

The Impact of Digital Transformation to Business Performance in Thailand 4.0 Era

Anupong Avirutha (อนุพงษ์ อวีรุทธา)^{*}

Abstract

The purpose of this research is to study whether digital business transformation significantly affect SMEs to increase the business performance including the financial perspective, customer/marketing perspective, internal process perspective, and learning and growth perspective. The research design is designed as a quantitative research. Structural equation modeling (SEM) is used to analyze the survey responses. Using SME is to specify, test, and modify the measurement model. The results of measurement model analysis and path model analysis are presented. The data set of 500 samples are collected. The results of structural path analysis indicate that two hypotheses are statistically significant and positive.

Keywords: Digital Business, Transformation, Small and Medium Enterprises, Business, Performance

^{*} Assistant Professor Dr. Anupong Avirutha, Head of Digital Business Management, School of Business, Sripatum University, Email: anupong.av@spu.ac.th

ผู้ช่วยศาสตราจารย์ ดร.อนุพงษ์ อวีรุทธา หัวหน้าสาขาวิชาการจัดการธุรกิจดิจิทัล คณะบริหารธุรกิจ มหาวิทยาลัยศรีปทุม
อีเมล: anupong.av@spu.ac.th

Introduction

Thailand 4.0 is based on value-based economy, integrated by digital technology and innovation. It became crucial for the new economy era. Digital technologies are used to transform business operations in order to improve effectiveness, efficiency, productivity, and service delivery (Easley and Kleinberg, 2010). One of the crucial of Thailand 4.0 model is to help Thai to adapt to global competitive pressures by increasing the technological base through the development and integration of enabling innovation, and digital technologies (Languépin, 2016). The digitalization of a growing number of new business opportunities, including new types of products and services goods is huge access to crowd-sourced. The economic in many local markets are quickly disappearing and giving huge advantages to the best product, service or process in the market. Competition in markets is typically based on innovation rather than price, resulting in high opportunities in the market; with serving quickly being displaced by more successful innovators. Moreover, the growths of the technology, especially the digital economy and the revolution of business processes have transformed a new interest in the digital business development and business strategy. Therefore, the objectives of the study is to 1) examine the factors, including perceived of technology and digital readiness significantly affect to digital transformation, and 2) to examine whether digital transformation significantly affects the business performance, along with the hypotheses were stated as the followings:

1. Hypothesis 1: Perceived of technology acceptance of the Thai entrepreneurs are positively associated with the digital transformation.
2. Hypothesis 3: digital readiness of the Thai Entrepreneurs are positively associated with the digital transformation.
3. Hypothesis 3: Digital transformation is positively associated with the business performance.

Literature Reviews

The digital economy provides business an ability of the transformational effects of new way to use the data as in the fields of information and communication. It gives rise to certain form of new business models, which is important to the business to adapt in the new environments. Thailand attempts transforming nations through creativity and innovation, also known as Thailand 4.0. Thailand 4.0 is a new economic policy to develop Thailand into a valued-based economy or digital-based economy. However, Thailand is confronting many challenges, such as a labor shortage and an aging society. Thai labor is still lagging behind in

terms of manufacturing technology. New businesses in Thailand still lack the ability to find new sources of investment. Therefore, Thailand is attempting to change the country from traditional farming to smart farming, traditional business to digital business, and traditional services to high-value services. It is envisioned to change the country's traditional farming to smart farming, traditional SMEs to smart enterprises, and traditional services to high-value services.

Digital Economy and Thailand 4.0

Digital economy has been addressed for a significant method to transform a new way of doing business. Digital economy is generally defined as being the use of digital technologies to transform business operations in order to improve effectiveness, efficiency, productivity, and service delivery (Easley and Kleinberg, 2010). Typically, the digital economy involves with five parts, including hardware infrastructure, software infrastructure, service infrastructure, promotion and innovation, and society and knowledge (Boonnoon, 2014). Hardware infrastructure refers to information-technology infrastructure that is used to support a digital economy such as high speed broadband Internet, and digital gateways. Software infrastructure refers to online channels, online transactions such as verification systems to identify individuals online and cyber-security in order to boost up e-Commerce transactions. Service infrastructure would create a platform to support the private sector, while the promotion and innovation part is the developing the digital skills of entrepreneurs to improve their productivity and workflow process efficiency through the supply chain, which will utilize digital tools and go along with banking system, services and manufacturing. Society and knowledge refers to the universal access ability, which allows people various online channels with an affordable price. The integration of activities at various levels generates the value that make specific business models profitable (Boonnoon, 2014). The increasing recognition of the role of digital economy, which is enable the interactions among consumers, and suppliers as an important co-value creation has derived the implications of these interactions in numerous settings, including online activities. Digital economy is growing rapidly and frequently features comments about brands and products. Moreover, consumers increasingly rely on and are interested in collaborations (Cheong & Morrison, 2008). New business models have emerged demonstrating common features – mobility, use of data to generate value and network effects.

In 2016, The Thai government established the country's strategy "Thailand 4.0" as a new economic model aimed at pulling Thailand out of the middle-income trap, and developing it as a high-income country. Furthermore, the developing must be sustainable growth and development, in order to achieve economic growth and sustainable development without destroying the environment (Royal Thai Government, 2016). Therefore, Thailand 4.0 is mainly focus at least three major changes, which are 1) change production of "commodities" into "innovative products; 2) transform industry-driven activities into those driven by technology, creativity and innovation; and 3) shift from the focus on making products, to providing services (Yoon, 2016).

Typically, the Thailand 4.0 involves with three elements, including knowledge based economy, inclusive society, and sustainable growth and development (Royal Thai Government, 2016). These three will initiate to develop manpower, strengthen society, sustain economic growth, ensure a more equitable distribution of wealth and opportunities, and enhance the quality and accessibility of public services.

Knowledge based economy

In order to enhance the country's standing to become a high income country, the country faces many challenges such as knowledge, research and development, science and technology, creative thinking, and innovation. Thai government plans to increase their research and development investment to 1 percent of gross domestic product, while investing in digital infrastructure (The Nation, 2016).

Inclusive society

In the second element, Thailand will move toward an inclusive society with equitable access to the fruits of prosperity and development. Moreover, the government places high importance on the freedom, equality and well-being of people, as well as inclusive and equitable access to basic services (Chan-O-Cha, 2016).

Sustainable growth and development

The third element focuses on sustainable growth and development, in order to achieve economic growth and sustainable development without destroying the environment. Thailand 4.0 model employs technology and innovation as driving forces for sustainable economic development in the agricultural and industrial sectors, among others (Chan-O-Cha, 2016).

Digital Readiness

Generally speaking, the efficiency, whereby ventures can utilize digital business through highly scalable infrastructures. Thus, the digital decade has seen businesses taking advantage of lower price/performance levels of computing (hardware and software) as well as global connectivity through standard protocols such as the Internet, mobile web, and application to adapt their business infrastructure to the new digital era. Therefore, digital transformation challenging for traditional businesses require hardware infrastructure, software infrastructure, and digital literacy (Boonnoon, 2014; Bharadwaj, El Sawy, Pavlou, and Venkatraman, 2013; Eshet-Alkalai, 2004; Huerta and Almazan, 2007; Mutch, 1997; Wanda and Stian, 2015; and Ziphorah, 2014).

Business Transformation

Typically, digital economy specifically helps businesses mitigate the isolation inherent to most online data analysis activities. Furthermore, it is an online community-based e-commerce platform that brings together products from a vast array of stores into one digital platform. The types of business expand to several varieties of e-commerce, app stores, online advertising, cloud computing, participative networked platforms, high speed trading, and online payment services. Moreover, the growing of the digital technology in the business field has heightened demand for new big data being used for business intelligence. The increasing recognition of the role of digital economy, which is enable the interactions among consumers, and suppliers as an important co-value creation has derived the implications of these interactions in numerous settings, including online activities. Digital economy is growing rapidly and frequently features comments about brands and products. Moreover, consumers increasingly rely on and are interested in collaborations (Cheong & Morrison, 2008). New business models have emerged demonstrating common features – mobility, use of data to generate value and network effects. Digital technologies increase competitive advantage for the economy; this is likely to be global in scale, given that geographical barriers are becoming increasingly irrelevant. Therefore, the businesses that are embracing the digital business trend to craft their transformation stages are required to focus and develop the key business transformations as a digital transformation strategy, which are mobility, value of data, social commerce effect, and new business model (Harvard Business Review Analytic Services, 2015).

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM). The theory has widely applied and examined the determinants of computer usage behavior. Davis (1989) finds that intention to use a word processing system can precisely predict later use of the system. Meanwhile, perceived ease of use shows a significant effect on intention to use while attitude partially mediated the effects of beliefs on intention. Based on the theory, there are two important points of departure explained and predicted user acceptance of technology, including the beliefs in ease of use (EOU) and perceived usefulness (PU) (Davis, 1989). Ease of use is a degree to which the user expects a technology to be free of physical and mental effort (Davis, 1989). Perceived usefulness is a degree to which an individual believes that a particular system will increase the individual user's job performance (Fishbein and Ajzen, 1975).

Business Performance

Once the business is transformed to digital business, it is expected to achieve better results, which is able to compare to traditional performance. Possibly one of the most well-known models for strategic planning and management, is the Balanced Scorecard. The Balanced Scorecard (BSC) is used to provide management with a quick, but thorough overview of the company's performance on a strategic level (Kaplan, and Norton 1993). The BSC was developed by Robert Kaplan and David Norton in 1992 as an alternative to traditional performance measurement approaches that focus solely on financial indicators and are based purely on a business's performance. It is used as a strategic planning and management system, integrating business activities based on the vision and strategy of the businesses, to make effective internal and external communication processes and to monitor and improve organization performance against the overall strategic goals, providing sufficient feedback about both internal processes and external business outcomes to endlessly modify strategic performances.

Research Methodology

The research design is drawn from quantitative research methodology. The survey is used to establish a baseline on current perception and readiness of Thai entrepreneurs for digital transformation under the Thailand 4.0 policy. The total sample for this study consists of 500 samplings. The sampling technique used in this study is a convenient sampling to ensure that each individual of the population has the same probability of being chosen (Best & Kahn, 1998). The survey is expected to be responded by top management level because they are

most likely to be the one who involves in business planning, and makes the final decisions about implementation in the business. The participants in this study are voluntary and anonymous. Structural equation modeling is used to analyze the survey responses.

Results

A total of 500 usable questionnaires are obtained. The results of this study show that the Thai Entrepreneurs expect digital transformation provides the customer service and feedback. Enhance business's image, customer / marketing data insight, keep the business cost down, and enable to online business are the second, the third, the forth, and the fifth expectations of digital transformation by Thai Entrepreneurs.

Table 1 – 4 show the Thai Entrepreneurs perceived usefulness of digital technology that it helps the business in better performance (mean = 3.53), and they agree that it is easy to plan and implement the digital transformation process (mean = 3.94). Generally, the Thai Entrepreneurs agree that they are ready for the infrastructure; including hardware infrastructure (mean = 3.78), software infrastructure (mean = 3.90), and digital literacy (mean = 4.12).

Furthermore, the Thai Entrepreneurs are changing their business by getting ready and becoming mobility business (mean = 4.13). They concerned and used the data for the business planning, and view the value of the data (mean = 4.19). Additionally, the Thai Entrepreneurs start conducting the business in the digitalization (mean = 4.02), collaborating with new business model (4.10).

Respondents agree that digital business helps the business to increase the growth of sales (mean = 4.08), digital business increase revenue (mean = 4.03), digital business helps the business increase return on investment (mean = 4.15), digital business helps the business reduce operational costs (mean = 4.05), digital business helps the business reduce business costs (mean = 3.97), and the average (mean = 4.06), which has an agree mean response.

Table 1 Means, Standard Deviations, and Median Response with Items for Perceived of Digital Technology

Perceived of Digital Technology	Mean	SD.
Perceived Usefulness	3.53	0.94
Perceived Ease of Use	3.94	0.69

Table 2 Means, Standard Deviations, and Median Response with Items for Digital Readiness

Digital Readiness	Mean	SD.
Hardware Infrastructure	3.78	0.86
Software Infrastructure	3.90	0.74
Digital Literacy	4.12	0.61

Table 3 Means, Standard Deviations, and Median Response with Items for Digital Business Transformation

Digital Business Transformation	Mean	SD.
Mobility	4.13	0.65
Value of the Data	4.19	0.57
Digitalization	4.02	0.79
Business Model	4.10	0.71

Table 4 Means, Standard Deviations, and Median Response with Items for Digital Business Performance

Digital Business Performance	Mean	SD.
Financial Perspective	4.06	0.62
Customer/Market Perspective	3.96	0.67
Internal Process Perspective	3.79	0.63
Learning and Growth Perspective	4.05	0.45

Table 5 The Results of Adjusted Model Fit Index

Chi-Square	P-Value	CMIN/DF	GFI	AGFI	NFI	IFI	CFI	RMSEA
97.398	0.000	2.705	0.971	0.927	0.964	0.977	0.977	0.058

According to Table 5, the results exhibit that all the measurements have significant loadings to their corresponding construct. Overall, the model has a satisfactory fit with GFI = 0.971, AGFI = 0.927, NFI = 0.964, IFI = 0.977, CFI = 0.977, and RMSR = 0.058. Those are all very good, which is representing a reasonable model-data fit. Therefore, the model fit indexes for the path model indicated an acceptable approximation of the proposed relationship among the constructs and the results should be interpreted meaningfully.

Figure 1 Structural Relation and Standardized Coefficients for the Model

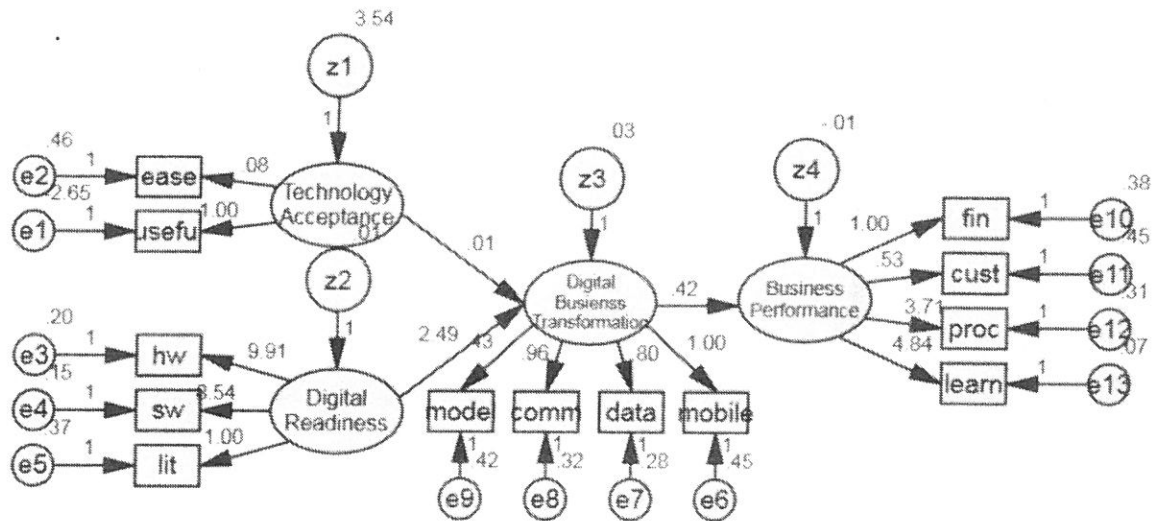


Table 6 Estimates of Regression Weights

			Estimate	S.E.	C.R.	P	Label
Digital Transformation	<---	Technology Acceptance	.0006	0.013	0.426	0.67	par_10
Digital Transformation	<---	Digital Readiness	2.495	1.001	2.492	0.01*	par_11
Business Performance	<---	Digital Transformation	0.418	0.148	2.829	0.00**	par_12

Note: * shows p-value < 0.05 ** shows p-value < 0.01

The hypotheses were tested by using SEM to analyze the structural relationship between constructs. The results of hypothesis testing are reported in terms of z-value (Critical.Ratio) at the level of significance of 0.05 or lower as shown in Table 6 and Figure 1.

The results indicate that all hypotheses are supported. All construct relationships are found to be positive. The results suggest that there is a significant relationship between digital readiness and digital transformation ($p < 0.05$) as the direction of the relationship is positive as the study proposed (Hypothesis 2).

Hypothesis 3 is supported as the results show a significant relationship between digital transformation and business performance ($p < 0.01$). This indicates that digital transformation has a positively influence the business performance in terms of financial

perspective, customer/market perspective, internal process perspective, and organizational learning and growth perspective.

Among the significant relationships, the standardized coefficients are 2.495 (digital readiness to digital transformation), and 0.418 (digital transformation to business performance). The paths represent directly link in the proposed model. It can be concluded that effective digital transformation will greatly lead to improve business performance.

Recommendations

The recommendations are not only for the policy makers, but there is a need for businesses to address the change in business scenarios, dynamic business demands and innovate ways to quickly cater to these changing needs. Digital business is supposed to improved productivity and a concomitant increase in business opportunities and business performance.

The transformation to digital business need to have a clear understanding of innovation, digital technologies, and economic change in order to develop strategies to innovate new business model and penetrate markets that can be accessed through Thailand 4.0 economic model. The Thai Entrepreneurs should well prepare for their employees' skill in business data analysis. They should be able utilize a data and information, consisting of a group of statisticians, technologists and business subject matter experts, to collectively solve problems and provide solutions. The needed ability is to determine how to transform large amounts of data into information which can be assimilated into the daily business processes in a timely manner with high quality information.

The Thai Entrepreneurs should well prepare for their employees' skill in business data analysis. The potential employees should gain skills and cross-sector experience that complements your capabilities. Digital and technology skills should be considered complementary to proficiency and literacy. Digital literacy is an essential tool that supports other subjects and their tasks and job activities. They should be able utilize a data and information, consisting of a group of statisticians, technologists and business subject matter experts, to collectively solve problems and provide solutions. The needed ability is to determine how to transform large amounts of data into information which can be assimilated into the daily business processes in a timely manner with high quality information.

Lastly, Thai Entrepreneurs should be enable the connected digital business approach, across all functions, and a connected interaction with the ecosystem of the business. They have to develop strategies and business models and to rethink how the business can thrive will be key to the business capability. Innovation, digital technology, and knowledge based economy will also challenge traditional methods of delivering higher performance. As a result, the transformation from traditional business to “smart business” is creating a potential value and a substantial driver for sustainable growth and development in Thailand 4.0.

References

- Aviruttha, A. (2017). "The Effectiveness of the Digital Business transformations of the Thai Small and Medium Enterprises." *Veridian E-Journal, Silpakorn University*, 10, 4: 209-223.
- Best, J., and Kahn, J. 1998. **Research in Education**. Boston: Allyn and Bacon.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). "Digital Business Strategy; Toward a Next Generation of Insights." *MIS Quarterly* 37, 2: 471-482.
- Boonnoon, J. (2014). "Govt Unveils Themes for Digital Economy Plan." Retrieved September 29, 2015, from <http://www.nationmultimedia.com/business/Govt-unveils-themes-for-digital-economy-plan-30247713.html>
- Chan-O-Cha, P. (2016). "Building an Inclusive Society in the Age of ASEAN." Retrieved August 23, 2016, from <http://www.bangkokpost.com/print/1092689/>
- Choong, H. J., and Morrison, M. A. (2008). "Consumers' Reliance on Product Information and Recommendations found in UGC." *Journal of Interactive Advertising*, 8, 2: 1-29.
- Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly* 13, 3: 319.
- Easley, D., and Kleinberg, J. (2010). **Networks, Clouds and Markets: Reasoning about a Highly Connected World**. United Kingdom: Cambridge University Press.
- Fishbein, M., and Ajzen, I. (1975). **Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research**. Reading, MA: Addison-Wesley.
- Harvard Business Review Analytic Services. (2015). *The Digital Transformation of the Business*. Harvard Business Publishing.
- Huerta, E., and Almazan, R. S. (2007). "Digital Literacy: Problems Faced by Telecenter Users in Mexico." *Information Technology for Development* 13, 3: 217-232.
- Kaplan, R. S., and Norton, D. P. (1993). *Putting the Balanced Scorecard to Work*. Harvard Business Review.
- Kanokwan, S. and Thirawat, T. (2016). "Expectations Factors Affecting Behaviors in Using Website Online." *Veridian E-Journal, Silpakorn University*, 9, 2: 359-374.
- Languépin, O. (2016). "Thailand 4.0 What We Need to Know?" Retrieved September 29, 2016, from <http://www.thailand-business-news.com/economics/54286-thailand-4-0-need-know.html>
- Mutch, A. (1997). "Information Literacy: An exploration." *International Journal of Information Management* 17, 5: 377-386.

- Royal Thai Government. (2016). "Transforming Nations through Creativity and Innovation." Retrieved June 24, 2017, from <http://www.thaigov.go.th/index.php/en/government-en1/item/106096-106096>
- Yoon, S. (2016). "Thailand 4.0: Will it Move the Country Out of its 'Lost Decade?'" Retrieved May 4, 2017, from <http://www.nationmultimedia.com/news/opinion/suthichaiyoon/30286689>
- Wanda, P., and Stian, S. (2015). "The Secret of my Success: An exploratory study of Business Intelligence management in the Norwegian Industry." *Computer Science* 64: 240-247.
- Ziphorah, R. M. (2014). "Information and Communication Technology Integration: Where to Start, Infrastructure or Capacity Building?" *Social and Behavioral Sciences* 116. 21: 3649-3658.