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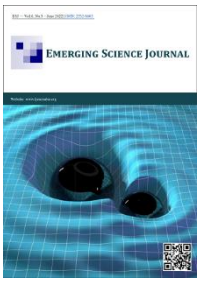

Attribute Implications and Reverberations of the Japanese Foreign Policy for Technology and Innovation Business in Thailand

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Abstract

Economic growth can be defined by real gross domestic value and international imports and exports supported by technology and innovation. Currently, there are concerns about the level of international technological policy investment, despite having the capability to be macroeconomically and business-valuable. The main objective of this research is to study the attributions in relationships and associations between the policy implications of technological business (PITB) and the effort of technology and innovation acceptance capacity (TIAC), which influence capacity development and foresight to ensure effective Japanese foreign policies. This research has been fully justified through business policy receiving technology and innovation, the potential for technology and innovation adoption (PTIA) and innovation for firm performance (IFP) of Japanese joint venture companies in Thailand was examined. Fifty-seven companies were subjected to the structural equation model testing method. Data collection was conducted by the questionnaire and an in-depth interview with validity and reliability checked under 4 main latent variables: PITB, TIAC, PTIA, and IFP. All processing was performed with the ADANCO 2.2.1 program. The research found that PITB had a positive correlation and directly influenced PTIA and IFP unless it had an inverse correlation to TIAC and the relationship between TIAC and PTIA. It can serve as a guide for how to correctly carry out the principle of creating a new Japan's foreign policy in the future.

Keywords:

Technological Business;
Innovation Adoption;
Acceptance Capacity;
Innovation Performance.

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1- Introduction

The advancement of "*Science, Research, Technology, and Innovation*" is a key determinant that can move the country forward from "Thailand 4.0 to Thailand 5.0," which is a shift from the former economic structure driven by the development of efficiency in industrial production to an innovation-driven economy [1]. Using creativity, innovation, science and technology, research, and development will increase the country's competitiveness and raise the country's income to escape from the middle-income trap [2]. Thailand relies heavily on Foreign Direct Investment (FDI), whether in innovation or technology businesses. There is a multilateral business system [3]. It also requires association with foreign companies or cooperatives and the sustainable development of technology and innovation [4]. Many companies are from Japan, where the Japanese government and state enterprises support Japan's technology business investment foreign policy under the concept of conjoined business, technology, and innovation systems [5]. In addition to the manufacturing or operating sectors preparing 18 ASEAN pilot projects, Japanese companies have entered into a pilot

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project of eight industrial incubation projects in Thailand. Most ASEAN member countries promote cooperation between the business sector, technology and innovation systems, educational institutions, and the governments of Japan and Thailand [6]. Meanwhile, all current projects have promoted and supported the application of technology, the technology business sector, the application of technology, and various innovations in both the public and private sectors. This research is about research for technology and innovative applications, including technology transfer investment proposals in foreign direct investment (FDI), where businesses in Thailand and ASEAN countries are going forward with proficiency and technology and innovation [7].

Japanese companies have come to invest and have a policy to connect their technology and innovation businesses. Innovation policy represents the confederate between economic value and technological development policy in industrial conditions. However, the absorptive-knowledge capacity in technology and innovation management and Technology Adoption and Innovation Management (TAIM) in Thailand and developing countries also depends on the recipient's ability and comprehensive system integration [1, 8]. Adjusting the procedure to suit Thailand and "how to create the ex-ante method" is critical because both are equally important. In the meantime, it is also a mechanism for developing competitiveness in the global market by developing innovative business policies with Thai-Japanese technology. It represents multilateral cooperation, which can be divided into two types: technology transfer and innovation across industries [7].

Along with cross-technology and innovation transfer [9], interfirm, and technology and innovation transfer [10], these three attributes create relationships and mutual interests in business and knowledge. Nonetheless, domestic and policy changes complicate the system's operation and introduce unpredictable competition elements. Therefore, it is important to upgrade Thai-Japanese technology and innovation business policies [5]. The consequences of the organization's technology and innovation project capabilities (Innovation Performance) and the informal elements include the internal circumstances' communication process (HORENSO). This should develop the reliability competency as much as possible. All include potential skills, which may affect the efficiency and effectiveness of the organization's operations [4]. Based on the above issues, the researcher realizes the importance of developing business policies, technology, and innovation in a multilateral form between Thailand and Japan. This research is fully justified through business policy receiving technology and innovation, the potential for technology and innovation adoption (PTIA) and innovation for firm performance (IFP) of Japanese joint venture companies in Thailand were examined. The authors hope that the results of this research will be the basis for further knowledge in developing business potential, preceding technologies, the soft skills of innovative entrepreneurs, and multilateral business organizations in advancing business competitiveness, especially the Japanese foreign policy and forthcoming development in soft innovation. A specific, effective policy can be integrated and reverberated to drive industrial competitiveness.

2- Literature Reviews

2-1- The Policy Implications of Technological Business

International business policy formulation and cooperation (Trade and Development) develops the economy. It is a matter of defining policy stances, objectives, and principles to form a country's practical pattern in international relations [11] to protect national interests [12]. Generally, every country has to set its own foreign policy principles and objectives, whether a business economy or industry. In today's world, there are contacts for product exchange and international trade and are the cause of widespread international marketing [13]. Each government must formulate policies aimed at preserving its economic interests. Japan's influence was strengthened through consolidating cooperation with a like-minded economy of innovation and technology. Overall, promoting value-oriented diplomacy is exceptional in the history of Japan's foreign policy. It may be a form of grouping countries to maintain economic interests among their own countries, such as establishing free trade zones [14]. Specifically, in terms of demand for economic policy, it primarily analyzes the role and behavior of interest groups that are also an instrument of governance and formulate economic guidelines [15]. In the future, achieving common practice between government and business in a dynamic system [16] is important. The efficiency of the policy (policy implementation) is an important and driving force in national development and related business [17, 18].

2-2- The Effort of Technology & Innovation Acceptance Capacity

The important factors in the country's development toward a knowledge-based economy and a society-based economy that build the capacity to adapt and keep up with globalization are used to develop the technology and innovation acceptance-capacity of entrepreneurs and businesses [19]. However, with the development of technological talent and innovation, there is still the need to rely on many factors to support development more continuously. It also requires a clear and sufficient government promotion policy to create a body of knowledge and innovation [20] and build a strong network of relevant agencies in the country's innovation system [21]. These can enable us to make systematic and continuous progress toward achieving sustainable development. Sonenshein (2006) [22] stated that technological and innovative competence includes understanding the importance and use of awareness strategies. The

Practice and operation in the field of technology also include the ability to analyze behaviors to create a creative potential for the effective application of technology and innovation.

Along with developing people and business infrastructure, innovation and technological advancements result from the complex relationships between the stakeholders that build talent [23]. Knowledge is distributed and applied in various forms of cooperation, activities, and the flow of knowledge technology [24]. Therefore, technological and innovation capabilities depend on the innovation efficiency of a country. This depends on the relationship between stakeholders and private organizations, universities, and government research institutes. This connects knowledge and technology in the form of cooperation from foreign countries or joint venture companies, such as joint research, personnel exchange, cooperative patents, advanced equipment, unique tools, and expertise formats [25].

2-3- The Potential for Technology & Innovation Adoption

The development of business policy adoption and technology and innovation capacity depends on the organization's core competence, which is where the organization must be most proficient, resulting in creating a competitive advantage and a representation of strategically important capabilities [26]. This includes adapting and enabling organizations to achieve their missions [27]. Currently, leading NGOs are increasingly adopting the concept of competence development and capacity development as a tool for management [28]. The term potential refers to specific knowledge in a subject that must be known. Essential knowledge is coupled with skills based on knowledge and practical expertise that affect the main work [29]. However, the adoption of technological innovations into organizations plays a role in creating competitive advantages for companies in various industries of various countries [27, 30]. Technological innovation for developing countries and technology will be transferred through various formats and evaluation factors, such as advanced manufacturing technologies (AMT) [31]. Hardware and software technologies may be divided into 3 types: management technology (administrative technologies), design technologies (design technologies), and production technology. Manufacturing technologies [32, 33] described the Innovation Adopting Organization (IAO) as an organization with the ability to absorb innovation (absorptive innovation capacity). It will rely on its managerial ability and the organization's ability to select and implement innovations to create the potential and competitiveness of the organization [34]. Meanwhile, the organizational success, with the impact being largest for power users and consistently supports those the function’s operations have improved. According to Protasiewicz (2020) [35], the ability to absorb innovation is one of the key factors of social and economic growth [36] for developing countries. Meanwhile, few organizations will receive advanced technology from abroad to be able to develop production potential within the organization by themselves. Additionally, the spread and increase of competitiveness and interest in new markets lead to the development of new technology lines based on their own research, leading to increased competitiveness and exports [37].

2-4- The Measure of Innovation on Firm Performance

Business operations generally focus on generating profits for business owners or venture capitalists to run their revenue and economic growth. For this reason, several academics have developed tools for measuring corporate business performance. For example, [38] developed a tool known as the balanced scorecard for measuring business performance using the response finance customers need in terms of internal operating business processes, learning, and organizational growth. However, for technology & innovation businesses, performance is measured by recognizing the effectiveness of innovation [39] through better new product development indicators than competitors and having a greater number of innovations than competitors. Meanwhile, the time taken for innovation to market is less than the industry average [40]. Organizations should measure the impact from the customer perspective because financial performance will increase accordingly if the customer is satisfied.

The main objective of this research is to study the relationship between the effectiveness of technological business policies (the policy implications of technological business, PITB) and the effort of technology & innovation acceptance capacity (TIAC), which influences the development of technology acceptance capacity. Technology & innovation business policy (the potential of technology & innovation adoption, PTIA), innovation on firm performance (IFP) of Japanese technology, and innovation joint ventures. To apply the findings to formulate guidelines for developing the potential for technology & innovation knowledge of Japanese venture capital firms in Thailand, it was found that most of the studies were related to the effectiveness of the economic policy, technological capability, and innovation. Nevertheless, most of the findings do not show a correlation. Research on this topic in Thailand is limited. Thailand has investments from multinational companies such as Japan, which tend to increase sequentially. There have also been no studies definitively establishing a link between the effectiveness of the economic policy, technological capability, and innovation. From the study of the above-related literature, the researcher formulated a conceptual research framework, as shown in Figure 1.

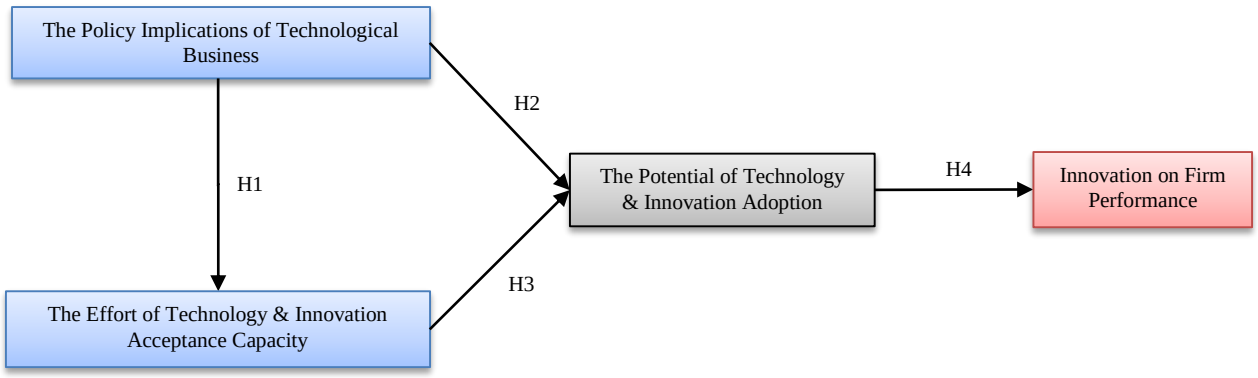

Figure 1. Research framework

From the conceptual research framework shown in Figure 1, the researcher can formulate the following research hypotheses:

H1: The policy implications of technological business have a positive relationship with the effort of technology and innovation acceptance capacity.

H2: The policy implications of technological business have a positive relationship with the potential for technology and innovation adoption.

H3: Technology and innovation acceptance capacity have a positive relationship with the potential for technology and innovation adoption.

H4: The potential of technology and innovation adoption has a positive relationship with innovation and firm performance.

3- Research Methodology

3-1- Participant

The population used in this study was 89 business executives from Japanese technology & innovation venture capital firms in Thailand [6]. In the Japanese foreign policy context, purposive sampling was used from the above population of 57 places with different business, technology, and innovation characteristics. There are 7 management technology businesses, 21 metal technology & fabrication equipment businesses, 20 energy businesses, and 9 compound rubber businesses. Innovation and technology businesses are considered to be technically efficient when using suitable data to provide a given level of outputs or alternatively maximize the outputs with given available resources.

3-2- Instrument

The researcher collected data from questionnaires and an in-depth interview that was conducted to increase knowledge on a given topic for Japanese technology & innovation venture capital firms in Thailand. The questionnaire and all results showed the level of opinion in each aspect through 13 indicators of observable variables under 4 main latent variables: the policy implications of technological business (PITB), the effort of technology & innovation acceptance capacity (TIAC), the potential for technology & innovation adoption (PTIA), and innovation on firm performance (IFP). Based on empirical data of technology business groups that have invested and received policies from multinational companies, Japan, based on research assumptions by testing structural equation modeling, considered the weight (loading) significance (p-value), and decision coefficient (R^2) [41], with validity and reliability checked. A more reliable measurement (reliability) has been used from Dijkstra-Henseler's rho [42], composite reliability [43], and Cronbach's alpha [44]. The average variance was extracted [45] by the ADANCO package [46].

4- Results and Discussion

Processing was performed with the ADANCO 2.2.1 program to check the accuracy (validity) and reliability measurement. Dijkstra-Henseler's rho (ρ_A), J¨oreskog's rho (ρ_c), Cronbach's alpha (α), and the average variance extracted (AVE) were found to range from 0.4211 to 1.0000, 0.7039 to 1.0000, 0.3810 to 0.6933, and 0.3834 to 1.0000, respectively. As such, statistics must be greater than or equal to 0.5 to show that the latent variable describes the variance of the indicative variable greater than 50 percent. Therefore, the above test results show that the model is consistent and reliable, as shown in Table 1.

Table 1. The result of validity and reliability measurement

Construct	Dijkstra-Henseler's rho (ρ_A)	J"oreskog's rho (ρ_c)	Cronbach's alpha (α)	Average variance extracted (AVE)
PITB	0.6886	0.7085	0.6933	0.3834
TIAC	1.0000	1.0000	-	1.0000
PTIA	0.4211	0.7039	0.3810	0.4517
IFP	1.0000	1.0000	-	1.0000

When considering the overall model quality by the bootstrap method through the root mean square root index (SRMR), the values were 0.1169 and 0.1178, which were higher than the required low standard values of 0.1 [47-50]. This includes considering the structural model from the magnitude and significance of the path coefficients. The coefficient of determination (R^2) and adjusted R^2 found that the decision coefficients of the latent variables TIAC, PTIA, and FIP were 0.0699, 0.1052, and 0.0129, respectively (see Table 2). This indicates that the above model may not be very suitable for the data, as the measurable value was less than 0.5 [41, 51]. Moreover, when testing the causal influence to study the effect and testing the hypothesis, it was found that all components had a p-value > 0.05 and a t-value < 1.96, which is lower than the critical value at the 0.05 level of significance. Thus, rejecting the research hypothesis is shown in Table 3. Meanwhile, the overall structural equation model test results are shown in Figure 2.

Table 2. Coefficient of determination

Construct	Coefficient of determination (R^2)	Adjusted R^2
TIAC	0.0699	0.0527
PTIA	0.1052	0.0714
IFP	0.0129	-0.0054

Table 3. Structural equation modeling

Effect	Original coefficient	Mean value	Standard error	t-value	v-value	Finding
PITB → TIAC	-0.2645	-0.2645	0.2498	-1.0587	0.2900	Unsupported
PITB → PTIA	0.1984	0.2167	0.2665	0.7444	0.4568	Unsupported
PITB → IFP	0.0226	0.0190	0.0620	0.3641	0.7159	Unsupported
TIAC → PTIA	-0.2660	-0.2514	0.1597	-1.6656	0.0961	Unsupported
TIAC → IFP	-0.0302	-0.0260	0.0454	-0.6663	0.5054	Unsupported
PTIA → IFP	0.1137	0.1033	0.1709	0.6654	0.5059	Unsupported

Correlation is significant at the 0.05 level (2-tailed).

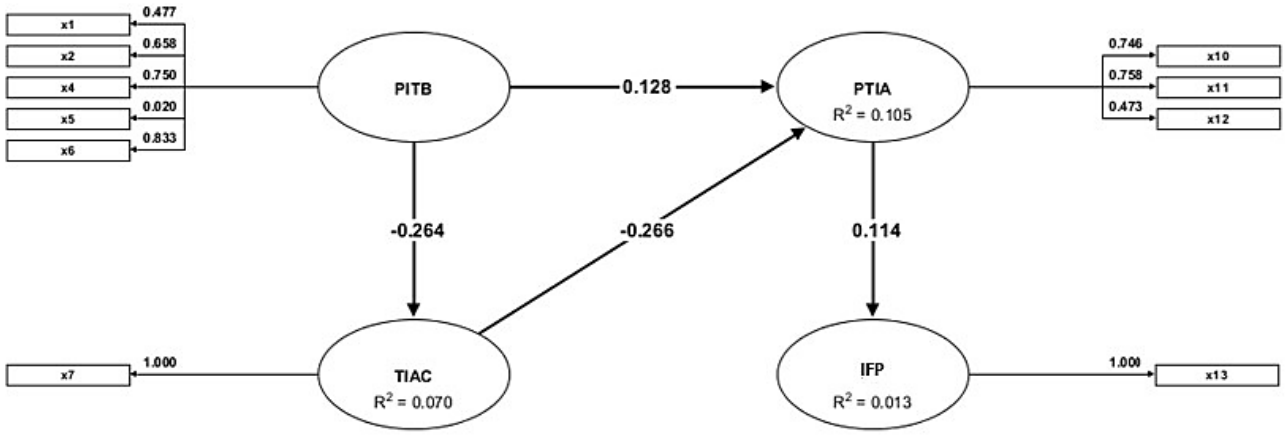

Figure 2. Empirical model: the overall structural equation model test results

5- Conclusion

The research found that the policy implications of technological business (PITB) had a positive correlation and a direct influence on the potential of technology and innovation adoption (PTIA) and innovation on firm performance (IFP). It was Japanese foreign policy to provide determination and cooperation with these remarkable and robust performances. The adoption of a national economic strategy enabled Thailand to have a clear and long-term vision. It

also focused on the importance of values. Unless it had an inverse correlation to the effort of technology and innovation acceptance capacity (TIAC). In addition to the relationship between the effort of technology and innovation acceptance capacity (TIAC) and the potential of technology and innovation adoption (PTIA), it was found that the hypothesis was rejected on all issues that the researcher had determined. It was also discovered that the model developed by the researcher may not be appropriate for the empirical data studied. This resulted in a parameter bias and lower statistical testing power than expected. However, it also depends on the number of indices for each model used in the study. The influence of the sample size also had to be increased for higher statistical testing power. The statistical power size depends on the significance level, sample size, and influence size. The resulting statistical power should be 0.8 or higher, with a higher value indicating sufficient confidence to accept the hypothesis. In addition, the influence size depends on the sample size if PLS-SEM is used. Small data can still produce high statistical testing power if the path coefficient and power size are large enough. However, if the influence was from the middle scale, the statistical test power would be lower than the threshold. The research made important contributions to the field of how to conduct and manage key technology-innovation policy management. It can be the guiding principle of creating a new Japanese foreign policy correctly in the future. Meanwhile, Japanese foreign policy may have ramifications for new business models and international policy. To do so, it would be important to enhance the competitiveness of Japanese foreign policy by adopting more technology and innovation adoption and innovation in firm performance. It was important for developed-developing country partnerships.

5-1- Limitations and Future Research

Due to the limited number of targeted companies, there are few Japanese venture capital firms in Thailand. Combined with the current coronavirus epidemic (COVID-19) situation, visits to the targeted area for collecting samples used in this research study cannot be carried out as planned. The resulting sample size used in this study is limited and, therefore, may be inaccurate in the research results. Future research might increase the number of samples to meet the test conditions, study results, influence size, and power limitations. This also includes filling an important gap between national policy and the process that is advantageously directed toward searching and analyzing innovative industries. Furthermore, sustainable value creation with new business implementation towards sustainability foreign policy for technology and innovation business needs, within the organization as well as to know what their role is in achieving sustainable innovation..

6- Declarations

6-1- Author Contributions

Conceptualization, Y.S. and S.A.; methodology, Y.S.; software, W.P.; validation, Y.S., S.A. and J.J.; formal analysis, S.A.; investigation, Y.S.; resources, W.P.; data curation, K.D.; writing—original draft preparation, S.A.; writing—review and editing, Y.S.; visualization, K.D.; supervision, S.A.; project administration, S.A.; funding acquisition, S.A. All authors have read and agreed to the published version of the manuscript.

6-2- Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6-3- Funding

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6-4- Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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