

THE EFFECTS OF LEARNING ORIENTATION ON INNOVATIVENESS IN ELECTRONIC/ELECTRICAL INDUSTRY

Norarat Runkawee and Chanongkorn Kuntobutr***

Abstract: *The purpose of this study was to investigate the effects of learning orientation on innovativeness including the firm size and the firm age. Learning orientation is comprised of commitment to learning, shared vision, open-mindedness, and intra-organizational knowledge sharing whereas innovativeness consists of product innovation, and process innovation. The unit of this study was at the firm level with the focus on factory managers or manufacturing managers in electronic/electrical product and parts industry in Thailand. Later, two hundred and five samples were obtained based on a simple random sampling method. The population sample came from the database of the Department of Export Promotion, Ministry of Commerce of Thailand and then the simple random sampling was applied. Data was analyzed based on descriptive statistics, confirmation factor analysis and Structure Equation Modeling. The finding showed the suitable model which was consistent with the theoretical model and the critical value informed by Chi-square (χ^2) was 28.925, Degree of freedom was 16, χ^2/df was 1.808, p -value was 0.24, GFI was 0.967, AGFI was 0.926, CFI was 0.970, NFI was 0.937, and RMSEA was 0.063. The results revealed that learning orientation had effects on innovativeness but the firm size and the firm age did not have statistically insignificant effects on innovativeness.*

Keywords: *learning orientation, innovativeness*

1. INTRODUCTION

Business today is highly competitive due to a degree of competition hence in order to survive the business must also gain its competitiveness and must stand out from its competitors. Creating competitive advantages will contribute to the firm performance as indicated by a variety of factors. One of the most important factors is being innovative. Innovativeness is noted as the intention to get involved in creativity and experimentation to such a great

* Rajamangala University of Technology Thanyaburi, Thailand,
E-mail: norrarat_r@mail.rmutt.ac.th

** Rajamangala University of Technology Thanyaburi, Thailand,
E-mail: Chanongkorn_k@rmutt.ac.th

extent to introduce new services and innovative ideas, leadership in technology, and superb processes in research and development (Lumpkin & Dess, 2001). Thus, innovation also means a major change in technology and the acquired knowledge is resulted from the increasing discovery of new things (Garcia & Calantone, 2002; Garcia, 2010). In the field of marketing, it is a must to foster increasing innovation (Grewal & Tansuhaj, 2001) because the ability to quickly innovate products or services will be distinguished as one of the dynamics to outperform its competitors (Hamel, 2000; O'Connor & Rice, 2001; Danneels, 2002). As a result, innovativeness always begins with the creativity of an individual and collaboration (Amabile, Conti, Lazenby, & Herron, 1996) and since ideas are derived from learning, the priority should be assigned to the aims of learning orientation.

The objective of learning orientation is related to the development of new knowledge acquiring in the organization (Cohen & Sproull, 1996; Crossan, Lane, & White, 1999) so the innovators work precisely to be accepted in an organization (Thompson, 1965), and the modern ideas are to be integrated into new operation process, products or services (Zaltman, Duncan, & Holbek, 1973) to lead to the success of an organization (Hurley & Hult, 1998). Research has found that there are four elements that indicate how learning orientation can yield more effectiveness: commitment to learning, shared vision, open-mindedness, and the intra-organizational knowledge sharing (Hurley & Hult, 1998). The four elements mentioned above will promote a learning organization, which also lead to innovation in order to compete with rivals in the market today. So the key objective of learning orientation is the organizational corporation because learning is important not only to an individual at the management level, but also to every single person in the company. In summary, the four elements mentioned above will enhance the innovativeness which can bring about competitive advantages which will in turn ultimately increase the firm performance.

As a result, researchers are interested in finding out if the factors of learning orientation are linked to the creation of innovative enterprises and in exploring the factors associated with the firm size and the firm age through the mechanism of quantitative research in order to develop an organization.

2. LITERATURE REVIEW AND HYPOTHESIS

The researcher was interested in studying the influences of learning orientation on the innovativeness and including the firm size and the firm age.

2.1 Learning Orientation and Innovativeness

The concept of organizational learning is the subject of an increasingly growing body of literature with theoretical roots in a range of disciplines including psychology (Schein, 1993; Dixon, 1994; Nonaka & Takeuchi, 1995), management (Senge, 1990; Stata, 1992; Levitt & March, 1998).

The leaning orientation is about the commitment of an organization to create and utilize the knowledge to increase its competitive advantage which includes gathering and sharing information regarding customers' wants and needs, market volatile, competition attitude and the development of the new technology for the higher quality of new products or services (Hurley & Hult, 1998; Moorman & Miner, 1998; Mone, Mckinley, & Barker, 1998; Nybakk, 2012). Buckler and Zien (1996) reported that the organization is committed to innovation and employee motivation, communication, and shared values of the organization. Slater and Narver (1995) believed that learning orientation is related to the success of innovating new products directly. Calantone, Cavusgil, and Zhao (2002), in addition, demonstrated a linkage among learning orientation, innovation, and organization performance.

Review of the literature on organizational learning and innovation (Rogers, 1995; Montoya-weiss & Calantone, 1994; Hurley & Hult, 1998; Mone et al., 1998; Nybakk, 2012) concluded that learning is necessary to its ability to innovate and results of operations of the organization (Hurley & Hult, 1998). Organizations committed to learning have the innovativeness to create much better products and services (Gatignon & Xuereb, 1997; Adis & Jublee, 2010). The organization that positively correlates with performance (Mone et al., 1998) will create innovation concerning goods and services by focusing on learning and will allow scholars to pay more attention on innovation that leads to an invention (Damanpour, 1991; Verona, 1999; Jang, 2013). Based on the concepts above, the below hypotheses were conducted.

H1: Learning orientation has positive effects on innovativeness

2.2 Firm size and Innovativeness

The size of the business (firm size) can be measured in various ways. One of them is measuring the total number of employees of an entire organization (Indarti & Langenberg, 2004), but the findings of Jimenez, Martinez and Sanz (2014) found that the size of the business, as measured by the number of existing staff had no relationship to the success of innovation. On the contrary, the research by McMahon (2001) found that the size of the larger

business resulted in more businesses success in creating innovativeness than smaller businesses. Based on the concepts above, the below hypotheses were conducted.

H2: Firm size has positive effects on innovativeness

2.3 Firm Age and Innovativeness

Firm age refers to the duration of a company that has been established and can operate smoothly which indicates positive relationship with the innovation and the company performance. Sinkula (1994) found that the age of the business had positive relation with the company's knowledge performance. On the other hand, such finding is not consistent with the finding by Jimenez et al. (2014) which indicated that the age of the business or duration in business would have no impact on innovation. Based on the concepts above, the below hypotheses were conducted.

H3: Firm age has positive effects on innovativeness

3. RESEARCH METHODS

3.1 Sample and data collection

This study was conducted to collect data from questionnaire via regular mail. The research used quantitative approach and questionnaires were employed for collecting data of factory managers or manufacturing managers in electronic/electrical industry in 2013. The population samples were Thai exporters based on the list of Department of Export Promotion which enlisted a total membership of 824 companies. Simple random sampling techniques were applied to select the samples. The totals of 520 questionnaires were distributed while 205 questionnaires were returned, which was 39.42 percent of response rate.

3.2 The measurement characteristics of the variable

Learning orientation

Learning orientation (LO) framework included commitment to learning (CL), shared vision (SV), open-mindedness (OM) and intra organizational knowledge sharing (IOK) to determine the weight of the composition of the list of questions including to confirmation that indicated or observed variables (Calantone et al., 2002). Four questions relating to the commitment to learning refers that organizational employees are motivated to cooperate in the development of the ideas of innovativeness (Dundon, 2002) and the

organization has been considered to support learning so it will be a key factor necessary to guarantee the survival of the organization (Higgins, 1995). Four questions concerning shared vision refers that the purpose of innovation is in line with the mission of the organization (Greenberg & Baron, 2002) and organizational development strategy and vision by establishing clear plans and activities (Dundon, 2002). Four questions concerning open-mindedness refers that the embrace of employees' diverse opinions on the policies of the organization (Denton, 1999) in the working atmosphere that welcomes everyone to openly make comments (Denton, 1999; Tidd, Bessant, & Pavitt, 2001; Dundon, 2002). Four questions concerning intra organizational knowledge sharing refers that organizations contribute to the working atmosphere to attempt and embrace the risk of failure (Denton, 1999) by providing a job rotation to achieve a wide range of knowledge (Denton, 1999) and a communication system both formally and informally (Higgins, 1995; Denton, 1999; Tidd et al., 2001).

Innovativeness

Innovativeness (IN) concept was measured in two dimensions; product innovation (PDI) and process innovation (PCI) to determine the weight of the composition of the list of questions which included indicators or observed variables (Lukas & Ferrell, 2000; Park, Hartley, & Wilson, 2001; Quesada, Syamil & Doll, 2006). In summary, four questions concerning product innovation refers that products are developed and commercialized to customers in acquiring and using them (Sandvik & Sandvik, 2003). Eight questions concerning process innovation refer that some important modifications are introduced to the production process such as new machines or new methods of organization (Nieto & Santamartia, 2010).

3.3 Reliability and Validity

Reliability analyzed for each dimension use to measure with a Cronbach's Alpha coefficient. According to the criteria the results showed that the confidence level of the questions was greater than 0.70 (Nunnally, 1978; Fornell & Larcker, 1981). The learning orientation instrument of this study presented the alpha was 0.846. The alpha of the innovativeness was 0.868. Content validity was examined the quality of the research instrument by experts. The content validity ranged from 0.6 and up.

The study included composite reliability (CR), average variance extracted (AVE), convergent validity, and discriminant validity. According to Fornell and Larcker (1981), it was recommended that composite reliability be greater than 0.60 and average variance extracted be greater than 0.50.

3.4 Statistical Analysis

1. Descriptive analysis represented that the respondents were male (57.1 percent), the majority of respondents were aged between 41 and 50 (42.0 percent), most of them were married (71.2 percent), the majority of them earned bachelor's degrees (52.2 percent) and some have worked for this company for 5 to 10 years (26.3 percent).

The majority of the samples selected were from limited companies (83.4 percent) and the companies were run by Thai owners (54.1 percent). Most of them had fewer than 250 employees (43.9 percent). Most of business capital was between 1,000,000 and 50,000,000 Bath (48.8 percent) and 79.5 percent of operation ranging more than 15 years.

2. The confirmation factor analysis (CFA) accordance with the structures on the relationships among the previous observation of variables that related to previous research literature review.

Figure 1: The measurement model of the CFA of learning orientation

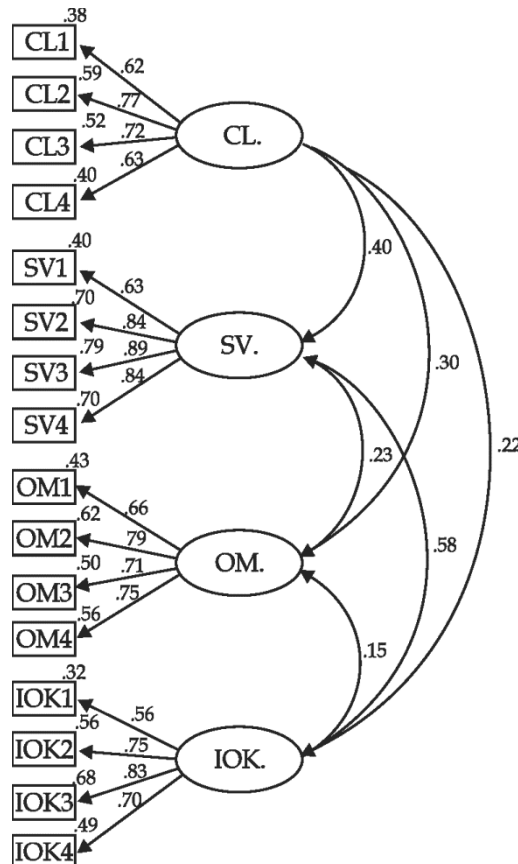


Figure 1 which presented the verification of concordant detail or the consistency of the model showed that p-value of Chi-square was 152.177, CMIN/df was 1.654, p-value was 0.240, GFI was 0.920, AGFI was 0.882, NFI was 0.903, CFI was 0.958, and RMSEA was 0.057. The factors loading verification found that a critical ratio (C.R.) value was greater than 1.96 and p-value was less than 0.001, so the factor loading was not a zero (Vanichbuncha, 2013).

Composite reliability (CR) of learning orientation showed that commitment to learning was 0.81, shared vision was 0.89, open-mindedness was 0.84, and intra organizational knowledge sharing was 0.83. Average variance extracted (AVE) showed that commitment to learning was 0.52, shared vision was 0.66, open-mindedness was 0.58, and intra organizational knowledge sharing was 0.56. After checking the Convergent validity and Discriminant validity the results showed that the AVE values. The AVE values were higher than the squared correlation indicating that there are convergent validity and discriminant validity among the variables. Therefore, all of the factors could be accepted as the structure of learning orientation.

Figure 2: The measurement model of the CFA of innovativeness

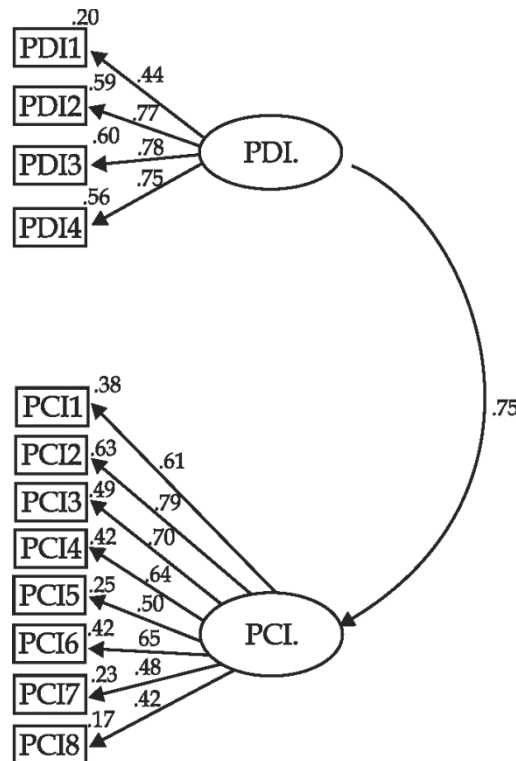


Figure 2 which presented the verification of concordant detail or the model consistency, showed that p-value of Chi-square was 51.539, CMIN/df was 1.171, p-value was 0.203, GFI was 0.960, AGFI was 0.929, NFI was 0.952, CFI was 0.992, and RMSEA was 0.059. After the verification of the factors loading, the finding showed that the critical ratio (C.R.) value was greater than 1.96 and p-value was less than 0.001, so the factor loading was not zero (Vanichbuncha, 2013).

Composite reliability (CR) of innovativeness showed that product innovation was 0.80, and process innovation was 0.82. Average variance extracted (AVE) showed that product innovation was 0.52, and process innovation was 0.54. After checking the Convergent validity and Discriminant validity the results showed that the AVE values. The AVE values were higher than the squared correlation indicating that there are convergent validity and discriminant validity among the variables. Therefore, all of the factors could be accepted as the structure of innovativeness.

3. Structure equation model (SEM) used to confirm the hypothesis in this study.

Figure 3: The structural model of learning orientation on innovativeness for hypotheses testing

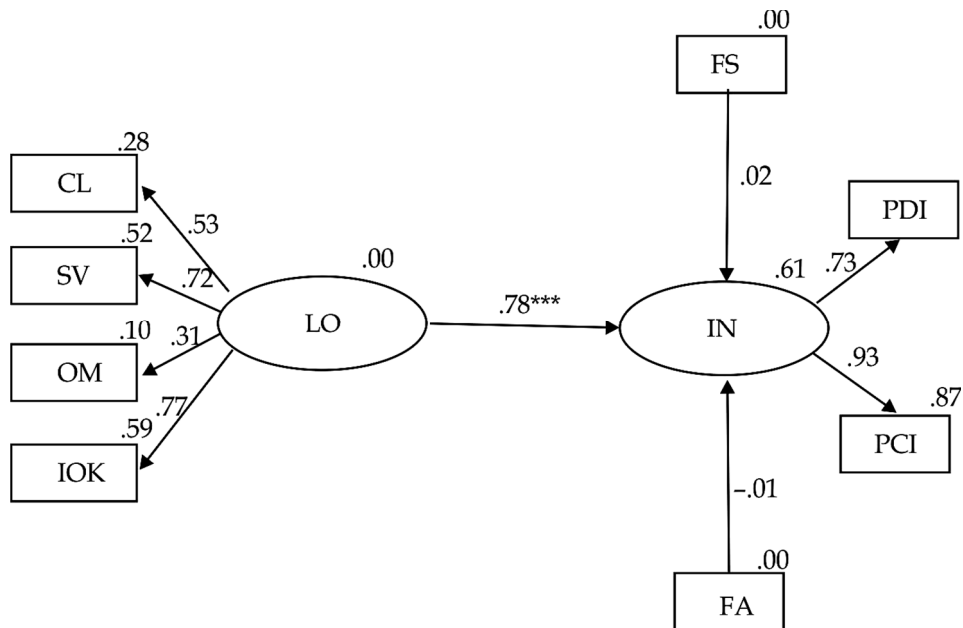


Table 1.
Parameter estimation and the significant test of learning orientation on innovativeness

			Standardized Coefficients	S.E.	C.R.	<i>p-value</i>
IN	←	LO	0.778	0.230	5.376	***
IN	←	FS	0.022	0.030	0.340	0.734
IN	←	FA	-0.008	0.042	-0.132	0.895
CL	←	LO	0.529			
SV	←	LO	0.721	0.240	6.059	***
OM	←	LO	0.315	0.167	3.628	***
IOK	←	LO	0.769	0.250	5.778	***
PDI	←	IN	0.727			
PCI	←	IN	0.930	0.107	9.684	***

*** $p < 0.001$

Figure 3 shows the structural model the effected factor of learning orientation on innovativeness including the firm size and the firm age. This study found that the models were combined with empirical data because the Chi-square was 28.925, CMIN /df was 1.808, p-value was 0.024, GFI was 0.967, AGFI was 0.926, NFI was 0.937, CFI was 0.970, and RMSEA was 0.063.

4. RESULTS AND DISCUSSION

In the study, hypothesis testing was conducted by using SEM test between relationships, constructs and statistical significance. The research mode by using the path analysis. The results showed that were positive effects between the learning orientation and innovativeness, supporting the results of the previous studies by, for example, Slater and Narver (1995) Gatignon and Xuereb (1997) and Adis and Jublee (2010). However, the control variable, namely the firm size and the firm age, does not affect the innovation which is consistent with the research by Jimenez et al. (2014) by separating the issues in the following order.

The first hypothesis that learning orientation affects innovativeness is consistent with previous researches (Gatignon & Xuereb, 1997; Calantone et al., 2002; McNally, Cavusgil, & Calantone, 2010; Adis & Jublee, 2010; Nybakk, 2012) found that the aims of learning orientation indicated a positive relationship with innovativeness. In the opinion of the researchers, organizations keep learning and are striving to learn something new whether it is the new concept of the product, the concept of the production process,

the concept in the process, to commit itself to learning new things and to maintain the shared vision. In addition, the outcomes of employees' openness to colleagues and the knowledge exchange within the organization will lead to the creation of new innovations in order to meet the needs of the market. Hence, at the end, innovation can help increase profits for the organization as well. Therefore, realizing the aims of learning orientation is the key to innovativeness. Thus, H1 was supported.

The second hypothesis was that the number of employees in the organization does not affect innovation. This is consistent with the work of Jimenez et al. (2014) who stated that the number of employees in the organization will be a minimal cause or has no relation to the success of innovation. Thus, H2 was not supported.

The third hypothesis was that the firm age does not affect innovation. According to the research by Jimenez et al. (2014), it was found that the age of the business, regardless of the time period, had no effect on innovation. On the contrary, the research by Sinkula (1994) found that the firm age had the relationship with the performance of the knowledge of the Company. Thus, H3 was not supported.

The second and the third hypotheses found that the total number of employees in an organization had minimal effects on the age of the business while the length of opening time did not affect any innovation in Thailand. In this study, the samples were selected from the electronics or electrical industry which normally would have involved quite a lot of innovation. However, the nature of its business in Thailand revealed that most of the subsidiary companies have received production orders from their parent companies which already operate in the related equipment. Typically the parent companies do not produce or assemble parts in any other countries in a form of a production network. Therefore, most of the research and development can be done in the parent companies using the high technology, mainly in developed countries where the labor and operating cost is very high. Because of the reasons above, most developing countries will outsource manufacturing to the countries with lower wages including Thailand. This manner of doing business in Thailand is considered as subsidiary company which has been employed to manufacture parts only.

According to this study, it is concluded that the main focus will be on learning innovation which resulted in innovation, not on the number of employees or the firm age which does not affect innovation in Thailand at all.

5. ACADEMIC CONTRIBUTION AND IMPLICATION FOR FUTURE

5.1 Academic contribution

1. Innovativeness must focus on learning orientation based on the belief that the commitment to learning shows a positive impact on the efficiency of generating ideas. In order to create things including creating innovation, businesses need to have a commitment to learn with a clear shared vision among employees. Also, it is a must to embrace open-mindedness to new things, to develop and to exchange knowledge within the organization regularly. This will lead to innovation and the improvement of employees' performance.
2. Those affiliates who get involved should take serious consideration on assigning priority to innovation. Moreover, entrepreneurs should not simply take orders from their parent companies alone but should be mindful of a new creation from other non-manufacturing companies. Consequently, if a company can start innovating new products, this will inevitably lead to power bargaining and the ability to set prices and its becoming a leading business in the future. In addition, Thai government should provide support in all aspects to promote the company to be ready and able to start innovating products more effectively and efficiently.

5.2 Implications for Future Research

1. The research was repeated in the similar context of other businesses so the data collection came solely from the electronics/electrical industry. We have already known that the nature of the business operations of the electrical industry may be different from that of any other businesses. Therefore, the future research can apply this model to explore other aspects of business such as the food industry in Thailand where the innovation is explicit by comparing the results already confirmed by the theory to bring the awareness to general explanations.
2. There are many factors influencing innovation that need to be explored. Therefore, those who are interested may study other factors that may be associated with additional innovativeness such as factors aimed at market orientation, the significance features of the top management team characteristics, the concept of innovation mindset and so on.

6. CONCLUSIONS

The summary of this study showed that learning orientation had effects on innovativeness; however, the firm size and the firm age did not have any positive effects on innovativeness. The results of this study indicated that those affiliates such as the business operators themselves needed to seriously focus on the innovation because it is the key to raise competitiveness and to eventually increase revenues for the business. The most important thing for a company to be successful is not only to receive production orders from the parent company but its entrepreneurs have to try a new invention and build up their own products.

References

- Adis, A. A., & Jublee, E. (2010). Market Orientation and New Product Performance: The Mediating Role of Product Advantage. *African Journal of Marketing Management*, 2(5), 91-100.
- Amabile, T. M., Conti, R., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39(5), 1154-1184.
- Buckler, S. A., & Zien, K. A. (1996). From experience: The spirituality of innovation: Learning from stories. *Journal of Product Innovation Management*, 13(5), 391-405.
- Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management*, 31(6), 515-524
- Cohen, M. D., & Sproull, L. S. (1996). *Organizational learning*. Thousand Oaks, CA: Sage Publications.
- Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organizational learning framework: From intuition to institution. *Academy of Management Review*, 24, 522-537.
- Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, 34(3), 555-590.
- Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic Management Journal*, 23(12), 1095-1121.
- Denton, D. K. (1999). *The Toolbox for the Mind: Finding and Implementing Creative Solution in the Workplace*. Milwaukee: Quality Press.
- Dixon, N. (1994). *How can we learn collectively: The organizational learning cycle*. Maidenhead: McGraw-Hill.
- Dundon, E. (2002). *The Seed of Innovation: Cultivating the Synergy that Fosters New Ideas*. New York: AMACOM.
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18, 39-50.
- Garcia, R. (2010). Types of Innovation. In *Encyclopedia of Technology and Innovation Management*. John Wiley and Sons, 89-95.

- Garcia, R., & Calantone, R. (2002). A critical look at technological innovation typology and innovativeness terminology: A literature review. *The Journal of Product Innovation Management*, 19, 110-132.
- Gatignon, H., & Xuereb, J. M. (1997). Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, 34(1), 77-90.
- Greenberg, J. & Baron, R. A. (2002). *Behavior in organizations: Understanding and Managing the Human Side of Work*. New Jersey: Prentice Hall.
- Grewal, R., & Tansuhaj, P. (2001). Building organizational capabilities for managing Economic crisis: The role of market orientation and strategic flexibility. *Journal of Marketing*, 65(2), 67-80.
- Hamel, G. (2000). *Leading the Revolution*. Boston MA: Harvard Business School Press.
- Higgins, J. M. (1995). *Innovate or Evaporate: Test and Improve Your Organizations IQ-Its Innovation Quotient*. New York: New Management.
- Hurley, R. F., & Hult, G. T. (1998). Innovation, market orientation, and organizational learning: An integration an empirical examination. *Journal of Marketing*, 62(3), 42-54.
- Indarti, N., & Langenberg, M. (2004). *Factors affecting business success among SMEs: Empirical evidences from Indonesia*. Paper presented at the second biannual European Summer University.
- Jang, S. H. (2013). The Offensive Framework of Resource Based View (RBV): Inhibiting Others from Pursuing Their Own Values. *Journal of Management and Strategy*, 4(1), 62-69.
- Jimenez, J. D., Martinez, C. M., & Sanz, V. R. (2014). Innovation, Organizational Learning Orientation and Reverse Knowledge Transfer in Multinational Companies. *The Electronic Journal of Knowledge Management*, 12(1), 47-55.
- Levitt, B., & March, J. G. (1988). Organizational learning. *Annual Review of Sociology*, 14, 319-340.
- Lukas, B. A. & Ferrell, O. C. (2000). The effect of market orientation on product innovation. *Academy of Marketing Science Journal*, 28(2), 239-247.
- Lumpkin, G. T., & Dess, G. G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16(5), 429-451.
- McMahon, G. P. (2001). Growth and performance of manufacturing SMEs: The influence of financial management characteristics. *International Small Business Journal*, 19(3), 10-28.
- McNally, R. C., Cavusgil, E., & Calantone, R. J. (2010). Product Innovativeness Dimensions and Their Relationships with Product Advantage, Product Financial Performance, and Project Protocol. *Journal of Product Innovation Management*, 27(7), 991-1006.
- Mone, M. A., Mckinley, W., & Barker, V. L. (1998). Organizational decline and innovation: a contingency framework. *Academy of Management Review*, 23(1), 115-132.
- Montoya-Weiss, M. M., & Calantone, R. J. (1994). Determinants of new firm performance: a review and meta-analysis. *Journal of Product Innovation Management*, 11(5), 397-418.

- Moorman, C., & Miner, A. S. (1998). The convergence of planning and execution: improvisation in new product development. *Journal of Marketing*, 62, 1-20.
- Nieto, M. J., & Santamaría, L. (2010). Technological collaboration: Bridging the innovation gap between small and large firms. *Journal of Small Business Management*, 48(1), 44-69.
- Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-creating company*. New York: Oxford University Press.
- Nunnally, J. (1978). *Psychometric Theory*. McGraw-Hill, New York.
- Nybakk, E. (2012). Learning Orientation, Innovativeness and Financial Performance in Traditional Manufacturing Firms: A Higher-order Structural Equation Model. *International Journal of Innovation Management*, 16(5), 1-28.
- O' Connor, G. C., & Rice, M. P. (2001). Opportunity recognition and breakthrough innovation in large established firms. *California Management Review*, 43(2), 95-116.
- Park, S., Hartley, J. L. & Wilson, D. (2001). Quality management practices and their relationship to buyer's supplier ratings: a study in the Korean automotive industry. *Journal of Operations Management*, 19, 695-712.
- Quesada, G., Syamil A., & Doll, W. (2006). OEM new product development practices: The case of the automotive industry. *Journal of Supply Chain Management*, 42, 30-40.
- Rogers, E. M. (1995). *Diffusion of innovations* (4thed.). New York: Free Press.
- Sandvik, L. I., & Sandvik, K. (2003). The impact of market orientation on product Innovativeness and business performance. *International Journal of Research in Marketing*, 20(4), 355-376.
- Schein, E. H. (1993). On dialogue, culture and organizational learning. *Organization Dynamics*, 22(2), 40-51.
- Senge, P. M. (1990). The leader's new work. Building learning organizations. *Sloan Management Review*, 32(1), 7-24.
- Sinkula, J. M. (1994). Market information processing and organizational learning. *Journal of Marketing*, 58, 35-45.
- Slater, S., & Narver, J. (1995). Market orientation and the learning organization. *Journal of Marketing*, 59(3), 63-74.
- Stata, R. (1992). Management innovation. *Executive Excellence*, 9(6), 8-9.
- Thompson, V. A. (1965). Bureaucracy and Innovation. *Administrative Science Quarterly* 5, 10, 1-20.
- Tidd, J., Bessant, J. & Pavitt, K. (2001). *Managing Innovation: Integrating Technological, Market and Organizational Change*. Chichester: Wiley.
- Vanichbuncha, K. (2013). *Structural Equation Modeling (SEM) by AMOS*. Samlada Publishing.
- Verona, G. (1999). A resource-based view of product development. *Academic Management Review*, 24(1), 132-142.
- Zaltman, G., Duncan, R., & Holbek, J. (1973). *Innovations and organizations*. New York: Wiley.