How Intellectual Stimulation Effects Knowledge Sharing, Innovation and Firm Performance

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Abstract—The purpose of this paper that determine whether the intellectual stimulation can influence innovation which is mediated by knowledge sharing, and whether innovation can improve a firm’s performance. The model tested on the 56 owners of small and medium enterprises (SMEs) in Tegal, Indonesia. Utilizing purposive sampling technique, with the following criteria, company has a workforce 5 to 100 people, engaged in the metal and machinery industry, not including to foreign-owned companies. Software analysis techniques PLS (Partial Least Square) are used in this research. The final results indicate that there are positive effects on intellectual stimulation, experiential sharing and explicit knowledge sharing; explicit knowledge sharing has a positive effect on product innovation and product innovation has a positive effect on business performance. While experiential sharing has a positive effect on product innovation, it is not significant, so the hypothesis is rejected. This study has important managerial implications, the psychological barriers that prevent employees sharing knowledge and experience can be enhanced through intellectual stimulation of transformational leaders, in this case the leader to be a role model that can be replicated and duplicated by subordinates or employees.

Index Terms—Intellectual stimulation, knowledge sharing, innovation, firm performance.

I. INTRODUCTION

Relationship of transformational leadership and innovation has been studied intensively in recent years. Some previous research has shown the influence of transformational leadership on innovation. Transformational leadership is closely linked to the behaviour of employees in the implementation of innovation [1]. Transformational leaders have a good effect on creativity on employees and the organization [2]. Transformational leadership improve employee empowerment and organizational climate which supports innovation [3]. However, not many studies that examine the effect of intellectual stimulation, as one dimension of transformational leadership, are related to the innovation.

Small and medium scale enterprises (SMEs) in Indonesia are the backbone of the national economy. Its existence has been shown to drive the wheels of the economy and reduce the number of unemployment. Statistics in 2010 showed that there are 3.8 million SMEs which are spread throughout Indonesia and absorb approximately 8.75 million workers, and contributes for about 32% of Gross Domestic Product (GDP), which is export industry value around USD 13.5 billion.

Although this sector has a variety of limitations, in fact they are able to compete with other companies. Even when economic conditions are getting worse and many large companies are threatened with bankruptcy, the sector is still able to survive and even to grow. Tegal, Central Java, Indonesia is the central activity of SMEs which still survive, such as in the metal and machinery industry.

In the knowledge based-economy, having a successful leader is one of the most effective ways to manage the source of organizational knowledge and the ability in engineering knowledge [4]. The role of leadership in knowledge based management focused on implementing and creating knowledge sharing. Creating and managing the successful of knowledge [5]. Leader as an innovator, teacher and facilitator have positive influences on organizational knowledge sharing [6].

The concept developed by a resource based-view (RBV) stated that company be regarded as a ligament of heterogeneous resources distributed to most of the company and this resources will persist over the time in those company [7], [8]. Knowledge is regarded as the most significant strategies of company. The company’s ability to acquire, integrate, store, distribute and apply knowledge into an enterprise capabilities, will be able to build and maintain sustainable competitive advantage of the company. The companies which has a superior knowledge, holding an ability to coordinate and combine traditional knowledge and it’s capability with unique and latest way in order to give the greater value to the consumer than the competitor [9]. Competitive advantage in the future is determined by the knowledge worker as a resource owned by the company [10].

Various studies show that knowledge sharing will contribute to organizational capabilities, such as innovation which is very important factor in determining the performance of the business [11]. Knowledge sharing activities with colleagues in the company may be very difficult, but few empirical studies indicate this activity is positively associated with a decrease in production costs. The more to work on the latest development projects, improvements team performance, improve innovation capabilities and business performance, including sales growth.

Discussions about knowledge sharing are a very important activity for building competitive advantage, but it is difficult to implement. Knowledge sharing does not happen automatically; therefore team leaders have an important role to create the activity [12]. Obstacles may arise in knowledge sharing activities that are individual barriers, organizational barriers and technology barriers [13]. Corporate leaders have a very important role in encouraging...
Successful implementation of knowledge sharing depends on the attitude of employees towards knowledge sharing, and it is influenced by the intention of knowledge sharing [21]. The intention of knowledge sharing is the willingness to share knowledge [18].

Knowledge sharing consists of tacit and explicit knowledge sharing. Human experience became the basis of the activity of sharing tacit knowledge [22], [23]. Tacit knowledge sharing is the face-to-face interaction among employees to share what they know and use what they learn [24]. Tacit knowledge sharing is the employees activity in spreading knowledge, intuition, and hunches gained through past experiences [25]. Tacit knowledge is not codified, uncommunicated openly, gained by sharing experiences, observations and imitate [26].

Referring to the experiential learning theory that learning is a process where knowledge is created through the transformation of experience. Knowledge is gained by combining and transforming the experience [27]. Someone will learn from failure than success of his/her self and the other [28]. Experiential sharing is the employee activities in sharing his success and failure experience to colleagues.

Activity of explicit knowledge sharing is a transfer of knowledge that can be institutionalized and often performed in a work environment because it can be easily obtained, codified and transferred [24]. Knowledge sharing in our researches divided into explicit knowledge sharing and experiential sharing.

C. Intellectual Stimulation and Knowledge Sharing

Top management support is one of important variables that can affect organizational knowledge [29]. Numerous studies have found the importance of top management support for creating a climate that supports and provides sufficient resources [30], [31]. Knowledge sharing process will be effective if supported by transformational leadership styles through intellectual stimulation [32]. Transformational leadership is positively related to knowledge sharing that occurs within an organization or company [6]. Transformational leadership is built on high-quality exchange relationships between leaders and members have an important role in the development of relational identification of employees and organizational identification, which in turn will increase knowledge sharing activity [33].

Previous research has proved that intellectual stimulation has an influence on knowledge sharing activities. Intellectual stimulation, inspirational motivation and confidence among members of the organization can encourage organizational learning [34]. Intellectual stimulation challenges to become professionals in their field are having an influence on learning activity, [35]. Intellectual stimulation is positively related to team performance. Intellectual stimulation refers to the leaders challenge to developed assumptions, risk takers and to gather some follower ideas, employees must be willing to challenge the status quo, not avoid the risks and be willing to share an understanding of consumer needs and the changing environments [36]. From the description we make the following hypothesis:

- H1: Intellectual stimulation will further increase
 experiential sharing.

- H2: Intellectual stimulation will further increase explicit knowledge sharing.

D. Knowledge Sharing and Product Innovation

Knowledge sharing which is supported by leader intellectual stimulus will encourage new knowledge will be beneficial as a resource to solve company problems and to create more efficient production processes. Knowledge sharing among employees will enhance rapid response to customer needs at a lower cost in operation [37]. Face-to-face interaction in the process of knowledge sharing is done between individuals within an organization to share experiences and knowledge so as to obtain new knowledge, learn new techniques, problem-solving skills, core competencies and starting new situation.

Previous research in the context of the relationship between innovation support effective knowledge sharing and innovation. Knowledge sharing of employees will contribute to the application of science and gain the competitive advantage [38]. Knowledge sharing with knowledge collecting dimensions have a significant effect on all types of innovation, as well as knowledge donating that occur in groups or group level has an influence on innovation [39]. Explicit and tacit knowledge sharing affect the pace of innovation and quality innovation [24]. Knowledge donating and knowledge collecting affect the company’s innovation capabilities [41]. Working experiences of employees will directly influence the higher level of team creativity and produce different products[40]. The hypothesis can be made as follows:

- H3: Experiential sharing will further enhance product innovation.
- H4: Explicit knowledge sharing will further enhance explicit product innovation.

E. Product Innovation and Firm Performance Innovation

Product Innovation and Firm Performance Innovation has been recognized as a significant motivating factor for companies to create value and sustain competitive advantage in an increasingly complex and rapidly changing external environment. Innovative companies have the ability to adapt with market change, having shorter decision chains and faster in flexibility [42]. In general, innovation can utilize the potential of existing resources, improve the efficiency and potential value, and it can be regarded as a new intangible asset for the organization. Various empirical studies show that the innovation of the company will be able to increase business performance. Product diversification mediating the relationship between export diversification and firm performance [43]. Firms with the greater innovation will be more successful in responding to customers need, so it could develop new capabilities to achieve better performance or superior benefits, [44].

Innovation performance has a significant and positive impact on corporate performance [45]. Innovation of new products or services will improve corporate performance through the reduction of operating costs and quality of customer satisfaction. The faster a company introduces a new product or service into the market will improve the company performance. Innovations affect the company’s financial performance which is return on assets and return on sales [46]. Product and process innovation has a strong relationship to company performance [47]. Product innovation is influenced by emotional and learning ability, which is finally having a significant impact on business performance [48]. From a review of previous research, it can be hypothesized as follows:

- H5: Product innovation created by company will further improve business performance.

III. Method

A. Sample and Data Collection

This study used a sample of 56 heads of small and medium-sized enterprises (SMEs) engaged in the metal and machinery industries in Tegal which has a total population of 296 SMEs. Utilizing purposive sampling technique, with the following criteria (1) Company has a workforce 5 to 100 people, (2) engaged in the metal and machinery industry, (3) not including to foreign-owned companies. To test the model and hypothesis utilizing Structural Equation Modelling (SEM) analysis with PLS (Partial Least Square) software, which use to determine whether the intellectual stimulation can influence innovation which is mediated by knowledge sharing, and whether innovation can improve a firm’s performance. This research use a questioner with a likert scale (1-10), 1 for strongly disagree, and 9 for strongly agree.

B. Measurement

1) Intellectual stimulation

Based on the previous studies [49], intellectual stimulation will be measured by four indicators; Supervising the work of employees according to the standards: Directing employees to solve problems on different viewpoints; Directing employees to solve problems on different perspective; Directing to find out new ways in finishing job.

2) Experiential sharing

Based on previous studies [20], [24], [27] experiential sharing measured by 5 indicators. Sharing failures experiences in the past, gaining knowledge based on leaders experiences. Gaining knowledge based on experience of other employees. Knowledge sharing based expertise. Sharing successful experiences in the past Explicit Knowledge Sharing

3) Explicit knowledge sharing

Explicit Knowledge Sharing is a process of knowledge sharing that has been documented related to their work among employees. Utilizing four indicators [20], [24]. Knowledge sharing related to the work from the writings. Sharing knowledge from manual work with colleagues. Collecting manual work from the other. Employees often follows development and training program.

4) Innovation product

In this study the innovation is the activity of producing new goods or services to create new markets or new customers. Innovation Product will satisfy the market and
currect customer [47], [50]. Four indicators are used to measure this variables: Constantly creating new product which is easier to use. Constantly developing new products with different raw materials. Creating new products with different technical and function product specifications. Constantly introducing a higher quality of new products.

5) Business performance
In previous researches, growth is used as a proxy variable in business performance. Growth as a performance measurement may more accurate and accessible than accounting measurement and financial performance, [51]. Business performance is the company achievement which characterized by the success and efficiency of corporate behaviour [51]. Indicators used to measure this variables is combining company size and growth, and accounting. The indicators are; sales value, increase in profit and capital growth.

IV. RESULT AND DISCUSSION
Validity test of this study using convergent validity models with PLS software, this can be seen with the average variance extracted (AVE) of each construct greater than 0.5. While the reliability test by composite reliability above 0.7 [52].

<table>
<thead>
<tr>
<th>Variable</th>
<th>AVE</th>
<th>Composite Reliability</th>
<th>R² Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS</td>
<td>0.685</td>
<td>0.827</td>
<td></td>
</tr>
<tr>
<td>ES</td>
<td>0.785</td>
<td>0.886</td>
<td>0.923</td>
</tr>
<tr>
<td>EK</td>
<td>0.810</td>
<td>0.900</td>
<td>0.917</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>0.816</td>
<td>0.903</td>
<td>0.945</td>
</tr>
<tr>
<td>BP</td>
<td>0.875</td>
<td>0.935</td>
<td>0.951</td>
</tr>
</tbody>
</table>

Table I, indicates that the value of AVE each constructs: Intellectual Stimulation (IS), Experiential Sharing (ES), Explicit Knowledge Sharing (EKS), Product Innovation (IP), Firm Performance (BP). The AVE value of each construct above 0.5, it shows that the indicators of each construct and questionnaire can be used in the explaining of variables.

| IS → ES | 0.45  | 0.415 | 0.259 | 1.737 | Accepted |
| ES → EK | 0.489 | 0.417 | 0.291 | 1.688 | Accepted |
| EK → IP | 0.242 | 0.15  | 0.188 | 1.287 | Rejected |
| IP → BP | 0.759 | 0.849 | 0.186 | 4.081 | Accepted |

From Table I, each construct or latent variables has composite reliability which is above 0.7. Indicates that the internal consistency of the exogenous variables (IS) and endogenous variables (ES, EKS, IP and BP) have good reliability. Parameter estimation has been shown from the significant value of the relationship of each variable in this study, the limit acceptance and rejection of the hypothesis is comparison of T Statistic and T count (1.684). Another interpretation of T statistic <T table are the hypothesis is rejected, while if the value of T statistics> of the T table, the hypothesis is accepted.

Based on Table II it can be explained as follows: the relationship between IS to ES positive with a value of 0.450 and significant at the 0.05 level of sig (1.737 > 1.684), hypothesis 1 is accepted. IS to EKS positive relationship with the value of 0.489 and significant at the 0.05 level of sig (1.688 > 1.684), hypothesis 2 is accepted. ES to a positive relationship with the value of IP 0.242 and significant at the 0.05 level of sig (1.287 <1.684), hypothesis 3 is rejected. IP EKS positive relationship to the value of 0.759 and significant at the 0.05 level of sig (4.081 > 1.684), hypothesis 4 is accepted. IP to a positive relationship with the value of BP 0.981 and significant at the 0.05 level of sig (19.525 > 1.684), hypothesis 5 is accepted.

V. CONCLUSION
This study has shown the importance of support from top management to ensure the willingness of knowledge sharing activities with colleagues. Intellectual stimulation as one dimension of transformational leadership has a positive and significant impact on experiential sharing and explicit knowledge sharing. Results of this study support previous research conducted by Coad and Berry, (1998), Chen and Barnes, (2007). Other findings have shown that explicit knowledge sharing, which is conducted by employee has a positive and significant effect on product innovation. This shows that the sharing of knowledge through various reports and documents related to the job. Can increase employees creativity including creating new products. While the sharing of experience among employees has no effect significantly on product innovation, this shows that there is no openness among employees to share their past experiences with their peers. Other findings show that product innovation on business performances. These findings support previous research conducted by Sadigoklu & Zehir, (2010), Kostopoulos et al., (2011) and Murat and Baki. This study has important managerial implications The psychological barriers that prevent employees sharing knowledge and experience can be enhanced through intellectual stimulation of transformational leaders, in this case the leader to be a role model that can be replicated and duplicated by subordinates or employees. Intellectual stimulation that can implement by the Focus Grop Discussion conducted within the organizational continually. Limitations of this study involve a small number of the sample, because the time of the study was conducted only three months. A subsequent study should be conducted longitudinally larger sampling and longer study time and improve coverage of multiple learning culture variables and availability of information technology

REFERENCES


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