

Report Summary

Web 2.0 in the Workplace: Generational Differences in Virtual Collaboration

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With the acceleration of information and communications technologies, communicating with people around the world has become significantly easier. Outside of organisations, the furious expansions in many Web-2.0-based communities, such as Linux, Facebook and Wikipedia, have attracted the attention of many organisations and academics. Virtual collaboration occurs when knowledge sharing and creation primarily rely upon virtual media (Zammuto, Griffith, Majchrzak, and Dougherty, 2007). Web 2.0 technology is particularly noteworthy because it can potentially facilitate collaborative activities in ways that were simply impossible previously (McAfee, 2006).

Research suggests that the techno-savvy Generation Y are the active users of social networking sites (eMarketer, 2008). As they are entering the workforce, they form the foundation of an innovative and collaborative workplace. However, a recent research claims that Baby Boomers appear to be the answer to the on-going skill shortage in the workplace (Mercer, 2008). It is therefore essential to examine how different generations perceive and use Web 2.0 technology to collaborate. The known differences between generations are summarised in Table 1 below.

Whilst the relationship between technology and organisations has been of interest to the organisation scientists for over 50 years (Zammuto *et al.*, 2007), there has so far been little attempt to integrate the knowledge on technology adoption with the literature on generational differences in the workplace. Therefore, this research report addresses the influences of generational differences on the perception and usage of collaborative technology and asks the following three research questions¹:

¹ The key theoretical concepts informing this study are summarised in Appendix #1.

RQ1. How do different generations define collaboration?

Research Question arises from literature that points out that the theorisation of collaboration is problematic due to the complexity in capturing all meanings associated with collaboration. Various terms have been used to describe collective activities such as alliance, partnership, network, coalition, cooperation, virtual corporation, association, community, joint venture, and collaboration (Lank, 2006). However, Himmelman (1997) stresses the importance of distinguishing the characteristics of different relationships, as their appropriateness is depended upon the influences of time, trust and turf in different circumstances.

Himmelman (1997) identifies four hierarchies of relationships, including networking, coordinating, cooperating and collaborating. Networking refers to the lowest level of relationships, which simply involves exchange of information for mutual benefits. Coordinating involves information exchange, altering activities for mutual benefits, and achieving a common purpose. Cooperation builds on coordination and requires participating entities to share resources, implying a higher level of organisational commitment which sometimes involves formal agreements. Collaborating is the highest hierarchy of relationship, requiring the greatest level of trust, time and share of organisational resources and jurisdiction. The qualitative difference of collaboration is based upon the willingness of the participating entities to enhance the capacity of each other to achieve a common purpose. Since the literature suggests that the definition of collaboration is diverse and complex, it is necessary to explore how different generations define the meaning of collaboration.

Table 1. Pervious research about the three generations.

	Generation Y	Generation X	Baby Boomers
Significance of the generation	The first group of people grew up surrounded by digital media	Have access to Web 2.0 technology during their early adulthood	Boomers appear to be the answer to the on-going skills and labours shortage, not the Generation Y: 14% increase in the number of Boomers entering the Australian workforce in the next five-year period (Mercer, 2008)
Communication Preferences	Seamlessly connected through technology and they want information instantly (Reynolds, Bush and Geist, 2008) Active users of social networking sites (eMarketer, 2008)	Comfortable with technology and generally find virtual communication as a more appealing approach than face-to-face meeting (Selene, 2006; Reynolds <i>et al</i> , 2008).	Most comfortable with print or face-to-face interactions with less reliance on electronic format of communication such as email (Reynolds <i>et al</i> , 2008).
Values and norms	Speed, freedom, openness, innovation, mobility, authenticity, and playfulness (Tapscott and Williams, 2007). Open-minded, collaborative, sociable and achievement-oriented (Raines, 2003).	‘Me-oriented’ (Smola and Sutton, 2002). Value a sense of belonging in combination with independence and autonomy to work, opportunity to learn new things, doing interesting and meaningful work, and collecting information then trading it with their peers (Denham and Gadbow, 2002; Jurkiewicz, 2000; O’Bannon, 2001). Individualistic and self-absorbed (Losyk, 1997)	Workaholic, evidenced by hard work, long working hours and loyalty to their employer (Kupperschmidt, 2000; Smola and Sutton, 2002; Southard and Lewis, 2004).

RQ2. How do different generations perceive the importance of resource protection when collaborating in a Web2.0 environment?

The second question is prompted by the slow diffusion of Web 2.0 technology. One possible explanation is due to the technology's open and free nature. In a Web 2.0 environment, numerous unknown and voluntary participants are encouraged to openly and freely share, acquire, maintain, update and retrieve knowledge in an open system (Zammuto *et al.*, 2007), which contradicts with the conventional wisdom of resource protection (Chesbrough and Teece, 1996).

Chesbrough and Teece (1996) argue that guarding and developing internal capabilities and protecting intellectual property (IP) are essential for sustainable competitive advantage in order to prevent from competitor's imitations. For example, they use the development of IBM's PCs during the 80's and early 90's as an example to demonstrate how 'open' architecture (i.e. collaborate through alliances and networks with suppliers and distributors) does not provide a sustainable competitive advantage.

Interestingly, Tapscott and Williams (2007) has recently used IBM as an example to illustrate the benefits of collaboration in an open and free Web 2.0 environment. IBM has recently invested a substantial amount of resources to support the Linux project, which is a free (in terms of free-of-charge and freedom) OSS development project. As Linux developers are not bounded by any rules to utilise IBM's resources, IBM has no control over the collaborative outcomes. Yet, cocreation with customers enables IBM to save significant product development costs and generate billions of revenue (Tapscott and Williams, 2007).

As these two studies on IBM illustrated, the main difference between the traditional collaboration and virtual collaboration is perhaps the sense of knowledge protection. Virtual collaboration with the use of Web 2.0 technology seems to be an implausible phenomenon because it contradicts with the conventional wisdom of resource protection and presents a significant dilemma for business in managing it.

RQ3. What are the generational differences in the motives of virtual collaboration in a Web 2.0 environment?

Finally, the third question emerges due to the limited understanding in the specific motives for people to collaborate virtually. The traditional collaboration literature can only provide some insights in understanding the generic reasons for people to collaborate, such as knowledge transfer and creation of new knowledge and synergy (e.g. Brown and Duguid, 1991; Dyer and Singh, 1998; Hardy et al, 2003).

In a virtual environment, Wasko and Faraj (2005) find that individuals share their knowledge in electronic networks of practice when participation enhances their reputation and when they are central to the network and connected to a large number of others. However, the motives identified in this research seem to be generic reasons that apply across all forms of collaboration rather than specific to virtual collaboration.

Therefore, one of the main aims of this thesis is to explore the generational differences in the motives for virtual collaboration with the use of Web 2.0 technology.

Research Method

This research was based on a qualitative case study design, mainly due to the exploratory nature of the thesis. Semi-structured interviews were conducted with 15 participants across three generations working in an organisation in the information technology industry. The emerging themes generated from the semi-structured interviews are presented in the cross-generation analysis table in Table 2. Emphasise that the method allows detailed exploration of the topic and cannot be considered generalisable to a greater population without further quantification with greater respondents.

Major Findings

Defining Collaboration

Building on Himmelman's definitions discussed above, the first finding in this research is that the generational perception of what collaboration is can provide some indications of individual's potential to be an effective collaborator.

Baby Boomers: My Responsibility. This research shows that Boomers generally believe that Web 2.0 technology is a useful tool for collaboration, and it is their responsibility to generate a collaborative environment. However, they engage in lower hierarchies of relationship, such as networking and cooperating. This can be explained by their concerns about anonymous online participants who are not necessarily responsible for the quality of the information. As a result of the lack of assigned responsibility at the individual level, Boomers generally express a low level to trust in a Web 2.0 environment. They also suggest that assigning responsibility to the information providers help ensure the quality of the information.

Generation X: My Career. With the support of collaborative technology, Generation X suggest that achieving a task became easier, quicker, more efficient and effective. As such, the use of collaborative technology is closely related to work purposes, such as getting the task done and helping them to advance the career path.

Generation Y: Our Communities. Generation Y interpret collaboration as an interactive process which draw upon multiple resources and people across organisational boundaries to achieve a common goal. To Generation Y, social networking by the use of collaborative technology is their second nature. They generally engage in the highest hierarchy of collaborative relationship, demonstrating high level of openness and trust.

Table 2. Cross-case comparison – Generational differences and the emerging themes

Themes	Baby Boomer: My Responsibility	Generation X: My Career	Generation Y: Our Communities
View of collaboration	Group interactions and communications that allowed individuals to gain access to the right information and connect to people to achieve an outcome	people's ability to share with others, working and networking together to achieve an outcome	an interactive process which drew upon multiple resources and people across organisational boundaries to achieve a common goal
View of collaborative technology	Mobility Partnering Conscious about anonymity	Mobility Networking	Mobility Networking Openness Authenticity
Motives for collaboration	Part of their responsibility generate a collaborative environment Recognition Opportunities to do business	Advances their career Requirement of their role Expect a return, e.g. save time, help the job, assistance, information exchange	Beneficial to the communities Leverages each other ability to create synergies
Importance of resource protection	Not important within the organisation	Not important within the organisation	Not important within the organisation
Obstacles in using Web 2.0	Not so much technical obstacle But concerns with the lack of personal responsibility	Not so much technical obstacle Comfortable with it	Not so much technical obstacle It is their second nature
Safety net for collaboration to occur	At individual level Depend on whether there is a personally assigned responsibility	Networks and communities one is participated in	Institutional structure of the organisation
Evaluation of the quality of information	Compared against personal experience The information provider's reputation, expertise, motivation Level of responsibility given to the information provider	The number of connections a person have Rating of other collaborators Compared against personal experience Information provider's expertise	Online resources e.g. number of responses and other online users' responses Information provider's expertise

Findings from the research suggest that Generation Y have the greatest potential to be an effective collaborator, and therefore realise the best possible outcomes from collaborative relationship. Generation X and Boomers were found to be less engaged in collaboration. As such, the participating organisation is unable to utilise the full potential of collaborative technology. This finding also implies that the availability of collaborative technology alone is insufficient to establish a collaborative workplace to add value to the organisation.

Resource Protection

This research finds that protecting one's knowledge is not the main obstacle that hinders collaboration within the organisation. It is found that all generations do not perceive protecting their own knowledge as important in *internal* collaboration. *Externally*, however, they were more conscious about disclosing their knowledge.

One major conclusion in this research is that because of the established guidelines within an organisation (i.e. institutional structure), resource protection is not the main obstacle that hinders internal virtual collaboration in an open and free Web 2.0 environment. Institutional structure hence represents a source of trust that supports members to interact with each other under the same rules of the game (Zucker, 1986).

Motives for Virtual Collaboration

Possibly the most important finding in this research is the specific motives for each generation to engage in virtual collaboration. Applying the theory of exchange currencies (Cohen and Bradford, 1989) helps explain why different generations engage in virtual collaboration and the potential obstacles that hinder their participations. This research indicates that the variations in individuals' potential to be an effective collaborator depend upon their perception of the feasibility and practicability of a fair exchange of currencies relationship (Cohen and Bradford, 1989).

It is found that Boomers and Generation X are more likely to value the exchange currencies that are generated by others. Boomers pursue to exchange vision

currency and recognition currency in collaboration. These currencies are difficult to be predicted and evaluated, and therefore the free and anonymity nature of Web 2.0 technology hinders their adoption of the technology. Similarly, it is difficult to ensure a fair exchange in virtual environment for Generation X as they desire task-related currencies in collaboration.

In comparison, Generation Y value personal-related currencies, which are the most predictable among all generations. As such, the use of Web 2.0 technology tended not to affect the fulfilment of these self-generated currencies. These findings imply that Generation Y may be a stronger candidate for virtual collaboration.

Other emerging findings

An emerging finding from the research is the concept of ‘safety net’ required by different generations. ‘Safety net’ in this study refers to the perceived level of protection the participants have in order to share different level of knowledge. It is found that different generations require different level of safety net in order to share their knowledge.

Boomers are concerned with the personal responsibility attached to the information provided in virtual environment. Generation X evaluate the quality of information based on the number of connections a person has. Generation Y suggests that people should go *beyond* their closed network as the quality of information is generally guaranteed by organisational institutional structure.

These findings demonstrate that there are different levels of openness towards virtual collaboration across generations. It implies that Generation Y, who have illustrated the highest level of openness, are the strongest candidates for virtual collaboration in a Web 2.0 workplace, followed by Generation X and Baby Boomers.

Managerial Implications

The first managerial implication derived from this thesis is the need for managing the meaning of collaboration. The diverse definitions of collaboration indicate that that organisations need to manage the definition more effectively. As this research reveals that different generations have differing interpretation of the meaning of collaboration, it may result in different expectations from collaborative relationship.

There are serious challenges if organisations want to maximise the full potential of virtual collaboration. A paradigm shift seems to be applicable regarding what collaboration really means. Undoubtedly, education and training play a significant role in this shift. Moreover, organisation can alter their communication process and style in order to facilitate knowledge sharing and creation. As discussed in this thesis, the use of collaborative technology alone is insufficient to create a truly collaborative workplace. There is a need for organisations to encourage collaboration at all levels so that employees across generations can visualise and learn the benefits of collaboration from day-to-day social interactions.

Secondly, organisations are also encouraged to develop multiple safety nets for different generation employees to collaborate. This research recognises that establishing institutional structure, creating social networks, and assigning personal responsibility are the basic requirements for Generation Y, Generation X and Baby Boomers to collaborate.

There is a need to establish clear conducts and guidelines on information and knowledge sharing in order to strengthen institutional structure. Management can also use social software to explicitly link employees' reporting relationships, customer contacts, and professional relationships. Nonetheless, attention is required regarding the issue of privacy and personally sensitive information. Instead, organisations can encourage employees to voluntarily disclose their networks through social softwares.

Regarding assigning personal responsibility, it may be difficult to achieve in a Web 2.0 environment due to its free and anonymity nature. Organisation may consider introducing the positions of broker (Burt, 1992) and boundary spanner

(Tushman, 1977) into the Web 2.0 environment. Fleming and Waguespack (2007) examine the difference between social brokering and boundary spanning in open innovation communities, suggesting that brokers represent the social connection or bridge that integrates disconnected actors together, and boundaries spanners work across communities and therefore diminishing technical and organisational boundaries. Brokering and boundary spanning, therefore, work within and across open innovation communities to, not only control or supervise, but also encourage volunteers to contribution in knowledge creation.

The increased control and supervision in participants' contribution in knowledge may also enhance the feasibility of a fair currencies exchange, therefore motivating Generation X and Boomers to engage in virtual collaboration. However, one criticism is that information control and political actions embedded in brokering may potentially violate the norms of open and transparent flow of information inherent in virtual collaboration (Fleming and Waguespack, 2007). Therefore in the long term, establishing a collaborative culture is beneficial because employees are encouraged, but not compelled, to contribute in knowledge sharing and creation.

Conclusions

This thesis contributes to the existing collaboration literature by exploring the relationship between virtual collaboration and generational differences. It argues that by understanding the differing perceptions on the meaning of collaboration among generations, organisations are more likely to determine the profile of an effective collaborator.

Another major finding in this thesis is that resource protection is not the main obstacle that hindered internal virtual collaboration. Rather, the perception on the feasibility and practicability of a fair currencies exchange helps explain individuals' motivations in engaging in virtual collaboration.

Addressing the imbalance in exchange currencies help motivate individuals across generations to collaborate virtually. Moreover, different generations require a distinct level of safety net, which influences their intention for engaging in virtual

collaboration. Therefore, organisations are encouraged to develop multiple safety nets to meet the need of different generations' employees.

Drawing upon the discussions from this thesis, new directions for future research and limitations can be identified. The devotion of more attention to understanding the new and unexplored area of virtual collaboration with the use of Web 2.0 technology is required.

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Appendix 1: Key Theoretical Concepts

Networking refers to the lowest level of relationships, which simply involves exchange of information for mutual benefits.

Coordinating involves information exchange, altering activities for mutual benefits, and achieving a common purpose.

Cooperation builds on coordination and requires participating entities to share resources, implying a higher level of organisational commitment which sometimes involves formal agreements.

Collaborating is the highest hierarchy of relationship, requiring the greatest level of trust, time and share of organisational resources and jurisdiction. The qualitative difference of collaboration is based upon the willingness of the participating entities to enhance the capacity of each other to achieve a common purpose. **Collaboration** occurs when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain. (Wood and Gray, 1991, p. 146)

Virtual collaboration refers to a situation where knowledge sharing and knowledge integration occur *primarily* through virtual media (Zammuto *et al*, 2007)

Web 1.0 technology is referred to as a virtual media that provides information, implying a one-way communication flow by which people interact on a one-to-one basis (e.g. instant messaging and email), or a one-to-many basis (e.g. intranet or website where users can comment on, but not change, the content of the sites) (Martin, 2007; Zammuto *et al.*, 2007)

Web 2.0 technology is defined as a user-edited, collaborative digital platform that facilitates the creation, share and refinement of information, which enables masses to collaborate on a many-to-many basis (e.g. wiki, social software, blogging, discussion forums) (Martin, 2007; McAfee, 2006; Ramos and Piper, 2006; Zammuto *et. al.*, 2007).

Theory of exchange currencies (Cohen and Bradford, 1989) states that individuals engage in social interaction through establishment of an exchange rate or currency to 'trade' with others. An effective exchange occurs when a fair give-and-take relationship is achieved. These currencies include inspiration-related currencies, task-related currencies, position-related currencies, relationship-related currencies and personal-related currencies, which can be self-generated or received from others.

Theory of social network suggests that the strength of social ties is an important predictor of collection actions (Burt, 1992). Marwell, Oliver, and Prael (1988) find a strong and positive relationship between social network centralization and collective actions.

The concept of institutional structure states that organisation with established guidelines is a source of trust, as it supports members to interact with each other under the same rules of the game (Zucker, 1986).

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