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Knowledge Sharing and Innovation Capability

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Abstract

The study was done to investigate the effect of individual predictors (enjoyment in helping others and knowledge self-efficacy), organizational predictors (top management support and organizational rewards) and technology predictors (information and communication technology use) on knowledge sharing processes and if the predictors lead to innovation capability. The result of the study indicated that one individual factor (knowledge self-efficacy) and two organizational factors (top management support and organizational rewards) significantly affect knowledge sharing. Future research can investigate how individual traits (such as age, education level, and work experience) and organizational characteristics (such as organizational size and type) may either mediate or moderate the relationships between knowledge enablers and processes. From the managerial viewpoint, the associations among knowledge sharing enablers, processes, and organization innovation capability may shed a light on how organizations can motivate knowledge sharing culture among their employees to maintain their performance. The results of this research provide a conceptual foundation towards the body of knowledge in the field of knowledge sharing and can also be utilized to investigate the relationships among knowledge sharing predictors, enablers, processes, and innovation capability. In terms of practical perspective, this research provided several predictors that are necessary towards successful knowledge sharing, and discussed the implications of the predictors in order to develop organizational strategies that encourage and improve knowledge sharing among employees.

Keywords: Knowledge sharing, innovation capability, individual traits, organizational characteristics, enablers

Introduction

Knowledge sharing can be defined as a social interaction culture, concerning the exchange of employees' knowledge, skills, abilities, opportunities, and experience throughout the organization (H. F. Lin, 2007). Knowledge sharing contains a set of mutual understandings related to providing employees access to relevant information in order to build and use knowledge network within organizations (Hogel, Parboteeah, & Munson, 2003). Besides that, knowledge sharing generates opportunities to optimize organization capability to gather the needs and creates solutions and efficiencies that support an organization with a competitive advantage (Reid, 2003). Furthermore, knowledge sharing occurs at the individual and organizational levels (H. F. Lin, 2007).For individual worker, knowledge sharing can be a form of communication with fellow workers in order to assist in the completion of a job better, quickly and efficiently. Whereas for organizations, knowledge sharing is gain by capturing, organizing, utilizing and disseminating knowledge within the organization by making the knowledge available to the others (H. F. Lin, 2007). Several studies have showed that knowledge sharing is important because it allows an organization to improve innovation and decrease repeated learning efforts (Calantone, Cavusgil, & Zhao, 2002; Scarbrough, 2003).

An organization can motivate knowledge sharing among employees either by incorporating knowledge in its strategy or by changing employees' attitudes and their behavior by consistently promoting and motivating knowledge sharing (Connely & Kelloway, 2003; H. F. Lin & Lee, 2004). In addition, several studies focused on the relation between knowledge sharing enablers, processes and innovation (Bock, Zmud, & Kim, 2005; Van den Hoof & Van Weenen, 2004a, 2004b; Yeh, Lai, & Ho, 2006), whereas other studies focused on the relation between knowledge sharing enablers and innovation (Calantone et al., 2002; Syed-Ikhsan & F., 2004). Nonetheless, researchers and practitioners have not tried an integrative model that discovers the

effectiveness of knowledge sharing from a comprehensive view, and only small number of empirical study has investigated on the relations sharing from a comprehensive view, and only small number of empirical study has investigated on the relations among knowledge sharing enablers and processes (Lin, 2007).

Besides that, there is less knowledge sharing culture in organization (Lin, 2007). In addition, there is also less understanding of the factors or enablers for knowledge sharing (H. F. Lin, 2007).Thus, this study investigates and focuses on the enablers and processes of knowledge sharing.

This study investigates the impact of individual traits (enjoyment in helping others and self-efficacy), organizational characteristics (top management support and rewards) and technology factors (the use of information and communication technology) on knowledge sharing processes. In addition, this study contributes to the body of knowledge by clarifying the predictors that are important for knowledge sharing to be effective. Moreover, this study contributes practically by identifying the significant determinants of knowledge sharing so that organizations would be able to develop strategies necessary to encourage and motivate knowledge sharing.

Literature Review

Operational definition of knowledge sharing

Enablers are the instrument that can be used to foster individual and organizational learning and to help knowledge sharing among employees within organizations (H. F. Lin, 2007). In other related studies, knowledge sharing enablers include the impact caused by individual motivations, organizational situations, and also information and communication technology (ICT) applications (Bock et al., 2005; H. F. Lin & Lee, 2006; Taylor & Wright, 2004; Wasko & Faraj, 2005). From the literature, there are various effects on employee knowledge sharing processes; such as individual, organizational, and technology factors (Connely & Kelloway, 2003; Lee & Choi, 2003; Taylor & Wright, 2004). Based from the individual factors, many researchers agree that knowledge sharing activities depend on individual traits, including experience, values, motivations, and beliefs (H. F. Lin, 2007). Moreover, Wasko and Faraj (2005) suggested that individual factors may facilitate employee willingness to share knowledge. This is because employees feel motivated when they think that knowledge sharing behavior is worthwhile to help other employees (H. F. Lin, 2007). Thus, the expectation of personal benefits can motivate employees to share knowledge with their colleagues.

Moreover, based on the organizational characteristics, organizational climate is usually made to capture efficiently the advantages innovation-supportive culture (Saleh & Wang, 1993). In the context of knowledge sharing, the various aspects of organizational climate are important factors for knowledge sharing, such as reward systems linked to knowledge sharing (Bartol & Srivastava, 2002), open leadership environment (Taylor & Wright, 2004) and organizational support (MacNeil, 2003, 2004). Meanwhile, based on the technology factors, ICT can be effectively utilized in order to facilitate the codification process, integration, and dissemination of organizational knowledge (Song, 2002). For instance, the utilization of ICT such as online databases, intranet and virtual communities, communicating and sharing knowledge has been the focus of several researchers (Koh & Kim, 2004).

The knowledge sharing activities component can be defined as to how employees share their work-related experience, skills, know-how, and information with their colleagues (Lin, 2007). Knowledge sharing activities consist of employee willingness to actively communicate with and actively consult with their colleagues to learn from those colleagues (H. F. Lin, 2007). Knowledge sharing activities can be considered as the processes through which employees mutually exchange knowledge and jointly develop new knowledge (Van den Hoof & Van Weenen, 2004a).

Knowledge sharing behavior involve both the supply and demand for new knowledge (Ardichville, Page, & Wentling, 2003). There are two dimensions of knowledge sharing; they are knowledge donating and knowledge collecting. Knowledge donating can be referred to as an activity where employees communicating their individual intellectual capital to their colleagues; whereas knowledge collecting can be referred to as an activity where employees consulting their colleagues as a motivation to share intellectual capital (Van den Hoof & Van Weenen, 2004b). According to Darroch and McNaughton (2002), organizations are promoting knowledge sharing by changing traditional ideas on managing intellectual capital to motivate innovation among employees. In addition, an important question for organizations is which predictors influence knowledge donating and knowledge collecting. Thus, this research focused on the relation between knowledge sharing enablers (i.e. individual, organizational, and technology determinants)

and knowledge sharing activities (i.e. knowledge donating and knowledge collecting).

Individual traits as predictors of knowledge sharing behavior

This study looked at individual traits that promote knowledge sharing behavior among employees. The two traits that may be proximal predictors of knowledge sharing are enjoyment in helping others and self-efficacy. Previous studies showed that individuals are motivated to contribute knowledge because practicing in intellectual activities and problem solving is not only challenging, but also satisfying; because of that they enjoy helping others (Wasko & Faraj, 2000, 2005). Employees who enjoy helping their colleagues may be more oriented toward knowledge sharing and more motivated to share knowledge – for both knowledge donation and knowledge collecting (Lin, 2007).

Self-efficacy can be referred to as the evaluation of individuals about their ability to organize and perform actions needed to achieve specific levels of performance (Bandura, 1982, 1989, 1993, 1994; Zimmerman, Bandura, & Martinez-pons, 2010). In their study, Wasko and Faraj(2005) found that self-efficacy motivates individuals to share knowledge with their colleagues. Other scholars also found that individuals who have high confidence in their ability to contribute knowledge are more likely to accomplish their goals and tasks (Constant et al., 1994). In addition, self-efficacy is usually evident in employees who believe that their knowledge can facilitate solving work-related problems and improve work performance (Luthans, 2003). Individuals who believe that they can contribute towards organizational performance by knowledge sharing will be more likely to contribute knowledge and receive it.

Organizational characteristics as predictors of knowledge sharing behavior

Organizational characteristics is considered as one of the important factors on organizational knowledge (Connely & Kelloway, 2003). Previous research has found that organizational characteristics is important to motivate knowledge sharing among employees by providing sufficient resources, one of the organizational characteristics is top management support (H. F. Lin, 2006). In addition, it is necessary for the top management to make visible of the support to create knowledge sharing climate among employees (MacNeil, 2004). Furthermore, Lin and Lee (2004)proposed that perceived organizational support would encourage knowledge sharing intention among employees; which, in turn would create knowledge sharing culture in the organization. Therefore, this research proposed that organizational support would positively influence the employees' motivation to share knowledge with their colleagues.

Organizational rewards indicate that the organization value certain kind of behaviors from employees (Cabrera & Bonache, 1999). Organizational rewards range from monetary incentives such as increased salary and bonuses to non-monetary rewards such as promotions and job security (Davenport & Prusak, 1998; Hargadon, 1998). In addition, several organizations have introduced reward systems that are specifically designed to motivate employees to share knowledge (H. F. Lin, 2007).Therefore, this research expects that if employees know that they would receive rewards by engaging in knowledge sharing, they would develop greater motivation to share knowledge with their colleagues.

Technology factors as predictors of knowledge sharing behavior

Information and communication technology (ICT) use and knowledge sharing are closely related, because ICT can facilitate quick search, access and retrieval of information; and can provide communication and cooperation among employees (Huysman & Wulf, 2006). Within knowledge sharing, the use of ICT development enable new methods and applications (such as online databases, intranet, virtual communities, etc.), and allow organizations to expand available social networks by overcoming geographical barriers and therefore achieving more efficient collaborative activities (Pan & Leidner, 2003). Furthermore, ICT plays three roles in knowledge management processes; such as (1) obtaining knowledge; (2) defining, storing, classifying, indexing, and linking knowledge-related digital items; and (3) searching and identifying relevant content (Zack, 1999). In addition, effective knowledge management would need employees to share knowledge using ICT because ICT can provide communication channels to obtain knowledge, identifying the location of knowledge providers and requesters, and correcting flow processes (Yeh et al., 2006).

Methodology

Sample and data collection

The survey was distributed to employees of OSRAM Opto Semiconductors (M) Sdn. Bhd. Penang. 150 questionnaires were distributed to the middle manager

and upper level that relate to the research that I have conducted from different department (Human Resource (HR), Finance, Information and Technology (IT), Site Services and Research and Development (R&D) Department). 115 respondents gave their feedbacks. Sampling technique used in this study was convenience sampling.

Measurement

In this study, items used to operationalize the constructs were adopted from past researches and was modified for use in the knowledge sharing context. All constructs were measured using multiple items. Five point Likert scale (1-strongly disagree, 5-strongly agree) were used for all the items. The measurement approach for each theoretical constructs in the model is explained briefly below.

For the first independent variable, a four-item scale measuring enjoyment in helping others was adopted from a measures developed by Wasko and Faraj (2000). Knowledge self-efficacy was measured using four items derived from Spreitzer (1995), which focused on worker views of pleasure attained through sharing knowledge. It was studied worker judgments of their ability to share knowledge that is precious to the company (Lin, 2007). Top management support was measured using four items derived from researches by Tan and Zhao (2003). These items was studied the degree to which workers recognize support and encouragement of knowledge-sharing from top management (Tan, 2003). Organizational rewards was measured using three items adopted from Hargadon (1998) and Davenport and Prusak (1998), which defined the degree to workers believe that they will obtain extrinsic incentives such as salary, bonus, promotion, or job security for sharing knowledge with others. In addition, ICT use was measured based on four items taken from Lee and Choi (2003), which referred to the extent of technological usability and ability about knowledge sharing. Knowledge donating was measured using three items derived from study by Van den Hooff and Van den Weenen (2004a), which evaluated the extent of worker willingness to contribute knowledge to others. While knowledge collecting was measured using four items adopted from Van den Hooff and Van den Weenen (2004a), which referred to collective viewpoints or behavioral practices regarding to the spread of learning among colleagues.

Data analysis and findings

All variables were analyzed using frequency analysis, descriptive analysis, reliability analysis, Pearson correlation analysis and multiple regression analysis of data.

Frequency analysis

Table 1: Frequency table

Variables	Findings	Percent
Age	31-40years old	45.2 %
Gender	Female	59.1%
Marital Status	Married	67%
Ethnic	Chinese	56.5%
Education Level	Bachelor Degree	68.7%
Length of Service	6-10 years	33%

There were 150 employees in OSRAM Opto Semiconductors (M) Sdn. Bhd. Penang; 115 respondents complete the survey making it 95% confidence with 4.4% error level and 76.67% response rate.

Descriptive analysis and Reliability analysis

Table 2: Reliability Statistics

Variables	No. of items	Cronbach's Alpha	Remarks
Enjoyment helping others	4	.943	Excellent
Knowledge self-efficacy	4	.802	Good
Top management support	4	.937	Excellent
Organizational rewards	3	.960	Excellent
ICT use	4	.807	Good
Knowledge sharing	7	.930	Excellent

Table shows that reliability analysis for independent and dependent variables. For enjoyment in helping others,

value of Cronbach's Alpha was .943 and it is considered excellent. For knowledge self-efficacy, value of Cronbach's Alpha was .802 and it is also considered good. For top management support, value of Cronbach's Alpha was .937 and it is considered excellent. For organizational rewards, value of Cronbach's Alpha was .960 and it is considered excellent. For ICT use, value of Cronbach's Alpha was .807 and it is considered good. For knowledge sharing the value of Cronbach's Alpha was .930 and it is considered excellent. Thus, the independent and dependent variables were reliable in my study. It was also means that all questions asked about these issues considered acceptable and understandable.

Pearson correlation analysis

The Pearson correlation was used to measure the relationship between two variables (Zikmund, 1997). According to Sekaran (2003), the coefficient or correlation described the strength of relationship between two sets of interval skills or ratio skills variables. The first independent variable which was enjoyment in helping others and knowledge sharing have a moderate relationship (r=.396, p=.000), second independent variable which was knowledge self-efficacy and knowledge sharing have strong relationship (r=.574, p=.000), third independent variable which was top management support and knowledge sharing have strong relationship (r=.605, p=.000), fourth independent variable which was organizational rewards and knowledge sharing have moderate relationship (r=.411, p=.000), last independent variable which was ICT use and knowledge sharing have moderate relationship (r=.369, p=.000). Thus, all the independent variables had influenced employee knowledge sharing.

Multiple regression analysis

Table 3: Model Summary

Model	R	R Square	Adjusted R Squared	Std. Error of Estimate
1	.683a	.466	.422	3.16225

a. Predictors: (Constant), Enjoyment Helping Others, Knowledge Self- Efficacy, Top Management Support, Organization Reward, ICT Use
b. Dependent Variable: Knowledge Sharing

Table 4: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	952.509	5	190.502	19.051	.000[a]
Residual	1089.978	109	10.000		
Total	2042.487	114			

a. Predictors: (Constant), Enjoyment Helping Others, Knowledge Self- Efficacy, Top Management Support, Organization Reward, ICT Use
b. Dependent Variable: Knowledge Sharing

Both table shows the result of regression of five independent variables against dependent variable. From the result, the regression equation with all the five predictors had a significant effect to the employee knowledge sharing, R square = .466, p= .000. The result means that .466 or 46.6% of the variance in employee knowledge sharing has been significantly explained by five independent variables. F value shows significant where $p < 0.000$. It can be concluded that the model of the study is significant.

Table 5: Coefficients[a]

Model	Standardized Coefficients	T	Sig.
1 (Constant)		4.049	.000
Total Enjoyment Helping Others	-.098	-.986	.326
Total Knowledge Self- Efficacy	.265	2.823	.006
Total Top Management Support	.473	4.023	.000
Total Organization Reward	.213	2.557	.012
Total ICT Use	-.055	-.608	.545

a. Dependent Variable: Knowledge Sharing

Based on the result, it shows that knowledge self-efficacy (β= .265, t=2.823, p=.006), top management support (β= .473, t=4.023, p=.000), organizational rewards (β= .213, t=2.557, p=.012) had a positive impact on the employee knowledge sharing. While, enjoyment in helping others (β=-.098, t=-.986, p=.326) and ICT use (β= -.055, t=-.608, p=.545), not significant with the employee knowledge sharing.

Discussion and implications

Discussion of findings

This study was fascinating from both theoretical and practical view. The result illustrated that one individual factor (knowledge self-efficacy) and two organizational factors (top management support and organizational rewards) significantly affect knowledge sharing. Practically, the relations between knowledge sharing enablers and processes might provide an idea pertaining how organization can cultivate knowledge sharing culture to maintain their performance. Discussions of the findings are explained below.

The first objective of this research was to examine the relationship between individual factor (enjoyment in helping others) and knowledge sharing. Thus, the finding indicated that enjoyment in helping others did not have an effect on knowledge sharing. Hence, there was no evidence for the association of enjoyment in helping others and knowledge sharing. This finding could be because workers do not feel pleasure in sharing knowledge and as a result helping others tend to be insecure. Workers also do not have positive mood condition pertaining social interaction which leads knowledge sharing behaviors (Lin, 2007). This could be because, if they share their knowledge, they cannot maintain and preserve their position and level.

Next was to investigate the relationship between individual factor (knowledge self-efficacy) and knowledge sharing. It was found that knowledge self-efficacy was significantly related to knowledge sharing. A sense of the ability and self-belief of workers might be the condition for workers to engage in knowledge sharing (Lin, 2007). So, workers who believe in their ability would be willing to share useful and valuable knowledge with others (Lin, 2007).

The second objective of this research was to analyze the relationship between organizational factor namely top management support and knowledge sharing. It was found that top management support was associated with workers willingness to knowledge sharing with colleagues. The findings showed that views of top management support of knowledge sharing affect individual willingness to share knowledge. Top management must show some support toward employees and provide enough resources to share knowledge (Lin, 2006). Besides that, if the top management aid social interaction culture and communication, it would likely motivate workers to share knowledge (Lin, 2007).

Next was to study the relationship between organizational factor (organizational rewards) and knowledge sharing. The findings found that there was a positive relationship between organizational rewards and knowledge sharing. Management must recognize organizational rewards as tools to motivate employees to share their knowledge, such as fiscal reward (Lin, 2007). To cultivate and foster knowledge sharing activities, management also can focus on salary, bonus and promotion incentives.

The third objective of this research was to examine the relationship between technology factor (ICT use) and knowledge sharing. The results indicated that there was no relationship between ICT use and knowledge sharing. This could be because this situation may be clarified by the fact that firms show a tendency for workers to use knowledge as their source of power for personal benefit rather than as company resources (Syed-Ikhsan and Rowland, 2004). This finding may due to the fact that investing in ICT alone is not sufficient to facilitate knowledge sharing (Lin, 2007). It is also possible that reliance on a techno-centric method to knowledge sharing is inadequate for attaining the essential social exchange and interpersonal interactions of workers for assisting worker willingness of knowledge sharing (Zack, 1999). It is because ICT can provide access to knowledge; however, access is not using or applying knowledge (Lin, 2007). Thus, knowledge sharing involves social and human interaction rather than ICT usage (Zack, 1999).

Practical implications

Firstly, this study focused on individual factors to understand the characteristics of employees who would share their knowledge to the others. This study has found that, employees with knowledge self-efficacy are more likely to share knowledge with other employees.

Secondly, this study focused on organizational factors. Thus, this study makes a unique contribution to previous research because of top management support and organizational rewards are significantly related to knowledge sharing. By showing that the organizational factors were significantly related to knowledge sharing, this research has provided valuable information to scholars and practitioner in the areas of knowledge sharing.

Limitations and directions for future research

Future study should focus on several areas to overcome the limitations of the current research. Firstly, is combine both dimension of knowledge sharing (knowledge donating and knowledge collecting) into one dimension, hence, future research could exploring each one of dimension knowledge donating and knowledge collecting separately. Secondly, past study has proposed an important relationship between individual differences and worker views of knowledge sharing culture (Connelly and Kelloway, 2003). Future study may investigate how personal traits (such as age, level of education, and working experiences) and organizational characteristics (such as company size and industry type) may moderate the relationship between knowledge sharing enablers and processes (Lin, 2007).

Van den Hooff and Van Weenen (2004a) suggested that communication atmosphere and worker affective commitment are determinants of knowledge sharing. Lee et al. (2006) confirmed empirically that dimensions of climate maturity such as learning orientation, trust, and worker commitment had influence on the knowledge quality and level of knowledge sharing. Further study in view of these aspects can improve understanding of vital factors for knowledge sharing (Lin, 2006). Thus, the research model must be tested further using samples from other organizations, because of cultural differences among companies affect worker views pertaining knowledge sharing (Lin, 2007). Further testing hence would provide more robust test of the hypotheses (Lin, 2007). Finally, future research might gather longitudinal data to investigate the causality and interrelationships among variables that are crucial to knowledge sharing processes (Lin, 2007).

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