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How the Organizational Goals Affect Knowledge Management

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How to enhance customer satisfaction and technology innovation have been topics of discussion for some time; however, few studies have explored the two issues by applying the knowledge creation theory, and analyzed their differences in knowledge creation activities. The present study aims to explore how the firm's organizational goal affects its knowledge creation process. Based on Nonaka's knowledge creation theory, questionnaires were developed and sent to Taiwanese firms in various industries, including the manufacturing and service industries. These questionnaires were collected either by mail or interview. Our findings suggest that externalization and combination activities should be emphasized when the organizational goal is innovation, whereas internalization activity should be emphasized when the organizational goal is customer satisfaction.

Keywords: knowledge management; knowledge creation process; organizational goal; innovation; customer satisfaction; SECI

Introduction

Nonaka and von Krogh (2009) pointed out that the knowledge creation theory defines knowledge in three parts: (a) Knowledge is justfied true belief; (b) Knowledge is (i) the actuality of skillful action and/or (ii) the potentiality of defining a situation so as to permit action; and (c) Knowledge is explicit and tacit along a continuum. Since Nonaka (1991) introduced the 'knowledge creation spiral' to characterize the tacit-explicit knowledge transformation process in knowledge-intensive firms, the knowledge creation theory shed light on organizational creativity, learning, innovation, and change in organizations (Nonaka and von Krogh, 2009; Rasmussen and Nielsen, 2011).

Over the past two decades, numerous empirical studies have followed their concept, and verified the sequential knowledge creation activities in the process-from socialization (S) to externalization (E), combination, (C) internalization (I), and then back to socialization (S) (hereafter referred to

as the SECI model) (Dyck, Starke, Mischke, & Mauws, 2005; Sabherwal and Becerra-Fernandez, 2003).

The past empirical studies of the SECI model made several discoveries. Becerra-Fernandez and Sabherwal (2001) discussed that knowledge management (KM) processes would impact perceived knowledge effectiveness. They found that the combination and externalization processes, and not the internalization and socialization process, would affect knowledge satisfaction. Sabherwal and Becerra-Fernandez (2003) further analyzed that different KM processes would influence perceived knowledge effectiveness at different organizational levels. For instance, internalization and externalization processes influence perceived effectiveness at the individual level, while socialization and combination processes exert influence at the group and organizational levels. Schulze and Hoegl (2008) also depicted that the novelty of product ideas generated is influenced both by the positive effect of socialization and internalization processes, as well as the negative effect of externalization and combination processes.

Notwithstanding the rich empirical studies of Nonaka's knowledge creation theory during the past two decades, the main question proposed by Baloh, Uthicke, and Moon (2008) still exists, that is, 'Which knowledge process do they need to nurture?' (p. 436). Empirical studies such as that of Schulze and Hoegl (2006) depicted the crucial processes when facing different product development phases (i.e., concept development, product development). However, their studies focused on a single industry (manufacturing) with a single organizational goal (new product success). In this study, we attempt to put all the industries together to identify the key knowledge activities when facing different organizational goals.

In previous research, organizational goals of innovation and customer satisfaction were respectively applied to discussions about the high-tech industry (Ho, 2011; Tsai & Wang, 2009, Tsai, Chen, & Chin, 2010) and the service industry (Chen & Li, 2006; Lin, Su, & Chen, 2006; Shahina & Zairi, 2009). However, innovation is not limited to the high-tech industry; it also exists in the service industry (Drejer, 2004; Hipp & Grupp, 2005; Castellacci, 2008). As most empirical studies show, technology innovations such as the auto teller machine (ATM) equipment (Jaw, Lo, & Lin, 2010), logistics tracking (Chang, 2003), and e-business (Ramsey, Ibbotson, Bell, & McCole, 2005) play an important role in the service industry. Application of these innovations improved operating procedures in the industry and reduced its service costs. Therefore, nowadays innovation is not a group of segmented factors applicable to the manufacturing industry, the high-tech industry, or the service industry, as in the case of prior studies; on the contrary, innovation has become a catalyst for a firm's success. In addition, although various studies describe how an organization's overall learning efficiency af-

fects its innovation performance (Clifton, Keast, Pickernell, & Senior, 2010; Ho, 2011; Li, Huang, & Tsai, 2009), few studies have analyzed the individual effect of each activity on innovation performance in the knowledge creation process (KCP). Therefore, the primary purpose of our research is to find out which activities in the KCP have a significant effect on a firm's innovation performance.

Customer satisfaction, on the other hand, has been a key factor in measuring the success of a market segmentation strategy (Athanassopoulos, 2000) or employees' service quality in the field of market research. Various studies have explored the relationship between learning and customer satisfaction (Caemmere & Wilson, 2010; Chang & Ku, 2009; Lin et al., 2006); however, few studies have analyzed the individual effect of each activity in the KCP in terms of customer satisfaction performance. Therefore, the second purpose of the current research is to identify which activities in the KCP have a significant effect on a firm's performance measured by customer satisfaction. To summarize, the aim of this study is to identify the activities in the KCP that firms should focus on when they have different organizational goals.

The rest of this paper is organized as follows: the second section reviews prior literature to summarize the development of the knowledge creation theory; the third section explains our research method, and the fourth section discusses our research findings. Future research directions are presented in the final section.

Literature Review

Knowledge Value

Originating from creativity, individual experiences, and organizational learning, knowledge exists in written documents, as well as in routines, tasks, processes, practices, rules, and values that shape an organization (Bhagat, Kedia, Harveston, & Triandis, 2002). Knowledge results from the interaction between individuals and organizations, and is specific to a context defined by particular time and place (Nonaka, von Kroghh, & Voelpel, 2000). Therefore, knowledge management is a type of organization memory, which encompasses a wide range of clear processes, methods, rules, and data, and thus enabes people to search for important knowledge among different KM operations (Liu, Chen, & Tsai, 2005).

Organization knowledge is path-dependent, hard for third parties to appropriate, difficult to imitate, and causally ambiguous (Cabrera & Cabrera, 2002); hence, every organization is enabled to create its unique competitive advantage and sustainability (Grant, 1996, Tsai & Li, 2007). In other words, a firm will enjoy more efficiency when its advantage is built on its daily processes and routines, and is created by individuals and groups who

could act autonomously as knowledge creators and transmitters (Nonaka, Toyama, & Konno, 2000; Sabherwal & Becerra-Fernandez, 2003). KM has become a fundamental task of an organization and the main challenge of its members (Pertusa-Ortega, Zaragoza-Sáez, & Claver-Cortés, 2010).

The model proposed by Nonaka (1994) has several characteristics. First, the model includes two important elements for knowledge creation: tacit knowledge and explicit knowledge. Tacit knowledge is highly subjective, idiosyncratic, and deeply rooted in personal experiences. Explicit knowledge, on the other hand, is rational, theoretical, and so-called scientific knowledge, which can be documented (Martín-de-Castro, López-Sáez, & Navas-López, 2008).

Second, in Nonaka's SECI model, tacit knowledge and explicit knowledge are complementary processes. They should not be seen as separate entities, since they are based on the same continuum (Nonaka & von Krogh, 2009). Third, knowledge transformation occurs during its transit, that is, knowledge is deepened and widened not only in the transformation between tacit knowledge and explicit knowledge, but also in the transit between individuals and groups. Sabherwal and Becerra-Fernandez (2003) clearly pointed out that the efficiency of the KCP is determined by the level of effectiveness at individual, group, and organizational levels, which interact continually when the KCP exists.

Lastly, knowledge creation is a spiral system. As Nonaka (1994) stated, 'This spiral illustrates the creation of a new concept in terms of a continual dialogue between tacit and explicit knowledge. As the concept resonates around an expanding community of individuals, it is developed and clarified. Gradually, concepts, which are thought to be of value, obtain a wider currency and become crystallized' (p. 15). Therefore, Nonaka thinks of the KCP as a spiral process, where new knowledge will be continuously created from previous findings.

In Nonaka's SECI model, the transition process is composed of four distinctive activities (Figure 1). The first is socialization, where tacit knowledge is transferred among members through mentoring and peer discussion. Therefore, the members share one mentality, technical skills, and experience. This is generally an intermingled multi-level trial-and-error process full of peer discussions, which is conducive to the next process-externalization. In the externalization process, tacit knowledge is attempted to be articulated into explicit concepts, usually via metaphors, continuous dialogues, and collective actions, in the hope that concrete concepts can be formed and group solutions can be found. The next is combination, which aims at combining different entities of explicit knowledge to bring about or even document new ideas and solutions. Lastly, internalization is the process whereby explicit knowledge is turned into tacit knowledge through learning-

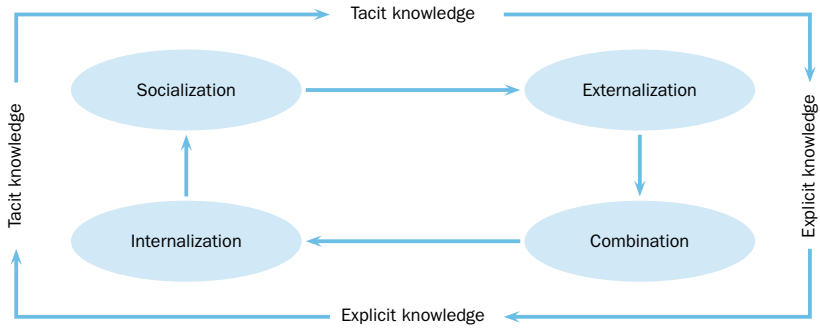

Figure 1 Knowledge Creation Model (adapted from Nonaka and Takeuchi, 1995)

by-doing, a process during which new experiences accumulate (Choi & Lee, 2002; Nonaka & von Krogh, 2009).

KCP and Organizational Goal

Gilbert and Cordey-Hayes (1996) argued that knowledge application is the facilitator of successful innovation. Thus, technology innovation in processes, products, and services helps industries enhance the efficiency of their production activities (Hung, Kao, & Chu, 2008; Miles, 2005; Sirilli & Evangelista, 1998). Ideas for technology innovation grow from visions, metaphors, or any language form into explicit knowledge. Take Matsushita's bread-maker, for example. A manager of the company got ideas about how to make bread from a hotel baker's implicit experience. The manager then translated these ideas into explicit language for their engineers and consequently, the development team combined the engineers' scientific knowledge with the manager's ideas to develop the bread-maker (Nonaka, 1991).

Innovation often first involves concept developments, followed by the organization of these concepts into a product structure (Hall & Andriani, 2003). Matsushita's example illustrates two key activities in an innovation process, namely externalization and combination. The translation of the manager's implicit ideas into explicit language is an externalization activity. The development of the bread-maker based on the engineers' scientific knowledge and the manager's explicit language is a combination activity. Nonaka et al. (2000) further indicated that concept creation in new product development is a process of externalization and converting explicit concepts into more complex and systematic sets of product knowledge is a process of combination. Hence, externalization and combination are the two key activities in the innovation process.

Therefore, the present study proposes the following hypotheses:

H1a *When a firm's organizational goal is innovation, increasing the focus*

on externalization activity in the KCP will increase the firm's performance.

H1b *When a firm's organizational goal is innovation, increasing the focus on combination activity in the KCP will increase the firm's performance.*

As Peter Drucker (1954) argued, creating a satisfied customer is the only valid definition of business purpose (also cited in Mohr-Jackson, 1998, p. 109). Cater and Cater (2009) also asserted that customer satisfaction is more affected by personal interaction than by price holds. Therefore, customer satisfaction is the main factor of service quality, which involves physical equipment and personnel interaction (Thomas, 1978). Prior research shows that if a firm's customer satisfaction or customer loyalty can be improved, the firm will enjoy significantly positive outcomes in terms of its service quality (Liao & Chuang, 2004; Tracey, Tannenbaum, & Kavanagh, 1995).

In discussions regarding the characteristics of successful programs or how to foster customer satisfaction in organizational activities, Li, Yang, and Wu (2008) pointed out that improved service quality relies on certain critical factors, including a service system (which involves a standardized service process and physical environment) and HR practices (which influence employees' job attitudes and service ability). In short, sharing implicit knowledge among employees through social interaction, followed by knowledge internalization through learning-by-doing, is the main way to enhance customer satisfaction. Therefore, we propose the following hypotheses:

H2a *When a firm's organizational goal is customer satisfaction, increased focus on socialization activities in the KCP will increase the firm's performance.*

H2b *When a firm's organizational goal is customer satisfaction, increased focus on internalization activities in the KCP will increase the firm's performance.*

Research Method

Sampling

Each sample represents one firm's knowledge creation activity. Given that our study attempts to identify how KCP works in firms with different organizational goals, we gathered data from firms that come from various Taiwanese industries, including manufacturing and service industries.

Every sampled firm was sent a copy of the questionnaire. Our target respondents were middle managers who are acquainted with the whole KCP in their firm (Lee & Choi, 2003). Middle managers were chosen because

Table 1 Sample Distribution

Industry	Category	Frequency	
Semiconductor and optical industry	IC Design house	2	1.50
	Manufacturing	5	3.76
	Equipment	2	1.50
	Optical	2	1.50
	Others	2	1.50
	Sub-total	13	9.77
High-Tech Industry	Cars	3	2.26
	Software	7	5.26
	Electronic	9	6.77
	Computer	9	6.77
	Peripheral equipment	8	6.77
	Others	3	2.26
	Sub-total	40	30.08
Communication and equipment industry	Communication equipment	6	4.51
	Web equipment	18	13.53
	Communicating products	1	0.75
	Others	1	0.75
	Sub-total	26	19.55
Food processing, house appliances and construction industry	Food processing	11	8.27
	Construction	1	0.75
	appliances	9	6.77
	Others	3	2.26
	Sub-total	24	18.05
Service industry	Medical	3	2.26
	Insurance	4	3.01
	Bank	8	6.02
	Beverage	4	3.01
	Communication	2	1.50
	Others	9	6.77
	Sub-total	30	22.56
Total		132	100.00

Continued on the next page

they are an important trigger for new instructions, which they make by coordinating information gathered from employees following the request of the top manager (Nonaka et al., 2006). The data was collected either by mail or interview. Of the 100 copies of questionnaires mailed, this study received 55 copies and thirteen of them were incomplete. The other 90 copies were fulfilled via face-to-face interviews. Using the two described approaches, we collected data from 132 firms. An ANOVA was then conducted to analyze whether the firms came from the same population by testing the mean dif-

Table 1 *Continued from the previous page*

Industry	Category	Frequency	
Sex	Male	99	75.00
	Female	33	25.00
	Total	132	100.00
Years of service (at the current company)	< 5 years	34	25.76
	< 10 years	35	26.52
	< 15 years	31	23.48
	< 20 years	19	14.39
	≥ 20 years	13	9.85
	Total	132	100.00
Firm Size	< 100	40	30.30
	< 200	17	12.88
	< 500	15	11.36
	< 1000	11	8.33
	≥ 1000	49	37.12
	Total	132	100.00

ferences among the firms; the results were all non-significant differences, which eventually proved to be true. The average tenure of the respondents is 9.9 years, and the ratio of males to females is 3:1. The detailed distribution of the firms is listed in Table 1.

Variables

Independent Variables. Drawing on other researchers' work (Boiral, 2002; Chou et al., 2005; Jordan & Jones, 1997), our questionnaire items regarding a firm's KCP were mainly developed based on the ideas of Nonaka et al. (2000). However, the questionnaire veered away from traditional surveys that ask respondents about the presence of the four knowledge creation activities in their organization; instead, we asked them *how much* their organization values each of the activities. We ran a pilot test on 26 firms to make sure the construction of this questionnaire was appropriate for all firms. The final version of the questionnaire contained nine questions regarding socialization, three questions regarding externalization, seven questions regarding combination, and three questions regarding internalization. Table 2 details the reliability of the pilot test and the revised items.

Dependent Variables. Two types of organizational goal-*innovation and customer satisfaction*-were used in this study, where innovation refers to process improvement (Law & Ngai, 2008), introduction of a new product, or a new marketing project. Innovation was assessed using a single item, and respondents were asked to indicate their performance relative to their competitors. Similar to innovation, customer satisfaction was also assessed

Table 2 Survey Items

Construct	Items	Source
Socialization (.732)	(1) Experience-sharing with customers	Nonaka et al., 2000
	(2) Experience-sharing with suppliers	Nonaka et al., 2000; Walter et al., 2007
	(3) Dialogue with competitors	Nonaka et al., 2000
	(4) Information-gathering from the sales force and production sites	Nonaka et al., 2000; Walter et al., 2007
	(5) Informal meetings with competitors outside the firm	Nonaka et al., 2000; Boiral, 2002
	(6) Idea-generation for corporate strategy from daily social life and interaction with external experts	
	(7) Information contact within the department	Boiral, 2002; Nonaka et al., 2000
	(8) Contact between departments	Nonaka et al., 2000
	(9) Expertise demonstrated by a master and acquired through practice	
Externalization (.650)	(1) Concepts created via the Internet	
	(2) Training evaluation (involvement of industrial designers in project teams)	Nonaka et al., 2000; Chou, Chang, Tsai, and Cheng, 2005
	(3) Improvement proposal (adductive thinking)	Nonaka et al., 2000
Combination (.742)	(1) Market information gathering	
	(2) Information gathering from all over the company (e.g., manufacturing and marketing)	
	(3) Construction of manuals, documents, and databases on products and services	
	(4) Planning and holding presentations to transmit newly created concepts	
	(5) Quality and quantity of new patents	Jordan and Jones 1997; Nonaka et al. 2000
	(6) The number of new products	Nonaka et al. 2000
	(7) Quality of documents (e.g., marketing analysis, strategic analysis, and so on)	
Internalization (.653)	(1) Employees' job attitude ('enactive liaising' activities with functional departments through cross-functional development teams and overlapping product development)	
	(2) Employees' job accuracy (experiments conducted and results shared with the entire department)	
	(3) The performance of inter-firm competition (encouraging engagement in facilitation, prototyping, and benchmarking, as well as a challenging spirit within the organization)	

Table 3 Construct Validity – Convergent and Discriminant

Indicators		(1)	(2)	S	E	C	I
S	1. Sharing with customers	0.39	4.24				
	2. Sharing with suppliers	0.26	2.75				
	3. Dialogue with competitors	0.59	6.77				
	4. Sales force and production sites	0.58	6.60				
	5. Informal meetings	0.54	6.06				
	6. Interaction with external experts	0.45	4.91				
	7. Contact within the department	0.62	7.23				
	8. Contact between departments	0.69	8.21				
	9. Demonstrated by a master	0.49	5.48				
E	10. Concepts created	0.56	6.15	10.45*			
	11. Training evaluation	0.65	7.40				
	12. Improvement proposal	0.64	7.26				

Continued on the next page

using a single item on a five-point Likert Scale, wherein 1 equaled much worse and 5 equaled much better.

Control Variables. We adopted turnover rate (Cater & Cater, 2009) as the first control variable, which asked the firms to compare themselves to their competitors in terms of their turnover rate on a five-point Likert scale, wherein 1 equaled much lower and 5 equaled much higher. The employees' rotation rate was then used as the second control variable, which also asked respondents about the firm's rotation rate compared to that of their competitors on a five-point Likert scale, wherein 1 equaled much lower and 5 equaled much higher. Firm size was used as the third control variable, which was also based on a five-point scale. Finally, employees' university degree was used as the last control variable. The firms were asked to specify how important a university degree is in recruiting their staff. A five-point Likert scale, wherein 1 equaled unimportant and 5 equaled very important, was also used for this control variable.

Statistics

Confirmatory Factor Analysis (CFA). This study used CFA to examine the convergent and discriminant validity of the scale. The measurement model included 22 items describing four constructs: socialization (S), externalization (E), combination (C), and internalization (I). Table 3 shows the validity results. The items of factor loadings were significant (i.e., $t > 1.96$) to their corresponding construct (Bagozzi, Yi, & Phillips, 1991), with the lowest *t*-value being 2.75. Moreover, the discriminant validity was tested by different chi-square between constructs (Bagozzi et al., 1991), and most of them

Table 3 *Continued from the previous page*

Indicators		(1)	(2)	S	E	C	I
C	13. External information gathering	0.53	5.95	29.15*	3.32†		
	14. Infor. gathering from company	0.67	7.92				
	15. Construction of manuals, documents and databases	0.59	6.76				
	16. Planning and holding present.	0.59	6.82				
	17. New patents	0.43	4.71				
	18. New products	0.39	4.25				
	19. Quality of documents	0.51	5.69				
I	20. Job attitude	0.85	9.14	53.85*	39.95*	50.99*	
	21. Job accuracy	0.76	8.20				
	22. Inter-firm competition	0.35	3.70				

Notes (1) factor loadings; (2) *t*-value (1.96); $p^* < 0.05$, $\chi^2 = 3.841$; $p\dagger < 0.1$, $\chi^2 = 2.706$.

Table 4 Means, Standard Deviations, Pearson Correlations and Cronbach's Alpha

Item	Mean	SD	1	2	3	4	5	6
1. Satisfaction	3.38	0.71						
2. Innovation	3.33	0.88	0.358**					
3. Socialization	3.55	0.69	0.214*	0.163†	0.648[a]			
4. Externalization	3.09	0.80	0.184*	0.381**	0.585**	0.650[a]		
5. Combination	3.50	0.68	0.186*	0.394**	0.465**	0.597**	0.733[a]	
6. Internalization	3.89	0.71	0.350**	0.151†	0.358**	0.366**	0.401**	0.625[a]

Notes [a] Cronbach's alpha for each activity on the diagonal and all scale's is 0.886. Correlation is significant at the $p^{**} < 0.01$, $p^* < 0.05$, $p\dagger < 0.1$ (2-tailed).

had a significant effect ($p < .05$). Therefore, the scale has convergent validity and discriminant validity in this study.

Reliability. Cronbach's alphas were used to measure the reliability of the multi-item scale for each dimension. The reliability of the whole instrument was .886, and the reliability of each SECI activity ranged from .625 to .7337 (Table 4). An adequate alpha is one that is higher than .5, although Nunnally (1978) recommended reliability higher than .6. Hence, the measurement instrument is reliable. The same argument of reliability is acceptable according to the standard of Bagozzi and Yi (1988, p. 80) and Baker, Parasuraman, Grewal, and Voss (2002, p. 130).

Pearson Correlation. Pearson correlation was conducted to check the correlation among activities. As shown in Table 4, most correlation variables are significant ($p < .05$).

Common Method Bias. Harman's one-factor test. A principal factor analysis of all measurement items yielded seven factors with eigenvalues larger than

one. These factors accounted for 67.644 percent of the variance. Considering that no single factor emerged as dominant, common method variance is unlikely to be a serious problem in our data (Podsakoff, & Organ, 1986).

Results and Findings

To compare the KCP of the better-performing group (i.e., survey participants who consider their innovation performance 'better' or 'much better' than their competitors) to that of the poor-performing group (i.e., survey participants who consider their innovation performance has 'no difference' or is 'worse' or 'much worse') when innovation is the dependent variable, ANOVA was run to test the mean differences in a firm's emphasis on each SECI activity of the KCP. As shown in Table 5, the mean differences of KCP in a firm's emphasis on both externalization and combination activities between the two groups are significant ($p < .01$). However, no significant difference regarding either socialization or internalization between the two groups is presented ($p > .05$). Furthermore, we ran a regression test to find which SECI activities have a significant effect on a firm's innovation performance. The results are presented in Table 6. Both externalization and combination activities have a significant positive effect on innovation performance ($p < .01$). In sum, H1a and H1b cannot be rejected.

To compare the KCP of the better-performing group (i.e., survey participants who consider their customer satisfaction 'better' or 'much better' than their competitors) to that of the poor-performing group (i.e., survey participants who consider that their customer satisfaction has 'no difference' or is 'worse' or 'much worse') when customer satisfaction is the dependent variable, ANOVA was also run to test the mean differences in a firm's emphasis on each SECI activity of the KCP. Also shown in Table 5, the mean differences of the KCP in a firm's emphasis on both socialization and internalization activities between the two groups are significant ($p < .01$). However, no significant difference regarding either externalization or combination between the two groups is presented ($p > .05$). Furthermore, we ran a regression test to find which SECI activities have a significant effect on a firm's customer satisfaction performance. The results are also presented in Table 6. Only internalization activity has a significant positive effect on satisfaction performance ($p < .01$), while socialization activity has no effect. In sum, H2a is not supported, and H2b cannot be rejected.

Discussion and Conclusion

This study analyzed the SECI activities when firms face different organizational goals. Few firms succeed in improving their KM performance despite substantial resources devoted to it. In their research, Pfeffer and Sutton (1999) examined what leaders do, how they spend their time, and how they

Table 5 The Anova Analysis for Innovation Orientation and Customer Satisfaction

		Dummy	*N*	Mean	SD	*F*	Sig.
Innovation orientation	S	0	70	3.456	0.559	3.010†	0.085
		1	62	3.661	0.795		
		Total	132	3.552	0.685		
	E	0	70	2.838	0.678	17.051**	0.000
		1	62	3.382	0.834		
		Total	132	3.093	0.800		
	C	0	70	3.304	0.667	13.265**	0.000
		1	62	3.715	0.623		
		Total	132	3.497	0.676		
	I	0	70	3.810	0.722	1.890	0.172
		1	62	3.979	0.688		
		Total	132	3.889	0.708		
Customer satisfaction	S	0	73	3.443	0.521	4.255*	0.041
		1	59	3.687	0.831		
		Total	132	3.552	0.685		
	E	0	73	2.977	0.681	3.529†	0.063
		1	59	3.237	0.912		
		Total	132	3.093	0.800		
	C	0	73	3.410	0.631	2.742†	0.100
		1	59	3.605	0.719		
		Total	132	3.497	0.676		
	I	0	73	3.712	0.721	10.937**	0.001
		1	59	4.108	0.633		
		Total	132	3.889	0.708		

Table 6 The Regression Analysis of Hypothesis

Item	Innovation		Customer Satisfaction	
	Model 1	Model 2	Model 3	Model 4
Socialization	–0.135	–0.142	0.091	0.064
Externalization	0.296**	0.328**	0.013	0.086
Combination	0.288**	0.279*	0.017	–0.007
Internalization	–0.023	–0.048	0.307**	0.301**
Turnover rate		–0.128		–0.013
Rotation rate		0.101		–0.031
Firm size		–0.051		–0.075
Degree		0.070		0.008
R^2	00.201	0.239	00.132	0.138
F-value	7.926**	4.403**	4.807**	2.238*
Sig. *F* change	0.001	0.000	0.001	0.030

Notes $p^{**} < 0.01$, $p^{*} < 0.05$, $p\dagger < 0.1$.

allocate resources to close the 'knowing-doing gap' condition. The present study offers important guidelines for firms regarding the question of how to prioritize knowledge creation activities for different organizational goals when facing limited resources and time.

Previous literature has shown that the knowledge creation process is important for new product development (Schulze, & Hoegl, 2006). An empirical study by Lawson, Petersen, Cousins, and Handfield (2009) demonstrated the importance of externalization activities during the development of new products. In addition, total quality management (TQM) should be another type of innovation, as it aims to improve the existing operation processes to become more efficient (Hung, Lien, Fang, & McLean, 2010). Therefore, TQM is also a kind of knowledge creation activity, and its innovation processes also emphasize externalization and combination activities (Hackman and Wageman, 1995; Martínez-Costa & Jiménez-Jiménez, 2009). In the service industry, Leiponen (2006) showed that business service improvements and new service introductions are significantly associated with collectively held knowledge, such as codifying service solutions or team-based competences and procedures. In sum, when a firm's main object is innovation, it should pay more attention to externalization and combination activities. That is, a firm should provide channels to increase intra-organizational interaction and discussion so that more ideas and problem-solving methods can be generated (Nonaka & Takeuchi, 1995).

In addition, when customer satisfaction is the primary organizational goal, internalization activity should be the main process; the reason is that internalization activity helps explicit knowledge to become the tacit knowledge of individuals. Griffith and Sawyer (2010) considered that information processes are passed face to face, thus efficient transfer of tacit knowledge will help improve customer satisfaction. Some researchers have discovered that service firms are more oriented toward external sourcing of knowledge, inter-organizational collaboration, and customer interaction and networking (Howells, 2010; Mansury & Love, 2008). On the other hand, the experiential knowledge of salespeople is gained through serving customers, an individual and psychological process that matches the characteristics of internalization activities in Nonaka and von Krogh's study (2009). In high-tech companies, Reychav and Weisberg (2009) showed that sharing tacit knowledge has a positive effect on enhancing employees' customer goal. Moreover, Howells (2010) declared that customer service is always intangible and perishable. Given these traits, what accumulates from customer service experience is tacit knowledge. The sharing of tacit knowledge among employees is the internalization activity in the KCP. That is, firms should offer HR practices, such as apprenticeship, social interactions, model learning, and simulation training, to enhance knowledge sharing and improve customer satisfaction (Li et al., 2008), as well as employees' work attitudes.

In addition, firms can also create an environment that embodies a learning climate and a training system for employees to increase the efficiency of a firm's internalization activities (Castrogiovanni, Urbano, & Loras, 2011; Lambert & Vero, 2013).

Limitations and Suggestions

The results of this study clarify the differences in the KCP for different organizational goals and build up the guidelines for the KCP in different firms so that they are enabled to modify their processes to match their organizational goals. Following our findings, a firm will be able to enjoy more competitive advantages compared to rivals who do not mark out the activities they need most.

However, this study still has some limitations. First, the sample size is small, which is a common problem in the empirical literature about firm performance. Second, the research is based on self-reported data, which might incur the possibility of common method bias; additionally, the reliability of the sample is not higher than .9. However, the tests of common method variance did not find a serious problem in this study. The reliability is about .88. The reason is that the objective of this study includes the manufacturing and service industries; hence, some questionnaire items in this study are fit for the manufacturing industry, but not for the service industry, whereas some are suitable for the service industry but not for the manufacturing industry. This would be the reason why the validity of this questionnaire is relatively low. However, this study also used multiple assessments to detect validity, such as convergent validity and discriminant validity. Future research might use a project-base for KM processes in different industries to strengthen the research design.

As for future research suggestions, this study did not take into account the empowerment of employees when they perform specific knowledge activities. A manager of a learning organization should make it an 'execution-as-learning' organization, where the employees are enabled to collaborate, by making information available, routinely capturing process data, and finding ways to improve (Edmondson, 2008). To achieve this goal, the organization's KM must involve empowerment. Therefore, we suggest that future studies consider the effects of empowerment on the efficacy of KM.

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