Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2021.vol8.no6.0213

Potential Indicators of Japanese Technology and Business Innovation Policy Adoption Among Thai Businesses*

Watcharawat PROMMA[1], Somnuk AUJIRAPONGPAN[2]

Received: February 20, 2021 Revised: April 20, 2021 Accepted: May 02, 2021

Abstract

This research aims to study and develop a potential indicator of Japanese technology and business innovation policy adoption in the context of Thailand business operations to serve as a guideline for creating an effective competency development model of organizational technology and business innovation policy adoption. This research uses a questionnaire as an instrument for data collection and data analysis, and this survey was distributed to a sample group of executives from 57 organizations related to joint ventures involving Japanese technology and business innovation in Thailand. The data was further analyzed using a partial least squares structural equation model (PLS-SEM) to estimate the relationships between the latent variables in the structural model of the study. The research results reveal that the measurement model is consistent with the examined empirical data. Moreover, its reliability exceeds the standardized criteria for indicator development. Therefore, it can be concluded that such a potential indicator of Japanese technology and innovation business policy acceptance consists of three main factors: core competency, innovation absorptive capability, and quality of employees. Furthermore, seven sub-indicators were identified: flexibility, achievement motivation, knowledge management, personnel participation, continuous improvement, efficiency-related changes, and personnel diversity. These indicators will be beneficial for further strategy and planning applications.

Keywords: Innovation Absorptive Capability, Quality of Employees, Innovation Adoption, Japanese Technology, Thai Businesses

JEL Classification Code: L26, L66, M11, M40, O15

1. Introduction

Technology and innovation development is regarded as a crucial factor in the urbanization process, whether it is economic, social, or cultural in nature. Facilitating cooperation between technological and innovation policy and urbanization policy is not only an intentionally created process, but also the cause, process, and result of the crucial economic and relational mechanisms between urbanization and sustainable economic development in countries, especially those related to technology and innovation variability in developing countries. Hence, technology plays a crucial role in generating income, enhancing the potential of infrastructure, and driving the economic systems of countries (Lee & Xuan, 2019). However, in developing countries, technology has to rely on foreign investment (Dnishev & Alzhanova, 2016). Furthermore, in 2019, the expansion of the ASEAN countries' economic system ranked 7th internationally, and it is projected to rank 4th in 2030. Thailand has relied on foreign investment as its main source of funding for projects such as innovation or business technology, which is done in the form of a multilateral business system.

According to the DT Index, 40% of Thailand's businesses are just starting utilize technology. These companies have advanced organizational plans and innovations that support and drive their evolution, and the governmental policies of Thailand 4.0 are a strategy announced by the government to develop the Thai economy by focusing on the use of technology and innovation. It emphasizes the economy driven by innovation for the

***Acknowledgements:**
This research was financially supported by Walailak University under grant WU63215.

[1]First Author. Lecturer, School of Management, Walailak University, Thailand. Email: pwatcha@wu.ac.th
[2]Corresponding Author. Associate Professor, School of Management, Walailak University, Thailand [Postal Address: 222 Thai Buri, Tha Sala, Nakhon Si Thammarat, 80160, Thailand]
Email: asomnuk@wu.ac.th

increase of economic value. However, currently, conducting technology-related business in Thailand depends on the cooperation of foreign countries, especially Japanese corporations, and the mutual development of technology and innovation (Dnishev & Alzhanova, 2016). Thailand's policies on business and technology investment in foreign countries (FDI Flows) receive support from Japan's government under Japan's conceptual framework related to business expansion, including those on the connection between the business system and the technology and innovation systems, whether related to production or performance (JETRO, 2019). Hence, the support of potential technology and innovation business policy acceptance among business organizations is considered a crucial matter in terms of creating competitive advantages for business organizations established by foreign companies (Hoang, Do, & Trinh, 2021).

Today, leading private organizations are applying the potential enhancement concept of technology and business innovation as an administrative instrument to generate change and achieve improved behaviors that are consistent with their external environments and that can maintain or help increase their organizational effectiveness (Rajapathirana & Hui, 2018) Therefore, as Japanese technology and business innovation policy represent a guideline of potential development for the technology and business innovation policy acceptance of Thai business organizations in terms of generating competitive advantages for business operation, this researcher is interested in studying and developing a potential indicator of Japanese technology and business innovation policy adoption by employing the technique of second-order confirmatory factor analysis, which is designed for investigating the structure of a set of variables and describing the relationships between them using the minimum numbers of certain latent variables called factors. Hence, this research hopes that the findings of this study will contribute to generating a model of the potential development of Japanese technology and business innovation policy adoption for any business organizations that are interested in this issue. And they also need to develop the policies serve as a guideline for decision-making as well as guidance for effective operation and management.

2. Literature Review

The potential development of technology and business innovation policy adoption relies on the main potential and competency of organizations. An organization must develop the ideal skills to affect its competitive advantages. (Hsiao & Hsu, 2018) Moreover, the ability to adjust and lead an organization to achieve its mission is regarded as a strategic competency (Damanpour & Schineider, 2009). Currently, leading private organizations apply the concepts of competency and potential development as instruments for their administrations (Suvedi & Kaplowitz, 2016). The word 'potential' refers to a knowledge base that relates to the specific matters that an organization is responsible for. It refers to a knowledge base that encompasses subject matter such as technology and innovation use. Furthermore, its meaning covers the skills that help an organization be able to effectively engage in necessary operations, such as technology and innovation skills and knowledge base transfer skills. A skill is generated from the related knowledge base and by the operations' expert who is responsible for the main associated task (Kandampully, 2002)

However, the adoption of technological innovation in organizations is a factor that creates the competitive advantages of organizations in various industries and countries (Damanpour & Schneider, 2009; Swamidass, 2003). In addition, developing countries transfer numerous types of technology, such as advanced manufacturing technologies (AMTs) (Raymond, 2005), which are a group of technologies consisting of hardware and software. This technology can be divided into three types: administrative technology, design technology, and manufacturing technology (Steve & Arthur, 2003). Damanpour and Wischnevsky (2006) explained that an innovation-adopting organization (IAO) is an organization regarded as having an absorptive innovation capacity, which is based on its ability to select and apply innovations according to their potential and competitive capacity (Wisdom, Chor, Hoagwood, & Horwitz, 2014) by adapting to be consistent with its external environment. A change of organization refers to a change in the organizational behaviors currently used. Protasiewcz (2020) said that the ability to absorb innovation is considered one of the main factors of social and economic growth (Niedzielski & Rychlik, 2007).

In developing countries, there are three stages within the innovation absorption process: acquisition, absorption, and improvement. Various corporations obtain technologies from foreign countries. At first, these technologies allow corporations to develop their potential, to expand their competitive capacity, and to increase their participation in novel markets. Hence, they lead to the development of new technologies according to each organization's ability to enhance and increase its competitive and export capacities (Rajapathirana & Hui, 2018; Ciborowski, 2018). According to another study, employees in organizations influence the effectiveness of technological transfer from multinational corporations. For example, the contribution of Wolf, Egelhoff, and Rohrlack (2014) revealed that, if the employees of an organization skillfully integrate new ideas, they will be able to apply and absorb the related knowledge base well. This generates dynamic capacity, which affects the success of the multinational corporations operating

in a country. Moreover, the research of Talukder (2012) indicated that employees are regarded as a crucial factor that affects the efficiency of an organization's operation and administration related to technology and innovation adoption. Additionally, this involves such individuals' knowledge bases (Saffar & Obeidat, 2020).

Basically, this researcher studied the literature related to the potential development of technology and business innovation adoption of various scholars and identified the indicators involved with such issues, as shown in Table 1. Then, the researcher developed the conceptual framework used in this research, which is shown in Figure 1.

Table 1: Potential Indicators of Japanese Technology and Business Innovation Policy Adoption (PTIA)

Core Competency (CC)	
CC1	The organization's administration is sufficient and follows specified steps, and its system is unambiguous.
CC2	The administration engages in effective decision-making and operations related to technology and business innovation.
CC3	The administration leads the organization's practice, which is quick, flexible, and adjustable depending on each situation.
CC4	The administration emphasizes the success of contributions, and adheres to the organization's goals and policies.
CC5	There is a clear administration of knowledge bases relating to performance, skill, and innovation techniques from Japan.
Innovation Absorptive Capability (IAC)	
IAC1	The organization has an innovative work process that connects the personnel of each department.
IAC2	The organization has enhanced technology and innovation, and its personnel cooperate consistently.
IAC3	The work processes within the organization have been improved continuously.
IAC4	The organization is able to integrate policies from its parent company systematically by adjusting its performance effectively.
IAC5	The organization creates new B2B processes and services continuously.
Quality of Employees (QE)	
QE1	The personnel can adjust their innovative knowledge bases.
QE2	The personnel accept administrative changes.
QE3	The administration motivates the organization's personnel to achieve much more than expected in terms of goals.
QE4	The personnel of the organization receive promotions and base salary adjustments according to their competence.
QE5	The organization's personnel have various skills and pleasantly cooperate within each department.

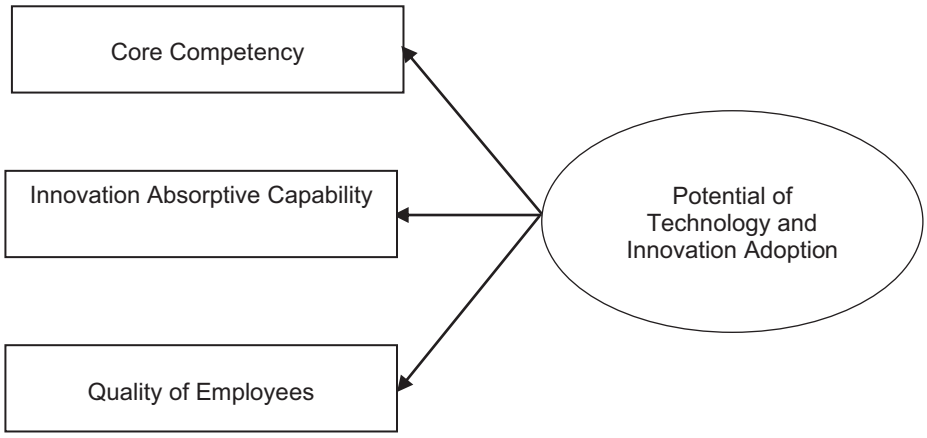

Figure 1: Conceptual Research Framework

3. Research Methods and Materials

This is a qualitative research study using the confirmatory factor analysis technique. This study was carried out by analyzing empirical data, and the model used in this study, as well as its characteristics, was compared with technology business establishments in Thailand that participate in and technology adoption policies from multinational corporations such as those in Japan (JETRO, 2019).

3.1. Population and Sampling

The population used for this research was composed of executives from Thai joint ventures involving Japanese technology and innovation, and a total of 89 organizations were included (JETRO, 2019). The sample was selected using the purposive sampling method among 57 establishments like those mentioned above. The organizations were categorized into three groups according to business type: 1) technology businesses, 2) discrete manufacturing industries, and 3) process industries. Statistics on the business types of these organizations are shown in Table 2.

According to Table 2, most of the establishments were technology and innovation joint ventures in the public and private sectors, (23 establishments (40.4%)); most of the organizations had been operating for more than 5 years (40 establishments (70.2%)); the majority of the establishments were engaged in metal technology and invention production (21 establishments (36.8%)); the number of employees in the establishments mostly ranged between 51 and 100 employees (28 establishments (49.1%)); most of the establishments that had authorized capital related to their cooperation with other companies or Japanese organizations had between 25 and 49 million baht of such capital (29 establishments (50.9%)); most of the establishments' main business operations consisted of technology and innovation business within Thailand (42 establishments (73.7%)); and most of organizations' customers had never worked with multinational companies

Table 2: Data Regarding Technology and Business Innovation

Business		**Frequency**	**Percentage**
Type of business	Private sector investment	17	29.8
	Government and private sector investment	23	40.4
	Japanese-affiliated companies	17	29.8
The period of business operation	<5 years	17	29.8
	5–10 years	20	35.1
	11–15 years	20	35.1
Business characteristics	Administrative technology	7	12.3
	Metal technology and invention production	21	36.8
	Energy production	20	35.1
	Rubber compound production technology	9	15.8
Number of employees	<50 employees	5	8.8
	51–100 employees	28	49.1
	101–150 employees	13	22.8
	>150 employees	11	19.3
Authorized Japanese capital	<25 million baht	9	15.8
	25–49 million baht	29	50.9
	50–75 million baht	9	15.8
	>75 million baht	10	17.5
Business operation	Export business	15	26.3
	Domestic business	42	73.7
Customer group working with a multinational company	Yes	10	17.5
	No	47	82.5
Rewards	Never	57	100

(47 establishments (82.5%)). Furthermore, none of the surveyed establishments had ever received rewards relevant to outstanding qualitative management.

3.2. Data Analysis

The instrument for data collection used in this research was a questionnaire. The researcher adjusted this questionnaire by studying documents regarding the theories and concepts of related research contributions. The SPSS program was used to analyze the basic statistics of the examined data such as frequencies, means, and standard deviations, and the data was further analyzed using a partial least squares structural equation model (PLS-SEM) to estimate the relationships between the latent variables in the structural model of the study; additionally, the relationships between the latent variables and observable variables in the measurement model and between the latent variables themselves were identified using a reflective model and a formative model (Bido, Da, & Ringle, 2014).

When the PLS method was employed, it was discovered that the latent variables had linear relationships with the observable variables. The measurement model's quality was considered based on its validity and reliability. The validity of the model was examined in terms of its convergent validity and discriminant validity and measured through variable loadings, which had to be greater than 0.5 to have statistical significance; the discriminant validity was measured by the correlation between the latent variables, which had to exhibit a value lower than the square root of the AVE values (Fornell & Larcker, 1981). The indicator reliability was measured using the square of the loadings, which typically have to be greater than or equal to 0.70. However, since this research used a survey, these values could be accepted if they were greater than 0.4 (Hulland, 1999). Consistency reliability measurements should be 0.7 or greater; however, in the case of survey research, values greater than or equal to 0.6 can be accepted (Bagozzi & Yi, 1988). Moreover, the reliability and composite reliability of a model as measured using Dijkstra-Henseler's rho (ρ_A) should be greater than 0.7 (Henseler, Hubona, & Ray, 2016; Hair, Sarstedt, Ringle, & Mena, 2012). Regarding the data analysis, both the descriptive statistics and inferential statistics of the data were analyzed with the partial least squares technique (PLS-SEM) using Smart PLS (Wang, 2013).

4. Results

At first, the results regarding the convergent validity of the model of the potential of technology and business innovation adoption using secondary confirmatory factor analysis with Smart PLS indicated that the model did not fit the empirical data. Hence, the model had to be further adjusted. After the model was improved, it was harmonious with the empirical data, as shown in Figure 2. The factor loadings and test results regarding measurement reliability are shown in Tables 3 and 4.

According to Figure 2, which shows the analysis results of the first confirmatory factor analysis done after adjusting the model, the highest coefficient of determination among the latent variables was that denoting core competencies (CC), which was equal to 0.728. This indicates that the variable CC describes 72.8% of the variance in the potential of technology and innovation adoption (PTIA). The latent

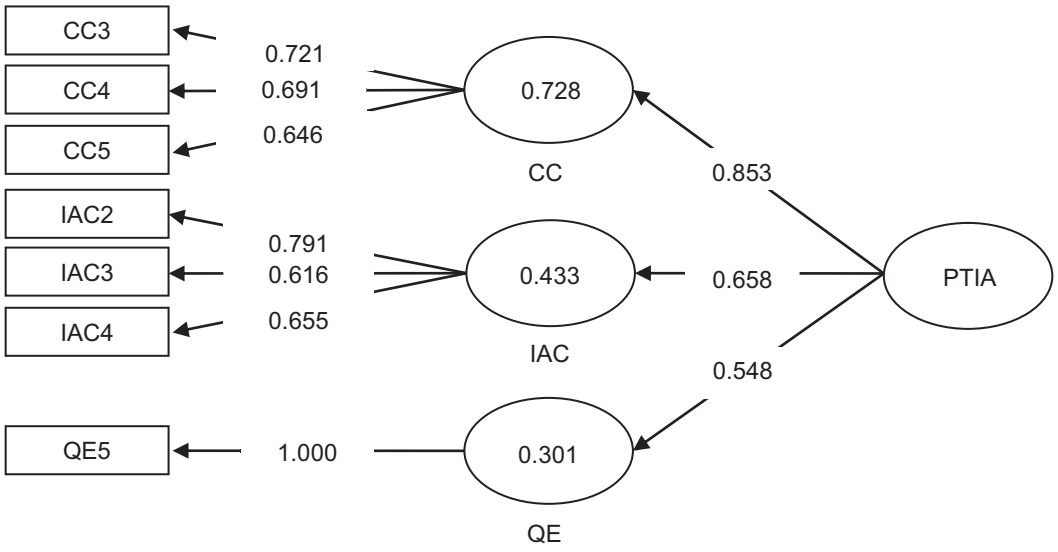

Figure 2: PLS-SEM Results

Table 3: Results Summary Regarding the Reflective Outer Model

Latent Variable/ Indicator Variable	Loadings	Indicator Reliability	Dijkstra-Henseler's rho (ρ_A)	Composite Reliability	AVE
CC	0.853	0.728	0.440	0.728	0.472
CC3	0.721	0.520			
CC4	0.691	0.477			
CC5	0.646	0.417			
IAC	0.658	0.433	0.575	0.731	0.478
IAC2	0.791	0.626			
IAC3	0.616	0.379			
IAC4	0.655	0.429			
QE	0.548	0.300	1.000	1.000	1.000
QE5	1.000	1.000			

Table 4: Fornell-Larcker Criterion Analysis for Ensuring Discriminant Validity

	CC	IAC	QE
CC	0.687	–	–
IAC	0.334	0.691	–
QE	0.288	0.065	1.000

variable representing innovation absorptive capability (IAC) and the latent variable denoting the quality of employees (QE) also describe part of the variance in the PTIA (43.3% and 30.1%, respectively). Regarding the factor loadings of the latent variables, the highest factor loading was that of CC at 0.853, and this was followed by the loadings of IAC and QE, which were equal to 0.658 and 0.548, respectively. Therefore, CC, IAC, and QE were all direct factors of PTIA.

When considering the analysis results of the second confirmatory factor analysis done after adjusting the model, it can be observed that only CC (the administration leads the organization's practice, which is quick, flexible, and adjustable depending on each situation), CC4 (the administration emphasizes the success of contributions, and adheres to the organization's goals and policies.), and CC5 (there is a clear administration of knowledge bases relating to performance, skill, and innovation techniques from Japan) are direct factors of the latent variable CC. The factor loadings of these variables are 0.721, 0.691, and 0.646, respectively. Furthermore, only the indicators IAC2 (the organization has enhanced technology and innovation, and personnel cooperate consistently), IAC3 (the work processes within the organization have been improved continuously), and IAC4 (the organization is able to integrate policies from its parent company systematically by adjusting its performance effectively) are direct factors of the latent variable IAC. These variables have factor loadings of 0.791, 0.616, and 0.655. When considering the factors of the latent variable QE, it can be observed that only QE5 (the organization is able to integrate policies from its parent company systematically by adjusting its performance effectively) is a direct factor of the latent variable QE, and this variable has a factor loading of 1.000.

Regarding Table 3, when considering the reliability from the measurement model, it reveals that all of the indicators have the reliability that passes the criteria at the acceptable minimum level. The latent variables of CC, IAC, and QE had composite reliability values equal to 0.728, 0.731, and 1.000, respectively. Every variable has a value higher than 0.6. Hence, it indicates that the reliability reaches a high level among the three latent variables. When considering the convergent validity of each variable, the average variance extracted (AVE) of CC, IAC, and QE is equal to 0.472, 0.478, and 1.000, respectively. The value close to the acceptance criteria is 0.5.

Table 4 reveals that the values indicating the discriminant validity of the latent variables CC, IAC, and QE are equal to 0.687, 0.691, and 1.000, respectively; thus, these values are greater than the coefficients of the relationships between each latent variable. This reveals that the model's validity is consistent with the given criteria.

5. Discussion and Conclusion

According to the results of the second confirmatory factor analysis of the potential indicators of Japanese technology and business innovation policy adoption among Thai businesses using 15 latent variables corresponding to

three main factors, namely, core competency, innovation absorptive capability, and the quality of employees, all of the examined latent variables are direct factors of the potential and capability for technology and business innovation policy adoption under the conceptual framework of the Japanese government and overcoming barriers to adoption for innovations in the policy. Furthermore, these results reveal that only seven of the indicators are direct factors of the latent variable denoting the quality of employees. All employees should take the extra initiative to do things and they should have a solutions-oriented mindset for working.

These are the following: First, the administration leads the organization's practice, which is quick, flexible, and adjustable depending on each situation that reasonable adjustments for workers with management ability related to innovation business. That helps set and prioritize the restrictions and conditions under which innovation takes place and how to present and manage for innovation business over time and with enough value to contribute clearly to overall execution. In management, the innovation business value is an important term that includes all forms of value that set the management and operation of the firm in the long run.

Second, the administration emphasizes the success of contributions by being able to visualize goals and objectives, and adheres to the organization's goals and policies. Innovation business policies usually show the rows, which help the potential of a company is creativity and production. The policies serve as a guideline for decision-making as well as guidance for effective operation and management involving and creating favorable circumstances that enlarge the chances of success or effectiveness for future business innovation. The policies show a company's vision and mission. Policies are based on targets, which offer gathering themes and extending over operations.

Third, there is a clear administration of knowledge base related to performance, skill, and innovation techniques from Japan (helping and reaching new markets and increase the bottom-line with better performance skills). All of these are direct factors of the latent organizational variable denoting core competency. The following indicators related to each organization's performance are direct factors of the latent factor denoting innovation absorptive capability. That relates to how to learn methods, abilities gathering, and convert of knowledge in the innovation business during a current situation. it is major to analyze all situations cautiously before taking any operations.

Fourth, the organization has enhanced technology and innovation, and its personnel cooperates consistently as employee engagement, which encompasses each individual's development. It consists of duties that expand a person's capabilities and potential in innovative business management. It refers to the dealing of all the business activities demanded. That helps how a company can introduce innovation management in your business areas and how can individual employees adjust and change to flexibility.

Fifth, the work processes within the organization have been improved continuously. Work process management is important, looking at insights into the business process and innovation business. Performance is normally the main demand for performance.

Sixth, the organization is able to integrate policies from its parent company systematically that has a controlling interest in sub-companies, which gives it the suitability to manage the subsidiary's operations by adjusting its performance effectively for effective company performance management is. Also, involves guiding, feedback, and administration support.

Seventh, the organization's personnel possesses various skills (financial management, human resource management, innovation business, knowledge management, operation management, innovation and technological talents, communication, data analysis, etc.) and pleasantly cooperates within each department. This is a direct factor of the latent variable denoting the quality of employees. A direct factor is currently undergoing by all company employees, managers and executives. These results are consistent with research by Hsiao and Hsu (2018); Damanpour and Wischnevsky (2006); Ciborowski (2018); Wolf, Egelhoff, and Rohrlack (2014); Talukder (2012). All of the above-mentioned factors show potential for Japanese technology and business innovation policy adoption among Thai businesses in terms of the characteristics needed to achieve success and optimal benefits related to innovative business management, performance, and technology and innovation adoption. Thailand has basic characteristics similar to those of Western corporations, business management, and operation. However, innovation businesses based in Thailand and aimed at Thai companies should approach their innovation and good policies. Following by the Japanese companies' characteristics as indicated by innovation management data, although some operations will be made to inter-organizational relations and corporate. Japanese business and industry have more leverage to extract technology for Thailand.

In future studies, additional data collection should be collected to obtain samples that are sufficient according to the general measurement criteria of structural equation models (SEMs). Furthermore, additional studies should be conducted on other factors that may affect the potential of Japanese technology and business innovation policy adoption; additionally, the indicators of each involved factor could be studied to strengthen the measurement model. The coronavirus pandemic (COVID-19) limited this researcher's ability to conduct fieldwork and collect data from the sample

group. Thus, the acquired data fell short of the researcher's expectations. Hence, such limits may have affected the measurement model, coming short of meeting generally-accepted criteria. However, future research will be finding innovative ways to adapt questions and methodology.

References

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74–94.

Bido, D., Da, S. D., & Ringle, C. (2014). Structural Equation Modeling with the SmartPLS. *Brazilian Journal of Marketing, 13*(2), 56–73. https://ssrn.com/abstract=2676422

Ciborowski, R. (2018). Determinants of international technology transfer (MTT) in underdeveloped countries. *International Business and Global Economy, 37*, 41–52. https://doi.org/10.4467/23539496IB.18.003.9376

Damanpour, F., & Schneider, M. (2009). Characteristics of innovation and innovation adoption in public organizations: Assessing the role of managers. *Journal of Public Administration Research and Theory, 19*(3), 495–522. https://doi.org/10.1093/jopart/mun021

Damanpour, F., & Wischnevsky, J. (2006). Research on innovation in organizations: Distinguishing innovation-generating from innovation-adopting organizations. *Journal of Engineering and Technology Management, 23*(4), 269–291. https://doi.org/10.1016/j.jengtecman.2006.08.002

Dnishev, F., & Alzhanova, F. (2016). Globalization of technological development and opportunities for national innovation systems of developing countries. *Journal of Asian Finance, Economics and Business, 3*(4), 67–79. https://doi.org/10.13106/jafeb.2016.vol3.no4.67

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.2307/3151312

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A., (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science, 40*(3), 414–433. https://doi.org/10.1007/s11747-011-0261-6

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems, 116*(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

Hoang, D. T., Do, A. D., & Trinh, M. V. (2021). Spillover effects of FDI on technology innovation of Vietnamese enterprises. *Journal of Asian Finance, Economics and Business, 8*(1), 655–663. https://doi.org/10.13106/jafeb.2021.vol8.no1.655

Hsiao, Y. C., & Hsu, Z. X. (2018). Firm-specific advantages-product innovation capability complementarities and innovation success: A core competency approach. *Technology in Society, 55*, 78–84. https://doi.org/10.1016/j.techsoc.2018.06.009

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal, 20*(2), 195–204. https://doi.org/10.1002/(SICI)1097-0266(199902)20:2<195::AID-SMJ13>3.0.CO;2-7

Japan External Trade Organization, JETRO. (2019). Technological accumulation and industrial growth. Tokyo. https://www.jetro.go.jp/ext_images/en/reports/white_paper/trade_invest_2019_overview.pdf

Kandampully, J. (2002). Innovation as the core competency of a service organisation: The role of technology, knowledge and networks. *European Journal of Innovation Management, 5*(1), 18–26. https://doi.org/10.1108/14601060210415144

Lee, J. W., & Xuan, Y. (2019). Effects of technology and innovation management and total factor productivity on the economic growth of China. *Journal of Asian Finance, Economics and Business, 6*(2), 63–73. https://doi.org/10.13106/jafeb.2019.vol6.no2.63

Niedzielski, P., & Rychlik, K. (2007). Innovations in the manufacturing and service sector - different or similar? [innovations in service sector and industry - differences and similarities]. *Scientific Journals of the University of Szczecin, 453*(8), 177–186. http://www.wzieu.pl/zn/453/summ/18_niedzielski_rychlik.pdf

Protasiewcz, A. (2020). Innovativeness of enterprises in Poland and their capacity to absorb innovation. *Optimum. Economic Studies, 2*(100), 81–92. https://doi.org/10.15290/oes.2020.02.100.06

Rajapathirana, R. P. J., & Hui, Y. (2018). Relationship between innovation capability, innovation type, and firm performance. *Journal of Innovation & Knowledge, 3*(1), 44–55. https://doi.org/10.1016/j.jik.2017.06.002

Raymond, L. (2005). Operations management and advanced manufacturing technologies in SMEs: A contingency approach. *Journal of Manufacturing Technology Management, 16*(8), 936–955. https://doi.org/10.1108/17410380510627898

Saffar, N., & Obeidat, A. (2020). The effect of total quality management practices on employee performance: The moderating role of knowledge sharing. *Management Science Letters, 10*(1), 77–90. https://doi.org/10.5267/j.msl.2019.8.014

Steve, F. K., & Arthur, R. G. (2003). *Exploring Advanced Manufacturing Technologies.* New York: Industrial Press Inc.

Suvedi, M., & Kaplowitz, M. (2016). *What Every Extension Worker Should Know Core Competency Handbook.* Michigan: East Lansing.

Swamidass. (2003). Modeling the adoption rates of manufacturing technology innovations by small US manufacturers: A longitudinal investigation. *Research Policy, 32*(3), 351–366. https://doi.org/10.1016/S0048-7333(02)00019-7

Talukder, M. (2012). Factors affecting the adoption of technological innovation by individual employees: An Australian study. *Social*

and Behavioral Sciences, 40, 52–57. https://doi.org/10.1016/j.sbspro.2012.03.160

Wang, K. K. K., (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using smartPLS. *Marketing Bulletin, 24*, 1–32. http://marketing-bulletin.massey.ac.nz/v24/mb_v24_t1_wong.pdf

Wisdom, J. P., Chor, K. H. B., Hoagwood, K. E., & Horwitz, S. M. (2014). Innovation adoption: A review of theories and constructs. *Administration and Policy in Mental Health, 41*, 480–502. https://doi.org/10.1007/s10488-013-0486-4

Wolf, J., Egelhoff, W. G., & Rohrlack, C. (2014). What best explains the success of cross-border technology transfers in MNCs: Traditional coordination instruments or modern management concepts? *Multinational Enterprises, Markets and Institutional Diversity, 9*, 97–130. https://doi.org/10.1108/S1745-886220140000009004