Research Article

Exploring Value-based Innovation in the Thai Digital Content Industry

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ABSTRACT

This empirical study aims to explore an innovation process in the Thai digital content creators. A multiple case-study approach was employed to investigate this complex phenomenon. Qualitative data were collected via in-depth interviews with 40 informants from 17 Thai digital content creators and five related actors involving in the digital content industry in Thailand. Through thematic analysis of data, the study demonstrates that an innovation in the digital content industry in Thailand can be classified as value-based innovation, which is induced by the Thai digital content creators via a value-based innovation process. The value-based innovation process is spiral and consists of seven stages: 1) customer insight researching, 2) designing, 3) prototyping, 4) testing, 5) re-designing, 6) commercialising and 7) modifying. At some particular stages in the process, the Thai digital content creators co-create values with some customers in order to create contents to eventually satisfy customers in their markets. Throughout the process, related actors — including 1) business partners, 2) industry associations, 3) government agencies, 4) education agencies and 5) customers or end users — engage to ensure value-based innovations to customers or end users. Hence, a value-based innovation network emerges to facilitate negotiation, knowledge sharing and resource transferring among the Thai digital content creators and related actors with an aim to generate new and valuable digital contents in the digital content industry in Thailand.

Keywords: Value-Based Innovation, Value Co-Creation, Innovation Network, Digital Content, Thailand

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บทคัดย่อ

การวิจัยเชิงประจักษ์นี้มีวัตถุประสงค์ เพื่อศึกษากระบวนการสร้างนวัตกรรมโดยผู้ประกอบการดิจิทัลคอนเทนต์ไทย โดยใช้การวิจัยแบบพหุกรณีศึกษา ซึ่งเหมาะสมกับการศึกษาปรากฏการณ์ที่ซับซ้อน และได้เก็บข้อมูลเชิงคุณภาพด้วยการสัมภาษณ์ผู้ให้ข้อมูลทั้งสิ้น 40 คน จากผู้ประกอบการดิจิทัลคอนเทนต์ไทย 17 ราย และผู้ที่เกี่ยวข้องในอุตสาหกรรมดิจิทัลคอนเทนต์ของประเทศไทยอีก 5 ราย จากการวิเคราะห์แก่นสาระของข้อมูลเชิงคุณภาพของการวิจัยนี้ พบว่า นวัตกรรมที่เกิดขึ้นในอุตสาหกรรมดิจิทัลคอนเทนต์ไทยมีลักษณะเป็นนวัตกรรมบนฐานคุณค่าที่สร้างขึ้นโดยผู้ประกอบการดิจิทัลคอนเทนต์ไทยตามกระบวนการนวัตกรรมบนฐานคุณค่า ทั้งนี้ กระบวนการนวัตกรรมบนฐานคุณค่ามีลักษณะเหมือนเกลียว อันประกอบด้วย 7 ขั้นตอน ได้แก่ 1) การศึกษาข้อมูลลูกค้าเชิงลึก 2) การออกแบบ 3) การสร้างต้นแบบ 4) การทดสอบ 5) การปรับแบบ 6) การนำเข้าสู่ตลาด และ 7) การปรับปรุง ในบางขั้นตอนผู้ประกอบการดิจิทัลคอนเทนต์ไทยได้ร่วมสร้างคุณค่ากับลูกค้าบางกลุ่ม เพื่อสร้างคอนเทนต์ที่จะสามารถสร้างความพึงพอใจให้แก่ลูกค้าในตลาดได้ กระบวนการนวัตกรรมของผู้ประกอบการดิจิทัลคอนเทนต์ไทยได้รับการสนับสนุนจากผู้ที่เกี่ยวข้อง 5 ภาคส่วน ได้แก่ 1) กลุ่มนักลงทุนหรือผู้กระจายดิจิทัลคอนเทนต์ 2) สมาคมจากภาคอุตสาหกรรมดิจิทัลคอนเทนต์ไทย 3) หน่วยงานสนับสนุนภาครัฐ 4) ภาคการศึกษาที่เกี่ยวข้อง และ 5) ผู้บริโภค ร่วมกันขับเคลื่อนนวัตกรรมในอุตสาหกรรมดิจิทัลคอนเทนต์ไทย และเกิดเป็นเครือข่ายนวัตกรรมที่จะส่งเสริมให้เกิดการเจรจาต่อรอง การแลกเปลี่ยนความรู้ และการส่งผ่านทรัพยากรท่ามกลางผู้ประกอบการดิจิทัลคอนเทนต์ไทยและผู้ที่เกี่ยวข้องดังกล่าวเพื่อให้สามารถสร้างดิจิทัลคอนเทนต์ใหม่ที่มีคุณค่าได้

คำสำคัญ : นวัตกรรมบนฐานคุณค่า การร่วมสร้างคุณค่า เครือข่ายนวัตกรรม ดิจิทัลคอนเทนต์ ประเทศไทย

1. Introduction

An increasingly important question for management theory and practice is how to manage innovation that can create and deliver value to customers when customer preferences and contexts are heterogenous. Although innovation can lead to firms' competitive advantages (Cantwell, 2005; Ferreira et al., 2020), not all innovations can do so. Among innovations, value-based innovation can create value to satisfy customer needs and contexts. It can assist firms to acquire competitive advantages. Preferences and contexts of customers are very specific, diverse and varied; therefore, satisfying all customer needs is not easy. It is even more difficult for firms providing digitalised products or services to satisfy all customers in the digital era. Not only have digital content firms encountered dissimilar and various customer contexts, but they have also faced a tension between creativity and business capability to create and commercialise innovations successfully. Hence, it is worth addressing how digital content firms induce value-based innovation that can create and deliver value to customers, especially in the context of the developing country.

This paper aims at exploring an innovation process in the digital content creators who need to generate innovations that can create and deliver value to heterogeneous customers. The Thai digital content creators refer to the Thai firms or individual creators who create, produce and commercialise their own digital contents. To investigate the innovation process in the Thai digital content creators is to study a value-based innovation process because such process can engender new and valuable offerings, which are digital contents, that could be commercialised successfully. Qualitative data were collected from 17 Thai digital content creators and five related actors (including business partners, industry associations, government agencies, education agencies, and end-users) involving in the Thai digital content industry. Moreover, additional data from seven digital content seminars held by industry associations and government agencies and secondary sources of data were used. The results show that the Thai digital content creators attempt to establish a value-based innovation process to induce new and valuable digital contents. They also take part in a value-based innovation network to ensure that they would successfully operate their value-based innovation processes.

2. Theoretical Background

Innovation has been considered as a key driver for the growth of an organisation (Freeman & Soete, 1997; Scherer, 1999). It is defined as a process of change, transformation and commercialisation (Flynn & Chatman, 2004; Rogers, 2003; Tidd et al., 2005). Initially, technological innovation in manufacturing sectors has dominated the concept of innovation. It refers to a process of transforming new ideas into new products, services or processes, and successfully launching those new outcomes via technological initiation, implementation and application (Freeman & Soete, 1997; OECD, 1997 p. 31). The rapid and widespread diffusion of technological innovation demonstrates that technological innovation is vital for firms' survival and growth in the knowledge-based economy (Freeman & Soete,

1997; OECD, 1997 p. 31; Scherer, 1999). Hence, the development and diffusion of new technologies by profit-seeking entrepreneurs can enable economic progress (Coombs et al., 1987; Galindo & Méndez, 2014).

In general, innovation is classified into product innovation and process innovation. While product innovation refers to changes in products and services firms offer, process innovation refers to changes in the ways firms create and deliver those offering (Francis & Bessant, 2005; Rowley et al., 2011). Moreover, innovation is also categorised, according to degree of novelty, into incremental innovation, radical innovation and transformational innovation. Incremental innovation is identified as continuous and small improvement at all times; meanwhile, radical innovation is defined as fundamental change in basic products, services or processes to new ones (Eiriz et al., 2013). In addition, transformational innovation is the development of a new paradigm to the whole industry or production, often associating different industries and sector into a single new system (Denning, 2005).

An innovation process contains exploration and exploitation. Exploration includes elements such as search, variation and experimentation; conversely, exploitation consists of refinement, selection and implementation. Strong selection might inhibit learning (variation), but weak selection might result in inefficient behaviours (Benner & Tushman, 2003; Dosi et al., 2005). On the contrary, focusing on exploration is costly and outcomes are uncertain (March, 1991). Encouraging a generation of variety might encounter too many new variations — 'a tyranny of combinatorial explosion' (Metcalfe & Miles, 1994). As a consequence, the balance of exploration and exploitation (or variation and selection) is required (March, 1991). Actually, variation and selection (or exploration and exploitation) co-evolve, and feedback from selection to variation generates new variety for further selection (Dosi et al., 2005).

The service sector has risen after they were traditionally seen as a laggard sector. Services have been overlooked constantly in economic, statistical, business and innovation studies (Djellal et al., 2013). Nevertheless, service is increasing recongnised as a major contributor to the economy. Miles et al. (2002) indicate that service occupations, in-house service functions, and externalised service functions purchased by firm across the economy have grown.

A service product is identified as a bundle of components containing supporting facility, facilitating goods, explicit services, and implicit services (Fitzsimmons & Fitzsimmons, 1994; Glushko & Tabas, 2009). Service is the combination of outcomes and experiences delivered to and received by a customer (Johnston & Clark, 2008). Miles (2000) elaborates that service activities and service products are composed of intangibility, interactivity and information intensity, which is termed as the 'three i s (3i s)'. Firstly, intangibility refers to that a service product is frequently intangible in nature. It is usually hard to store and/or transport; as well as, difficult to demonstrate (in advance) to potential clients. Secondly, interactivity refers to that services-based organisation has a high level of interaction with their customers. Under coterminous consumption and production, the service provider and customer must be present

at the same place and time to operate the transaction of a service contract. An involvement of clients in the process of service production and delivery often occurs. Finally, information intensity is a typical nature of most services that information exchanges are central to interactivity.

Service innovation is identified by changing combinations of tangible/intangible product innovation and technological/managerial process innovation (Miles, 1993; Miles, 2010). The combinations tend to vary among service firms due to their peculiar contexts and environments such as firm size, service sector and specific country. Small changes or incremental innovations from adaptations of existing products or a new way of delivering a service are included into the innovation concept (Sundbo et al., 2001).

Services are identified as supplier-dominated sectors in which innovations are often generated by outsiders of sectors (Miozzo & Soete, 2001). In addition, innovation in services is created via non-linear processes. Especially, service innovation is frequently organic, emergent and responsive. Innovation activities in services are rarely organised by formal R&D departments and are rarely regarded as R&D by service firms themselves. Innovation is frequently perceived as 'project development' and 'ad hoc' organisation (Miles et al., 2002; Sundbo, 1997).

As services are diverse and heterogeneous, ways of managing innovation activities in service firms are various and depend on specific factors — e.g. forms and sources of innovation, types of workers involved or impacted, market circumstances and needs of potential users (Miles et al., 2002). Skills of management and qualified employees are vital to service firms in organising innovation activities. In addition, Sundbo and Gallouj (2000) propose a dual form of organisation of innovation activities that new ideas come from both management and staff in the hotels; however, the management controls innovation through screening and selecting the proper innovation. Sundbo and Gallouj (2000) illustrate six innovation patterns undertaken by different service firms to organise their innovation activities, including industrial pattern of innovation, service professional pattern, organised strategic innovation pattern, entrepreneurial pattern, artisanal pattern and network pattern. The industrial pattern of innovation refers to that an innovation process is organised in an R&D department. The service professional pattern refers to that an innovation trajectory is of the service-professional type. The innovation process is a collective process in which all the professionals are supposed to participate. It is flexible, able to respond quickly to market signals, and able to capitalise on the individual ideas of its members. The organised strategic innovation pattern emphasises the firm's strategy as the core innovation determinant. Top managers of the firms control the innovation process, but ideas for innovation come from all parts of the organisation and from the external network of the firm. There is no R&D innovation department. The entrepreneurial pattern refers to that small service firms without R&D department focus on a radical innovation. Their main activity is to sell the initial radical innovation. The artisanal pattern refers to that small firms involved in operational services (such as cleaning and hotels) are generally conservative and not innovative. They do not have an innovation strategy, R&D

department, or IT department. If they are innovative, the renewals or innovations are small, usually through improvement models and learning processes. Finally, the network pattern refers to that a number of service firms have created a common network firm that has the specific purpose of innovating. Tourism and financial groups follow this pattern.

Importantly, value-based innovation requires attention. Not all innovations are able to succeed in markets. One main reason of innovation failure is that innovation could not provide value that customers want (Heidenreich & Spieth, 2013; van der Panne et al., 2003). In this paper, value-based innovation refers to a new offering delivering valuable experiences to customers (or users), which is underpinned by integrative efforts of diverse stakeholders. Value-based innovation requires shared values of external stakeholders engaging in innovation processes (Breuer & Lüdeke-Freund, 2017). It leads to competitive advantages as it can create unique value that a customer is willing to pay for. Through a perspective of service science and service innovation, value co-creation among a service provider and customers can enhance and ensure customer satisfaction and then competitive advantages (Grönroos, 2011; Matthyssens et al., 2006).

Customer engagement is a key factor to create and deliver service offerings (Johnston & Kong, 2011; Miles, 2000; Voss & Zomerdijk, 2007). A service provider plays a role to create value proposition through service offerings delivered to users while users play a role to use service offerings to create their own values based on their own contexts (Lusch et al., 2007).

However, there has been little attention paid to value-based innovation in digitalised services, especially in the digital content industry. The digital content industry transforms symbolic material to create value to users through a process of creation, manipulation and delivery of information. Throughout the transformation process, digital content firms encounter dilemmas between creativity and business capabilities (Landoni et al., 2020). As a process of generating new digital contents contains several stages from the initiation to commercialisation, digital content firms with limited resources and capabilities need to acquire additional assistances from related outsiders to operate their innovation processes successfully. Normann and Ramirez (1993) demonstrate that value is created when a company encourages customer involvement and supplier co-production by building and managing value constellation. Therefore, value-based innovation can be generated via collaboration among related actors in a value-based innovation network.

A value-based innovation network is built up on a perspective of innovation network, where open innovation has emerged. Open innovation refers to the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively (Chesbrough, 2003). It refers to a concept that two or more potential actors (or organisations) collaborate to generate and commercialise innovation (West & Bogers, 2014). External and internal resources are integrated and exchanged to induce innovation effectively (West & Gallagher, 2006). An

exchange of knowledge and technology between potential partners occurs (Liu et al., 2023; Miotti & Sachwald, 2003). Within an open innovation model, an organisation can establish customer engagement to involve customers in value creation process (Chesbrough, 2011; Chesbrough et al., 2018; Wise & Baumgartner, 1999).

The concept of sectoral innovation system emphasises that dissimilar sectors embrace specific and different arrangement for enabling innovation processes. The industrial sectors differ in terms of their knowledge bases, the actors that are involved in the innovation process, the links and relationships among such actors, and the institutions that are integral to such innovation (Malerba, 2002). Different sectors typically operate under different technological regimes, characterised by specific combinations of opportunity and appropriability conditions, different degrees of technological knowledge accumulation, and idiosyncratic characteristics of the relevant knowledge base (Carlsson et al., 2002). In particular, a system of digital content production and distribution is complex because there are several actors interacting with one another to create new digital contents (Ma et al., 2018), which may require a specific form of innovation network.

In a sectoral innovation system, a set of actors who may be called 'intermediaries' might emerge (Howells, 2006; Kivimaa et al., 2019). Intermediaries are required to mitigate systemic problems of innovation systems in the developing country (Intarakumnerd & Chaminade, 2011). They play significant roles in 'innovation communities' by linking and transforming relationships within an innovation network or a system (Lynn et al., 1996). They facilitate innovation processes by performing activities that bridge user needs and the supply side regarding many areas, including technology, skill and human resources, financial support, business and innovation strategy, knowledge about new technology, implementation, and other matters (Dodgson & Bessant, 1996). Four roles of intermediaries, identified by Partners (2007), include consultant (providing information and advice in the recognition, acquisition and utilization of the relevant intellectual property and technological capabilities), broker (brokering a transaction between two or more parties), mediator (acting as an independent 'third party' who assists two organisations achieve a mutually beneficial collaboration), and resource provider (acting as an agent who secures access to funding and other material support for the innovation outcomes of such collaborations). Through these roles, intermediaries can help main actors obtain technology/knowledge transfer and share risk of R&D project (Partners, 2007). To be able to play such roles, an innovation intermediary should develop four capabilities which are network capabilities (abilities to build relationships, stimulate linkages and constantly coordinate between actors), coordination capabilities (abilities to communicate in order to build trust, obtain the agreed understanding and dissolve conflicts between actors), knowledge-building capabilities (abilities to acquire and accumulate market trends and technical knowledge, and infrastructures related to its expertise) and management capabilities (abilities to manage research projects, monitor progress, and evaluate qualities of the project throughout the project's life) (Sutthijakra & Intarakumnerd, 2015).

Based on the literature review, value-based innovation can be induced through an innovation process. However, an innovation process must allow users or customers to engage in the process of innovation to ensure valuable innovations for themselves. Moreover, an innovation process cannot exclude outsiders who possess key resources and capabilities that can help to generate value-based innovation. In this case, an innovation intermediary can play a role to bridge and encourage integration of key resources and capabilities among related actors.

3. Data and Method

The paper employs a multiple-cases study to explore an innovation process in the Thai digital content creators because 1) this phenomenon is complex and involves several actors together with their interactions; and 2) it is underpinned by a logic of replication that results are verified and refined by additional cases (Yin, 2014). Within the digital content industry in Thailand, the animation, game and character sub-sectors were examined according to DEPA's categorisation of sub-sectors used for developing a policy. In addition, the growth rates of game and character increased 18% and 16% consecutively from 2016 to 2017; as well as the growth rates of animation producers increased approximately 8% from 2016 to 2017 (DEPA, 2019). Data were collected from the Thai digital content creators who play a key role to generate new digital contents (or innovations) and related actors who play a supportive role to induce innovations throughout the production process of new digital contents.

Fieldwork was conducted by using an in-depth interview and seminar observation from March to September 2019. A snowball sampling strategy was used to select informants to ensure that data collected was rich and insightful. Forty informants from 17 Thai digital content creators and five groups of related actors (i.e. business partners such as investors/broadcasters, industry associations, government agencies, education agencies, and customers/end-users) in the digital content industry in Thailand were interviewed. A set of interview questions was developed for each group of informants. Importantly, questions probing for specific data in subsequent interviews were modified based on observations made during previous interviews. Moreover, additional data were collected from seven digital content seminars held by industry associations and government agencies in the sub-sectors.

Regarding to a thematic analysis of data, data saturation occurred when themes and patterns emerged after data were collected from 40 informants. Data from several sources were complementary to explain the specific phenomena. Analysis of texts — from 40 interview transcriptions, and additional information from seminars — was used to find emerging themes or patterns. Template analysis was applied to thematically organise textual data for analysis and interpretation. A 'template' is produced from 'coding' to represent themes emerging from textual data. A prior set of codes (template) was defined, modified, and added to as texts were read and interpreted until it could reflect emerging issues or patterns. Table 1 presents sources of interview data.

Table 1: Sources of Interview Data

Actor	Interviewee		
	Animation Sector	**Game Sector**	**Character Sector**
1) Thai digital content creator	- The Monk Studio - Big Brain Pictures - Yannix - Imagimax - Shellhut Entertainment - Kantana Animation Studio - Igloo Studio	- Teapot Communications - Maya Wizard - Yggdrazil Group - Thinkbox Solution - Extend Interactive	- 2SPOT Communications - Sweet Summer - Liffolab - Jumbooka - Monsterallnuts
2) Government	1) Department of International Trade Promotion (DITP) 2) Ministry of Culture (MOC) 3) Digital Economy Promotion Agency (DEPA)		
3) Industry association	Thai Animation and Computer Graphics Association (TACGA)	Thai Game Software Industry Association (TGA)	TACGA and Digital Content Association of Thailand (DCAT)
4) Education agency	Digital Content Course Management from: 1) Silpakorn University 2) Thammasat University 3) Dhurakij Pundit University (DPU)		
5) Investor or broadcaster	1) True Vision Group 2) Cartoon Club 3) Thai PBS	–	–
6) Customer/end user	Animation Audience	Gamer	Character User

Note: From Empirical Cases

4. Value-Based Innovation: A Synthesis of Empirical and Theoretical Investigations

4.1 New Digital Contents as Value-Based Innovations

Innovations generated by the Thai digital content creators can be recognised as value-based innovation. New digital contents are created with an aim to deliver value to customers. The Thai digital content creators examined attempt to transform symbolic material to new digital contents that can enhance customer's satisfaction, while they have encountered a challenge of idiosyncratic needs of customers in the digital era. Customer value in the digital content industry is specific and depends on each particular customer's perception and experience. Therefore, new digital contents can be successful in the market only when customers consume and realise value, which the Thai digital content creators are able to get feedback real-time. For example, in the animation sub-sector, Kantana Animation Studio conducted customer research to understand its target customers' insights and preferences before designing contents and characters of Khan Kluay[1]. Moreover, in the game sub-sector, Yggdrazil Group developed Home Sweet Home[2] by its designing and developing teams, but it encouraged gamers to test and give feedback to adjust the game before launching into markets. For the character sub-sector, 2SPOT Communications studied its target customers who spent their times at the Siam Square shopping center in the middle of Bangkok to find their insights about characters in the existing markets before creating Bloody Bunny[3].

4.2 A Value-Based Innovation Process

The Thai digital content creators and their customers (or users) co-create value together, thereby generating new offerings that can enhance customer value. This is similar to the studies by Johnston and Kong (2011), Miles (2000) and Voss and Zomerdijk (2007), which explain that customer engagement is a key factor to create and deliver service offerings. For example, in particular for Kantana Animation Studio, the company invited some target audiences to watch the pilot version of Khan Kluay, and required their opinions about the design of characters in the animation film.

> *Before the final version of Khan Kluay character, the team re-designed several times. At first, the team conducted research and then designed the characters. Team members also voted for what they liked. It is good that Kantana has its own small movie theatre. The team invited children to watch the draft version of Khan Kluay movie and character.*

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1 Khan Kluay is a 3D animation film about a Thai elephant who wanders away from his mother and becomes the war elephant for the King in Ayutthaya-era Siam.

2 Home Sweet Home is a horror adventure game based on Thai ghost stories.

3 Bloody Bunny is a character created based on a concept of aggressive rabbit.

Then, the team could finalise that Khan Kluay character should be blue because the kids like blue. (Managing Director, Kantana Animation Studio/24 September 2019)

The additional empirical data also show that the Thai digital content creators co-create value with their customers (Table 2).

Table 2: Extracted Evidence of Value Co-Creation of The Thai Digital Content Creators

Sub-sector	Example of Value Co-Creation
Animation	- Shellhut Entertainment co-created with customers by inviting a group of target customers to watch and provide feedback on its animation films at its own theatre. - Kantana Animation Studio created and produced Khan Kluay by conducting a focus group of target customers so that it could make adjustment on the pilot version of Khan Kluay.
Game	Yggdrazil Group tested Home Sweet Home by inviting gamers to play the game and provide feedback about their experiences and technical errors found so that the firm could make adjustments before launching the game.
Character	2SPOT Communications identified its target customers and studied what they liked or disliked about characters in the market before creating Bloody Bunny.

Note: From Empirical Cases

The Thai digital content creators employ a value-based innovation process to induce new digital contents. A value-based innovation process is a spiral process containing seven stages including customer-insight researching, designing, prototype developing, testing, re-designing, commercialising and modifying (Figure 1). The process involves exploration when information and knowledge are gathered to generate variation, and exploitation when selection is employed to refine new digital contents. Co-evolution of exploration and exploitation occurs, which leads to knowledge accumulation throughout the process. This result confirms the study that variation and selection (or exploration and exploitation) co-evolve, and feedback from selection to variation generates new variety for further selection (Dosi et al., 2005).

Within the value-based innovation process, customers are able to co-create value with the Thai digital content creators at the particular stages, together with providing feedback to make adjustments to the new digital contents. This is consistent to the study that a company can employ customer engagement in order to involve customers into a value-creation process (Chesbrough, 2011; Chesbrough et al., 2018; Wise & Baumgartner, 1999).

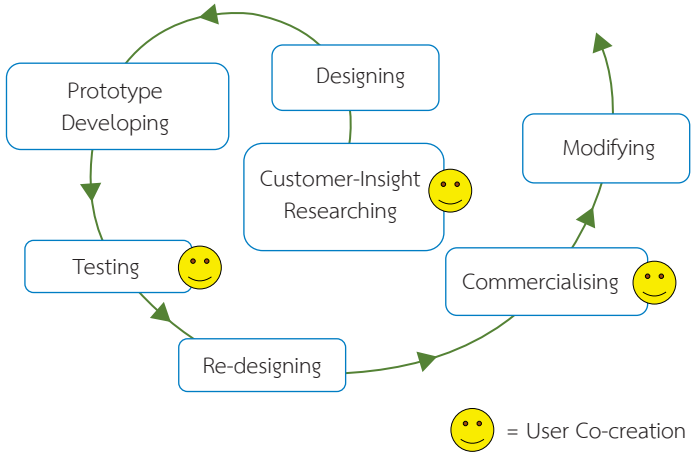

Figure 1: A value-based innovation process in the Thai digital content creators examined

At the customer-insight researching stage, the Thai digital content creators acquire insightful information about customer need and value by conducting research and engaging customers via value co-creation. At the second stage, the designing stage starts when a designer or design team initiates or creates a concept of new digital contents according to what customers want. Creativity is important at this stage. The third stage is named the 'prototype developing' stage because the initial version of new digital contents is developed. The fourth stage is 'testing' which the prototype is experimented with a selected group of customers. Customer feedback is exploited to improve and make adjustment to the prototype. At the fifth stage, the re-designing stage occurs when the team re-designs or adjusts the prototype in order to ensure that the new digital contents can deliver value to customers. The new digital contents should be ready to be launched to the market after this stage. The sixth stage is named the 'commercialising' stage as the Thai digital content creators attempt to commercialise their new digital contents successfully. As business capability is important to a successful commercialisation, collaboration with business partners is necessary. Finally, at the modifying stage, the Thai digital content creators continue improving the new digital contents by utilising feedback from customers experiencing the new digital contents.

Among seven stages of value-based innovation process, the customer-insight researching, testing and commercialising stages involve customers to co-create value. The empirical evidence demonstrates that the Thai digital content creators co-create new digital contents with customers at the customer-insight researching, testing and commercialising stages (Table 3).

Table 3: Extracted Evidence of Value Co-Creation Occurring in a Value-Based Innovation Process

Sub-sector	Innovation Stage	Example of Value Co-Creation
Animation	Customer-insight researching	Kantana Animation Studio engaged customers by asking them to vote the colour of the main characters in Khan Kluay.
	Testing	Igloo Studio acquired customer preferences on The Legend of Muay Thai film by conducting a focus group of 50 customers during its production.
	Commercialising	Igloo Studio engaged customers by asking them to vote for their favourite characters in The Legend of Muay Thai film. After that, the most favourite characters were used for marketing and merchandising.
Game	Testing	Extend Interactive tested Pandora Hunter, a mobile game, through Close Beta Test (CBT) for the specific group of gamers. After improvement, it then tested the game through Open Beta Test (OBT) for public.
	Commercialising	Extend Interactive employed its facebook page as a community to engage customers and acquire feedback for its Pandora Hunter.
Character	Customer-insight researching	2SPOT Communications studied its target customers through online and offline channels in order to understand what kind of characters customers wanted, before designing characters.
	Testing	- 2SPOT Communications asked teenagers at a shopping mall in Bangkok to vote for their favourite character among -Bloody Bunny and other renown Japanese characters in order to test how the teenagers liked Bloody Bunny. - Liffolab acquired feedback from customers by posting the 'Shewsheep' character on a facebook page.
	Commercialising	2SPOT Communications opened Bloody Bunny Café to promote the character and engage customers.

Note: From Empirical Cases

4.3 A Value-Based Innovation Network

A value-based innovation network plays a key role to stimulate value-based innovation in the digital content industry in Thailand. The Thai digital content creators can exploit this web of resources to induce value-based innovation. Not only customers, but also actors in the network collaborate to create and deliver new digital contents that enhance customer value. The Thai digital content creators can balance their creativity and commercialisation capabilities at a certain degree. While they can create new digital contents, other related actors (such as business partners) in the network can assist to increase opportunities for commercialisation. For example, in particular for Big Brain Pictures, the company created the concept and story of the Hey Buddy, while Toonz Animation India produced and commercialised the Hey Buddy film in the global market.

> *We [Big Brain Pictures] were contacted from the animation company in India, Toonz Animation India. Toonz Animation India wanted to invest in the Hey Buddy project that we [Big Brain Pictures] initiated. We [Big Brain Pictures] owned the project, while Toonz Animation India was responsible for production and commercialisation. Big Brain Pictures invested in the pre-production stage, whilst Toonz Animation invested in the production stage and commercialisation. In total, we [Big Brain Pictures] invested 30% of budget, while Toonz Animation invested 70%. After commercialisation, we [Big Brain Pictures] would get 40% of profit margin. Toonz Animation India would get 60%. (Managing Director, Big Brain Pictures/11 July 2019)*

This finding confirms the study that actors in an innovation system would collaborate to induce innovations by mixing and integrating resources within the system (Wise & Baumgartner, 1999). The empirical evidence also shows that the value-based innovation network in the digital content industry in Thailand involves six groups of actors — i.e. digital content creators, customers (or users), business partners, industry associations, government agencies and education agencies. These actors play different roles in the value-based innovation network (Table 4).

Within a value-based innovation network, both customer value and actor's value need to be addressed. In order to create and deliver value to customers, related actors put efforts and recourses to facilitate a value-based innovation process, from variation to commercialisation. Hence, they also require their value enhancement in returns (Table 4). This finding confirms that companies can create value through the value-creating system, where customers are willing to co-create while suppliers (actors) attempt to co-produce customer value in exchange of suppliers' own value (Normann & Ramirez, 1993).

Table 4: Extracted Evidence of Actors' Roles and Values in a Value-Based Innovation Network

Actor	Role	Value
Digital content creator	Creator	Creating and marketing new and valuable digital contents successfully
Customer	Value co-creator	New and valuable digital contents worth to pay for
Business partner	Value co-producer	Financial returns from new and valuable digital contents
Industry association	Intermediary	Industry and market growth
Government agency	Supporter	Industry growth
Education agency	Supporter	Skillful human resources

Note: From Empirical Cases

Along the value-based innovation processes, related actors within the innovation network involve in the particular stages of innovation processes (Table 5).

Table 5: Extracted Evidence of Actor Involvement in Value-Based Innovation Processes of Thai Digital Content Creators Examined

Sub-sector	Innovation Stage	Involving Actor	Example of Actor Involvement
Animation	Customer-insight researching	Customers	Shellhut Entertainment and Kantana Animation Studio co-created value with their target customers (as mentioned in Table 2).
	- Designing - Prototype developing - Testing - Re-designing	Business partners: Other animation firms (or production studios)	- Shellhut Entertainment worked with other animation firms (as outsourcers) during the production and post-production of the Legend of the 2 Heroes film. - Big Brain Pictures worked with Toonz Animation India during the production of the Hey Buddy film. Also, it worked with the production company in Ireland during the post-production step.
	Commercialising	Business partners: Distributors, broadcasters, investors	- The Legend of the 2 Heroes film would be commercialised in China by the Chinese distribution agency. - Toonz Animation India would market Hey Buddy in the global market while Cartoon Club (Broadcaster in Thailand) would commercialise the animation in Thailand. - Exformat invested in the animation project named 'The Legend of Muay Thai' created by Igloo Studio. It also was responsible for marketing the film.
Game	Designing	Business partners: Other game creators/firms	Maya Wizard and Teapot Studio, which are game creators, co-produced the Thai game named 'Heroes Guardian'.
	Prototype developing	Business partner: Other game creators/firms	Maya Wizard was responsible for coding the Heroes Guardian game.
	Testing	Gamers	Heroes Guardian, Pandora Hunter and Home Sweet Home were tested by gamers and later were adjusted appropriately before they were launched.

Table 5: Extracted Evidence of Actor Involvement in Value-Based Innovation Processes of Thai Digital Content Creators Examined *(Cont.)*

Sub-sector	Innovation Stage	Involving Actor	Example of Actor Involvement
Game *(Cont.)*	Re-designing	Business partners: Other game creators/firms	Maya Wizard and Teapot Studio re-designed Heroes Guardian together, according to feedback from the testing stage.
	Commercialising	Business partners: Publishers and customers	- Maya Wizard and Teapot Studio would contact a publisher in Southeast Asia to distribute Heroes Guardian. - Yggdrazil collaborated with a publisher in China to commercialise Home Sweet Home in the Chinese market. - Extend Interactive built an online community to engage customers to Pandora Hunter (as mentioned in Table 2).
	Modifying	Business partners: Other game creators/firms	Maya Wizard and Teapot Studio modified Heroes Guardian together, according to feedback from the market.
Character	Testing	Customers	2SPOT Communications and Liffolab tested their characters with customers through offline and online channels.
	Commercialising	Business partners: Merchandisers and an online marketplace	- 2SPOT Communications, Liffolab and Sweet Summer (owned Majory) commercialised their characters through licensing merchandisers to utilise their characters. - The owner of Jumbooka sold several sets of Jumbooka stickers on the LINE sticker marketplace.
	Modifying	Customers	2SPOT Communications, Liffolab and Sweet Summer continued improving their characters and stories once receiving feedback from customers.

Note: From Empirical Cases

4.4 Emerging Innovation Intermediaries

The digital content industry in Thailand is fragmented, where connections between resource owners and resource users are weak, because it embodies several small and medium-sized firms and freelancers. This finding confirms that the complex system of digital content production and distribution contains several actors interacting with one another to create new offerings (Ma et al., 2018). The Thai digital content creators have encountered a limited access to necessary knowledge and resources in generating value-based innovation. Consequently, an innovation intermediary informally emerged in the Thai digital content industry. An innovation intermediary can play a key role to facilitate collaboration and coordination with related actors who possess the necessary knowledge and resources. This is consistent to the study that innovation intermediaries facilitate innovation processes by performing activities that bridge user needs and the supply side regarding many areas of resources (Dodgson & Bessant, 1996). The empirical evidence presents that the industry associations in the Thai digital content industry are likely to play a role as an innovation intermediary (Table 6).

Table 6: Extracted Evidence of Innovation Intermediaries in The Thai Digital Content Industry

Sub-Sector	Innovation Intermediary	Example of Actions to Facilitate Collaboration
Animation	TACGA	TACGA coordinated animation firms, business partners and government agencies at national and international levels to conduct business matching events, seminars and related projects (e.g. Animation Apprentice Project and Thailand Animation Pitch). TACGA also facilitated collaborations between Big Brain Pictures and broadcasters (Toonz Animation India and Cartoon Club) to create, produce and market the Hey Buddy film.
Game	TGA	TGA facilitated collaborations among game creators/firms, business partners and government agencies to develop and position Thai games in the global market by organising business matching events and investor meeting sessions.
Character	DCAT and TACGA	DCAT and TACGA worked together to coordinate character creators/firms, business partners and government agencies to increase capabilities of creators/firms by organising business matching events such as DC Cluster Day (Digital Content Cluster Day) and BIDC Festival (Bangkok International Digital Content Festival).

Note: From Empirical Cases

An incomplete system of innovation is a consequence of lacking connections between resource providers and actors who want to utilise resources. This is a problem about innovation network management and relationship management within the network (Intarakumnerd & Chaminade, 2011). Therefore, an innovation intermediary is an important actor to manage and coordinate resources and capabilities in the value-based innovation network in the Thai digital content industry. The industry associations in the Thai digital content industry work with the digital content creators, business partners, government agencies and education agencies to generate new and valuable digital contents, thereby driving the growth of industry. Among four capabilities — i.e. network capabilities, coordination capabilities, knowledge-building capabilities and management capabilities — of an innovation intermediary's capabilities identified by Sutthijakra and Intarakumnerd (2015), the industry associations mainly employ network capabilities and coordination capabilities. Moreover, the finding adds to existing knowledge that an innovation intermediary needs to consider value required by each actor in the value-based innovation network if they want to stimulate an involvement of potential actors.

5. Theoretical Contributions and Practical Implications

This research paper contributes to academic knowledge in the areas of service innovation and innovation network. Based on the exploration of innovation processes in the Thai digital content creators, the paper confirms that an innovation process in services is not linear, but iterative and spiral. This paper also reveals that value-based innovation can be induced through value co-creation. During an innovation process, the Thai digital content creator and users (or customers) co-create new digital contents to enhance value for users (or customers). Moreover, this paper uncovers that an innovation network is a web of resources and capabilities to facilitate and support the Thai digital content creators to engender value-based innovations.

For practical implications, the Thai digital content creators should provide platforms or channels for users or customers to participate in an innovation process to ensure value co-creation, resulting in value-based innovation. Moreover, the Thai digital content creators should involve in a value-based innovation network so that they would be able to dissolve their dilemmas between creativity and business capability during an innovation process. In general, the Thai digital content creators generate new digital contents based on their strong capability, which is creativity. However, a market success of new digital contents also depends on business (or commercialisation) capability, which they are not an expert. Hence, collaboration with other related actors who gain business expertise will help increase a possibility for commercialising the new digital contents successfully.

For policy recommendation, the Thai government agencies have to systematically develop a value-based innovation network in the Thai digital content industry. Consequently, the Thai digital content creators and resource owners can establish linkages to transfer and share essential resources in order to strengthen the Thai digital content creators' competencies, thereby creating new and

valuable digital contents for customers. It is worth noting that the Thai government agencies should support and stimulate the industry associations to be an innovation intermediary because the industry associations are a result of collaboration among Thai digital content creators. The industry associations have gained insightful understandings of digital content business and market as well as connections within the industry network. Therefore, they would be able to play a key role to organise and stimulate linkages among actors in the value-based innovation network of the Thai digital content industry.

6. Conclusion

The value-based innovation process in the Thai digital content creators and the value-based innovation network in the Thai digital content industry are revealed in this paper. Value-based innovation is engendered through a spiral process of value-based innovation process, which consists of seven stages, including customer-insight researching, designing, prototyping, testing, re-designing, commercialising and modifying. At some particular stages in the value-based innovation process, the Thai digital content creators co-create value with customers so that customers can create value to satisfy their own needs. Throughout the process, related actors — including 1) business partners, 2) industry associations, 3) government agencies, 4) education agencies and 5) customers or end users — participate to ensure value-based innovations to customers or end users. Therefore, a value-based innovation network is formed to generate new and valuable digital contents in the digital content industry in Thailand. The value-based innovation network can assist to facilitate negotiation, and knowledge and resource transfer between the Thai digital content creators and related actors possessing necessary knowledge and resources.

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