FACTORS ENABLING THE DIGITAL CHANGE ON DIGITAL TRANSFORMATION FOR SMALL AND MEDIUM BUSINESSES

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ABSTRACT

The purpose of this research is to study the factors affecting the digital change which significantly lead to the digital business transformation. The research design is designed as a quantitative research. Structural equation modeling (SEM) is used to analyze the survey responses. Using SEM 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 400 samples are collected. The results of structural path analysis indicate that there are the effects among digital infrastructure, digital disruption, and digital change. Furthermore, there is significant and positive relationship between digital change and digital business transformation.

Keywords: Digital Infrastructure, Digital Disruption, Digital Change, Digital Business Transformation

Introduction

The digital economy rises to a number of new business models recently from traditional business to modern advances in technological involvement that have made it possible to conduct many types of business at outstanding greater scale and over longer distances than was previously. The digital economy allows the rapid development of new business models; it can also quickly cause existing businesses to become obsolete.

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 (Languepin, 2016). The digitalization of a growing number of new business opportunities, including new types of products and services 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 study will provide an empirical approach for investigating this phenomenon, while creating knowledge that will contribute to a deeper understanding of digital transformation. Furthermore, it may provide a framework for corporate strategic planners with meaningful technological considerations to integrate into their business strategies. One of the crucial of Thailand 4.0 model is to help Thai industries in every sectors such as agriculture, SMEs, and services, to adapt to global competitive pressures by increasing the technological base through the development and integration of enabling innovation, and digital technologies. Furthermore, the developing must be sustainable growth and development, in order to achieve economic growth and sustainable development without destroying the environment. Therefore, the research objective is to focus on the factors affecting the digital transformation of small and medium businesses.

Digital Infrastructure

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). Thai government has established the DE policy to offer citizens and businesses the opportunity to complete a vast array of related transactions through many channels; i.e., Electronic-Procurement (e-Procurement), Electronic-Auction (e-Auction), and Electronic-Taxation system (e-Taxation).

Typically, the digital economy involves with five parts of infrastructure, 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.

Digital Disruption

Digital disruption was possible because of a convergence, or the timely occurrence, of three key factors are technology, intelligence, and customer expectations. Advances in technology, especially surrounding mobile, data analytics, and Cloud computing, seemed to flourish overnight and dramatically affected the overhead required for businesses to launch, reach their customers, and collect the data necessary to tailor their new customer-centric business models around existing paradigms (Kollmorgen, 2017). The digital company has been gathering data from its digital shopping experience across all of their platforms since its inception. Artificial intelligence is used to track customer behaviors, and identify exactly where shoppers are on their purchasing journeys and target them with products accordingly. Lastly, the change in consumer expectations is likely a result of advances in technology and data analytics, but it is also the single most powerful influencer of digital disruption. Society quickly learned to value the experiences associated with the purchasing of products and services. In some cases, we have also demonstrated we are willing to pay more for premium experiences and some customer segments, namely Millennials, appear willing to pay for an experience over a product.

Digital Change

Organizational transformations succeed at improving a company's performance and sustaining those gains, the latest results find that the success rate of digital transformations is lower. These characteristics fall into five categories: leadership, capability building, empowering workers, upgrading tools, and communication (Boutetière, Montagner, and Reich, 2018). To develop talent and skills throughout the organization are a fundamental action for traditional transformations which one of the most important factors for success in a digital change effort. Another key is giving employees a say on where digitization could and should be adopted. When employees generate their own ideas about where digitization might support the business. Furthermore, digitizing tools and processes can support success. We asked respondents about seven structural changes their organizations had made since the transformations began. Lastly, results suggest that when communicating change stories, successful organizations tend to relay a richer story than others do. The elements with the greatest influence on success are clear targets for organizations' key performance indicators and clear communication of the transformation's timeline. These categories suggest where and how companies can start to improve their chances of successfully making digital changes to their business. Additionally, the adoption of technologies plays an important role across digital transformations. The organizations with successful transformations use more sophisticated technologies, such as artificial intelligence, the Internet of Things, and advanced neural machine-learning techniques.

Digital 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). Mobility is enabling new business scenarios (Harvard The development of a core contributor to value creation and economic growth for companies in the digital economy. Businesses are increasingly able to carry on commercial activities remotely while traveling across borders, removing geographically from both the locations in which the operations are carried out and the locations in which their suppliers or customers are located. Value of Data as big data effect is a crucial part on the value of the data-driven marketing economy and the revenues generated for the economy. The business uses the big data to obtain and analyze data, and big data in particular, is increasingly well documented by market observers, and used to develop new products and services. Digital Commerce is becoming a core aspect of modern digital marketing strategies, and they see potential for it to radically transform the marketing function. This helps to confirm and increase their purchase decisions. It is more likely to have friend collaborative buying experience. New Business Models is developed by data input and resources such as customer information, and customers' online behavior allows businesses gaining an asset in business models where the different sides of the market can be created then dynamically adapted based on evolving technology, the latest expression of consumer demand, and a firm's position on the market, resulting in innovative new business models, products, and services.

Research Methodology

The research design is drawn from quantitative research methodology. The survey is used to establish a baseline on the study. The total sample for this study consists of 400 SMEs. Descriptive, frequency, percentage distributions, means are used to describe and report the information collected affecting to individual variables and demographic information. Furthermore, structural equation modeling is used to analyze the survey responses. Using SEM, it is to specify, test, and modify the measurement model. Model-data fit is evaluated based on multiple fit indexes.

Results

Table 1 shows that SMEs agree that they are ready for the infrastructure; including hardware infrastructure (mean = 3.89), software infrastructure (mean = 4.01), process infrastructure (mean = 4.04), and service infrastructure (mean = 3.97).

Table 1 Means, Standard Deviations, and Median Response with Items for Digital Infrastructure

Digital Infrastructure	Mean	SD.
Hardware Infrastructure	3.89	0.95
Software Infrastructure	4.01	0.67
Process Infrastructure	4.04	0.81
Service Infrastructure	3.97	0.94

Table 2 shows that the SMEs believed that their businesses are being disrupted and affected by technology and innovation (mean = 4.13), artificial intelligence (mean = 3.62), and customer expectation (mean = 4.17).

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

Digital Disruption	Mean	SD.
Technology and Innovation	4.13	0.68
Artificial Intelligence	3.62	0.79
Customer Expectation	4.17	0.74

Table 3 shows that the SMEs is planning and preparing their business by creating digital strategy (mean = 4.02). They informed the significant important of the digital skill of their workforce (mean = 4.07), they change the working operation to digital procurement (mean = 4.09), and they invested more on digital tools for daily working (mean = 4.15). Respondents agree that their business needs to be transformed to mobility (mean = 4.26), they also viewed that digital skill is significant important (mean = 4.07), digital procurement (mean = 4.09), and digital tools (mean = 4.15).

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

Digital Change	Mean	SD.
Digital Strategy	4.02	0.71
Digital Skill	4.07	0.77
Digital Procurement	4.09	0.74
Digital Tools	4.15	0.66

Furthermore, Table 4 shows the SMEs is planning and preparing their business by creating digital strategy (mean = 4.02). They informed the significant important of the digital skill of their workforce (mean = 4.07), they change the working operation to digital procurement (mean = 4.09), and they invested more on digital tools for daily working (mean = 4.15). Respondents agree that their business needs to be transformed to mobility (mean = 4.26), they also viewed that digital skill is significant important (mean = 4.07), digital procurement (mean = 4.09), and digital tools (mean = 4.15).

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

Digital Business Transformation	Mean	SD.
Mobility	4.26	0.74
Value of the Data	4.14	0.66
Digital Commerce	4.22	0.68
Digital Business Model Platform	4.05	0.82

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 = 0.954, AGFI = 0.931, NFI = 0.927, IFI = 0.944, CFI = 0.925, and RMSR = 0.031. Those are all very good, which is representing a reasonable model-data fit. Therefore, the model fix indexes for the path model indicated an acceptable approximation of the proposed relationship among the constructs and the results should be interpreted meaningfully.

Table 5 The Results of Adjusted Model Fit Index

Chi-Square	P-Value	CMIN/DF	GFI	AGFI	NFI	IFI	CFI	RMSEA
93.741	0.000	2.577	0.954	0.931	0.927	0.944	0.925	0.031

Table 6 shows the testing which are reported in terms of z-value (Critical Ratio) at the level of significance of 0.05 or lower. All construct relationships are found to be positive. The results suggest that there is a significant relationship between digital infrastructure and digital change ($p < 0.01$) as the direction of the relationship is positive as the study proposed. The results show a significant relationship between digital disruption ($p < 0.01$). This indicates that digital disruption has a positively influence the change in terms of digital strategy, digital skill, digital procurement, and digital tools. Additionally, the results show a significant relationship between business change and digital business transformation ($p < 0.01$).

Among the significant relationships, the standardized coefficients are 2.217 (digital infrastructure to digital change), 2.031 (digital disruption to digital change), and 1.729 (digital change to digital business transformation). The paths represent directly link in the proposed model. It can be concluded that effective digital business transformation will greatly lead to improve digital business transformation.

Table 6 Estimates of Regression Weights

			Estimate	S.E.	C.R.	P	Label
Digital Change	<---	Digital Infrastructure	2.217	1.012	2.322	0.00**	par_10
Digital Change	<---	Digital Disruption	2.031	1.107	2.527	0.00**	par_11
Digital Business Transformation	<---	Digital Change	1.729	0.971	2.018	0.00**	par_12

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

Discussions and Recommendations

As the finding, there are the direct effects among digital infrastructure and digital disruption and digital change. Generally, the efficiency, whereby ventures can utilize digital business through highly scalable infrastructure. According to Boutetière, Montagner, and Reich (2018) found that develop talent and skills throughout the organization are a fundamental action for traditional transformations which one of the most important factors for success in a digital change effort. Digital transformation is involved in the long-term success coming from the executives and employees understanding the opportunities of digital that provides and giving them the tools to successfully drive initiatives forward. Since the data found the relationship between a digital readiness and the strategic execution. to understand their ability to respond. Therefore, digital business transformation starts with an understanding of how the organization works now and identifying internal change as well as opportunities for a better innovation culture. Therefore, the adoption of technologies plays an important role across digital transformations. Furthermore, the digital change successfully completed is on digital strategy as well. Schumacher, Erol, Sihn (2016) found that the business value derived from integrating this perspective into the company's general strategy. Duperein (2014) pointed that a digital strategy impacts the learning and growth perspective in balanced scorecard model in term of human, information and organization capital, which these factors have to be leveraged by business processes. Therefore, from the executives and employees understanding the opportunities of digital that provides and giving them the tools to successfully drive initiatives forward (Ortowski, Ziokowski, Paciorkiewicz, 2017). Therefore, the recommendations are suggested as the followings:

1. The ability to digitally reimagine the business is determined in large part by a clear digital strategy supported by leaders who foster a culture able to change and invent the new. Companies should build understanding regarding digital transformation starts with how the organization works now and identifying internal change as well as opportunities for a better innovation culture.
2. Beside internal factor focusing, to use digital technology and develop it into the business strategies and new business models in order to listen to and better understand customer sentiment about products, brands, and companies as a whole, by Increased data volume could affect data integration and analytical capabilities, thus impacting big data maturity.

3. The business that pursue successful transformations should focus more sophisticated technologies, such as artificial intelligence, the Internet of Things, and advanced neural machine-learning techniques. 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.

4. To develop talent and skills throughout the organization are a fundamental action for traditional transformations which one of the most important factors for success in a digital change effort**.** The businesses should change job descriptions, relocate employees to other departments, and/or implement incentive programs designed to motivate employees to provide suggestions, receive education or training, and/or gain tenure through continued employment, required to support the value creating internal processes**.**

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