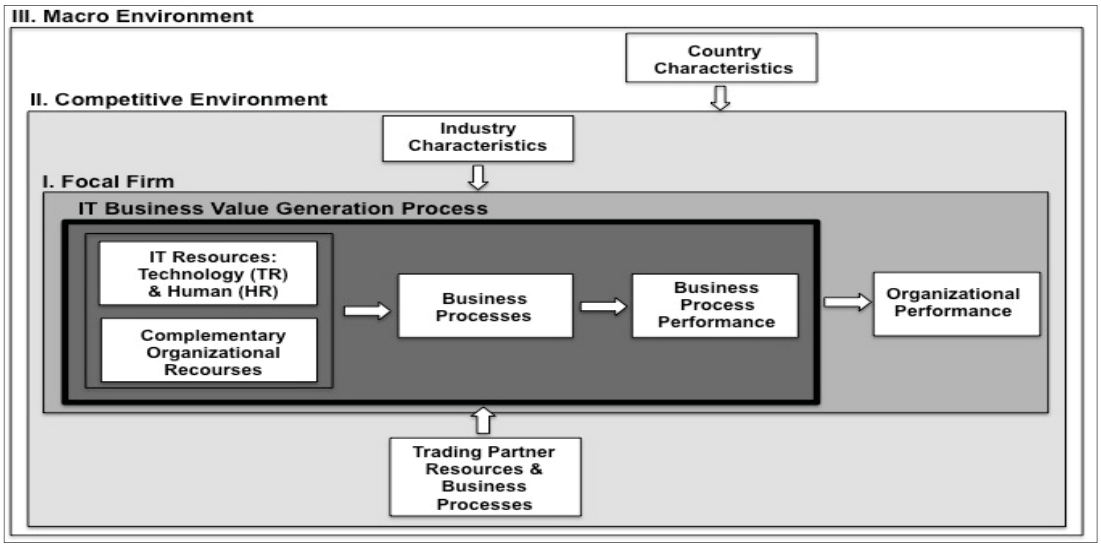

Figure 3: IT Business Value Model (Melville et al. 2004)

On the other hand, an analysis of the literature also has shown the relatively under-developed complementary organisational resources both in the focal firm and its trading partners which have formed VT in terms of virtual team members who experienced difficulty in establishing trust (or swift trust) with other members whom they do not meet face-to-face and difficulty in effectively communicating through IT resources. In consequence, despite the sufficient support of IT resources, members among VT cannot easily maintain mutual knowledge and share knowledge even when their strategic tasks or projects require timely sharing of information and knowledge for effective performance. The literature on VT tends to focus research attention on the virtual team level rather than the firm level. In consequence, relatively little has been written about business processes, business process performance, and very rarely about the relationships between VT and organizational performance. In summary, while the literature on VT in general and on case studies on VT contributes to our understanding of organizational challenges in creating business value through ICT-enabled VT in the organization, the literature still lacks the organizational and strategic levels of focus in solving these organizational challenges.

CONCLUSION

This study has reviewed published current case study research on VT from 2004 to 2012. Four key organisational issues: communication, people and skills, trust, and knowledge have been identified and

discussed. How an organisation capture and create business value has been argued and related to the IT business value creation model of Melville et al. (2004) as the most comprehensive model at this time. Basically, VT environment leads to the challenges and problems that more difficult than a traditional way as without the benefits of face-to-face interactions. According to the case studies and ground concepts, it is presented that all issues depended and influenced each other. Communication is an infrastructure of interaction between team members. People need special skills in leadership and technical tools usage to maximize the utilization of communication channels. Trust and knowledge cannot be disregarded as no organisation can drive the performance without trust and knowledge in the team and work. Overall, this study showed that business value creation through IT is still a myth for both traditional and VT. More research in empirical study to prove and refine the model is necessary.

This study has some research limitations, because the review is based on existing literature on virtual teams. Specifically, our study has focused on organisational challenges on VT so we have reviewed the published case studies and field studies on VT. This focus has excluded prior research on VT using other research methods such as experiment, simulation, and survey. Despite these limitations, it has discussed future research directions suggested by the conceptualization of virtual teams as innovative organisational forms that need to be aligned with strategic goals of the organisation and expand the existing organisational resources to create business value through organisational investments in these innovative organisational forms; ICT-mediated virtual teams.

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