

VALUE CO-CREATION, CO-DESTRUCTION, AND FIRM PERFORMANCE: A PROPOSED MEDIATION OF THE INTERNET OF THINGS

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ABSTRACT

Value co-creation is a study on consumer-firm interactions, where consumers can be actively involved with firms in designing, developing, marketing, distributing, and (or) selling of products to personalize their service experiences. In contrast, value co-destruction exists due to imbalance involvement between consumers and firm in co-creating of value as a result of misuse of resources. Previous studies have suggested while value co-creation will increase firm performance, value co-destruction will do just the opposite of that. In the meantime, the internet of things (IoT) has becoming important topic to study how value co-creation and co-destruction can be created. Therefore, it was expected the effects of value co-creation and co-destruction on firm performance can be better understood with IoT. However, study that has looked into the mediating effects of IoT in the relationships between value co-creation and co-destruction on firm performance in a single topic is still hard to find. In line with the research gap, this paper will be investigating the aforementioned issue by building a conceptual framework with research propositions. This paper is proposing that IoT will positively improve the effect of value co-creation on firm performance, while at the same time reducing the negative effect of value co-destruction. This paper is expected to enhance our knowledge on the relationships between value co-creation and co-destruction, improve our understanding on the effects of IoT on firm performance, and promotes resource-based view (RBV) to complement Service-Dominant (S-D) logic at explaining superior firm performance.

Key words: *IoT, resource-based view, service-dominant logic, value creation*

INTRODUCTION

Studies on value creation have been shifted in the digital era, which has enabling interconnection between consumers and firm in promoting value co-creation (Xie, Wu, Xiao, & Hu, 2016). As a result, the roles of internet at facilitating value co-creation have been explored in the past (Choi & Burnes, 2013). For instance, Toshiba has realized the

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important of value co-creation under this digital era by improving the customer experiences based on the voice of customers with the redesigned Toshiba support site, which is more flexible, easy to maintain and update to improve customers loyalty and experiences³. As a result, scholars' interest on the internet of things (IoT) for value co-creation has been increasing (Mejtoft, 2011). In fact, IoT has been discussed with value co-creation from the perspective of service-dominant (S-D) logic itself (Tommasetti, Vesci, & Troisi, 2015). Therefore, besides the current issues on value co-creation and co-destruction, IoT has emerged into important topic to harness value co-creation. Although there have been numbers of studies (in both conceptual and empirical) discussing the issues on value co-creation and co-destruction (e.g., Echeverri & Skålén, 2011), value co-creation and firm performance (e.g., Chakraborty, Bhattacharya, & Dobrzykowski, 2014), value co-creation and IoT (e.g., Mejtoft, 2011), and IoT and firm performance (e.g., Del Giudice, 2016), the interrelated issues of these topics are yet to be addressed in a single study. With this research gap, two interrelated questions have emerged – how do value co-creation and co-destruction interact with firm performance, and how does IoT influences value co-creation and co-destruction on firm performance? In response, this paper aims to investigate these interrelated issues by building a conceptual framework with research propositions on the mediating effects of IoT in the relationships between value co-creation and co-destruction with resource-based view (RBV) perspective, in complementing S-D logic at explaining superior firm performance.

INTERRELATED ISSUES

Firstly, even though value co-creation has always been associated with positive implications on consumers (Terblanche, 2014); there are also some possible negative implications related to them (Grönroos, 2012). The same observation could also be happened to firm performance. For instance, increasing consumer participation will reduce firm controls on the outcome of the process. This situation would be ended up co-destructing the value through the very same consumer-firm interactions that are used in value co-creation (Terblanche, 2014). Therefore, the possibility of value co-destruction should not be overlooked (Plé & Cáceres, 2010) as it may as well affect the firm performance (Alexander, 2012). Despite of that, the numbers of studies focusing on both value co-creation and co-destruction in a single topic is still relatively low. Since the concept of value co-destruction is still in blur (Plé & Cáceres, 2010), the interrelationships between value co-creation and co-destruction need to be further explored. Secondly, value co-destruction has so far been treated negatively relative to value co-creation (Echeverri & Skålén, 2011; Neuhofer, 2016). However, under certain circumstances, co-destruction can also be a useful strategy for value creation. In fact, from a RBV perspective, firm can renews, redeploys, recombines, replicates, retrenches, or even retires its resources for achieving superior firm performance (Helfat & Peteraf, 2003). This is especially true as some values need to be destroyed and recreated as part of the business strategy (Galván, Pindado, & Torre, 2007). Thirdly, since value co-creation requires direct and active interactions between two parties (Grönroos, 2012), it was

³See for details <http://www.nohold.com/assets/nohold-toshiba-support-redesigns-the-customer-experience.pdf>

suggested that firm can interact with consumers by taking advantages of IoT, which can be useful for understanding how value co-creation (and co-destruction) are assessed and created (Mejtoft, 2011), and influencing firm performance (Hamidi & Gharneh, 2017). Since service innovations can be enabled by IoT (Andersson & Mattsson, 2015), it will be interesting to know either IoT can enhance the positive effect of value co-creation on firm performance, while at the same time reducing (or controlling) the negative effect of value co-destruction. Lastly, in relation to S-D logic, RBV treats firm services and consumer-firm interactions for value creation as intangible resources. Therefore, while co-creation can be considered as a type of resources, co-destruction is also another type of resources (Mele & Corte, 2013). In fact, previous study has discussed RBV with S-D logic in analyzing sourcing decisions for business processes (Dobrzykowski, Tran, & Tarafdar, 2010). Despite of that, there are still much works to be done on the interactive application between RBV and S-D logic (Mele & Corte, 2013).

VALUE CO-CREATION, CO-DESTRUCTION, AND INTERNET OF THINGS

The notion of co-creation has been appeared in the service marketing research as early as 1970's (Grönroos, 2012). However, the interest on this topic was only started to become popular after the publication of seminal paper by Prahalad and Ramaswamy in 2004 (Leclercq, Hammedi, & Poncin, 2016). In general, the concept of value co-creation can be loosely understood as a joint creation of value between consumers and firms that actively co-construct and personalize the service experiences through continuous dialogue and problem solving (Pralhad & Ramaswamy, 2004a). From the theoretical perspective, this concept has emerged from the S-D logic where the marketing focus has been shifted from tangible (e.g., manufactured goods) to intangible resources (e.g., skills, information, knowledge) with the orientation departed from firms to consumers (Vargo & Lusch, 2004). Co-creation enables new values to be experienced by consumers that cannot be created in silo by the firms alone (Payne, Storbacka, & Frow, 2008). This concept has becoming critical due to the consumers are now more "connected, informed, and active" and they can "access information on firms, products, technologies, performance, prices, and consumer actions and reactions from around the world" (Pralhad & Ramaswamy, 2004b, p.4). Enabled with the invention of internet, consumers can now actively participate in the development and usage of products and services provided by the firms, in which they have becoming the co-creators of the value (Kambil, Friesen, & Sundaram, 1999). With this in mind, the consumers have to be treated as a source of competency to drive firm products and services offering (Pralhad & Ramaswamy, 2000). Since "the co-creation experience of the consumer becomes the very basis of value" (Pralhad & Ramaswamy, 2004b, p.5), this concept has treated consumers at the utmost importance for achieving superior firm performance (Tijmes, 2010).

In contrast, another concept called as value co-destruction was also emerged from S-D logic in not so many years ago. This concept was in the spotlight since the publication of conceptual paper by Plé and Cáceres in 2010. This concept is referred to as "an interactional process between service systems that results in a decline in at least one of the systems' well-being (which, given the nature of a service system, can be individual or organizational)" (2010, p.431). This concept suggests that consumer-firm interactions

may not always end up co-creating the value. Instead, the imbalance level of co-creation can lead to co-destruction of value. One of the possible reasons for such value co-destruction to be in existence is on the misuse of resources either intentionally or unintentionally from either one or both parties (Plé & Cáceres, 2010). For instance, according to a previous empirical study on public transportation, value co-destruction can happen due to incongruent in five interaction value practices, namely informing (e.g., misinterpretation of information), greeting (e.g., disagreement on how to conduct greeting), delivering (e.g., strict procedure), charging (e.g., complicated payment methods), and helping (e.g., skills and actions of helping do not connected properly with the others' needs) (Echeverri & Skálén, 2011). Since then, there have been more and more discussions on value co-destruction in various contexts, such as in the sport management (Stieler, Weismann, & Germelmann, 2014), business-to-business (Marcos-Cuevas, Prior, & Enz, 2015), information systems (Vartiainen & Tuunanen, 2016), interfirm relationships (Prior & Marcos-Cuevas, 2016), and tourism (Neuhofer, 2016).

In the meantime, the term “internet of things” was first coined in 1999 by Kevin Ashton (Gubbi, Buyya, Marusic, & Palaniswami, 2013). A simple search on the terms “internet of things” and “IoT” with Google Trends covering the periods from January 1st, 2004 to Jun 30th, 2017 has found the attention level on this topic was started to increase at the end of 2013 and has reached the highest peak in October 2016 for the internet of things and Mac 2017 for IoT. The astonishing jump in the attention level is signaling that the topic is currently getting more important. Meanwhile, the numbers of search on IoT was higher than the internet of things itself implying that IoT is more popular and well accepted acronym for the internet of things (Zaidi, 2017). Since the late 1990's the IoT definition has evolved to include wider applications (Gubbi, Buyya, Marusic, & Palaniswami, 2013). It is now “comprises an evolving array of technologies that extend the idea of instantaneous connectivity beyond computers, smartphones, and tablets to everyday objects such as home appliances, cars, and medical devices” (Poudel, 2016, p.997). As the application domains of IoT are wide ranging from personal and home, enterprise, utilities, and mobile (Gubbi, Buyya, Marusic, & Palaniswami, 2013), “the IoT is expected to transform how we live, work and play” (Chase, 2013, p.6). Due to the impacts on time use and community, politics, organizations, and culture (DiMaggio, Hargittai, Neuman, & Robinson, 2001), IoT is proven hard to be simply ignored by any business firms as it will change the way firms interact with customers (Weichselbaum, 2015), and influencing the future business models (Fleisch, Weinberger, & Wortmann, 2015). Since IoT is argued to improve communication and interaction between consumers and firm, therefore, IoT should be able to enhance value co-creation, while reducing (or controlling) value co-destruction from emerging and affecting firm performance.

THE LINK: SERVICE-DOMINANT LOGIC AND RESOURCE-BASED VIEW

In the past, firms used to focus on the distribution and exchange of commodities and manufactured goods in the field of marketing strategy. Even under industrialization era, firms still given priority in producing quality products including its designing, controlling, and delivering to customers in order to increase the business performance. Through this focus, firms were supposed to create value by offering a quality products to

customers as well as to the market. This kind of value creation is considered as goods-dominant (G-D) logic, since the value of goods is determined by the products (Vargo & Lusch, 2004) and it is evaluated only on the basis of exchange. Whereas, there was no direct interaction with customers to produce these values. However, as the time passing by, customers are becoming active participant and want to co-creation the value for the product, such as transportation service (Powar, Beltagui, & Riedel, 2009). They wish to become a co-producer of value in the view of service. Service value is determined by customers on the basis of 'value in use' that are also the primarily operant resources as well as active participants in interactive exchanges and co-invention (Vargo & Lusch, 2004). Therefore, from the perspective of S-D logic, value is co-created through beneficial relationship between firm and consumers by acquiring specialized competences (knowledge and skills) or services (Belal, et al., 2014). In contrast, goods are treated as the intermediate products that are used by consumers in value creation processes (Vargo & Lusch, 2004). Due to the fact that value is co-created with specialized competences, the platform for value co-creation is made up by resources and activities comprising of physical resources (e.g., goods), contact employees, focal customer, and fellow customers via interactive and peer communication. This platform has to be used in a right way since any mishandling will lead to destruction (Grönroos, 2012). In other words, value co-creation (and co-destruction) is a result of interaction between resources and activities. This implies that value can only be co-created if firm and consumers know how to manage the specialized competences. Therefore, it can be concluded for value to be co-created: (1) resources and activities for value co-creation must exist, and (2) these resources and activities have to be used in the right way, otherwise value co-destruction may happen.

Correspondingly, from RBV perspective, value co-creation (and co-destruction) can be the source of superior performance if the firm is capable of capturing the value with specialized competences that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Hence, while S-D logic is focusing on value creation processes (Mele & Corte, 2013); RBV on the other hand will enable value co-creation to be associated with firm performance. RBV has a long history where the contributions to the work can be tracked back as early as 1959 by Edith Penrose (Kor & Mahoney, 2004). RBV was then popularized by Wernerfelt in 1984 who has claimed the imperfectly available resources are the firm's position barrier to maintain high returns over long periods of time. The assumptions use in RBV is that firms can create a sustained competitive advantage when possessing heterogeneously strategic resources and these resources are imperfectly mobile. For the firm's strategic resources to become the source of sustained competitive advantage, they have to be valuable, rare among firms, imperfectly imitable, and non-substitutable (Barney, 1991). These strategic resources can be reconfigured for renewal, redeployment, recombination, replication, retrenchment, or retirement (Helfat & Peteraf, 2003), which this concept can be applied to value creation. For instance, in the case of capability renewal, the critical resources can be deployed to create new value with consumers. Meanwhile, in the case of capability retirement, firm might want to use the strategic resources (intentionally) to destroy the existing value co-created with consumers due to irrelevance at time. Under certain circumstances, firm might have also unintentionally used the strategic resources to destroy the value. Since value co-creation and co-destruction are the firm capabilities, it can be argued that firm performance can be

affected not just by the ways firm renewing, redeploying, recombining, replicating, retrenching, or retiring the capabilities, but also by the capabilities themselves (i.e., value co-creation and co-destruction). Similarly, IoT that enables consumer-firm interactions for value co-creation and co-destruction, where the levels of adoption and usage are different between firms, is also treated as capability that can influence the performance. For a record, dynamic capabilities, which is an extended concept from RBV was adopted in previous empirical study on value co-creation and firm performance (Chuang & Lin, 2015). With RBV in mind, firm performance refers to “the extent in which a firm is capable of reaching sustained competitive advantages as leveraged by resources that are valuable, rare, and imperfectly imitable and have no strategically equivalent substitutes” (Hamidi & Gharneh, 2017, p.78).

As a result, emphasizing the link between S-D logic and RBV will not just help us to understand how S-D logic and RBV can co-exist at explaining the source of competitive advantage, but also enable us to understand how IoT can be the platform to manage value co-creation and co-destruction towards achieving better firm performance.

CONCEPTUAL FRAMEWORK AND RESEARCH PROPOSITIONS

Inspired by the National IoT Strategic Roadmap’s (2014, p. 2-01) definition of IoT as the “intelligent interactivity between human and things to exchange information and knowledge for new value creation”, this study is treating IoT as a platform for active consumers-firm interaction to achieve firm performance. In order to investigate the mediating effects of IoT in the relationships between value co-creation, value co-destruction, and firm performance, the conceptual framework with propositions is suggested in Figure 1.

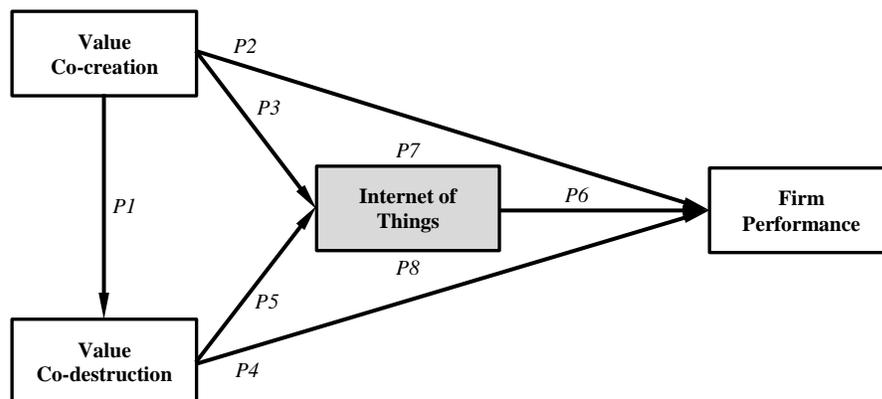


Figure 1
Research propositions

As shown in Figure 1, both value co-creation and co-destruction are proposed to have direct effects on firm performance. However, with the mediation from IoT, it is proposed that the positive effect of value co-creation can be increased on firm performance, while the negative effect of value co-destruction can be decreased. With these in mind, the following propositions are highlighted:

Based on S-D logic, consumers are treated as co-creators of value (Payne, Storbacka, & Frow, 2008). However, since consumer-firm interactions are not always co-creating value; the possibility of adverse consequences can lead to co-destruction of value (Plé & Cáceres, 2010). This can happen because for the value to be co-created, three components must exist, namely the value, actors, and engagement platform. Missing any of these components may cause value co-destruction to exist. Since value co-destruction has always been treated as opposite to value co-creation (Leclercq, Hammedi, & Poncin, 2016), it is proposed that:

P1: Value co-creation relates negatively with value co-destruction

Value co-creation is likely to improve firm performance (Restuccia & Ouellet, 2009). Previous study has proposed that value co-creation will have a significantly positive effect on firm performance (Chakraborty, Bhattacharya, & Dobrzykowski, 2014). This result was then supported by an empirical study, which has shown that value co-creation has a significantly positive relationship with firm performance (Chuang & Lin, 2015). Accordingly, another empirical study has also found that firm performance was enhanced by value co-creation (Ren & Li, 2015). Similarly, a recent study has shown that the impact of co-creation on firm performance is greater than innovation capability (Hamidi & Gharneh, 2017). Due to value co-creation has been conceptualized to have consequences on firm performance (Leclercq, Hammedi, & Poncin, 2016), while the previous studies have empirically proven the positive relationship between value co-creation and firm performance, this paper is proposing that:

P2: Value co-creation relates positively with firm performance

A recent study has proposed that ICT will boost the process of value co-creation (Martínez-Cañas, Ruiz-Palomino, Linuesa-Langreo, & Blázquez-Resino, 2016). In a similar vein, ICT has become integral to enhance value co-creation (Neuhofer, 2016). Accordingly, a previous empirical study has shown that e-service innovation has a strong and positive effect on value co-creation (Chuang & Lin, 2015). Since value co-creation can take advantages from IoT development (Mejtoft, 2011), it is proposed that:

P3: Value co-creation relates positively with IoT

It was argued that “value co-creation explicitly may have both positive and negative impacts on value formation for customers, and it may be instrumentally created or just emerge from customers’ experiences” (Grönroos, 2012, p.1521). Therefore, value co-destruction may happen when the value was not reciprocally created (Leclercq, Hammedi, & Poncin, 2016). As a result, although involving consumers in co-creation of value can be good for firm performance, a negative effect can emerge as a result of consumers’ perception on imbalance relationship (Martínez-Cañas, Ruiz-Palomino, Linuesa-Langreo, & Blázquez-Resino, 2016). Even though unique value is co-created with consumers (Prahalad & Ramaswamy, 2004b), in which they have been treated as a new source of competency for the firm (Prahalad & Ramaswamy, 2000), there was also a pitfalls of inviting consumers to co-create value with firm (Urban, 2015). With these in mind, it is proposed that:

P4: Value co-destruction relates negatively with firm performance

Besides value co-creation, value co-destruction can also present in IS (Vartiainen & Tuunanen, 2016). However, there was lacking of knowledge on value co-destruction when comes to ICT (Neuhofer, 2016). Since there are not many studies between value co-destruction and IoT, by default, this paper is proposing that:

P5: Value co-destruction relates negatively with IoT

Previous study has found that ICT impacts on firm are broader, not just on the performance (De Stefano, Kneller, & Timmis, 2016). However, many studies such as a study on broadband have measured the impacts on firm performance (Bertschek, Cerquera, & Klein, 2013). In addition, IT capabilities were also found to be positively and significantly related to the firm performance improvement (Anand, Wamba, & Sharma, 2013). Prior to that, RFID was found to be impacting the firm market value (Jeong & Lu, 2008). Meanwhile, a recent study on big data analytics capability has also found a direct effect on firm performance (Wamba, et al., 2017). Although there are not many studies of IoT on firm performance, based on the effects of ICT, broadband, RFID, big data, etc. (the components of IoT) on firm performance, this paper is proposing that:

P6: IoT relates positively with firm performance

Value creation has shifted to value co-creation under a digital age with big data (ICT) works as the driver of change (Xie, Wu, Xiao, & Hu, 2016). Since ICT can improve value co-creation to enhance firm performance (Ren & Li, 2015), there could be intervening variables (mediator) between value co-creation and firm performance (Restuccia & Ouellet, 2009). In the recent study, marketing and technological capabilities (e.g., ICT) was found to fully mediate service-dominant orientation on firm performance (Wilden & Gudergan, 2017). Since service innovation was enabled by IoT (Andersson & Mattsson, 2015), it was argued that IoT will mediate value co-creation at achieving firm performance. Therefore, it is proposed that:

P7: IoT improves the positive effect of value co-creation on firm performance

It was previously proposed that value co-destruction will reduce firm performance. However, since IoT is enabling a more effective communication to take place between consumer-firm, it was argued that value co-destruction can be reduced. With this in mind, it is proposed that:

P8: IoT reduces the negative effect of value co-destruction on firm performance

CONTRIBUTIONS

Firstly, value co-creation was started to receive greater attention from 2004 onwards, while value co-destruction from 2010 onwards. By right, studies that have formally focused on the interrelationships between value co-creation and co-destruction were only started on a later year. Since the numbers of studies that have addressed both concepts in

a single topic are still low, this paper has contributed to the knowledge by advancing the conceptual framework with propositions on value co-creation and co-destruction, and their opposite relationships with firm performance. Secondly, value co-creation was enhanced by ICT that allows consumers to interact even more easily and actively with firms. In the recent years, the focus has started to advance further from ICT to IoT, which will shift the consumer-firm interactions to a new level. With this in mind, the effects of IoT on value co-creation, value co-destruction, and firm performance were highlighted. It was proposed that IoT will enable co-creation of the value between consumers and firm, while value co-destruction will be reduced due to the effective communication and interaction provided by IoT. As a result, this paper has promoted IoT and how it fits well into the current scenario between value co-creation and co-destruction. Lastly, this paper has discussed on the conceptual framework from RBV perspective as to demonstrate how the relationships between value co-creation, value co-destruction, and IoT can be understood as a source of superior firm performance. In doing so, this paper has shown that RBV can fit in harmony with S-D logic by treating resources and activities for value co-creation as intangible resource, while the firm's skills and capabilities with IoT as another intangible resource. These intangible resources that are unique, rare, inimitable, and valuable to firm can lead to superior performance.

CONCLUSION

Value co-creation and co-destruction are the two interrelated concepts that look at consumer-firm interactions to jointly create value based on personalized service experiences. Due to incongruence between them, previous studies have suggested that while value co-creation can improve firm performance, value co-destruction at the other hand can reduce the performance. In the recent years, IoT has started to gain greater attention to address issues on value co-creation and co-destruction. However, there is hardly any work that has been done to investigate the mediating effects of IoT in the relationships between value co-creation and co-destruction on firm performance. To reduce the research gap, this paper has discussed a conceptual framework with research propositions. As a result, this paper has enhanced our knowledge on the interrelated concept of value co-creation and co-destruction, and their relationships with firm performance, enlightened our understanding on IoT at influencing value co-creation, value co-destruction, and firm performance, and also highlighted the RBV theory in complementing S-D logic at explaining how value co-creation, value co-destruction, and IoT can be treated as critical resources to achieve superior firm performance.

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