Information and Knowledge Sharing among IT Professionals in Singapore

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Abstract

The purpose of this study was to investigate information and knowledge sharing behaviour of IT managers and professionals in a multinational company in Singapore. It also addressed areas such as information needs for job-related tasks, attitude of the respondents towards information and knowledge sharing, intra- and inter-departmental sharing, preferred communication channels, and barriers to information and knowledge sharing. The study revealed that IT managers and professionals need information about technical, operational, and process-related aspects of their projects. On the whole, the respondents demonstrated a positive attitude towards information and knowledge sharing. However, only limited inter-departmental sharing was observed. The preferred channels for information and knowledge sharing were email, telephone and face-to-face meetings. It was interesting to note that although all the respondents were IT professionals and were expected to be IT savvy, they were seldom using organizational intranet and online collaboration tools for information and knowledge sharing. This paper offers some suggestions for creating awareness about the importance of sharing and developing an environment conducive for information and knowledge sharing.

Keywords: Information and knowledge sharing; IT professionals; Sharing attitude; Sharing barriers; Communication channels; Singapore

1. Introduction

Active information and knowledge sharing is considered an important attribute of a learning organization. The emergence of knowledge-based economy has further increased the need for effective exploitation of knowledge and making knowledge management an essential area of activity in organizations. As a result, knowledge is now regarded as a crucial resource which supplements traditional factors of production (Metaxiotis & Psarras, 2003). In fact, knowledge is increasingly considered a vital component of an organization's competitive advantage which can help it survive in a highly competitive, dynamic, and uncertain business environment. Edge (2005) argues that an organization's success is greatly influenced by its ability to mobilize and capitalize on internally held tacit knowledge. Hence there is a need to develop appropriate strategies to support sharing of this knowledge. Among the information and knowledge management activities, sharing is considered as one of the most crucial and challenging activity both for individuals and their organizations. In any planning, decision-making or problem-solving situation, the availability of relevant information is essential to help improve the overall performance of an organization (Kolekofski & Heminger, 2003).

In recent years, the theme of information and knowledge sharing has grabbed the attention of many academics and practitioners to study different aspects of this vital activity. Undoubtedly, information and knowledge sharing is a social behavior and many physical, technological, psychological, cultural, and personality factors either promote or hinder this activity (Riege, 2005; Yuan, Fulk & Shumate, 2005). Often people feel happy by helping others through sharing their knowledge and for them it is a gratifying, pleasing

and fulfilling activity. Dixon (2000) highlights that people like to share information and feel flattered whenever they are approached. Many studies suggest that strong personal ties and mutual respect can stimulate individuals to share knowledge with their peers. People are less likely to share their information and knowledge if they do not have a feeling of trust. This stems from their need to be reassured that the shared knowledge will not be misused or abused. Riege (2005) argues that the level of trust in a company, between its sub-units, and among its employees seems to have a direct influence on the amount of knowledge sharing within and between business functionaries or subsidiaries. Droege and Hoobler (2003) suggest that reciprocity in relationships together with trust promote knowledge sharing. Alstyne (2005) also agrees that trust is an important factor in developing positive interpersonal relationships which encourages information and knowledge sharing. Mutual trust is often developed over a period of time through frequent interactions and that is why it is important that adequate time and opportunities should be provided for developing cordial relationships (Majid & Yuan, 2006).

One of the major constraints in many organizations is the lack of an information and knowledge sharing culture. Ikhsan and Rowland (2004) feel that culture is a prime factor as it determines the effects of other variables such as technology and management techniques on the success of knowledge management activities. Culture creates the organization's norms which in turn influence the information and knowledge sharing process (Kolekofski & Heminger, 2003). Employees' beliefs and attitudes also play a vital role in information sharing. Stoddart (2001) argues that knowledge sharing would only work if the culture of the organization promotes it. An organization that supports information sharing and knowledge creation among its employees and encourages multiple viewpoints is likely to improve its organizational life (Levine, 2001). It is, therefore, important that organizations should integrate information and knowledge sharing culture into their existing values and the overall operational styles (Riege, 2005).

Although sharing is considered a vital activity for organizational success, several studies suggest that many organizations experience information and knowledge sharing problems among their employees. Davenport (1997) claims that the act of knowledge sharing is unnatural and there are many reasons why people avoid sharing their knowledge. Certain factors that may impede information and knowledge sharing include: lack of depth in relationship between the source and recipient of knowledge, lack of motivation or rewards to share, lack of time, and non-existence of a knowledge sharing culture (Ikhsan & Rowland, 2004; Smith & McKeen, 2003). In addition, a lack of understanding of what to share and with whom to share, limited appreciation for knowledge sharing, and the fear of providing wrong information can also hamper the knowledge sharing activity (Ardichvili, Page & Wentling, 2003; Majid & Yuan, 2006).

The organizational culture plays an important role in information and knowledge sharing and it involves changing employees' behaviour which is one of the most difficult issues to manage (Ikhsan & Rowland, 2004). With the widespread notion that knowledge is power, individuals have become conscious of protecting their knowledge in order to secure their unique worth and contribution to the organization. This has even become more significant due to frequent downsizing exercises in the region which have created a sense of fear and uncertainty among employees. For many of them knowledge is their power and to divulge valuable information could threaten their status in the organization (Bates, 2005). Most of the time, employees would only share their knowledge when it is beneficial for them to gain recognition and reward. This propensity to withhold information stems from people's basic survival instinct, the corporate culture and a poor working relationship among the employees. It is, therefore, necessary that employees need to be assured that sharing of knowledge would not impede their career advancement.

Organizations need to create an environment that is conducive for sharing and social networks play a vital role in developing such an atmosphere. Numerous studies suggest a strong correlation between the extent of knowledge sharing and employees' social networks. Most of the time, some formal and informal networks already exist in organisations and it is a matter of taking full advantage of these networks. The creation of informal spaces is more advisable given the fact that a considerable amount of sharing takes place at the informal level, that is, in environments where people trust each other and voluntarily share knowledge and insights, and collaborate actively and willingly (Riege, 2005). There is no doubt that technology can act as an enabler for encouraging and supporting information and knowledge sharing processes by making them more convenient and effective. To facilitate sharing, the emerging collaborative tools can provide a broad range of options and capabilities. Some of the most popular and powerful communication and sharing tools include online discussion forums, virtual communities, instant web messengers, Weblogs, and Wikis (Wagner & Bolloju, 2005).

The literature review suggests that many factors either encourage or inhibit information and knowledge sharing in organizations. Although some of these factors are common among different organizations and countries, local culture, mindset and work environment also contribute in understanding the additional dimensions of this issue. The purpose of this study was to investigate the information needs of IT professionals in a multinational company in Singapore, their attitude towards information and knowledge sharing, status of intra- and inter-departmental information sharing, preferred communication channels, and barriers to information and knowledge sharing.

2. Methodology

A questionnaire was used for eliciting information from the respondents as it allowed reaching to a relatively larger population and was the most economical method. Initially some interviews were conducted with individuals from different IT groups to have a better understanding of the organizational structure, work flows, the overall work culture, IT infrastructure, and information and knowledge sharing tools accessible in the organization.

A total of 17 questions were included in the survey and the first five questions were designed to gather demographic data about the respondents. The next section of the questionnaire collected data about the information needs of the respondents for undertaking their daily tasks. The third section of the survey solicited data on the types of information and knowledge shared by the respondents within their own groups, with members of other groups in the same department, and with IT professionals working in other departments. The last section of the questionnaire recorded responses against different statements, representing different information and knowledge sharing believes and attitudes, and their perceptions of information sharing barriers.

The IT operations, products and services of the organization are handled by three departments and each department consists of several IT groups. The Operations Department (OPS) is further divided into five groups: the server group, network group, database group, desktop group, and systems support group. Both the Business Information Systems Department (BIS) and Factory Information Systems Department (FIS) are further divided into 6 groups each. A manager usually heads a group with various numbers of IT professionals undertaking different specialized tasks whereas each senior manager supervises two or more IT groups. A director is assigned to each of the three departments and these directors report to a senior director. A stratified, proportionate random sampling technique was used to draw a 40% sample from each of the three participating

departments. In total, 177 questionnaires were distributed and 96 useable questionnaires were received back, thus giving a response rate of 54.2%.

3. Findings

The following sections provide an analysis of data collected through the questionnaire survey and highlights important trends emerging from data analysis:

(a) Profile of the respondents

There were 57 (59.3%) male and 39 (40.7%) female respondents who participated in the survey. Figure 1 shows the distribution of 96 respondents by their departments. The Factory Information Systems Department made up the largest number of respondents (38%), followed by Operations Department (37% respondents), and Business Information Systems Department (25% respondents).
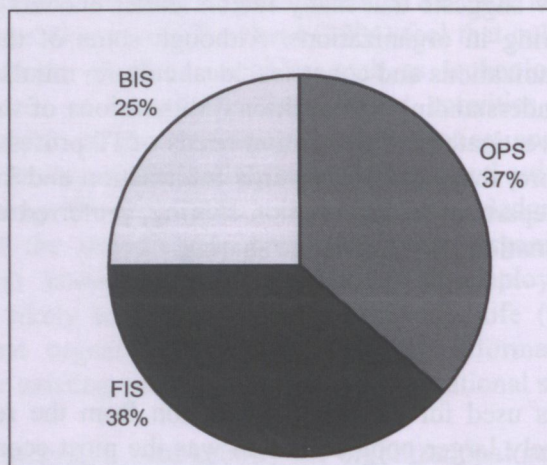

Figure 1: Distribution of Respondents by their Department

A majority (38%) of the respondents belonged to the age group of 31-35 years while 27% were 30 years old or less and 21% of the respondents were in the age group of 36-40 years. Around 14% of the respondents were more than 40 years old. Fifty-six percent of the respondents had a bachelor's degree, 19% a diploma, 16% a master's degree, and 9% had certain other qualifications.

(b) Information Needs for Performing Daily Job Activities

The respondents were asked about the type of information they require for performing their daily tasks. It was found that technical information and updates, and information about operational issues were needed 'all the time' or 'most of the time' by 80.2% of the respondents (Table 1). The next two most important types of information were process related information and updates (70.9% respondents) and information pertaining to systems performance (57.3% respondents). On the other hand, general IT information and updates were found to be either needed 'all the time' or 'most of the time' by 55.2% of the respondents. Policies and procedures were mentioned by 46.9% of the respondents while product related information and updates were selected by 42.7% of the respondents.

(c) Information Sharing Within Own Group

The respondents were asked how often they share different types of information with IT professionals within their own groups. Information related to operational issues was indicated as the most frequently shared information by 80.2% of the respondents (Table 2). The technical information and updates (67.7% respondents), and process related

information and updates (66.7% respondents) were indicated as the next two most important types of information shared 'all the time' or 'most of the time'. It was also found that information about different IT products (54.2% respondents), policies and procedures (50.1% respondents), and systems performance issues (42.7% respondents) were occasionally or never shared.

Table 1: Information Needs for Day-to-Day Operations

Information Type	All the Time	Most of the Time	Occasionally	Never
Information related to operational issues	34 (35.4%)	43 (44.8%)	19 (19.8%)	-
Technical information and updates	18 (18.8%)	59 (61.4%)	17 (17.7%)	2 (2.1%)
Process related information and updates	18 (18.8%)	50 (52.1%)	25 (26.0%)	3 (3.1%)
Information about system performance issues	19 (19.8%)	36 (37.5%)	34 (35.4%)	7 (7.3%)
General IT information and updates	17 (17.7%)	36 (37.5%)	43 (44.8%)	-
Information related to policies & procedures	14 (14.6%)	31 (32.3%)	49 (51.0%)	2 (2.1%)
Information about IT products and updates	9 (9.4%)	32 (33.4%)	51 (53.0%)	4 (4.2%)

Table 2: Frequency of Information Sharing within Own Group

Information Type	All the time	Most of the time	Occasionally	Never
Information related to operational issues	21 (21.9%)	56 (58.3%)	18 (18.8%)	1 (1.0%)
Technical information & updates	12 (12.5%)	53 (55.2%)	29 (30.2%)	2 (2.1%)
Process related information and updates	16 (16.7%)	48 (50.0%)	29 (30.2%)	3 (3.1%)
General IT information and updates	13 (13.6%)	46 (47.9%)	34 (35.4%)	3 (3.1%)
Information about system performance issues	16 (16.7%)	39 (40.6%)	34 (35.4%)	7 (7.3%)
Information related to policies & procedures	15 (15.6%)	33 (34.4%)	42 (43.8%)	6 (6.3%)
Information about IT products and updates	7 (7.3%)	37 (38.5%)	46 (47.9%)	6 (6.3%)

(d) Information Sharing with Staff from Their IT Departments

Respondents were asked how frequently they share different types of information with staff from other IT departments. The data analysis showed that only 5% or less of the respondents shared different types of information with staff from other IT departments 'all the time' (Table 3). Information about operational issues was shared 'most of the time' by 15.6% of the respondents while only 14.6% of the respondents shared information related to processes, performance and technical issues at this frequency. It was also found that 27.1% and 24% of the respondents did not share any product information and technical information respectively with IT staff from other departments. The information about IT

products (92.7% respondents), and policies and procedures (87.5% respondents) were either occasionally or never shared at all. This was different from what they had indicated earlier that information related to technical performance was one of the most important information for their day-to-day operations but it was not shared with staff from other IT departments. On the whole, it appeared that comparatively more information about operational issues was shared with staff from other IT departments, followed by information about processes (20.8% respondents) and system performance issues (18.8% respondents).

Table 3: Frequency of Information Sharing with Staff in Other IT Departments

Information Type	All the time	Most of the time	Occasionally	Never
Information related to operational issues	5 (5.2%)	15 (15.6%)	62 (64.6%)	14 (14.6%)
Process related information and updates	4 (4.2%)	14 (14.6%)	59 (61.4%)	19 (19.8%)
Information about system performance issues	4 (4.2%)	14 (14.6%)	58 (60.4%)	20 (20.8%)
Technical information and updates	4 (4.2%)	8 (8.3%)	61 (63.5%)	23 (24.0%)
Information related to policies & procedures	3 (3.1%)	9 (9.4%)	63 (65.6%)	21 (21.9%)
General IT information and updates	1 (1.1%)	14 (14.6%)	61 (63.5%)	20 (20.8%)
Information about IT products and updates	2 (2.1%)	5 (5.2%)	63 (65.6%)	26 (27.1%)

(e) Information Sharing by other IT Professionals

An interesting situation emerged when the respondents were asked about the frequency of information sharing done with them by their colleagues in the same group (Table 4). Only a few of the respondents (not more than 14) indicated that their colleagues share information with them 'all the time'. However, it was found that information about operational (62.5% respondents) and technical issues (46.9% respondents) were the most commonly shared information among IT professionals within the same group.

Table 4: Information Sharing by Other Employees with the Respondents

Information Type	All the time	Most of the time	Occasionally	Never
Information related to operational issues	14 (14.6%)	46 (47.9%)	34 (35.4%)	2 (2.1%)
Technical information and updates	7 (7.3%)	38 (39.6%)	45 (46.9%)	6 (6.2%)
Information about system performance issues	10 (10.4%)	34 (35.4%)	48 (50.0%)	4 (4.2%)
General IT information and updates	6 (6.3%)	38 (39.6%)	47 (48.9%)	5 (5.2%)
Process related information and updates	2 (2.1%)	42 (43.7%)	48 (50.0%)	4 (4.2%)
Information related to policies & procedures	8 (8.3%)	24 (25.0%)	60 (62.5%)	4 (4.2%)
Information about IT products and updates	6 (6.3%)	24 (25.0%)	58 (60.4%)	8 (8.3%)

It appeared that a majority of the respondents felt that they share information more frequently with their group members as well as colleagues in the same department. On the contrary, they were of the opinion that their colleagues, even within the same group, do not share their information and knowledge with them (Figure 2). Although this study did not attempt to investigate the reasons behind this perception, it would be interesting to study why many individuals feel that they share information and knowledge more frequently than their colleagues do.
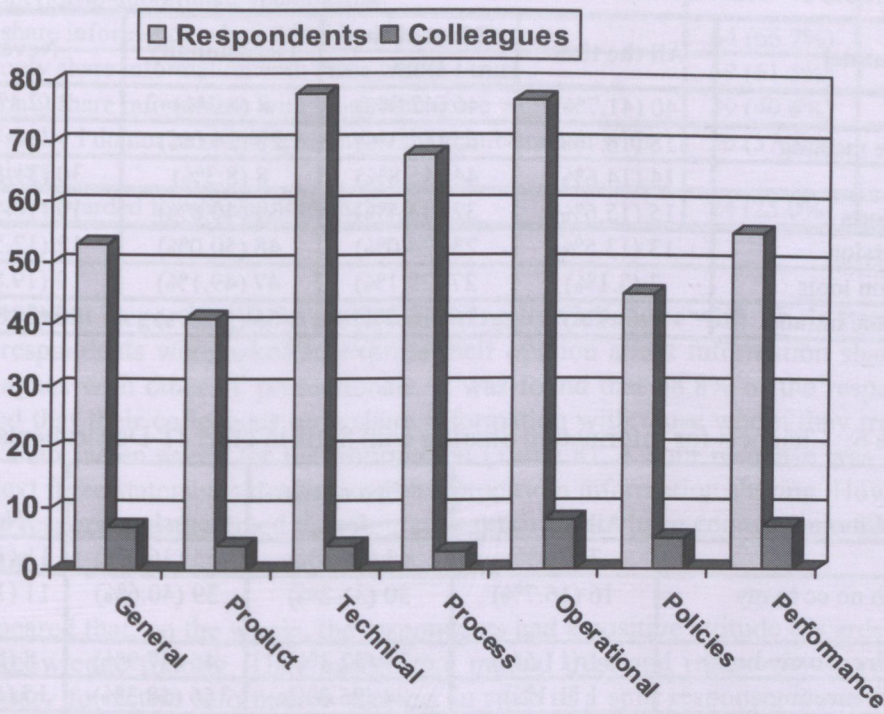

Figure 2: Comparison of Perception of Information Sharing

(f) Information Sharing Channels
Data was also collected about different communication channels used by the respondents for the purpose of information and knowledge sharing.

(i) Channels used for sharing within own department
The respondents were asked about the use of different channels for sharing information with colleagues within their own departments. It was found that email was the most popular channel, used 'all the time' or 'most of the time' by 89.6% of the respondents (Table 5). Face-to-face meetings were at the second position (76% respondents), followed by telephone (60.4% respondents). It was, however, surprising to note that IT-based collaboration tools were not frequently used by the respondents. The organizational intranet was 'occasionally' or 'never' used for information sharing by 80.2% and other collaboration tools by 68.9% of the respondents. It appeared that, although all the respondents were IT professionals, they were not heavily using IT tools for sharing information and knowledge with their fellow colleagues.

(ii) Channels used for Information Sharing with staff in other IT Departments
It was found that email was once again the most frequently used channel for information sharing and 47.9% of the respondents reported using it 'all the time' or 'most of the time'

with a copy sent to supervisor while 43.8% of the respondents using this channel did not send a copy to their bosses (Table 6). The face-to-face meetings were often used by only 26.1% of the respondents although all the employees were physically located in the same building. On the contrary, intranet was 'occasionally' or 'never' used by 91.7%, collaborative tools by 83.3%, and weekly published reports by 82.3% of the respondents. On the whole, it appeared that email and telephone were the most frequently used channels for sharing information with staff from other IT departments. The organisational intranet and other IT-based information and knowledge sharing tools were hardly used by the respondents.

Table 5: Channels for Information Sharing within Own Department

Channel	All the time	Most of the time	Occasionally	Never
Email	40 (41.7%)	46 (47.9%)	8 (8.3%)	2 (2.1%)
Face-to-face meeting	18 (18.7%)	55 (57.3%)	23 (24.0%)	-
Telephone	14 (14.6%)	44 (45.8%)	8 (8.3%)	30 (31.5%)
Weekly reports	15 (15.6%)	32 (33.4%)	39 (40.6%)	10 (10.4%)
Informal session	13 (13.5%)	23 (24.0%)	48 (50.0%)	12 (12.5%)
Collaboration tools	3 (3.1%)	27 (28.1%)	47 (49.1%)	19 (19.8%)
Publish on the intranet	3 (3.1%)	16 (16.7%)	55 (57.3%)	22 (22.9%)

Table 6: Channels for Information Sharing with Staff in other IT Departments

Channel	All the time	Most of the time	Occasionally	Never
Telephone	7 (7.3%)	43 (44.8%)	35 (36.4%)	11 (11.5%)
Email (with no cc to my boss)	16 (16.7%)	30 (31.2%)	39 (40.6%)	11 (11.5%)
Email (with cc to my boss)	11 (11.5%)	31 (32.3%)	46 (47.9%)	8 (8.3%)
Face to face meeting	1 (1.1%)	24 (25.0%)	56 (58.3%)	15 (15.6%)
Weekly reports	-	17 (17.7%)	36 (37.5%)	43 (44.8%)
Collaboration tools	-	16 (16.7%)	51 (53.1%)	29 (30.2%)
Publish on the intranet	-	8 (8.3%)	57 (59.4%)	31 (32.3%)

(g) Attitude towards Information Sharing

This section presents findings related to respondents' attitude and behaviour towards information and knowledge sharing. A combination of positive and negative statements was used for obtaining more balanced responses.

(i) Opinion about information sharing with others

The respondents were asked about information shared by them with their colleagues. An overwhelming majority of the respondents (96.9%) agreed that the power of information is achieved when it is shared (Table 7). Another 86.5% of the respondents said that they know from where and from whom they can get the needed information, which indicates their awareness about the availability of different information sources. However, responses to a couple of statements showed some reservations about information sharing. It was found that 66.7% of the respondents agreed that they share information only when asked by their supervisors, and that they share with those colleagues to whom they trust (61.5% respondents). Some 40.6% of the respondents also agreed that they only share information with those who share with them. However, 62.5% of the respondents disagreed that they do not have enough time for sharing while 75% also disagreed that they are rewarded for sharing. It appeared that although a majority of the respondents

agreed that the power of information can only be achieved through sharing, certain factors were limiting their information sharing efforts.

Table 7: Opinion Regarding Information Sharing with Others

Statement	Agree	Disagree
I feel the power of information is achieved when it is shared	93 (96.9%)	3 (3.1%)
I know from whom and from where to get the needed information	83 (86.5%)	13 (13.5%)
I feel that there are many information exchanges to spawn superior-to-subordinate relationship	71 (73.9%)	25 (26.1%)
I share information when asked by my supervisor	64 (66.7%)	32 (33.3%)
I only share information with those whom I trust	59 (61.5%)	37 (38.5%)
I only share information with those who share with me	39 (40.6%)	57 (59.4%)
Usually I do not have enough time to share information with others	36 (37.5%)	60 (62.5%)
I am rewarded for sharing information	24 (25.0%)	72 (75.0%)

(ii) Opinion Regarding Information Sharing by Colleague with Their Peers

The respondents were asked to express their opinion about information sharing by their colleagues with other IT professionals. It was found that 68.8% of the respondents each agreed that their colleagues only share information with those whom they trust, and they only share when asked for the information (Table 8). A split response was recorded for the next three statements dealing with reciprocity in information sharing. However, 55.2% of the respondents disagreed that their colleagues do not have enough time for information sharing.

It appeared that, on the whole, the respondents had a positive attitude towards information and knowledge sharing. They agreed that mutual trust and reciprocity in relationship is necessary for active information sharing. In spite of a split response, it was interesting to note that well over one-half of the respondents disagreed that they do not have adequate time for information sharing. It was also noted that three-quarters of the respondents felt that they were not being adequately rewarded for their information and knowledge sharing efforts.

Table 8: Opinion Regarding Information Sharing by Colleague

Statement	Agree	Disagree
My colleagues only share information with those whom they trust	66 (68.8%)	30 (31.2%)
My colleagues share information with me only when I request for it	66 (68.8%)	30 (31.2%)
My colleagues share information with me regardless of how I treated them in the past	49 (51.0%)	47 (49.0%)
Often my colleagues feel inclined to share information with others	49 (51.0%)	47 (49.0%)
My colleagues share information with me only when I share information with them	46 (47.9%)	50 (52.1%)
My colleagues do not have enough time to share information	43 (44.8%)	53 (55.2%)

(h) Barriers to Information Sharing

Finally, the respondents were asked to identify those factors that, in their opinion, were creating hurdles in active information and knowledge sharing in their organization. A majority of the respondents (88.5%) agreed that staff in their organization tend to limit information sharing to their group members (Table 9). Another 87.5% of the respondents agreed that there is no motivation for sharing which is in line with the findings presented in the previous section where three-quarters of the respondents mentioned the lack of incentives for this vital activity. The next three barriers to information sharing were: information is treated as a symbol of power (84.4% respondents); feeling that their information might not be useful to others (77.1% respondents); and the 'Kiasu' attitude which is a sort of fear of losing to others (70.8%). Nearly two-thirds of the respondents also agreed that they were expected to tightly control the flow of information.

Table 9: Reasons for Not Sharing Information

Statement	Agree	Disagree
People tend to limit information sharing within their group/project	85 (88.5%)	11 (11.5%)
Lack of motivation to share	84 (87.5%)	12 (12.5%)
Information is treated as a symbol of power	81 (84.4%)	15 (15.6%)
Feeling that their information might not be useful to others	74 (77.1%)	22 (22.9%)
'Kiasu' attitude	68 (70.8%)	28 (29.2%)
Communication problems among staffs	68 (70.8%)	28 (29.2%)
Fear to "lose face" if they were to provide wrong information	67 (69.8%)	29 (30.2%)
We are expected to control information tightly	64 (66.7%)	32 (33.3%)
Information is my personal property	48 (50.0%)	48 (50.0%)
No information sharing policy in place	45 (46.9%)	51 (53.1%)
There is no central place where we can share information	41 (42.7%)	55 (57.3%)

Responses for this question suggest some discrepancy in replies given in the previous sections. Earlier an overwhelming majority of the respondents agreed that power of information is achieved through sharing and now in this question they have also agreed that information is treated as a symbol of power. They also mentioned that there was no information sharing policy in place in the organization and at the same time said that they were expected to tightly control the flow of information held by them or their departments. It seems only limited efforts have been made by the organization to develop a culture of information and knowledge sharing by introducing sharing-friendly policies as well as by providing adequate incentives and rewards to encourage sharing.

4. Conclusion

The current business environment is very dynamic, uncertain and complex. Organizations need to take full advantage of their information and knowledge assets, including human capital, to gain edge over their competitors. An interesting finding of this study was that a sizeable majority of the respondents felt that they share information and knowledge more frequently than their peers. A rather surprising finding was that although all the respondents were IT professionals and expected to be IT savvy, only a few were using organizational intranet and IT-based collaborative tools for information and knowledge sharing. Certain earlier studies also suggest a lower use of organization intranet and other IT tools for information knowledge sharing. These organizations need to carefully review their system architecture, contents, and searching and browsing capabilities so as to bring them close to users' expectations. It was also observed that several local cultural factors also play a role in encouraging or inhibiting information and knowledge sharing. A

majority of the respondent felt that their peers do not share information due to the fear of losing their importance in the organization or even losing their jobs. They were also fearful of 'losing their face' if the shared information is proven wrong. Organizations in Singapore need to adequately address such fears as well as other factors to create an atmosphere that is conducive for information and knowledge sharing.

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