A theoretical framework for exploring the influence of national culture on Web 2.0 adoption in corporate contexts

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Abstract: The purpose of this conceptual paper is to identify variables which help to explain cross-country differences in adoption rates of Web 2.0 technologies in corporate contexts. The paper proposes a model which indicates how national cultural characteristics determine the evolution of Enterprise 2.0 business practices in different countries. The model is developed from a literature study, which combines insights on technology adoption, the Web 2.0 phenomenon and cross-cultural management concepts. Based on this model, the paper assumes that Web 2.0 technologies may enjoy faster adoption rates in companies that operate in countries whose national cultures reject power distance, embrace collectivism, and accept uncertainty.

Keywords: Web 2.0, Enterprise 2.0, knowledge management, technology adoption, national culture

1. Introduction

Web 2.0 is a phenomenon that has rapidly gained attention in the discussion about the impact of Internet technologies on modern society and business. A number of authors perceive Web 2.0 not necessarily as a new generation of technologies, but rather as a paradigm shift in which a critical mass of users is accessing the Internet for mutual interaction and the collective creation of knowledge. Web 2.0 refers to a portfolio of emerging tools that lay the foundations for a more mature Internet that enables users to collaborate, share information and create network and scale effects in large communities (Albrecht et al 2007; Berners-Lee et al 2006; Kerres 2006; McAfee 2006; Musser and O'Reilly 2006; O'Reilly 2005; Seufert 2007).

Whilst the distribution capabilities of the early Internet enabled organizations to push generalized content towards end-users, emerging Web 2.0 technologies enable end-users to pull selected content into their individual work and learning environments using aggregation tools such as RSS (Really Simple Syndication) feeds, tagging, and mash-ups. In addition, tools such as wikis, blogs and social networking services are based on a collaborative model in which end-users increasingly have the potential to produce content themselves, retrieve personalized information, and exchange knowledge with each other in distributed networks. In short, the Web is evolving from a transmissive towards a more responsive medium, where generalized information sent to wide audiences is giving way to the active exchange of contextualized information in more focused peer groups.

The adoption of Web 2.0 tools in companies is driven by their capacity to capture the way in which employees search and collect relevant information in their work contexts, and to make interaction patterns within or between organizations visible. Web 2.0-based enterprise platforms support the dynamic exchange of knowledge and the emergence of corporate information structures that reflect the genuine interests and competence domains of employees. McAfee (2006) has coined the term 'Enterprise 2.0' to represent business practices which allow employees in information-rich corporate contexts to produce and exchange knowledge in collaboration and interaction. Web 2.0 technologies are primarily perceived in this perspective as building blocks for an enterprise platform that enables open collaboration as well as exchange of information and knowledge either within companies, or between companies and their partners or customers.

Most current studies on the adoption of Web 2.0 technologies in business environments have in common that they have adopted a rather universalistic research approach to understand the new phenomenon (Barnes and Mattson, 2008; Brechbühl, 2007; Brynjolfsson and McAfee, 2007; Frappaolo and Keldsen, 2008; Hass et al, 2007). Few scholars, by contrast, have so far looked at possible differences in the adoption patterns of Web 2.0 technologies within organizations across different countries. Notable exceptions, however, are the McKinsey annual surveys on the corporate use of Web 2.0 technologies.

Bughin and Manyika (2007, 2008 and 2009) have carried out a series of McKinsey annual surveys on the adoption and use of Web 2.0 technologies in business. Their 2007 and 2008 surveys analyzed which Web 2.0 tools are the most important to organizations in particular regions around the world. They have also investigated overall levels of employee satisfaction with Web 2.0 tools by region, including Europe, India, North America, China and Asia Pacific. According to the survey's 2008 results, blogs have been perceived as the most important tool for firms in the Asia Pacific region (48%) and India (46%); firms in North America (37%) and China (35%) consider them to be more important than European organizations (21%). Indian firms consider wikis to be even the most important Web 2.0 tool, while North American firms deem social networking services to be the most important application (35%). Chinese firms lead in terms of the importance of peer-to-peer technologies (22%).

The 2008 and 2009 McKinsey surveys reveal global differences in users' overall satisfaction with Web 2.0 technologies. In the 2008 survey, respondents from the Asia Pacific region indicate the comparably highest satisfaction rates - an astounding 40% of Asia Pacific respondents report very high satisfaction levels with Web 2.0 tools. Latin American respondents report in contrast the lowest levels of satisfaction. The results of the 2009 survey indicate marked differences amongst respondents with respect to the use of Web 2.0 technologies for internal processes. Crucially, 64% of Indian respondents claim to have achieved measurable benefits from using Web 2.0 technologies in the workplace, meanwhile only 53% of Chinese respondents give similar responses in the survey. Although the results of the McKinsey surveys indicate important differences of Web 2.0 technology adoption and usage across broad geographic regions, they tell us little about specific cross-country differences in adoption and usage patterns and do not explain underlying reasons for these attitudinal differences.

Against this background, the focus of this conceptual paper is the relation between cultures traits of employees and the adoption of technologies in companies. It investigates how the use of software applications differs across cultural boundaries, and how local cultural perspectives influence user requirements (Zaharias, 2008). The paper specifically seeks to answer the following question: what factors contribute to cross-cultural and country-level differences in Web 2.0 adoption? The paper addresses this question in four sections, which identify key variables that help to explain cross-country differences in the adoption of Web 2.0 technologies in corporate contexts. The first section provides a literature study on the adoption of innovation and technologies within organizations. The second section reviews research which investigates the effects of culture on technology adoption. Based on these two broad lines of research, the paper's third section proposes a model which illustrates cultural influence factors for the adoption Web 2.0 technologies in corporate contexts. The paper concludes by discussing the academic contribution of the proposed cross-cultural technology adoption model and suggests future avenues of research.

2. Technology adoption

Technology adoption can be defined in line with the groundbreaking work by Rogers (2003) on the diffusion of innovations as the individual or organizational decision to make use of an innovative product or technology. There is a significant amount of work in this area resulting in strong concepts and paradigms such as innovation attributes, individual innovativeness, opinion leadership, and rate of diffusion (ibid). Although research into the diffusion of innovations dates back to the early 20th century, the first studies on the diffusion of information technologies (IT) were carried out in the 1970s. Mao and Palvia (2001) point out, however, that this early research is limited in scope and lacks solid theoretical foundations. Davis (1986 and 1989) has laid the foundation for the TAM (Technology Acceptance Model), which has been subsequently extended and tested for mobile communication by Venkatesh et al (2003) and has evolved as one prominent model for the adoption of new technologies by individuals. According to the TAM model, 'perceived ease of use' and 'perceived usefulness' are the two strongest moderating variables that determine individual adoption of a new piece of technology.

The evolution of Web 2.0 technologies is recent, and the term has first been proposed by O'Reilly in 2004. To date, no research has developed a comprehensive list of factors which determine the user acceptance of Web 2.0 tools. Nonetheless, a review of existing literature on corporate cultures and IT integration in firms reveals a number of key factors with the potential to determine whether or not a critical number of employees in organizations adopt such technologies. These factors, we argue,

include: (1) the freedom of employees to participate in corporate decision making; (2) their willingness to collaborate and exchange knowledge with each other; and (3) their curiosity and openness for new technologies.

2.1 Employee freedom to participate in corporate decision-making

One factor which is likely to influence directly the adoption of Web 2.0 technologies is the freedom of employees to make their own decisions within their companies. Ward Cunningham, the inventor of the wiki, states that Web 2.0 technologies are most likely to be accepted in corporate environments where senior managers are comfortable to delegate decision-making responsibilities to employees (Venners, 2003). Mintzberg (1998) suggests in his prominent discussion on corporate configurations that this propensity to delegate control varies in accordance with corporate structures and organizational designs. Schneckenberg (2009) argues in consequence that models for corporate governance strongly influence the integration of Web 2.0 tools into the work culture of companies.

Web 2.0 technologies are more likely to be adopted by a critical mass of employees in liberal, decentralized organizations. These 'pancake' organizations with flat hierarchies grant employees a high level of autonomy and competence to take individual or group decisions based on their analysis of contextual information. Web 2.0 technologies are in turn less likely to be adopted in hierarchical, centralized organizations. Decision-making in these 'pyramid' organizations is rather a rigorously planned process: employees gather contextual information, generalize it in reports and prepare it for delegation to top managers who then take decisions based on the aggregated information that has been delivered to them.

2.2 Employee collaboration and knowledge exchange

A second factor which is likely to influence the adoption of Web 2.0 technologies is the aspect of employee collaboration and knowledge exchange. This relates to the extent to which staff members of a given organization are prepared to work together and share information. Downes (2007) identifies interaction between peers as a key principle of the Web 2.0 paradigm and one of the driving forces behind its evolution. Users can deploy authoring tools such as blogs, wikis and instant communication tools such as ICQ and Skype to contextualize and reflect on online content in an interactive learning and knowledge exchange.

To make efficient use of Web 2.0 in their corporate contexts, employees thus need to be familiar with working in a collaborative way. If such collaboration is absent and employees are not prepared to work together and exchange knowledge, an enterprise platform based on Web 2.0 technologies might end up without having a critical mass of employees adopting the tools for communication (McAfee 2006).

2.3 Curiosity in new technologies

A further, more general factor determining the adoption of Web 2.0 technologies is the curiosity and enthusiasm of employees for new technologies. A well-known approach for the adoption of innovation is Rogers' theory of adopter types. In this work, Rogers (2003) identifies five distinctive social groups in innovation processes. He assumes that these five groups require different periods of time to take up and adopt ideas – a phenomenon that Rogers refers to as 'innovativeness'. Whilst some individuals have a high degree of innovativeness and adopt new ideas rapidly, most people need considerably more time to adapt to innovation processes. For a small group of people with a low degree of innovativeness, it is extremely difficult to adapt to changing environments.

According to Rogers' theory, there are five different types of adopters: 'innovators', 'early adopters', 'early majority', 'late majority', and 'laggards'. Using statistical calculations that consider the mean and the standard distribution of the total population within a social system, Rogers estimates the adopter distribution within the five categories. This ideal-type standard distribution of adopter types in a social system calculates 2.5 percent of the total population for the innovator category, 13.5 percent for the early adopter category, 34 percent for both the early majority and the late majority categories, and finally 16 percent for the laggard category. Figure 1 illustrates these assumptions in an adopter categorization model.
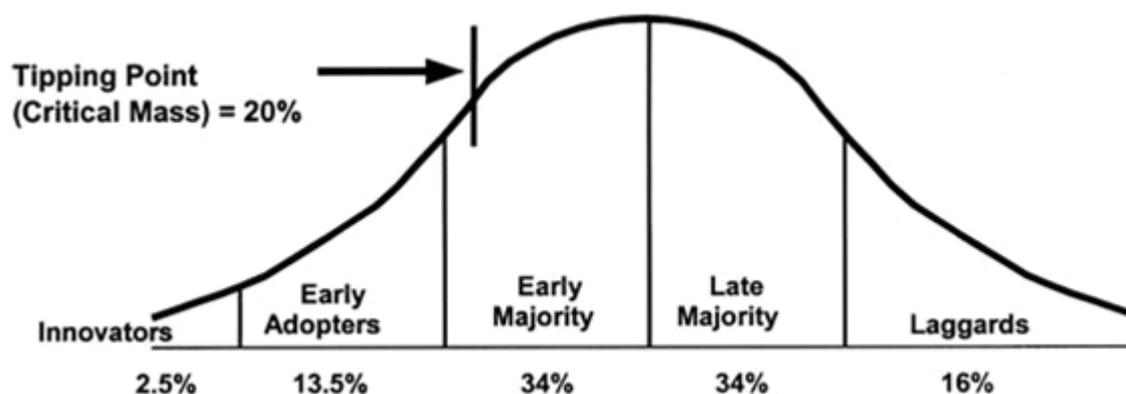
Figure 1: Adopter Categorization on the Basis of Innovativeness (based on Rogers 2003)

3. The effects of culture on IT adoption and diffusion

Much research in the field of technology and information-management studies can be located in what Child (2000) refers to as low-context perspective. Research adopting this particular perspective does not consider country- or culture-specific variables to be analytically significant. Such low-context research also explains managerial choices and behaviors using theories that espouse universalistic rationales, and it assumes a convergence of corporate behavior around the world. There are certainly reasons to expect higher levels of similarity in the information-management strategies of companies. Technological innovation, globalization and the rise of the multi-national enterprise (MNE) seem to be leading to a convergence of managerial thinking and practices around the world (e.g. Lammers, 1990). Against this background, companies and their international subsidiaries might thus be expected to adopt more uniform information-management processes.

Quite aside from the literature demonstrating that MNEs are network structures integrating differentiated units (e.g. Nohria and Ghoshal, 1997) and that MNE subsidiaries are free to pursue their own information-technology strategies (e.g. Cantwell, 2001), there has also emerged a growing number of scholars who have adopted a more high-context research perspective and recognized the influence of culture on technology adoption. This recognition can be seen in the recent rise of academic publications drawing theoretical insights from cross-cultural scholars such as Hofstede (2001) and House et al (2004) to explore a possible link between culture and IT adoption and suggesting that national culture may affect the adoption of technology. This paper focuses specifically on the question how the cultural dimensions of (1) power distance, (2) individualism-collectivism and (3) uncertainty avoidance affect the adoption and diffusion of new technologies.

3.1 The dimension of power distance

House et al (2004: 513) define power distance as ".. the extent to which a community accepts and endorses authority, power differences, and status differences". It is a cultural dimension that has received much attention in studies addressing the effects of culture on technology adoption. As argued by Shore and Venkatachalam (1996), organizations rooted in high power distance cultures are characterized as having explicitly defined lines of authority and responsibility. Consequently, the implementation of new technologies may reduce the power hitherto held by individuals. Furthermore, if new technologies enable more employees within an organization to access information, they have the potential to disrupt the high power distance culture. Similarly, Gales (2008) contends that, in comparison to low power distance cultures, organizations in high power distance cultures are less likely to implement new, innovative technologies because they threaten to change power structures with the organization.

Empirical research appears to confirm these arguments. For example, Zmud (1982) found that organizations characterized by centralized decision structures, high levels of authority and the use of formal rules are associated with lower rates of innovation and software-technology adoption. Straub et al (1997) found in their cross-cultural test of the TAM that the leveling effects of communication technologies were not desirable in cultures where people are separated by a large power distance. Instead, people may choose communication media which involve high levels of social presence, such as face-to-face interaction. Erumban and De Jong (2006) compared national expenditure in ICT

(hardware, office equipment, software, IT services and telecommunications) and found that the low power distance countries identified by Hofstede (2001) have overall higher rates of ICT adoption than high power distance countries.

3.2 The dimension of individualism/collectivism

A second cultural dimension discussed in the technology adoption literature is individualism/collectivism. This dimension represents the extent to which individuals are integrated into groups. Hofstede (2001) states that people in individualist societies only create loose ties between each other. They are consequently expected to be responsible for themselves and their immediate families. By contrast, people in collectivist societies integrate into strong, cohesive groups. They are expected to act in the general group interest. Groups protect their members who in return have to show loyalty to the groups to which they belong.

Some cross-cultural comparisons of IT adoption have focused on this particular cultural factor. For instance, Veiga et al (2001) found that members of individualist societies tend to emphasize their individual interests over those of the group. This emphasis on the self can lead to a low perceived utility for technologies such as group support systems whose objective is to increase collaboration and integration in organizations. By contrast, other scholars like Shin et al (2004) or Huysman and Wulf (2006) argue that the sharing cultures required for successfully implementing collaborative software systems are most likely to be present in collectivist societies.

3.3 The dimension of uncertainty avoidance

A further cultural dimension that has received attention in technology adoption literature is that of uncertainty avoidance. House et al (2004: 602) define uncertainty avoidance as ".. the extent to which ambiguous situations are threatening to individuals, to which rules and order are preferred, and to which uncertainty is tolerated in society". The same authors also identify uncertainty avoidance as the cultural dimension which most strongly correlates with technology adoption. Specifically, they purport that ".. perhaps in no other realm of human endeavor would we expect uncertainty avoidance […] to be more influential than in the conduct of progress of science and technology" (ibid: 632-633). Although uncertainty-avoiding cultures tend to resist change, this does not necessarily imply resisting technology. House et al rather claim that cultural practices associated with uncertainty avoidance promote technology development: "In formalized and orderly cultures […] one may find more company-university cooperation, more emphasis on basic science and research, and more interest among youth regarding science and technology issues" (ibid: 633). They also identify a strong correlation between uncertainty avoidance and success in basic scientific research.

Contrary to these findings, other groups of researchers examining the relationship between uncertainty avoidance and technology adoption have found that a general fear of uncertainty in uncertainty-avoiding cultures results in a resistance to adopt new technologies in the first place. Png et al (2001) conducted a field research with 153 companies in 24 countries. They have found that uncertainty-avoiding cultures are significantly less likely to adopt frame relay technologies than uncertainty-accepting cultures. Sundqvist et al (2005) discovered that uncertainty-avoiding cultures need more time than uncertainty-accepting cultures to adopt new technologies - the majority prefers to observe the experiences of early adopters before they make their technology-implementation decisions. Likewise, a number of other researchers have concluded that uncertainty-avoiding cultures tend to adopt new technologies later than uncertainty-accepting cultures (Garfield and Watson, 1998; Hansen and Ditsa, 1999; Kiel et al, 2000; Veiga et al, 2001; Doktor et al, 2005).

4. Towards a cross-cultural model of Web 2.0 adoption

This paper proposes a model that combines the above discussed insights on technology adoption, the Web 2.0 phenomenon and cross-cultural management concepts. The aim of this cross-cultural model of Web 2.0 adoption is to investigate in detail the effects of national culture on the adoption of Web 2.0 technologies in corporate contexts. We assume in our model that national culture affects the internal structures and processes of organizations. Indeed, a number of scholars, including Schneider and Barsoux (2003) as well as Trompennaars and Hampden-Turner (1997) have recently provided empirical evidence to suggest that organizations and their internal structures and processes are the reflections of deeper seated national cultural preferences for organizing. In this way, they challenge the notion, popularized by authors such as Deal and Kennedy (2000), that managers are able to create corporate cultures that are isolated from their external, cultural milieus.

We assume in this paper that the internal structures and processes of organizations are affected by national culture. Our model seeks therefore to provide an understanding about factors, which explain why Web 2.0 technologies are more or less likely to be adopted by companies which are embedded in different national contexts. It proposes that a combination of direct and indirect factors determine whether or not organizations adopt Web 2.0 technologies. Based on our literature study, we include the following factors with a direct influence on Web 2.0 adoption in the model: (1) the freedom of employees to participate in corporate decision making; (2) their willingness to collaborate and exchange knowledge with each other; and (3) their openness and curiosity for new technologies. We have equally identified in the literature study factors with an indirect, moderating influence on Web 2.0 adoption. These are the cultural dimensions of: (1) power distance, (2) collectivism/individualism, and (3) uncertainty avoidance.
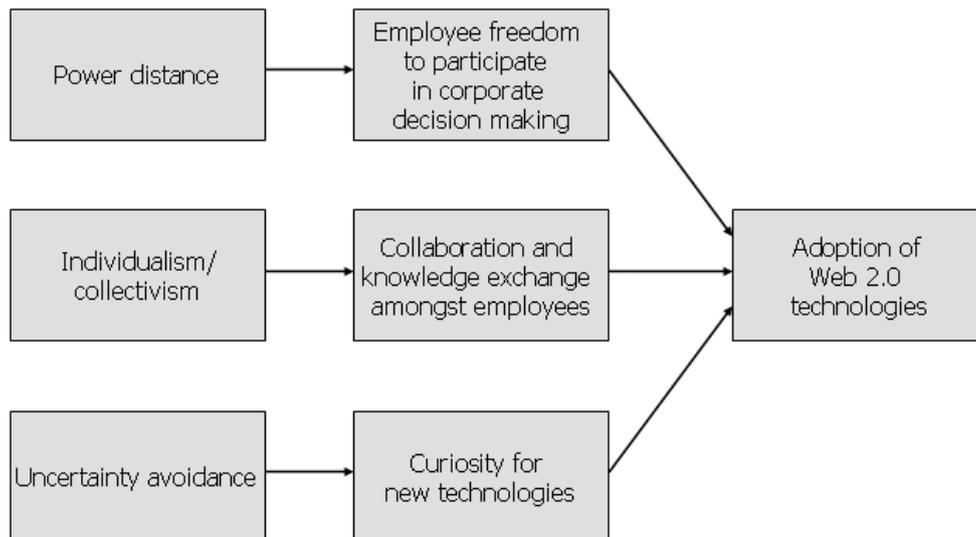

Figure 2: A model of cross-cultural Web 2.0 adoption

The structure of the proposed framework suggests that the adoption of Web 2.0 technologies is driven directly by freedom of employees to participate in corporate decision making, collaboration and knowledge exchange amongst employees and a curiosity and interest in new technologies. It also posits that the cultural dimensions of power distance, individualism/collectivism, and uncertainty avoidance exert an indirect impact on the adoption of Web 2.0 technologies through their respective effects on employees' freedom to participate in corporate decision making, collaboration and knowledge exchange amongst employees and curiosity and interest in new technologies. We outline below the relationships between the direct corporate and indirect cultural factors of our Web 2.0 model, as illustrated in Figure 2.

4.1 Relationship between employee freedom and power distance

We conclude from our review of the IS literature that Web 2.0 technologies are likely to enjoy a greater level of adoption in organizations with flat hierarchies. We assume therefore that the adoption of Web 2.0 technologies will be stronger in organizations where employees participate in corporate decision making and weaker in organizations where employees are excluded from corporate decision making. Organizations that encourage employees to participate in company decision making, are often based in low power distance cultures and do not explicitly define layers of authority and lines of responsibility. We propose within this point of view the following relationships in our model: (1) The greater the freedom that employees have to participate in corporate decision making, the stronger the adoption of Web 2.0 technologies; and (2) the freedom of employees to participate in corporate decision making is greater in cultures with a lower degree of power distance.

4.2 Relationship between employee collaboration and knowledge exchange

We assume that the level of collaboration and knowledge exchange amongst employee influences the adoption of Web 2.0 technologies. If organizations plan to use Web 2.0 technologies, a critical mass of employees in the workforce has to be motivated and to be able to work together and share

information. Existing research into the cultural determinants of technology adoption suggests that such a sharing culture is more likely to exist in collectivist societies, whose members attach importance to group interests rather than their individual interests. Therefore, we propose the following relationships in our model: (1) The greater the degree of employee collaboration and knowledge exchange within organizations, the stronger their adoption of Web 2.0 technologies; and (2) employee collaboration and knowledge exchange is greater in collectivist cultures.

4.3 Relationship between uncertainty-accepting cultures and curiosity in new technologies

The adoption of new technologies depends on a general curiosity and interest of employees in innovation. Organizations are more likely to implement Web 2.0 technologies if they have nurtured a culture of 'innovators' or 'early adopters', where employees are ready to experiment with emerging technologies that have not yet revealed their full potential and capabilities. Companies, whose employees are mostly early majority adopters, late majority adopters and laggards are less likely to implement such technologies. We have also seen in the literature review that members of uncertainty-accepting cultures are more likely to adopt faster new technologies than members of uncertainty-avoiding cultures. We propose therefore the following relationships in our model: (1) The greater the curiosity for new technologies, the stronger the adoption of Web 2.0 technologies; and (2) curiosity in Web 2.0 is likely to be greater in uncertainty-accepting cultures.

Drawing on cultural index scores derived by Hofstede (2001) and reported in Table 1, the adoption model has the potential to predict in which countries employees will generally accept or reject Web 2.0 technologies.

Table 1: Cultural differences across China, Finland, France, Norway, Spain, Sweden and Great Britain (Source: Hofstede, 2001)

Country	UAI	PDI	IDV
China	30	80	20
Finland	59	33	63
France	86	68	71
Norway	50	31	69
Spain	86	57	51
Sweden	29	31	71
Great Britain	35	35	89

Focusing specifically on these countries, the model suggests that, all other aspects being equal, the implementation and use of such Web 2.0 technologies will be high in Finland, Norway and Sweden where national cultures appear the most supportive of the successful uptake and usage of Web 2.0 technologies. Indeed, compared to their counterparts in other countries, the citizens of these three particular countries exhibit uncertainty-accepting tendencies, reject differences in power, status and authority and are relatively collectivist in their cultural orientation. Conversely, the model predicts that the use and acceptance of such technologies will be particularly low in France, whose citizens were found by Hofstede to exhibit high levels of uncertainty avoidance, to accept power differences, and to manifest comparatively individualistic tendencies.

In addition to predicting which countries are the most and least likely to implement and use Web 2.0 technologies, the model has more specifically the potential to predict particular factors that promote or hinder their adoption in the workplace across different country contexts. This point can be illustrated by comparing and contrasting the case of British, Chinese and Spanish firms.

In accordance with our model, British and Chinese workers are likely to embrace Web 2.0 technologies as innovators or early adopters. Both Britain and China are uncertainty-accepting cultures, meaning that employees are likely to be curious about benefits of Web 2.0 technologies. By contrast, Spanish workers are, compared to their British and Chinese counterparts, likely to be later adopters of Web 2.0 technologies in the workplace. Crucially, the initial acceptance of Web 2.0 tools

by Spanish workers may be adversely affected by the strong uncertainty-avoiding national culture in which they are socialized. Specifically, they are less likely than British or Chinese workers to be intrigued by alleged benefits of Web 2.0 technologies.

However, once Spanish workers overcome their initial resistance to Web 2.0, the corporate environments of Spanish firms appears to meet cultural pre-conditions for successful Web 2.0 implementation. Essentially, the adoption of Web 2.0 technologies by Spanish employees may be promoted by Spain's moderately collectivist national culture, which encourages workers to collaborate and share information. The adoption of Web 2.0 technologies in Spanish organizations may also be facilitated by comparatively power-distance-rejecting cultures, with the result that employees are encouraged to participate in corporate decision-making.

Like Spain, Britain has a relatively power-distance-rejecting culture, with the result that employees in British organizations expect to participate in corporate decision-making. This meets one of the key pre-requisites for the successful implementation of Web 2.0. However, unlike in Spain, the more widespread adoption of Web 2.0 technologies by British employees may be adversely affected by Britain's relatively strong individualistic culture. Consequently, although they may be initially interested in Web 2.0 technologies and free to participate in corporate-decision making, their strong individualistic tendencies may discourage British workers from collaborating and sharing information. Over time, therefore, they may see little advantage of using collaborative Web 2.0 technologies in the workplace.

According to our model, national cultural barriers to collaborative working and knowledge exchange will be much less of an obstacle in Chinese organizations, owing to the considerably more collectivist and sharing cultures in which Chinese workers are socialized. Instead, the implementation and use of Web 2.0 technologies in the Chinese workplace is likely to be slowed down by the strong power-distance-accepting culture. In such pyramid cultures, employees will have less freedom to participate in corporate decision-making and thus will be less likely to use Web 2.0 technologies.

5. Conclusions

This conceptual paper has developed a model that aims to investigate effects of national culture on the corporate use of Web 2.0 technologies. The potential of Web 2.0 technologies, including the use of wikis, blogs, Web services and RSS feeds for business purposes, has attracted the attention of senior managers around the world. We have argued that the corporate adoption of Web 2.0 technologies is in part contingent on three pre-requisites. First, employees should be encouraged to participate in corporate decision making; second, they should be willing to collaborate and exchange knowledge with each other; and finally, they should ideally be 'innovators' or 'early adopters' interested in using the latest versions of new technologies.

By combining these insights from theoretical concepts developed in the literature on cross-cultural management and technology adoption, this paper outlines how corporate factors directly influence and cross-cultural factors indirectly influence the adoption of Web 2.0 technologies in different contexts. Drawing on literature on cross-cultural management, we argue in this paper that national culture characteristics have the potential to influence the three corporate web 2.0 adoption pre-requisites either in a positive or in a negative way. Crucially, it is hypothesized that Web 2.0 technologies are likely to be adopted faster by organizations socialized in power-distance rejecting, collectivist and uncertainty-avoiding cultures than in power-distance rejecting, individualistic and uncertainty-avoiding cultures.

The paper contributes to the literature on the effects of culture on technology adoption. To date, research on the adoption of Web 2.0 technologies has taken a universalistic approach, which suggests that there is one best way of using such technologies and assuming that companies around the world will face similar challenges when implementing them. Our work relies on an extensive literature study and existing data form international surveys to explore how national culture affects Web 2.0 adoption. This focus has to date not been extensively addressed by cross-cultural scholars of information systems.

Our web 2.0 adoption model also offers new perspectives for researchers who are interested in Web 2.0 technologies. We hope that this paper will encourage future research to investigate the extent to which pre-requisites for successful Web 2.0 implementations are culturally determined. The paper

offers in addition new insights for information-system practitioners seeking to implement Web 2.0 technologies in corporate environments. Our model encourages Chief Information Officers in multi-national enterprises to anticipate, reflect on and respond to the cross-country cultural barriers that may impede the roll-out of such technologies in different national contexts.

Our model may possibly be charged with training its attention too closely on *national* culture. Holden (2002) warns that this particular view of culture can overlook the different levels at which culture manifests itself (e.g. national, regional, organizational levels). Future research on the topic should take this view into account. A culturally-grounded model of Web 2.0 uptake and usage could be based on the four classifications of organizational culture, which Deal and Kennedy (2000) have developed. These classifications are the 'Tough-Guy Macho' culture, the 'Work Hard/Play Hard' culture, the 'Bet Your Company' culture, and the 'Process' culture. It should be stressed, however, that scholars are increasingly providing empirical evidence that organizational cultures can be seen as reflections of deeper seated national cultural preferences for organizing (e.g. Schneider and Barsoux, 2003).

Our model draws much of its inspiration from the cultural dimensions of national culture developed by Hofstede (2001). His model is widely used for reasons of convenience, popularity, and the lack of available alternatives. Taras et al (2009) point out though that Hofstede's dimensions reduce complexities of national cultures to simplistic and overly generalized conceptualizations (see also McSweeney, 2003). Consequently, our Web 2.0 adoption model could be enhanced by incorporating theoretical insights from alternative cultural categorization studies (e.g. Schwartz, 1992: Trompenaars & Hampden-Turner, 1997). It would in this way provide a more sophisticated analysis of the effects of culture on Web 2.0 adoption. A wider range of cultural dimensions could possibly provide richer explanations of the effects of culture on Web 2.0 usage patterns. Nonetheless, we have to avoid the potential pitfall of some cross-cultural research whose frameworks risk becoming non-operational by including too many additional cultural dimensions (Taras et al., 2009).

The Web 2.0 adoption model gives equal weighting to each cultural dimension of uncertainty avoidance, power distance and individualism/collectivism. We have to be aware that ascribing equal importance to all three cultural dimensions may paint an oversimplified picture of reality. For example, our model suggests that Web 2.0 technologies will suffer from acceptance problems in organizations in the United States, because American employees are socialized in a highly individualistic national culture and thus not be motivated to work together or to share information. The 2009 McKinsey survey has however found that American employees believe it is possible to achieve measurable benefits from using Web 2.0 technologies for internal-knowledge sharing purposes.

The model also predicts that the uptake and usage of Web 2.0 technologies in Japanese organizations will be hampered by a strong uncertainty-avoiding national culture. Consequently, Japanese workers will be less likely that their counterparts in more uncertainty-accepting cultures to be curious about using such technologies. This prediction, however, contradicts the rich corpus of research that has addressed the Japanese infatuation with technological innovation and their fascination for the latest technological gadgets and trends (e.g. Partner, 2000). In response to these possible limitations, our model could be enhanced by identifying which specific cultural dimensions exert the greatest impact on the adoption and usage of Web 2.0 technologies. Efforts could also be undertaken to identify any moderating factors that may determine in which contexts or situations national culture is the most important factor for explaining the take-up and usage of Web 2.0 technologies.

Finally, in the absence of empirical support, the propositions of our model remain untested for the time being. A concrete program of field research therefore needs to be developed and conducted to test the validity of the proposed relationships between the pre-requisites for successful Web 2.0 adoption and usage and dimensions of national culture. One potentially fruitful approach could involve comparing and contrasting employees' experiences of using Web 2.0 technologies in the international subsidiaries of MNEs. A focus on MNE subsidiaries would hold constant global corporate and organizational cultures, thus ruling out these factors as rival explanations for any possible variations in Web 2.0 acceptance and usage.

Acknowledgments

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