Investigating the Role of the Knowledge Sharing and Innovative Behavior in Supply Chain Management

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***Abstract*— In the era of highly competitive environment and fastly technology advance, an organization should continuously adapt and innovate. The main purpose of the research is to investigate and to analyse the effect of knowledge sharing and innovative climate supply chain performance. The current research is also to investigate and to analyse the moderating role of the relationship between knowledge sharing and innovative behavior in supply chain management. Two hundreds and ten respondents are the sample of the research. SPSS software was used to analyse the research data. The result showed that knowledge sharing and innovative climate significantly affected to supply chain performance. However, the study failed proving moderating role of innovative climate to the relationship between knowledge sharing and innovative behavior. Results showed to maximize knowledge sharing benefits in supply chain networks. Finally Theoritical and practical implication of the current research are conveyed.**

***Keywords*—** *highly competitive environment, knowledge sharing, innovative behavior, supply chain management.*

1. Introduction

Pressure of competitive globalization and fastly technology advance increases the need of organization to continuously adapt and innovate in supply chain networks [1]. An organization with high level of innovation will be more successful in responding the environment change. It develops new capacity to gain better performance [2]. Meanwhile for an organization that is not responsive to the challenge, it will be the looser in the hard competition. Moreover, Raykov [3] stated that in current era, organizational sustainability mainly depends on its level of creative and innovative work of the employees.

Innovation has crucial role to guarantee the life of an organization in long term. It is in line with statement of Ancona & Caldwell, [4] and Scott & Bruce, [5] that innovation is one of most important factors to sustain in long term of organization. Product innovation of an organization will maximize the margin through premium price fixing. While innovation on process increases business process efficiency and assists the organization to gain cost leadership. Thus, an organization having high level of innovation will be easier to achieve its competitive advantage than that of competitors.Being cost leadership is difficult to imitate and it is scarce. The statement is supported by Shanker et al. [6] that innovation is an important element for individual creativity within organization. Besides, innovation also constitutesthe most important factor to gain the organizationan's sustainability. Innovation variable is often related with organizational level, while innovative behavior isrelated with individual one.

Many previous researches have studied the antecedents of individually innovative behavior, such as: individual,job and contextual factors [7]. Individual factors covers personality, education and motivation. Job factors will be aboutautonomy, complexity and time pressure. Meanwhile for contextual ones, it involves management support and leadership [8].

Though innovative behavior is defined as a process to develop and implement new ideas, antecedents studied previously did not cover knowledge management perspective yet. While knowledge management-related contructs are ensured as important factor of innovative behavior [8]. Moreover, from literature view, the understanding of innovative behavior in organization is not relatively consistent and not concluciveyet ([9].

One of innovation sources is from effective knowledge management. Broadly, knowledge is recognized as strategic asset assurring an

organization having unique competency and finding opportunity to innovate [10]. Many previous researches showed that knowledge management has important role in innovation prosess and the output [11]. However, empirical evidence about the relationship is still limited. Such indication is supported by [6] that the relationship between knowledge sharing and innovative behavior is not broadly explored and studied, especially for non western countries context.The current article is intended to fill the existing gap.

Knowledge sharing constitutes one of important dimensions of knowledge management. Knowledge management refers to creation, identification, sharing and storing of knowledge [12]. According to Nonaka [13] knowledge management has two dimensions, namely: explicit knowledge, written and oral forms, such as regulations and organizational procedures and tacit knowledge that is implicit, among others: beliefs, values and experience.

Some research results indicated that knowledge sharing is important element in implementing process of knowledge management. Knowledge sharing is intended to provide comfortable environment supporting employees to share knowledge to their colleagues [14].

Knowledge sharing is also as valuable resource for an organization. An organization can increase its efficiency, decrease risk and training cost. Research by Smith and Mckeen [15] indicated that readiness to share knowledge is associated by profitability and productivity as well as workforce cost decreasing. Besides, knowledge sharing is a supporting factor stimulating individuals of organization to create knowledge and change it to the bigger power [16]. Knowledge sharing with colleagues gives individuals an opportunity to exchange and discuss about ideas of colleagues in solving organizational problems [17]. When an individual in an organization actively share knowledge, the knowledge is acquired. Such condition will promote innovative behavior.

Beside knowledge sharing, organizational context is also believed to influence knowledge management and the relationship between knowledge management and innovation. Organizational context has significant effect to the job environment and employee behavior. An organization can mobilize its employeesto exchange and create knowledge aggresively through more comfortable context creation for knowledge management practice.One of organizational contexts is organizational climate. Organizational climate is a key indicator being able to promote creativity and innovation in workplace [18]. Moreover, Shanker et al. [6] concluded that if organizational climate is positively appreciated by employees, such condition will improve level of commitment, motivation and engagement of employees to the organization. Organizational climate can be innovative climate and supportive climate.

2. Review of Literature

2.1 Innovative Behavior

Studies concerning innovation have been part of many disciplines of academics, among others: sociology, history management, economics, psychology and industrial design [19]. Studies related with innovation highlight the importance of innovation dealt with important issues in the era of modern economy [3]. Innovative work practices, efficiency and employee contribution in organizational change is as main concern of current human resource. Related with the importance of organizational innovation, innovative behavior is important prerequisite to succeed.

In organizational level, innovation is defined as the development and implementation of new ideas froman individual [20]. While individual level of innovation is represented by innovative behavior involving micro level of innovation processes such as: problem recognizing, idea generation, coalition building to support existing idea and implement it [5].

Innovative behavior is a result of a series of comprehensive behavior dealt with idea creation, idea support, idea promotion and idea implementation [21]. The first step of individual innovation is to create idea generating new and valuable idea [22]. The second step, the idea is promoted to the potential colleagues to gain support. Finally, innovation process involves idea application by developing aprototype of innovation implemented in team as well as in organization [23]. Thus, the behavior is a muti-stage processes in which an individual faces a problem, then generate idea leading to problem solution and needed support from employees [24]. Moreover, Bos-Nehles [25] stated that the behavior is an intentional one from an individual to create and implement new and useful idea for individual,

group or organization. It also constitutes process of problem-solving implementation started with problem identification, solution finding and its implementation. With a belief thatinnovative behavior has positive effect on job results, many researchers have devoted much attention to the potential factors giving contribution to the innovative behavior increasing, such as knowledge sharing [26].

2.2 Knowledge Sharing

Knowledge is an importantly organizational resource. Knowledge sharing gives a significant contribution to the organization to gain competitive advantage. Better knowledge sharing management of an organization will positively affect for organizational output.

Knowledge sharing has been investigated in literature by many authors [27, 28] in different terms. Many researchers refer to knowledge sharing as knowledge transfer [29] or knowledge flows [30]. Knowledge sharing indicates a process in which organizational actors, whether it is in a team, a unit or an organization exchange each other and receive knowledge. Such process is affected by level of experience and knowledge from those conducting knowledge sharing.

Knowledge sharing refers to provision of information and idea among employees to run a function or certain task [31]. King [14] stated that knowledge sharing is information exchange between team and individual in workplace. Knowledge sharing also constitutes an importantly intellectual capital resource in financial planning. Knowledge sharing is one important thing in creation process and knowledge innovation [32]. Knowledge sharing creates opportunity to maximize the capacity of an organization to meet the need. Knowledge sharing consists of a series of shared understanding related withrelevant information access providing to the employees and building as well as network using of knowledge in an organization [33].

Knowledge sharing involves some different levels of individuals in organization. The process assumes that at least two parties are involved in the activity. One party conveys or distributes knowledge, while the other absorptor collect knowledge [34].

There are many perspectives being able to influence the implementation of knowledge sharing. In [23] mentioned 5 important perspectives affecting knowledge sharing implementation, such as: the form and location of knowledge, relation among knowledge source,capability of knowledge sharing source, knowledge receiver and the model of receiver learning.

2.3 Knowledge Sharing and Supply Chain Management

Many researches related with knowledge management and organization have strengthened concept that knowledge sharing can affect organizational performance, such as: innovation and absorption capability [35, 36]. Innovation is a process in which economic and social value is extracted from knowledge, through creation, diffusion and transformation of knowledge to achieve product quality or betterly new process being used by society [3].

Initiative of innovation depends on knowledge, skill and experience of employees in value creation process. According to the view, knowledge sharing can be seen as valuable input for innovation [37]. Capability of an organization to change and exploit knowledge can determine level of innovation of an organization. Thus, the organization can only manage knowledge effectively when employees are ready to share knowledge.

Knowledge sharing, as one of knowlegde management dimensions, should be managed well. Practically in an organization, among the employees in organization can have different knowledge. By sharing knowledge, knowledge that is previously not acquired yet can be internalized by employees involved in knowledge sharing activity [38]. The condition facilitates new idea creation [39]. When process of knowledge sharing, contributor of knowledge should translate knowledge in the forms that are understandable by receivers [26]. The experience improve contributor's capacity to promote and realize new idea. The stage is as main element of innovative behavior [23]. Many researchers have focused on the vital role of knowledge sharing in improving innovation [40, 41].

When one shares his knowledge, he not only gives information to others. He also elaborates, combine and translate into clearer and more relevant forms to the receiver [42]. Thus,knowledge sharer improves his capacity to innovate. Spesificallywhen elaborating, integrating and translating information, knowledge sharer actively reflects his knowledge scope. Knowledge sharing action activates cognitively elaborative process

giving individuals new understanding about knowledge owned. Such situation supports innovative process.

Capability of knowledge sharing has contribution to some organizational capabilities, like the vital role of innovation in improving organizational performance [43]. The improvement of knowledge sharing of organization triggers creativity and innovation covering new job method, new procedure and the change in traditional method [44]. Qammach [32] illustrated that knowledge sharing constitutes important factor influencing organizational innovation. Explicite knowledge directly affects to innovation speed, while tacit one influences innovation quality. Many previous research results indicated that knowledge sharing has direct effect to innovative behavior [18, 32, 45, 46].

2.4 Innovative Climate and Supply Chain

Innovative climate is a critically contextual condition for innovative behavior. Innovative climate empirically influences innovative behavior significantly [47]. Moreover, King et al [48] stated that innovative climate has been identified as important element of organizational systems. Empirical evidence indicated that innovative climate affects to intrinsic motivation of employees and then affects to their creativity's level [49]. The stronger innovative climate, the higher level the innovative behavior of employees. A meta-analysis concerning employee's innovation predictors showed that contextual factors, such as: autonomy, support for creativity or innovation, positive climate, organizational resources and supervisory support positively deal with idea generation and its implementation [7].

Supportively innovative climate, minimizing potential risks received by employees during innovation process will enhance employee's innovation in work. When an employee feels valuable and respected, he will have higher motivation to do innovative behavior to achieve organizational goals [50].

2.5 Moderating Role of Innovation Climate

Organizational context can affect to employees behavior in knowledge management. Organizational context can create an atmosphere being able to improve transition process from knowledge management to new product and service. The relationship between knowledge management and innovation is possibly moderated by organizational context. One of contextual variables is organizational climate.

Organizational climate is a felt perception by employees concerning practices and procedures as well as value system of organization [51]. Organizational climate can form a context for an organization to affect knowledge management perception of employees and innovation. Cabrera and Cabrera [52] stated that an organization being able to offer to its employees a comfortable environment and creates an atmosphere in which an employee is not critized without strong reason will give benefit for employee capability inthinking creatively. Within an organizational climate in which employeesof the organization feel convenient, an employee will be motivated to createand share knowledge [53]. An organization can not create its own knowledge. The members of the organization have roles as an intermediary to spread out the knowledge through sharing.

In process of knowledge sharing in an organization, tacit knowledge is more difficult to share. Meanwhile, explicite one is easier to share because of text and language form. Thus, employees are more comfortable to share the latter. Type of different knowledge has differently moderating effect to the relationship between organizational climate and knowledge sharing. In the operation of organizational system, employees' innovative behavior is affected by atmosphere concerning sharing in organizational, team as well as individual level.Organizational climate in each department will be various. Such atmosphere affects to employees' perception and their behavior [54].

Organizational climate can cover innovative and supportive climate. Innovative climate indicates challenging job environment to be creative and takes a risk [55]. An organization withgood knowledge management can not improve its innovation if it does not have innovative climate. An employee in an organization appreciating innovation, strengthening creativity and tolerating failure is proved to affect to the lower uncertainty and tends doing innovative activities [56]. During new product development period, innovative climate will motivate employees to take risk to do challenging activity and creatively transform

knowledge to be new product.

Moreover, under inovative climate, employees not only exchange and share the knowledge for creativity purpose but also seek differently new approach to the jobs [56]. They integrate new knowledge derived from knowledge management activity and then reach higher level of innovation. Conversely, activity of creation and sharing of knowledge can not gain optimum level of innovation without employees that are individually inspiredby innovative climate. Thus, innovation climate is believed to have moderating role to the relationship between knowledge sharing and innovative climate.

3. Research Methods

3.1. Respondents

This section models knowledge sharing in supply chains by considering the previously mentioned critical success factors in knowledge sharing. Three hundreds questionnaires are distributed to the respondents and 210 ones returned and all could be used for the next analysis. The detail occupation of respondents is as follows: 11 state-owned companies, 65 private sectors, 39 teachers and 95 government officers. SPSS software was used to analyse the data.

3.2. Constructs Measurements

For knowledge sharing questionnaires, the current research used Vuori and Okkonen's ones in Masa'deh, Obeidat dan Tarhini [57]. The next measurement was innovative climate. In the current research, researcher used Scott & Bruce [5]'s questionnaires to measure innovative behavior. For innovative climate, questionnaires of Amabile [58] were used. Respondests were givien on scale ranging 1"strongly disagree" to 5 "strongly agree".

4. Result and Discussion

Based on the result of validity test conducted to the questionnaire items of knowledge sharing, innovative behavior and innovative climate, it is indicated that all items of questionnaires are valid. The significant value is less 0.05 and correlation value is 0.5 up. Beside validity test, it is also conducted reliability test. Based reliability test carried out, it is known that Cronbach's Alpha's values of each research variables are 0.7 up. The conclution is that all items of questionnaires are reliable.

Based on model test (Uji F) conducted, it is indicated that significant value is 0.000 < 0.05. It indicates that the model fits and can be used for the next analysis step. Determination coefficient value for the model is 64.3 %.It means that variable of independent, knowledge sharing and innovative climate are able to explain dependent variable, innovative behavior, amounted 64.3 %. The rest is explained by others not used in the research.

Table. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.805(a)	.648	.643	.32843

a Predictors: (Constant), AbsKS_IC, IC, KS

For t test, it is knowned that knowledge sharing significantly affects to innovative behavior (sig value: 0.00<0.05). Thus,the first hyphotesis is supported. The higher the practice of knowledge sharing, the higher the innovative behavior of employees. While for the second hyphotesis, the effect of innovative climate to innovative behavior, it is knowned that innovative climate significantly affects to innovative behavior (sig value: 0.00<0.05). The second hyphotesis is also supported. It means that the higher the innovative climate, the higher the innovative behavior. For the third hyphotesis, moderating role of innovative climate to the relationship between knowledge sharing and innovative behavior, it is indicated that innovative climate does not moderate the relationship between knowledge sharing and innovative behavior. Thus, the thirth hyphotesis is not supported.

Table. Simultan Hypothesis Testing

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	40.858	3	13.619	126.266	.000(a)
	Residual	22.220	206	.108		
	Total	63.078	209			

a Predictors: (Constant), AbsKS_IC, IC, KS

b Dependent Variable: IB

Table. Partial Hypothesis Testing

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.326	.207		1.573	.117
	KS	.339	.054	.333	6.286	.000
	IC	.578	.048	.589	11.967	.000
	AbsKS_IC	.003	.059	.002	.045	.964

a Dependent Variable: IB

The current research succeeded proving the effect of knowledge sharing to the innovative behavior. The result supports many previous researches's findings. The finding also strengthens the literature of the relationship between knowledge sharing and innovative behavior.

The research finding is line with the result of [59] that employee's willingness to share knowledge promotes innovative bahavior of employees. The setting of the research is in Hanoi University with 320 academic staffs as respondents. The current research finding also supports the result research of Radaelli et al [26]. They surveyed healthcare professionals with 155 employees as samples. In the research, two preconditions for individual knowledge sharing is explored, namely: employee's ability and opportunity.

The current research finding also supports the result of research of [46]. In [46] conducted their research in China with the object of telecommunication industry. The research uses two dimensions of knowledge sharing as independent variables separately, namely: knowledge donating and knowledge collecting. The finding proved that knowledge donating and knowledge collecting positively and significantly impact to innovative behavior of employees. However, knowledge collecting is better contributor of employees's innovative behavior. Moreover, [60] conducted a research in Vietnam. They studied the relationship between knowledge sharing and innovative behavior. The findings also strengthen the previous finding of the relationship. The result indicated that employee's willingness to donate and collect knowledge support them to improve innovative behavior. From practical view, the suggesstion will be about how an organization can promote knowledge sharing process to increase innovative behavior of employees.

The study also succeeded proving the effect of innovative climate to the innovative behavior. The stronger the innovative climate, the stronger innovative behavior. The result supports the finding of the research conducted by [43] that innovative climate significantly affects to innovative behavior. The finding showed that organizational climate, in this context is innovative climate, can promote the innovative behavior of employees. Therefore, an organization should seriously design and nurture suitably organizational context to facilitate innovative behavior, especially innovative climate.The finding is also in line with finding of * [61] that innovative climate has positive effect to the idea generation and its implementation. The result indicated that innovative climate is an important element related with innovative behavior. The other research finding supporting the result was from [62] finding that innovative climate significantly affects to inovative behavior.

The research failed proving the moderating role of innovative climate to the relationship between knoledge sharing and innovative behavior. The result is in line with the finding of [63] that innovative climate did not moderate the relationship. The finding showed that innovative climate did not function as strong context to

trigger variable of knowledge sharing to innovative behavior. According to Coakes et al [64], employees in an organization sometimes suppose knowledge as valuable assets so that they limit to share the knowledge to their colleagues.

The finding of the current research about the moderating role of innovative is also in line with the finding of [5]. Their research failed proving the moderating role of innovative climate. It meas that innovative climate does not moderate the relationship between knowledge sharing and innovative behavior. The object of the researh is employees in finance and insurance industries. From the findings, it implies that the moderating role of the variable is still needed to investigate more in the future research.

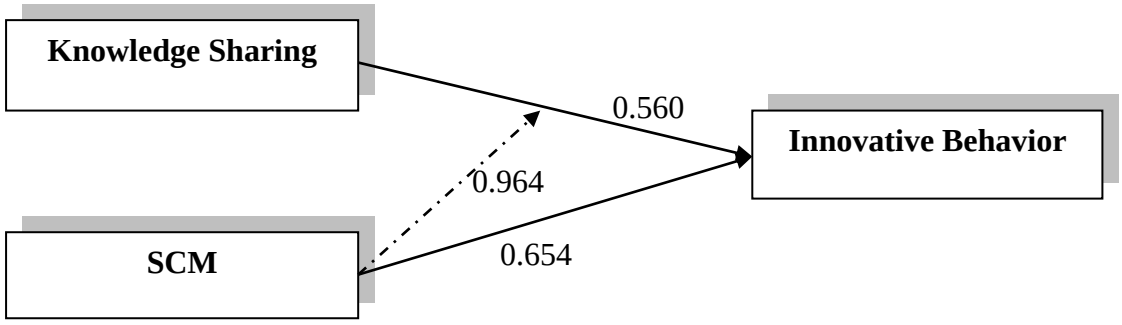

Figure 1. Result Research

5. Conclution

The main finding of the research is that knowledge sharing significantly affects to SCM. The finding strengthens many previous researches's results and theory building in literature about the relationship. Knowledge sharing strongly improves the level of innovative behavior of employees. To optimize knowledge sharing practices, knowing antecedents of knowledge sharing will be suggested.The research finding also proved that innovative climate significantly affects to innovative behavior. It supports management to create such climate to optimize the innovative behavior of the employees.However, the research failed proving the moderating role of innovative climate to the relationship between knowledge sharing and innovative behavior. It implies the theory building of the moderating role of the variable is not robust yet.

In conclusion, the proposed knowledge sharing model here focused on global supply chain network that possibly to be conducted by using Information Technology or human. The study has many limitations and suggests for future research. The data of the current research is based self-report data. It has a potential to undergo common method variance. The current research's data is single source. To strengthen the validity of the finding, a qualitative interview can be conducted to validate the quantitative result [65].

The current research has implication that a clear understanding of one of critical factors, knowledge sharing, promoting innovative behavior may help managers to develop fitting strategy to support the implementation of knowledge sharing. An organization can develop the knowledge sharing culture to encourage its employees's innovatibe behavior in SCM process.

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