# Does Knowledge Sharing Not Make Effect To Innovation Capabilities?

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**ABSTRACT :** *Some research produced different result about the effect of knowledge sharing on innovation capabilities. One side of research revealed knowledge sharing had positive effect on innovation capabilities. In other hand, some research show there is no significant effect knowledge sharing on innovation capabilities. These research presented to confirm this gap.This research choose longitudinal method. This research takes time for about one and half years, in to two period of time. This method different with others research which choose cross sectional method. Home industry at North Sulawesi choose as research sample.In the short time period, research gave empirical evidence there were good possibility knowledge sharing could not make any impact to Home Industry Innovation capabilities yet, further in more longest time knowledge sharing could make good effect on home industry at North Sulawesi innovation capabilities. In conclusion, knowledge sharing as learning process need time to absorb to becoming useful knowledge.*

**KEYWORDS :** *Innovation Capabilities, Knowledge Sharing, Home Industry*

## I. INTRODUCTION

Business paradigm nowadays has shifted from economic basis into knowledge and information basis paradigm. This paradigm shift facilitates high altitude of competitive level business. Innovation is one of the options taken by companies to reinforce their competitive issue and mostly became major key point of the company business success. (Johannesen *et al.*, 2001; Nonaka and Takeuchi, 1995). The company innovation capability highly depends on knowledge resources: therefore, the opulence of company innovation needs to be neatly organized and valued in order to guarantee company success enhancing their competitiveness by innovation (Du Plessis, 2007). An innovative company is a company with capability of handling and organizing knowledge effectively (Darroch, 2005). In other words, an effective and excellent system utilizing opulence of knowledge resources is defined as an effort made by the company to enhance its capability in term of competitiveness by increasing knowledge resources. According to Davenport and Prusak (1998), knowledge resources has their own uniqueness compared to other resources. Uniqueness that Davenport and Prusak (1998) refer is the continuity development of knowledge resources as their being utilized.

One of the way large and small companies to utilize their knowledge resources is knowledge sharing. Knowledge sharing becomes the inseparable element from company because according to Argote *et al.* (2003) knowledge sharing is the way how company optimizes knowledge resources. The result of research conducted by Lin (2007) reveals that by utilizing knowledge sharing, company's knowledge resources can be enriched continuously for innovation creation (Lin, 2007). Lin (2007) assumes that knowledge sharing possesses the capability of regenerating a brand new knowledge to be utilized for upgrading innovation capabilities. Another study conducted by Miller et al. (2007, in Wuryaningrat, 2012) results in an empirical evidence that knowledge sharing between divisions in the company is truly helpful in regenerating innovation. Dyer and Nobeoko (2000) stated that Toyota becomes a successful business company and role model for other companies by sharing knowledge with their suppliers. However, another research conducted by Wuryaningrat (2012) about SMEs in Indonesia reveals the contrary fact. The result shows that a possibility of knowledge sharing provides a negative effect if it is not supported by adequate absorptive capability. Liao et al. (2006) discloses in his research that knowledge sharing is incapable of affecting innovation without fine absorptive capacity support. The result of this research surely differs from other research. Wuryaningrat (2013) confirmed Liao et al. statement.

Therefore, it is important to point out the importance of replicating or readopting other research's result since it has relation with external validity of previous research. In short, the research of Wuryaningrat (2012) and Liao et al. (2006) needed to adopt and redevelop for generating more information about how knowledge sharing affects the company's innovation in long term. This article is divided into several sections. The first section is introduction of problem which reveals the motive of importance why this research is

conducted. The second section covers theory, previous research and developing research hypothesis. The third section points out selected research method. The fourth section contains research and discussion result which also covers validity, reliability and hypothetical test. This section also reveals discussion in research. The last section concludes the research limitation and further research suggestion.

## II. THEORY AND HYPOTHESIS

**Innovation :** Innovation in open information era nowadays has become the part of company's daily life in order to materialize continuation of competitive capabilities. Innovation as continuation of competitive capabilities can be referring to key of company success (Nonaka dan Takeuchi, 1995). Company either large or small needs innovation, according to admitted opinion, Tidd *et al.* (2005) who states that innovation became necessary needs for company either large or small for competition survival.In acquiring competitive capabilities, company required strategic dominance acknowledged by innovative company. This opinion is supported by Schumpeter (in Tidd *et al.*, 2005) who implies that innovation is inseparable from entrepreneurship spirit that keeps on seeking innovative way in acquiring strategic dominance. Definition of innovation can be diverse but can be put into one conclusion that innovation is form of newness (Wuryaningrat, 2012, 2013). Johannessen *et al.* (2001 in Wuryaningrat, 2012) states an opinion which defined innovation as form of newness aimed at creating and maintaining continuation of competitive capabilities. Innovation referred by Johannessen *et al.* (2001, in Wuryaningrat, 2012) affix with product innovation, service innovation, new production innovation method, new market innovation method, new supply resources innovation, and new way of operation system innovation. Innovation as form of newest is closely related to where it is being adopted,and it means that innovation as form of newness is in perception scope of its creator (company) (Tidd et al., 2005). For instance, SMEs applies email usage as part of communication tools. This change might be something new for the company and creating potential conflict or new problem into the company. However, in large company this issue becomes a common sense.

Ki Hajar Dewantara, one of Indonesia's historical figures in education also developed the definition of Innovation. Ki Hajar Dewantara stated that innovation consists of 3N; *Ngamati*, *Niroke*, *Ngembangke*. In other words, innovation starts with an observation which is followed by imitating, and finally, developing what has already been imitated. For example, China is an impersonator country that nowadays develops into an innovative country. Now, China is one of world's biggest countries. Further, Japan also takes the same path and becomes an advance country after learning greatly from superpower country, The United States. Eventhough innovation is a necessity for small and large company, the application needs extra effort which concludes adjustment change in all elements of company. Innovation needs adjustment because its application might emerge pro and contra for required changes. Those who support innovation might realize the importance for the company and people within the organization are willing to adapt and follow the innovation. As for those who not support, it might cause the failure in absorbing current knowledge to keep on track with company innovation.

Lack of acquired knowledge to keep on track with company innovation can be explained by using *innovation funnel* concept (Clark and Wheelright, 1992). The concept assumes that mass number of knowledge, information, and ideas received by employee could create a confusing and difficult state on determining relevant knowledge for regenerating innovation. *Innovation funnel* concept illustrates the condition by making an analogy of pouring too much water into funnel, therefore it will spill out and becomes a waste. From such illustration, the probability in gathering knowledge which becomes frequent activity can generate new unusable knowledge and therefore, innovation capabilities weakens instead of increasing (Wuryaningat, 2013).

**Knowledge Sharing :** Nonaka *et al.* (2006) defines creation of knowledge by knowledge sharing through a continuous learning process of acquisition new context, new point of view and new knowledge. Such continuous learning process has more value if the already learned knowledge by individual is shared among others instead being reserved for self-sake. Knowledge sharing inside the organization may be defined as knowledge trading process either tacit or explicit for the sake of regenerating new knowledge (Van den Hoof and Ridder, 2004). The embodiment of knowledge sharing according to Bartol and Srivastava (2002) is an individual capability and willingness to provide ideas, suggestion, advice, information, experience, and expertise to other team members inside the organization. According to Van den Hoof and Ridder (2004), knowledge sharing is divided into two distinguished dimensions namely knowledge collecting and knowledge donating. Knowledge sharing becomes key success on translating process of individual learning to achieve an organizational capability (Frey and Oberholzer-Gee, 1997; Nahapiet and Ghoshal, 1998; in Wuryaningrat, 2013). However, Lam and Szulanski (2000) remind that knowledge sharing process is not

easy to conduct as it highly depends on individual willingness for sharing because it is a social process which possesses complexity difficulty and causal ambiguity. Further, the difficulty mentioned above is that not all individual achieve an equal absorptive capacity to digest knowledge. While, absorptive capacity is an absolute component in knowledge sharing (Davenport and Prusak, 1998).

**Review of Previous Research :** In knowledge management literature, knowledge sharing inside the organization was a pertinent element in optimalizing knowledge resources (example: Bartol and Srivastava, 2002). Knowledge sharing obtains an ability to regenerate new knowledge which hopefully can be utilized for upgrading innovation ability. This issue was an argument revealed in previous research. Research conducted by Miller et al. (2007 in Wuryaningrat, 2012) enlightens us with an understanding which is proven empirically by sharing knowledge interdivisional inside a company facilitate them to ignite changes or rejuvenation.Qualitative research conducted by Dyer and Nobeoko (2000) presents arguments why Toyota becomes one of world's big automotive industries nowadays. Dyer and Nobeoko (2000) point out how Toyota advances through knowledge sharing conducted between producer and supplier of Toyota in Japan. The result of their knowledge sharing has succeeded to create an increasing cost efficiency and product dissimilarization. In other words, Toyota becomes more innovative because of knowledge sharing. According to Lin (2007), large and small industries that have demonstrated the increase in their innovation capability support the implementation of knowledge sharing. Darroch (2005) also discloses that the distribution of knowledge through knowledge sharing between individual within organization also takes part in affecting innovations of the company.

In Indonesia, such research that have been conducted show similar result as already explained research result on previous paragraph. However, the most interesting here is research from Wuryaningrat (2012) and Liao et al. (2006) which generates totally different result. Through Wuryaningrat (2012) research, we acknowledge that knowledge sharing brings negative effect on innovation capabilities of SMEs at Yogyakarta, Indonesia. Furthermore, Wuryaningrat explains the weakeness of SMEs such as inadequate funds, less information and market access and less accomplished workforce could be the reasons of this research's different result compare to other research. Liao et al. (2006) also explains without adequate absorptive capacity, knowledge sharing will not affect innovation capabilities.

**Hypotesis Development: Home Industry and Innovation :** Home industry is a micro scale business. According to North Sulawesi Statistical Bureau (BPS), home industry is a business with number of employees less than five persons. According Davenport and Prusak (1998) numbers of employee also affects process of knowledge sharing inside the company. Home industry with less employees allows home industry business could perform knowledge sharing easier than large scale company. Home industry generally has several common flaws such as less fund including initial knowledge, and less amount of capable workforce. These weaknesses make the frequent knowledge sharing they perform turns into a questionable state of result or still do not obtain preferred result. The research result from Wuryaningrat (2012) discloses that knowledge sharing in fact has weakening effect on SMEs innovation capabilities. For instance, funding often makes home industry business delay even halted their effort to try or innovate, although the company receives so many inputs from many consumers. Several report results from mass media unveil home industry's flaw on innovating. In Simalungan county of North Sumatra, home industry product is unable to compete with others in terms of attracting public buying interest because of its lack creativity on product packing (Metro Siantar, 10 April 2013). Production of roasted coating peanut "Ohara" in central Sulawesi still stalled with very traditional production process and limited to consumer demand also setback on supply (Mas et al., 2013).

Already mentioning above, home industry had other setbacks such as far from market access and access to information (Vinding, 2000 in Wuryaningrat, 2013). For that reason, home industry probably is incapable of capitalizing its innovation capabilities. Eventhough they produce new products or new production process, their products are in imitating phase. An observation result that has been conducted in peanut snacks home industry society situated in Kawangkoan district of Minahasa, Indonesia found that their products are less innovative (Senduk, 2011). Its means that their new product solely results from imitating process with little improvement. It could be the indication mentioned by Wuryaingrat (2013) and Liao et al. (2006) that SMEs still have to increase their absorptive capacity. This research suggests that knowledge sharing practiced by home industry in short time period will not be capable of generating innovation. SMEs still need time to learn from many sources. In other words, in short period, knowledge sharing will make any impact to innovation capabilities because knowledge sharing is not instant process. With continuous learning, SMEs will make difference in term of absorptive capacity and also their innovation capabilities. According to Nonaka et al. (2006) knowledge sharing is continuous learning process.

The explanation above then being sum up into first hypotheses one (1a and 1b).
*H1a. Knowledge collecting in short time period is unable to contribute significant effect to innovation capabilities of home industry. H1b. Knowledge donating in short time period isunable to contribute significant effect to innovation capabilities of home industry.*

Knowledge is a unique resources because it can be upgraded according to the way it utilizes (Davenport and Prusak, 1998). Through step by step learning process, it is possible that knowledge sharing can benefit to upgrading innovation capabilities of home industry. Liao et al. 2006 reveals that knowledge sharing as a learning process that can be used to increase absorptive capacity and when absorptive capacity increase, so does innovation capabilities.

The explanation above then are summed up into first two hypotheses (2a and 2b).
H2a. Knowledge collecting in long time periods enables to contribute significant effect to innovation capabilities of home industry.
H2b. Knowledge donating in long time periods enables to contribute significant effect to innovation capabilities of home industry.

## III. RESEARCH METHOD

North Sulawesi is regarded as one of the regions experiencing the highest economic growth.` According to data gained from North Sulawesi Statistical Bureau, the economic growth in North Sulawesi during the first semester of  2012 has increased by 7.49 percent if compared to the first semester of 2011. The economic growth of North Sulawesi economy is even higher than Indonesia's economy growth which is only 6.3 percent (Wuryaningrat, 2013).This research uses an explanatory research design by applying a survey approach. This method enables research findings to be generalized across persons, settings, and time (Cooper and Schlinder 2008). However, this research faces obstacles because the data gained from SMEs agencies of North Sulawesi Province do not reflect the reality. Therefore, to gain more credible data, this research involves non random sampling techniques.

Selected respondents are invited respondent for succeeding this research. Invitation was distributed to 300 home industry owners or managers  from several home industries in Manado and Minahasa. These two places were selected because of territorial vastness in North Sulawesi province. To maintain validity of collected data, several criteria are formulated for filtering invited respondents.Samples taken must meet the following criteria: 1). Home Industry must have been established for a minimum of   five  years because this length  of  time  is assumed  to give sufficient  time for  delivery and introduction of   home Industry innovation. 2). Home industry must have less than 5 employees (Indonesia statistic bureau or BPS). 3). Home industry are in the food and beverage manufacturing sector because these two are the mainstream industries in North Sulawesi province compared to others (BPS Sulut).Unlike previous researches which is limited by only using cross sectional method. this research used longitudinal study because this research applied two periods of time. First period is phase one survey seeking the answer of hypothetis one, then there is an interval time that is used for conducting training  and motivation to home industry in North Sulawesi province. After the interval time, second phase survey was conducted with the same questionnaire sheet.

From 300 phase one survey invitations, only 207 invitation attended and were asked to fill in the provided questionnaire sheet. Then, second phase survey sent to 207 invitation attended  phase one and only 123 attended. Data collection and compiling report andarticle writing in this research costed one and a half year from March 2012 till August 2013. Phase one questionnaire survey period was filled by 207 attended invitations in April 2012. In January 2013, 207 respondents were once again invited for attending innovation and motivation training in order to increase their innovation capabilities. This course was only attended by 127 respondents.  Then in May 2013, the whole 207 previous attended respondents were invited again to fill in the same questionnaire. However, the  attendants only reached123 invitations. Data from June to August 2013 were analyzed.       The data were analyzed by using PLS-SEM. Eventhough correlation between variable  within  this research can be solved with other tools such as multiple regretion,  PLS-SEM had capability in term of robust to classic  assumption and therefore,  PLS-SEM was selected  (Hair et al., 2011).  Convergent validity method was used to test validity of data. Convergent validity reflected  on  AVE (Average  variance  extracted) score. Reliability test was used composite reliability and cronbach alpha score to define reliability of the data.  Software being utilized on this research was SmartPLS 2.0.       Accepted value in convergent validity test is AVE $\geq$ 0.5 and indicator extracted to its variable (Hair et al., 2010). Acceptable score of cronbach alpha is $\geq$ 0.6 (Nunnaly, 1978 in Hair et al, 2010) while best value of composite reliability is $\geq$ 0.7 (Hair et al., 2010).

**Measurement :** Questionnaire applied on this research was adopted from previous research which is already translated and used for research carried out by Wuryaningrat (2012). However, the questionnaire had undergone a slight modification. The modification was done by adding statement which concentrated on whether innovation had been performed was considered as new and different from close by competitors. This modification considered necessary because generally home industry in Minahasa and Manado city in cluster form often have similar product and production process. Even if there is a new product, it solely just imitates (Senduk, 2011). Likert scale is used to quantify the acquired qualitative data scale which ranges from 1 to 5 (1=rarely to 5=very often). Detailed operational definition and original resource instrument of research can be cited in next section.

**Operational Definition :** Knowledge sharing is defined as trading knowledge whether tacit or explicit to generate new knowledge (Van den Hoof and Ridder, 2004). There is two dimensions of knowledge sharing which consist of knowledge donating and knowledge collecting. Knowledge donating dimension is measured by six statement items while knowledge collecting by four statements. Focus on this measurement is to be acquainted with knowledge sharing activeness in the company based on manager perception assessment. Innovation capabilities are defined as innovation as a form of newness to increased competitive advantage (Johannessen et al., 2001). There are six items consisting of new product, new service, new production method, new market, new supply resources, and new system management. This measurement points out displaying innovative level achieved by company.

**Validity and Reliability :** To make sure the data were valid and reliable, validity and reliability test must be done. This validity and reliability test being perform in order to obtain question item which can fulfill the requirement of good question item. AVE score used to indicate validity of data, cronbach alpha and composite reliability score used to indicated reliability. This research consist of two phase, it is why is totally relevant convergent validity test also perform in two phase way.

**Phase One: First Survey :** On phase one survey, 10 valid questionnaire items came out as result. In other words, from 16 question items, 6 items should be dropped because the items did not reach the minimum value of factor loading of 0.5 or having problems cross loading. According to Hair et al . (2010) the value of good factor loading is ≥ 0.5 and no cross loading occurs. Then, remaining 10 items generate satisfying AVE score (AVE ≥ 0.5). In other words, convergent validity is qualified . Similarly, the value of both composite reliability and Cronbach alpha reliability are also qualified. Composite reliability produce values ≥ 0.7 (Hair et al . 2010) and Cronbach alpha generate value ≥ 0.6 ( Nunnaly, 1978 in Hair et al., 2010) . Details validity and reliability of test result can be seen in Table 1.

Table 1. Validity and Reliability First Phase

| VARIABLE | AVE | COMPOSITE RELIABILITY | CRONBACH ALPHA |
|---|---|---|---|
| Knowledge collecting (KC) | 0.670 | 0.859 | 0.764 |
| Knowledge donating (KD) | 0.517 | 0.808 | 0.708 |
| Innovation capbilities (INOV) | 0.573 | 0.796 | 0.629 |

**The second stage: The second Survey :** In the survey conducted in the second phase, there were 13 valid questionnaire items. In other words, 16 items of questions, 3 items should be dropped. Improvement with lessen dropped items should be an indication of a possible increase in knowledge or have experience with previous surveys. 3 items must be dropped because the items did not reach the minimum value of factor loading of 0.5 or having problems cross loading. According to Hair et al . 2010 the value of the good is the factor loading ≥ 0.5. 10 items left then managed to generate values that satisfy AVE rule of thumb of Hair et al . 2010 of ≥ 0.5. In other words, convergent validity is qualified. Similarly, the value and reliability of both composite reliability alpha cronbcah had qualified . Composite reliability produce values ≥ 0.7 ( Hair et al . 2010) and Cronbach alpha generates value ≥ 0.6 ( Nunnaly , 1978 in Hair et al . , 2010) . Details validity and reliability of test results can be seen in Table 2.

Table 2. Validity and Reliability second Phase

| VARIABLE | AVE | COMPOSITE RELIABILITY | CRONBACH ALPHA |
|---|---|---|---|
| Knowledge collecting (KC) | 0.502 | 0.799 | 0.683 |
| Knowledge donating (KD) | 0.621 | 0.867 | 0.799 |
| Innovation capbilities (INOV) | 0.521 | 0.843 | 0.771 |

## IV.    DATA ANALYSIS AND RESULT

Data analysis in this study consists of two major steps, which are, data reduction (validity and reliability) and hypotheses testing. The first step has been conducted and it provides good results. The subsequent step, after testing validity and reliability is testing the hypotheses the results   which are shown in Table 3.

Table 3. Hypothesis Testing

| Hypothesis | Correlation | Coefficient | S.E | T-stat | Explanation |
|---|---|---|---|---|---|
| Step 1 | | | | | |
| H1 | KC → INOV | -0.204 | 0.161 | 1.271 | Support |
| | KD → INOV | 0.254 | 0,152 | 1.673 | Support |
| Step 2 | | | | | |
| H2 | KC → INOV | 0.379 | 0.082 | 4.630 | Support |
| | KD → INOV | 0.200 | 0.077 | 2.601 | Support |

In the first hypothesis, hypothesis 1a and 1b can be said according to the allegations that have not been able to share their knowledge had a significant effect on the innovation capability of home industry in North Sulawesi province of Indonesia . It can be seen from the t – stat that is lower than 1.960 and 1.271 for hypothesis 1a t- stat 1.673 lower than 1.960 for hypothesis 1b . Even in the beta coefficient (original sample ) values generated hypotheses 1a -0204 which means there is a negative effect , although not significant . In other words, collecting knowledge and knowledge donating as a part of knowledge sharing have no effect on the ability of innovation survey conducted during the first phase .Hypotheses 2a  and  2b are also in accordance with the allegations  because the value of t - stat hypothesis 2a was 4,630 higher than 1.960 and t - stat for the hypothesis 2b 2,601 higher than 1,960 . These results imply significantly positive effect occurs between knowledge collecting (KC) and knowledge donating on innovation capability . In other words, collecting knowledge and knowledge donating have a positive impact after two stage survey.

## V.    CONCLUSION

Knowledge sharing activity is an activity that is useful to gain new knowledge, to improve innovation capabilities. However, the new knowledge gained may take time to understood. Home industry weakness (see theory background), could make knowledge sharing has not been able to have a significant influence. This result is contrary to the results of previous research that revealed positive effects of knowledge sharing on innovation capability. H owever, the results of this study also confirm  the results of Wuryaningrat research (2012) and Liao et al. (2006).The learning process takes time to make home business industry to be more innovative. In other  words, it can be concluded that knowledge sharing as a learning process needs time to absorb to become useful knowledge. According to research from Wuryaningrat (2013) and Liao et al. (2006), knowledge sharing can increase the absorptive capacity. Hence, the provision of learning time and training and education plus provision for the home industry is needed. This research gave empirical evidence that can answer knowledge sharing has a positive impact on innovation capability when given the time to learn from many source of knowledge, for instance continuous education and training for increasing home industry ability.

Even though this research result is different from another research as mentioned before,   the truth of the result is not different at all. These two conflicting research results have the truth, and it not something that needs to be debated. The difference could be due to different method of research[1].  In conclusion, the results of this research confirmed that knowledge has become very vital for the sustainability of the business world in particular small-scale businesses, but the knowledge gained needs to be digested and understood. Knowledge is necessary to understand the sufficient ability to absorb knowledge, which knowledge needs to be developed in stages.

## VI.    RESEARCH LIMITATIONS AND SUGGESTIONS

This research is a longitudinal study , but the time constraints of this kind of research cann ot be known. Research takes time and a half years of data collection may be not enough. Selection of sampling method with convenience sampling method is also a weakness in this research. Convenience sampling is likely to cause bias although this possibility is reduced to trying to provide eligibility criteria can be selected to be the respondent. The lapse of time between the delivery of training materials with a second survey is fairly close together, so it is still possible to imprint training materials. In other words, short intervals may not provide an

opportunity for the home industry for their training practice in the daily effort that generated responses from respondents may have still imprinted training materials not as the result of training implementation.Suggested further research for other researchers is to replicate this study in order to re-obtain a better external validity, with a time of research needs to be added. The addition of other variables such as absorptive capacity could make this research could be better.

# VII.    ACKNOWLEDGEMENT

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