

# พินเทค : รูปแบบหนึ่งของการพัฒนาวัตกรรมทางการเงินในศตวรรษที่ 21

## Fintech as a Form of Financial Innovation Development in the 21<sup>st</sup> Century

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### บทคัดย่อ

ในปัจจุบันการขับเคลื่อนการพัฒนาทางเศรษฐกิจและการพัฒนาทางสังคม มีระบบการเงินของประเทศไทย เป็นกลไกสำคัญ ภาคธุรกิจการมีหน่วยงานกำกับควบคุมดูแล การปรับปรุงกฎระเบียบในระบบการเงินภายหลังวิกฤตการณ์ทางเศรษฐกิจของประเทศไทย เพื่อความผันผวนที่เกิดอย่างรวดเร็วและรุนแรงของระบบการเงินของไทย ซึ่งระบบการเงินยังมีบทบาทสำคัญของประเทศไทยเป็นแหล่งเงินทุนของประเทศ ทั้งภาคธุรกิจและภาคเอกชนต่างให้ความสำคัญกับระบบการเงิน เห็นได้จากการขยายกิจการของภาคเอกชนไปในต่างประเทศ การลงทุนในโครงสร้างพื้นฐาน โดยใช้ระบบเงินทุนในประเทศไทยขึ้น จากรายงาน World Economic Forum ซึ่งให้เห็นจุดอ่อนหล่ายประการ เช่น ความพร้อมและต้นทุนของบริการทางการเงิน การเข้าถึงเงินกู้ การระดมทุนผ่านตลาดทุน เป็นต้น ซึ่งปัจจัยดังกล่าวเป็นส่วนต่อขึ้นอัตราการเจริญเติบโตของภาคเศรษฐกิจจริงในระยะยาว ยังคงในสภาพที่มีการแข่งขันในด้านการค้าและการลงทุนจากต่างประเทศที่มีความรุนแรง และในสภาพที่อัตราการเจริญเติบโตทางเศรษฐกิจของไทยเติบโตในอัตราที่ช้าลงกว่าในอดีตประเทศไทยยังมีปัจจัยหลายอย่างที่อื้อต่อการพัฒนาธุรกิจพินเทค ทั้งภาครัฐและภาคเอกชนความมีการสนับสนุนอย่างจริงจัง เพื่อเปิดโอกาสให้ผู้ที่ประกอบธุรกิจพินเทคทดลองจนธุรกิจด้านนวัตกรรมต่างๆ มีการนำเอาเทคโนโลยีมาใช้และให้ความสำคัญถึงผลกระทบที่มีต่อประชาชน และผู้ให้บริการ และหากร่วมกันพิจารณาทางแนวทางในการพัฒนาและส่งเสริมอุตสาหกรรมพินเทค เพื่อเพิ่มขีดความสามารถในการแข่งขันธุรกิจพินเทคในประเทศไทย และร่วมมือกันพัฒนาของทุกภาคส่วนเพื่อให้เกิดความสามารถในการแข่งขันของไทยสูงขึ้น สนับสนุนและส่งเสริมให้ประเทศไทยดำเนินการอย่างเต็มที่ในลักษณะการปรับปรุงให้เกิดสภาพคล่องในการดำเนินการ เช่น การออกใบอนุญาต กฎระเบียบ ข้อกฎหมายที่เกี่ยวข้องกับการดำเนินธุรกิจ การเป็นตัวกลางในการขับเคลื่อนกลไกต่างๆ ที่เกี่ยวข้องของธุรกิจ ระบบความปลอดภัยของเทคโนโลยี การส่งเสริมและผลิตบุคลากรที่มีความเชี่ยวชาญ ความชำนาญให้ตรงความต้องการของภาคธุรกิจ และเปิดโอกาสให้ผู้เชี่ยวชาญจากต่างชาติเข้ามาในประเทศไทยเพื่อปรับปรุงและพัฒนาต่อไป

**คำสำคัญ:** การพัฒนาเศรษฐกิจไทยอย่างยั่งยืน นวัตกรรมทางการเงิน พินเทค

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## Abstract

The financial system of Thailand has been a major mechanism in driving economic and social development. The regulatory unit initiated by the government, together with the improvement of existing regulations of the financial system after the economic crisis, is required to cope with abrupt and critical fluctuations in the Thai financial system. Both the government and private sectors have regarded the financial system as very significant due to its role as the source of funds for the country in expanding the latter's business to overseas, while supporting the former's infrastructure investment. The report of World Economic Forum, however, has indicated a number of weaknesses in the Thai financial system, e.g. the readiness and costs of financial services, loan access, and funds generating via the capital market. The said weaknesses will inevitably affect the long-term growth rate of the real economic sector. However, despite the fierce competition in international commerce and investment as well as the declining growth rate of Thai economy, Thailand still holds on to a number of factors conducive to Fin Tech business development. Hence, the government and the private sectors should strenuously enable Fin Tech and innovation-related entrepreneurs to implement technology while contemplating on impacts on the public and service providers. They should also cooperate to generate the development and promotion of Fin Tech business and all related sectors to increase the competitiveness of Fin Tech business in Thailand. In this aspect, necessary measures should be supported to facilitate the procedures, e.g. permit issuance, improvement and enactment of regulations and business-related laws, initiation of roles in mediating and driving business mechanisms, provision of technological security system, promotion and production of talents as required by business, and importation of foreign experts to help develop Fin Tech in Thailand.

**Keywords:** Financial innovation, Fin Tech, Related rules & regulations

## Introduction

At present, the problems of poverty and income inequality are still a major obstacle in economic development, especially in under-developed and developing countries. The said problems are basically involved with complicated financial structures and other relevant factors, one of which concerns the poor's inability to get equal access to financial services (Fiscal Policy Office, 2015 & 2016). Their deprivation of such financial service access stems mainly from various causes, e.g. too expensive bank fees, inadequate or too remote

branches or ATM, bank's tendency to turn down seemingly poor customers due to unworthy service costs, or the poor's hesitation to reap benefits from formal financial systems.

In 2016, the fiscal policy was considered a major driving force of Thai economy, reflecting in the continuing rise of government expenses in the 2016 fiscal year, especially the annual expansion of government investment to 16.0% that mostly concerns basic infrastructures and public utility systems. In addition, the fiscal policy also served as a major role in solving economic problems of Thailand during uncertainties in the world economy. Some problems were involved with the fluctuating economic policy of the United States, the "Brexit" risk of the United Kingdom withdrawing from the European Union, and fluctuating commodity prices (e.g. oil, agricultural products). The aforesaid factors inevitably rendered a significant impact on Thai economy, particularly on low-income people, small farmers, and SMEs (Fiscal Policy Office, 2015 & 2016).

As stated in the 20-year National Strategy, Thailand has set as a goal to achieve her long-term economic growth of a developed country. In this aspect, a number of reforms need to be conducted for Thailand to achieve economic stability, human resource development, equal economic opportunity, environmental sustainability, competitive advantage, and government system efficiency. The reforms under operational process include multi-year investments on major infrastructure projects, i.e. developing dual track railways, restructuring rules and regulations to facilitate business operation, establishing the State Enterprise Policy Committee for better operational management, transferring the supervision and examination of Specialized Financial Institutions (SFI) to the Bank of Thailand, issuing progressive inheritance and estate taxes, and opening of National Savings Fund (NSF) to replace the abolished social safety nets of informal labors. As a result, Thai economy was expected to grow by 3.6% in 2017 and 3.6% in 2018. (Asian Development Bank & Bank of Thailand, 2015)

Nevertheless, the solution of economic and social inequalities has not yet been successful, and hence rendering Thailand in the middle income trap. According to the Thailand Development Research Institute (TDRI, 2016), the implementation of high technology in business and the entrepreneur's creative innovation will help increase productivity throughout the value chains of products and services, as well as heighten the competitive advantage of the country. The emergence of innovative environment and high productivity society depends basically on the close cooperation between the private sector (e.g. large firms, SMEs and Startups), the public sector (e.g. quality assurance, R&D support), and the academic sector.

According to Lusardi and Mitchell (2011), financial literacy is related with financial decision in terms of borrowing, saving, and planning for retirement. Since financial illiteracy is mostly found among the youths, the elderly, and the low-educated people, it will surely lead to risks of failure in retirement financial planning. Therefore, every country aims primarily to enable her citizens to be financially literate, and that could be accomplished via the efficient development of technology-aid financial service innovations.

Since financial innovation has basically served as a significant tool on financial development; this article is organized with the following topics : the definition of financial innovation, development of financial innovations, and application of financial innovations with technology. The content will also include advancement of Fintech business in Thailand and approaches to financial innovation reforms for Thai economy development.

## Definition of Financial Innovation

An innovation, or “Novas” in Latin, signifies the presentation of new things. In financial terms, a financial innovation, as defined by some economists, refers to the initiation of new policy, e.g. monetary policy innovation, as well as the approaches invented to be responsive to changing environments (e.g. Euro deposits). Financial innovations basically serve as an innovative financial tool with respect to the technology implemented by related institutions, and they are generally composed of new products and processes, as related to derivatives, innovative funding methods, free floating services, or other practical interactions. The financial innovations will actually do no harm to the industry or participating firms if their related procedures and products are stated clearly with valid references.

Financial technology is a main focus of many countries such as the United Kingdom, the United States, Australia, and Singapore. In some countries, the government sector acts as a principal driving force to initiate the financial industry, while in other countries, the private sectors are more active in developing financial innovations.

Financial technology basically provides users with additional, suitable, and efficiently-accessible financial service options. If Thailand avoids the financial reforms to respond properly to financial technology, the financial systems will be definitely weakened due to upcoming service providers from aboard and decreasing number of existing users. This incident will inevitably cause negative impacts on the financial sector, thus further weakening the capital-based economic sector. Such negative impacts will also affect the over 200,000 employment rates involved in the financial sector and millions in the real sector. This incident will definitely result in increasing social gaps and inequality, and thus the stability and sustainable development of the country.

## Development of Financial Innovations

The financial system of Thailand has largely been affected by continuously advanced financial technology and innovations. The estimation of changing financial system structure and possible impacts on financial and economic systems may lead to the innovation-conducive financial ecosystem. As a result, financial servicing and accessing in an extensive, efficient, stable, and safe approach will be generated. Such ecosystems include level playing field, entrepreneurial spirits, and international aspiration, and these will strengthen Thai entrepreneurs in extensively creating financial innovations.

Three types of financial innovation creations are as follows:

1) The “Entrepreneur-led Innovations” refer to those created by the entrepreneurs in the form of new products in response to customers’ needs, or the improvement of existing services to be more efficient, faster, and more cost-saving. The government may help support the innovation creation via the strengthening of startup businesses with regard to knowledge and funding provision.

2) The Innovations created from “Industry Common Solutions” refer to those created through brainstorming to determine problem solutions or future development systems, aiming specifically to upgrade business development and services. The said innovations include electronic payment to reduce operating costs and service fees, modification of work process from paper-based to electronic-based approaches, and E-KYC (Know Your Customer) customer identification. The government will take a partial role in supporting the creation of efficient and cost-saving innovations.

3) The Innovations created from “The Impossible” refers to those perceived as possible by the entrepreneurs, but the product/service development process is largely hindered by existing rules and regulations. To support this type of innovation creation, the government may conduct on an experimental basis strategies to loosen rules and regulations in order to facilitate the innovation development.

## Using Financial Innovations with Technology

According to Arner, Barberis, and Buckley (2015), Fintech was brought into effect during 1990s by Citigroup in the “Financial Services Technology Consortium,” in which technological cooperation was promoted between the Bank itself and external partners. The development of Fintech can be divided into 3 periods. The first period or Fintech 1.0 lasted from 1866-1967, during which the financial service industry was mostly analog-driven with some technology implementation. This period that linked monetary with technology also laid

an infrastructure foundation for the financial globalization trend in late 19th century which ended before the First World War. Such technology as telegram, railways, canals, and steamboats basically linked the financial sector overseas and generated world-wide financial information, transactions, and payments. Meanwhile, the financial sector also provided significant loans to related industries as a means to support technology development.

The second period of Fintech or Fintech 2.0 began in 1967 in which the digital communication technology and transaction processing changed the financial industry from analog to digital system. A driving force to the second period of financial globalization stemmed partly from the “Black Monday” incident, whereby the U.S. stock index dropped drastically in 1987.

From 1987-2008, financial services in developed countries had reaped great benefits from the second financial globalization in which the internet and more advanced digital technology was brought in to propose financial products and services. In 1995, Wells Fargo Bank provided online auditing services via World Wide Web (WWW). In 2001, 8 large banks in the United States accumulated up to million online customers. This phenomenon took place in major regions throughout the world, along with the regulatory supervision for risk identification and management. Later in 2005, direct banks with no physical branches were initiated in the United Kingdom, e.g. ING Direct Bank and HSBC Direct Bank.

From 2008 onwards to present marked the Fintech 3.0 in which financial technology was implemented not only in financial institutions but also in newly born Startup business. Renowned technology firms have simultaneously been offering financial products and services to the business sector and the general public.

The growth of Fintech markets in the Asia-Pacific region is pushed forward by different factors when compared with those of the United States and Europe. The financial industry in this region has witnessed lower expenses on information technology than those in American and European. Numerous factors could shed lights on this incident, e.g. smaller competitive scale, higher governmental control, and distortion caused by state-owned banks. In addition, some people have no trust in the banking system of the state-owned banks due to corruption and inefficiency problems. As a result, they are more prone to accept innovative financial services from non-banks.

As for the number of branch distribution, the number of branches in the Asia-Pacific region is still way below those in the European region and the United States. That is, 62.5 branches are situated per 100,000 populations in Europe, while only 12.5 are per 100,000 populations In Asia-Pacific. This smaller number of branches enables the financial products

and services on mobile phone applications more interesting for users (Sarinee Achavanuntakul, 2017).

The phenomenon of Fintech 3.0 has marked the emergence of Fintech startup business. The characteristics of Fintech Startup business could be explained by the following classic framework (Ernst & Young as cited in Sarinee Achavanuntakul, 2017)

**Table 1:** The characteristics of Fintech Startup Business

	Common Characteristics	Details
C	Customer-centric	<ul style="list-style-type: none"> <li>products and services being convenient and easy-to-use</li> <li>financial service designed to be responsive to customer's need</li> <li>high level of customer engagement</li> </ul>
L	Legacy-free	<ul style="list-style-type: none"> <li>the system designed specifically in the digital format</li> <li>no delay due to no relevancy with old products characterized by low usage level, merger, or supervisory tasks</li> </ul>
A	Asset light	<ul style="list-style-type: none"> <li>low level of fixed assets, thus leading to high operating leverage</li> <li>assets generated via leasing or outsource</li> </ul>
S	Scalable	<ul style="list-style-type: none"> <li>business expansion ability embedded in business model, using the advantage of business networks, distribution, and simplicity</li> <li>low capital as mandated by law</li> </ul>
S	Simple	<ul style="list-style-type: none"> <li>offer understandable and basic values to customers</li> <li>highly focused and transparent work process</li> </ul>
I	Innovative	<ul style="list-style-type: none"> <li>Innovative throughout the operating process, e.g. business model of products and services and service offering approaches</li> </ul>
C	Compliance light	<ul style="list-style-type: none"> <li>Model designed to be simple and complication-free of approval process</li> </ul>

Source: From *Capital Allocation in Thai Economy under Globalization*. By Sarinee Achavanuntakul. (2017). co-authored with Prof. Kittichai Sae-lee, presented at year-end symposium, Economics Department, Thammasat University.

## Advancement of Fintech Business in Thailand

The application of technology to financial services in Thailand is mainly in the e-Finance level; that is, using e-services to increase the virtual marketplace and reducing the physical marketplace. Despite the upcoming convenience and service cost saving, the operating and offering of services are still following the traditional approach, thus making the Fintech business in Thailand different from that in other countries, in which innovative financial competition has been the prime focus. As a result, Thailand's Fintech is still in the preliminary stage in which loss of economic opportunity may prevail. In this case, the National Research Council of Thailand (2016) has analyzed the situation of Fintech business in Thailand as following.

**Table 2:** Strengths and Weaknesses Analysis of Fintech Business in Thailand

Strengths	Weaknesses
1. Over 90% of the population have access to financial services (Bank of Thailand, 2014), leading to a large base of customers who are experienced with financial interactions.	1. Household debt in Thailand is as high as 80% of GDP (Asian Development Bank, 2015; & Bank of Thailand, 2015), thus affecting their ability to incur and pay off more debts.
2. With renowned service-related skills, Thai people understand well that the success of service business involves basically the responsiveness to customer's needs and wants.	2. Due to low level of financial literacy of Thai people (as compared with Asian average level), generating income from complex financial services is relatively hard to achieve.
3. Thai entrepreneurs' attitudes regarding network formation are favorable, and they also possess necessary resources for Fintech business development.	3. With low income distribution among Thai people and restricted funding regulations, Thai entrepreneurs will be eventually deprived of adequate funds.
4. The cost saving features of Fintech in financial transactions will benefit the economic system at large, while increasing business competitive advantage.	4. Lack of knowledge integration and tendency of centralized administration of Thai entrepreneurs have rendered internal and external management somewhat inefficient.
5. Venture capital firms shows interest in investing in Fintech business (but no active mediator among stakeholders are available yet).	5. No central unit has yet been established to take charge in technological security, hence rendering this security gap a costly risk.

Source: From *Thai Economy Research Strategy on “Financial Technology (FinTech) and Thai Financial System Development*. By National Research Council as cited in Pornchai Chunhajinda. (2017) [Online] Available at: [http://e-jodil.stou.ac.th/filejodil/14\\_1\\_592.pdf](http://e-jodil.stou.ac.th/filejodil/14_1_592.pdf)

**Table 3:** Opportunities and Challenges Analysis of Fintech Business in Thailand

Opportunities	Threats
1. A large domestic market of over 65 million people (Department of Provincial Administration--DOPA, 2016) with approximately 30 million tourists per year (Tourism Department, 2016) has provided an income-generating opportunity for Fintech business via various innovative services.	1. Thailand has put less emphasis on service-related technology and technology development. According the WIPO, in 2014, the number of patent applications in Thailand was less than 10% of the world average.
2. The complete population list held by DOPA is readily available to be used by the business sector to create the “Know-Your-Customer (KYC)” database.	2. Fewer than 5% of innovation-creating Startups have experienced a success, thus signifying a high risk investment in the said business.
3. Thai people are generally flexible and readily adoptive of new technology learning. Their access to internet and communication technology is markedly extensive.	3. Work permit regulations are not conclusive to welcome international experts to help with business development.
4. The internet and communication infrastructures are quite modern to support Fintech business.	4. The information-technology curriculum is not capable of producing sufficient number of personnel to respond exactly to the market demand.
5. Although being more advanced when compared with Thailand, the Fintech business in other countries is still in the introductory stage, hence offering Thailand to catch up by learning from their experiences.	5. Thai people’s preference of products/services from overseas, high expectation triggered by technology development, and attitude regarding digital information security, may cause difficulties for Thai startups business in the preliminary stage.

**Table 3:** Opportunities and Challenges Analysis of Fintech Business in Thailand

Opportunities	Threats
6. Increasing per capita income of Thai people has rendered Thailand an upper-middle-income country, resulting in people's higher purchasing power. This will eventually benefit the growth of Fintech business.	6. Thai people are generally not innovation-driven entrepreneurs, especially in the technological creativity, as indicated in the low ratio of startups firms to the working-age population.
7. As a new business in Thailand, Fintech has still been invested by a few number of firms (KASIKORN Business Technology Group, 2016), thus providing a big room for marketing and business opportunities.	7. The government has promoted the Startups only in particular business segments and allowed a short period to register for special benefits (within 2016). This will deprive non-profit-generating Startups of their tax benefits.
8. A lot of Thai people still rely on informal loans (Asian Development Bank, 2015; & Bank of Thailand, 2015) thus providing an opportunity for Fintech entrepreneurs to provide a better and cheaper financial services.	8. Thailand still experiences a small number of research papers, research centers, and researchers, when compared with the total population. According to World Bank Group (2015), during 2005-2014, Thailand's R&D investment fund was ranked the 70 <sup>th</sup> in the world.
9. Young Thai people are continuously and increasingly alert in starting their own business despite their unpreparedness to be the innovative entrepreneurs.	9. Fast-changing technology and big budgets for new technology investment may do harm to the not-so-active Startups.
10. Thai government attentively supports Startups by providing exemptions of corporate tax for 10 years, along with dividend tax & capital gain tax for 5 years. National committee and supportive funds were also established.	10. Particular obstacles include unclear and outdated technology-related regulations, as well as inconclusive law enforcement (digital signature law, privacy protection law, block chain law, and biometric authentication).
11. Due to high fixed costs but low variable costs, Fintech business of Thai entrepreneurs has still grasped an opportunity to expand to international markets, thus resulting in a bigger customer base and more income.	11. Corruption, political instability, and ambiguity in patent violations are particular factors that inhibit international cooperation.

Source: From *Thai Economy Research Strategy on “Financial Technology (FinTech) and Thai Financial System Development*. By National Research Council as cited in Pornchai Chunhajinda. (2017) [Online] Available at: [http://e-jodil.stou.ac.th/filejodil/14\\_1\\_592.pdf](http://e-jodil.stou.ac.th/filejodil/14_1_592.pdf)

## Approaches to Financial Innovation Reforms for Thai Economy Development

To reform the system as a foundation for financial innovations, an extensive cooperation is required from both the government and the private sectors, in which the former initiates the brainstorming and the latter generates common vision and main point in the industry. More importantly, a priority should be focused on 4 working frames as follows (The Secretariat of the House of Representatives, 2017).

### 1. Digital Infrastructure Building

#### 1.1 Business Infrastructure

- Developing the government data infrastructures to open access to government information to be used in innovation development

- Developing the infrastructures for cross-industry data pool to be used in cross-industry depth analysis, for example, the collection of people's medical history for inter-hospital treatments and insurance fee calculation.

- Developing the common utility infrastructures as required by business, so as to increase business efficiency and reduce business costs, e.g. Electronic-KYC, Electronic-account opening, regulatory reporting, licensing registration, fraud & financial risk detection.

#### 1.2 Technical infrastructure

- Developing the cyber security for national critical infrastructure, and build a mechanism to push forward the cooperation between the government and private sector, support the recruitment of cyber security personnel, and call for standardized practices in both sectors.

- Promoting the use of electronic document and signature in transactions, so as to reduce costs, increase speed and accuracy, and solve legal problems and restrictions. The government units may initiate the use of electronic document and signature first in their own transactions, and simultaneously formulate the standardized ecosystem to encourage the investments in public key infrastructure (PKI).

- Developing the infrastructures for digital identity to uplift the credibility in authentication in cyber transaction. This will reduce costs while increasing accuracy and fraud protection.

- Supporting the R&D investments in Artificial Intelligence (AI), particularly by the private sector. AI personnel must also be produced or recruited to help reduce costs and increase efficient access and usage among small and medium firms.

- Supporting the R&D investments in Big Data Platform and Analytics, promote knowledge dissemination and personnel development to help reduce costs and increase efficient access and usage among small and medium firms.

- Developing the network and connectivity for easy access by the publics, focusing particularly on the quality standards of connectivity and protocols, so as to enhance common-language communication, reduce costs, and facilitate transactions with international firms. An example is the Universal Interconnect Services, in which each domestic and foreign innovator could communicate in common language, e.g. using ISO 20022 in payment.

## 2. Updates of rules and regulations

2.1 New rules/regulations issuance and updates. At present, the creation of various innovations, particularly the financial one (Fintech) is prevalent. Such financial innovation will be incessantly and increasingly enhanced to provide services for investors, e.g. using algorithm in trading, investment advising, planning, and management (so called robo advisor). Hence, the issuance and updates of rules and regulations to make them flexible and responsive to the future trend are deemed significant to encourage further innovation creation. The aforesaid includes the following:

- The effort to bring forth the digital and electronic laws, e.g. KYC, electronic account opening and signature.

- The support of barrier-to-entry reduction, e.g. legalization of crowd funding and peer to peer lending, as follows:

(1) Issuance of Civil and Commercial Code on determination of interest rate for lending business and liquidity of capital transfer from overseas to invest in Thai Startups.

(2) Issuance of National Credit Bureau (NCB) Law, e.g. extending the NCB members to include the peer-to-peer lending firms

(3) Issuance of Escrow Agent Law to increase its roles in supervising investors' money

- Establishment of regulatory sandbox. At present, the firms providing innovation financial services have to apply for a business permit as required by traditional types of rules and regulations, thereby restricting the not-so-ready firms to start their business. The regulatory sandbox, therefore, will serve as a mechanism and space for those new firms to try out their financial innovation with actual customers on a limited basis, thus avoiding the

obstacles of restricted regulations. The process of Sandbox tryout is hereby supervised by The Securities and Exchange Commission or Bank of Thailand.

The traditional type of rules and regulations in business supervision is largely based on human, thus being inappropriate for and restrictive of the development of Fintech innovation. For example, the registered capital stated in the traditional type may be unrealistically high for the Fintech business, and requirement of work or personnel processes may not be appropriate as well.

- Establishment of Virtual Sandbox for the firms that want to try out their business using real data but not with real customers. In this case, the Securities and Exchange Commission will provide the fund/factsheet, such as machine-readable prospectus, together with opening access to data held by other organizations for tryout process.

- Determination of proper data protection level to enhance innovation creation. Customer data will be protected while the analysis of those data is allowed only on an anonymous basis as restricted by the relevant laws concerning privacy and market conducts. The said practices involve the critical data management and data use ethics.

## 2.2 Intellectual Property Protection

Implementation of intellectual property rights of created innovations on the fair and proper manners.

## 2.3 Tax Incentives

The tax incentive policy is the critical factor to generate innovations in Thai financial systems as following.

- providing tax incentives to the entrepreneurs who invest in R&D and technology/innovation for business purposes.
- providing tax incentives to the investors in Startups, e.g. exemption of capital gain tax, income tax, and value-added tax.

## 3. Proactive work with Innovation Enablers

### 3.1 Innovation Lab

- Supporting the establishment of innovation lab to accelerate innovation creation from both domestic and international private sectors. An example is the MAS in Singapore in which the government subsidized 50% of salary for the workforce in the innovation center.

### 3.2 Accelerator Program

- Attracting the experienced investors to invest in the Startups, by providing business feasibility analysis and advice for generating minimum viable products, as well as

co-management, so as to increase the success opportunity

### 3.3 Co-working Space

- Establishment of co-working space to reduce space costs and promote networks among entrepreneurs
- Enhancing the access to data and technology to experiment on innovation creation

### 4. Fintech Talent Development

The development of Fintech courses is supported to produce personnel talented in using and developing the financial innovations based on their fundamental knowledge and understanding in technology.

## Conclusion and Suggestion

The government and private sectors have reaped the benefits out of the economic crisis in Thailand by working on creating various financial innovations, one of which is the Fintech business. Basically, Thailand has been largely prominent in Fintech business development with intensive support from the government and private sectors. Hence, the concerned parties should exercise remarkable endeavors to develop and promote Fintech in order to increase Thailand's sustainable competitive advantages. The necessary efforts include, for example, the issuance of permit, the updates of related rules & regulations, the role as mediator in driving business mechanism and securing technology security, the development of talented hands, and the recruitment of experts from abroad to help with further development.

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