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Are service productivity and quality in permanent conflict? (The effect of service innovation and the role of customer satisfaction)

DongJun Rew
The University of Texas Rio Grande Valley
Email: dongjun.rew01@utrgv.edu

ABSTRACT

The purpose of this study is to explore the roles of service productivity and service innovation, the relationships of service productivity and innovation with customer satisfaction, and the effects on firm performance. However, there is not much research developed in marketing literature, even though it is the important concept for both practitioners and scholars to explain important issues of marketing, such as strategical competitiveness and sustainable service providing in the market. Thus, this study verifies and demonstrates that there are positive relationships among each variable through a simple classification analysis. Therefore, this study has several theoretical and practical contributions.

KEYWORDS: Service innovation, Service productivity, Service quality, Customer satisfaction, and Firm performance

INTRODUCTION

Is there always conflict between service quality and service productivity? The purpose of this study is to re-explore the relationships among customer satisfaction, service quality and service productivity. In marketing literature, the relationship between service quality (hereafter SQ) and service productivity (hereafter SP) has been in conflict to firm's profitability, because both concepts have had intercontradictional impact on customer's satisfaction (Anderson et al., 1997). Especially, according to Anderson et al (1997), productivity has different impacts on customer satisfaction for goods and services. In detail, in the service industry, productivity is negatively related to customer satisfaction, whereas in the manufacturing industry, the productivity is positively related to the customer satisfaction. It is also true that both SP and SQ have impacted on customer satisfaction, where customer satisfaction is defined as an overall evaluation of firm's products and/or services (Anderson et al., 1997). However, these relationships had been examined at the point of operational costs, in terms of labor cost that have direct impact on firm's profit.

After the revolution of S-D logic (Vargo and Lusch, 2004; 2008), the point of view that SQ and SP are sources of operational costs has changed. Especially, advanced technology has radically changed the economic environment in the world. For example, technology can help customers and firms to interact actively with each other, even in the process of producing products/services (Sorescu and Spanjol, 2008; Vivek et al., 2012). Therefore, in service industry it is hard to believe that SP is negatively related to customer satisfaction. In other words, SP is a sources of firm's competitive advantages in the competitive service market. In short, under the SD logic the concept of SP has to be considered coincidentally with the effect of technology as the way of interaction with customers.

In fact, SP in marketing literature has been still used with the definition as the ratio of outcomes over inputs (Mark, 1982; Anderson et al., 1997; Filiatrault et al., 1996; Looy et al., 1998). However, the traditional definition of SP did not consider the effect of advanced technology on SP. Thus, Grönroos and Ojasalo (2004) assert that SP must be considered and measured by

three components, such as effectiveness, efficiency, and capacity. With this point of view, Rust and Huang (2012) theoretically develop and empirically test the optimizing level of SP to maximize the firm's profitability. In the study they argue that SP must be considered with customer engagement through customer's usage of technology. It indicates that SP does not need to be negatively related to customers.

This argument is based on the service innovation, because services need clients and providers to make a value by working together (Sophrer and Maglio, 2008). As one of strategies to be close to customers, companies have developed a tactic by innovating their production process and communicating with their customers, which indicates service innovation (hereafter SI) (Schumpeter, 1934; Spohrer and Maglio, 2008; Dotzel et al., 2013; Snyder et al., 2016). This challenge from SI is caused by the rapid change in the map of entire market and the characteristics of service (Spohrer and Maglio, 2008). Thus, to create a larger value for both participants companies in the service sector move their concentration to their customers by SI, including three dimensions: assimilation, demarcation and synthesis perspectives (Witell et al., 2016). Therefore, it is necessary to investigate the relationship between SP and SI, because SI is able to optimize the effect of SP. This investigation also includes the relationship between SI and firm value by Dotzel, Shankar, and Berry (2013).

Under this point of view, this study theoretically agrees with Grönroos & Ojasalo (2004) and Rust & Huang (2012), which is fundamentally that there is no contradiction between the effects of SP and SQ on firm's profit as the consequence of customer satisfaction. In fact, there is much research on the relations between SQ, SP and firm's profit to customer satisfaction (Anderson et al., 1997; Boulding et al., 1993; Choi et al., 2015). However, they have fragmentarily focused on each effect of SQ and SP on firm's profit and customer satisfaction, and there are a very limited number of studies on the effect of new conceptualized SP in marketing literature. Thus, this is the first empirical study to investigate the entire theoretical frame of relationship between SP, SQ, customer satisfaction, and profit in service industry. Additionally, through this investigation, the study will explore the role and effect of service innovation as a common antecedent of both SP and SQ. I will also verify the role and effect of customer satisfaction in the relationships of each construct. To achieve the purpose of this study as mentioned above, there are several research questions as follows;

- What are the relationships between firm performance and each SQ (CS) and SP?
- What is the role of service innovation?
- What is the role of customer satisfaction (CS) in the relationship between SP and firm's performance?

Therefore, this study will have a couple of contributions to both marketing practitioners and scholars. Theoretically this study will provide a new insight of SP and SQ impacts and the role of service innovation (hereafter SI) and CS on measuring firm's profitability, and practically it will suggest some important messages to marketing practitioners. For the remainder of this study, it will be organized with the related literature review and developed research hypotheses with theoretical research framework. It will also be concluded with results from methodological approach. Lastly, this study will deliver meaningful messages to both marketing practitioners and scholars.

LITERATURE REVIEW

Relationships among SP, CS and firm value

Up to until present, there has been still argument about effects of SP and SQ on firm profit and the relationship with the profit. The argument of productivity would start with the industrial revolution. Since the principle of scientific management (Taylor, 1998), the argument has been intensified. Then, the productivity in service industry has been discussed by other disciplines,

such as economics and finance, as well as marketing (Mark, 1982; McLaughlin and Coffey, 1990). Although, in fact, there are different types of productivity between manufacturing industry point of view and service industry point of view, service productivity has been defined as operational efficiency and it has been measured as output divided by input (Anderson et al., 1997; Donbi et al., 2000). Therefore, SP has been always negative related to customer satisfaction (hereafter CS) in marketing literature (Cosby, 1979; Deming, 1982; Johnson and Fornell, 1991), because to increase productivity companies need to choose the managerial decision of decreasing input, in terms of labor resources.

However, the new discussion of SP recommences, because of the measurement, even though it is recognized that SP is considered with both effectiveness and efficiency (Donbi et al., 2000; Grönroos and Ojasalo, 2004; Johnston and Jones, 2004; Schmenner, 2004). The newly defined SP includes both concepts of effectiveness, which can directly affect customer's attitude, and efficiency, which indicates the cost reduction (Grönroos and Ojasalo, 2004). It is called, "optimal level of SP", and it can be calculated with managerial decision variables as the function of price per unit, margin of profit, market concentration, and wages (Rust and Huang, 2012).

Based on this new definition of SP and the measurement, SP can chase two hares at once, customer satisfaction and operational cost reduction, because the newly defined SP considers both key concepts. Theoretically, when waiting time of services decreases, customers recognize that they are satisfied by the decrease in waiting time (Johnston, 1995; Rust and Huang, 2012). In other words, through customers' participation using various technology, such as ticketing machine, ATM, self-service checkout system, and kiosks, etc., companies achieve both cost reduction by standardization from the technology and customer satisfaction by decrease in waiting time from their participation in using technology (Rust and Huang, 2012). Therefore, it is hypothesized that;

H1 (a): SP positively affects firm value as BE.

H1 (b): SP positively affects customer satisfaction (CS).

Relationships among SI, SP, SQ, and firm value

Despite the importance of service industry in the economy, research on the effect of service innovation on the newly defined service productivity and service quality is relatively underdeveloped. Before concerned productivity in service industry, the concept of productivity was positively influenced by innovation, measured as R&D expenditure (Wakelin, 2001). For any set of service characteristics, innovation improves operational productivity. Peterson and Jeong (2010) argue that the investment in R&D leads firm's financial performance, especially brand value and firm performance. Therefore, company investment in R&D results in positive financial performance, which means financial profit or surplus.

There is another type of research on the relationship between SI and SQ. In this type of study, it indicates that SQ is significantly related to the degree of customer satisfaction (Helms and Mayo, 2008). Thus, when SQ is improved, the degree of CS is also enhanced. In a study on service innovativeness, Dotzel et al. (2013) introduce the concept of service innovativeness, defined as "a new or enhanced intangible offering that involves the firm's performance of a task/activity intended to benefit customers". It means that service innovation has to lead positive financial performance for both customer and firm as the result of investment. In other words, the investment action for service innovativeness can also have positive relationships with SQ and SP.

Kibbeling et al. (2013) argue that there is a positive relationship between innovativeness and CS. It is fundamentally derived from the statement of the theoretical argument by Rust et al. (1995), which is that CS can be measured instated of SQ. This will be explained later in the relationship between CS and SQ. Therefore, it is assumed that there is still a positive relationship between SI and SP.

H2 (a): Service innovation (SI) positively affects firm value (BE).

H2 (b): Service innovation (SI) positively affects service productivity (SP).

H2 (b): Service innovation (SI) positively affects customer satisfaction (CS).

Relationship between SQ and CS

Service quality (SQ) has led to innovative thinking in the services industry (Rust et al., 1995). Through SQ, companies can have a chance to match with more customers' demand and better level of both firm and service performance (Aaker and Jacobson, 1994; Rice, 1990). The literature of SQ has been with the history of service marketing. As the cognitive concept, SQ has been measured from customers' perception (Parasuraman et al., 1985; 1988; 1991; 1993) as a function of expectations and performance. Thus, to reach the highest level of SQ, service companies need to deal with the gap between expectations and performance as much as it can be reduced.

Through controlling SQ, companies in services accomplish more and better in both customer satisfaction (hereafter CS) and firm/services performance, because theoretically SQ consisted of expectations and performance affects CS by influencing customers' cognition and attitude toward the service (Zeithaml, 2000). Especially, Rust et al. (1995) propose CS as an alternative way of measuring SQ, because it can be theoretically expressed that CS is explained by the perceived SQ which expressively influences CS. Also Rust and Zahorik (1993) insist that statistically customer's retention behaviors, which are affected by SQ, are expressed in a logistic regression, which ranges from 0 to 1. The changes in the regression are typically small, which ensures that changes in SQ are also small. Rust et al. (1995), therefore, argue that methodologically it is reasonable to use CS for measuring SQ, rather than to directly evaluate SQ by measurements of SQ as proposed by Parasuraman et al. (1985 & 1988) and Cronin & Taylor (1992).

Thus, once quality of service improves or increases, theoretically CS is increased as much as SQ is increased (Fornell et al., 1996). With respect to this argument, Rust et al. (2002) support the theoretical argument by extension of the effect of SQ on firm performance, even though they did not pay attention to the role of customer, which means CS. The study of relationship between SQ and CS by Anderson et al. (1997), therefore, demonstrates that CS is directly related to the quality and productivity of service even though there are contradictable relationships of CS with SQ and SP as noted above.

Relationship between CS and firm value

In market, customers always have taken a leading actor, thus companies aim to satisfy their customers to provide what they want to have from the provided services and products (Szymanski and Henard, 2001). Drucker (1951) points that the reason of why companies exist is to satisfy their customers. Increase in CS leads firm's portability as performance, and CS indicates the level of service performance (Kotler, 1991). Thus, the goal of business is moved from maximizing profit to maximizing customer satisfaction (Anderson and Sullivan, 1993). This point of view has been supported by many studies in marketing literature. Luo and Bhattacharya (2006) insist that customers play an important role between marketing action, which is CSR, and firm's market value, which is stock return, as a mediator.

In the cognitive behavioral study, Anderson and Swaminathan (2011) identify key factors that lead to customer satisfaction in e-businesses, such as adaptation, commitment, network, assortment, transaction ease, and engagement, investigate the positive effect of CS on customer's loyalty moderated by customer trust and inertia. Thus, it can be theoretically assumed that when customers are satisfied by some factors, CS has a greater effect on

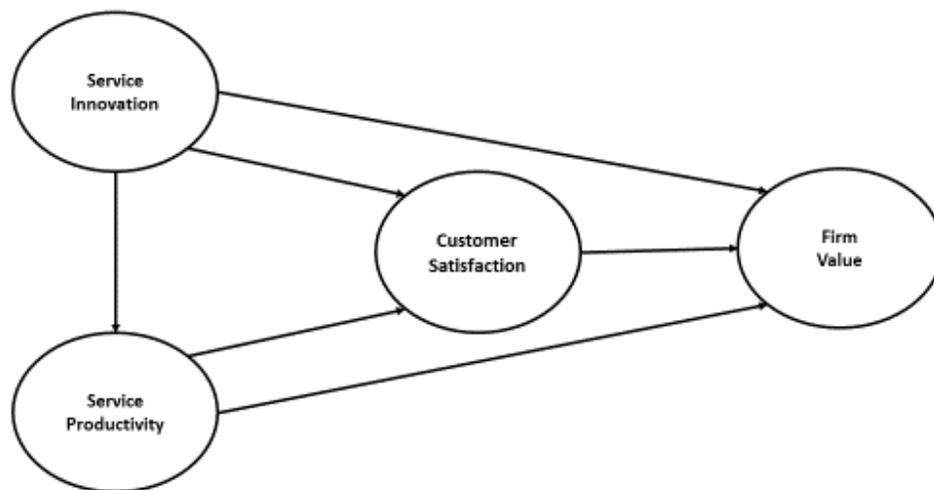
cognitive behavioral performance and firm financial performance. Therefore, it is hypothesized as follows;

H3: CS positively affects firm value (BE).

Conceptual framework

Based on the literature review, this study proposes a theoretical research framework as follows. Fundamentally, this study investigates the effect of each variable on firm performance. More importantly, the current study examines the role of service productivity in the research framework and the relationship with CS and firm performance. To verify the roles of CS and SP, this study employs the method of verifying mediating effects suggested by Baron and Kenny (1986).

Figure 1. Conceptual framework



METHODS

Data

For testing the research hypotheses, this study employed secondary data, from COMPUSTAT and the American Customer Satisfaction Index (hereafter ACSI). COMPUSTAT data is about over 30,000 public companies working in the United States and Canada. It is based on the companies' accounting information. ACSI is provided by the University of Michigan, publicly. This index is intended to be representative of the nation's economy as a whole (Fornell et al. 1996). Based on the SIC codes system, the index includes seven major economic sectors, which are manufacturing/non-durable, manufacturing/durables, transportation/communication/utilities, retail, finance/insurance, services, and public administration/government. According to Fornell et al. (1996), each company in the sectors randomly interviews approximately 250 current customers, who already purchased and experienced a product/service of each company. Interviews derive from 48 duplicate national probability samples of households in the U.S. with telephones. There are customer satisfaction

evaluations to publicly over 400 companies as the index. With these data sets, therefore, this study started with collecting ACSI, which is 2012 fiscal year data. Then, I matched ACSI with COMPUSTAT to get the sample for this study. After the process of matching data, this study had 127 companies in 2012.

Measurement

To estimate SP, I controlled outliers by winsorizing, which takes care of 1% and 99% outliers of each variable to reduce the impact of extreme values. I also did standardize all variables in the equations to have a mean of 0 and a standard deviation of 1 to ensure direct comparability, following studies by Rao et al. (2004) and Rust & Huang (2012). I first explored possible multicollinearity using ordinal least squares regression analysis (OLS) with return on asset (ROA) as the dependent variable. The VIF statistics are acceptable (see table 1), with a majority of them below 10. Based on the literature reviews of the construct, this study employed the way of Rust and Huang (2012). They suggest the optimal level of SP to investigate the construct under the new trend of technology (automation) in service sectors. The measurement of SP includes four main factors, such as labor wage, profit margin, market concentration, and price per unit. Each indicator has different signs to consist of optimal service productivity (see Rust and Huang, 2012, p.53).

Table 1: The result of SP measurement

| Model | Unstd. Coef. | | Std. Coef. | t | Sig. | 95% conf. int. | | Correlations | | | Collinearity Statistics | |
|----------|--------------|----------|------------|---------|-------|----------------|-------------|--------------|---------|-------|-------------------------|-------|
| | B | Std.Err. | Beta | | | Lower Bound | Upper Bound | Zero-order | Partial | Part | Tolerance | VIF |
| Constant | .120 | .001 | | 169.313 | 0.000 | .118 | .121 | | | | | |
| HHI | .006 | .003 | .278 | 2.147 | .032 | .000 | .011 | .037 | .076 | .073 | .222 | 4.532 |
| PROFIT | -.014 | .002 | -.651 | -7.326 | .000 | -.017 | -.010 | -.227 | -.252 | -.249 | .146 | 6.845 |
| WAGE | .006 | .001 | .266 | 3.842 | .000 | .003 | .008 | -.154 | .135 | .130 | .241 | 4.151 |
| PRICE | -.011 | .003 | -.550 | -3.724 | .000 | -.017 | -.005 | .057 | -.131 | -.126 | .111 | 8.943 |

Dependent variable: ROA

To measure SI, this study used the definition of innovation suggested by Hurley and Hult (1998), which is the ability of the organization to adopt or implement new ideas, processes, or products successfully. Many studies in marketing literature are using research and development expenditure of organizations as the indicator of innovation and the effect of innovation (Hurley and Hult, 1998; Kibbeling et al., 2013; Peterson and Jeong, 2010; Padgett and Galan, 2010). Therefore, in this study, innovation is calculated as the expenditure for research and development of each company as presented in COMPUSTAT.

For measuring CS, this study employs ACSI provided by consumer research institute in University of Michigan (Fornell, 1994). The data aims to study the science of customer satisfaction, and includes over 400 companies in the U.S. stock market publicly. By using phone interview with over 70,000 customers who already experienced the product/services for every year, it reports on a 0 to 100 scale. Especially, the stability of this data has been confirmed by using in various studies on CS in marketing disciplines (Anderson et al., 1997; Angelova and Zekiri, 2011; Fornell et al., 1996).

To investigate firm performance, this study follows one of ways to estimate firm performance, which is the way of measuring BE suggested by Simon and Sullivan (1993). Because as the study of Peterson and Jeong (2010), firms' innovation investment directly affects brand value, which is based on brand equity as the knowledge of the customer toward the brand/company. Even though it has been still discussed the suitability of BE to evaluate the ability as BV (Mizik, 2014), many of studies are still using the way of measuring BE with financial data, which is

Tobin's Q ratio (Simon and Sullivan, 1993; Chung and Pruitt, 1994; Torres and Tribo, 2011). Thus, this study employs Tobin's Q to measure BE.

RESULTS

All research hypotheses are supported. The results of the empirical analyses are described as follows, and the findings are summarized in table 2.

SP positively affects firm performance as BE (H1a). This test is about effects and the roles of newly determined service productivity by Rust and Huang (2012). Before their investigation of the new measured SP, SP had negative relationship with customer's attitude and their behavioral variables, such as purchase and satisfaction. Fundamentally even though their finding is limited in the positive relationship between SP and firm performance, the measurement of SP has included service quality and customer participation to increase customers' satisfaction. Thus, this hypothesis is supported by the statistical analysis ($t > 2.515$, $p^* < .013$).

SP positively affects CS (H1b). As noted above, there was negative relationship between SP and CS, because before Rust and Huang's study (2012), SP was estimated by the traditional way of measurement, which is the ratio of output over input (Anderson, Eugene W., Claes Fornell, and Roland T. Rust, 1997). This study initially tested the relationship between CS and the newly defined SP. Thus, the result shows that there is a positive relationship between them, which means the hypothesis is supported ($t > 2.130$, $p^* < .035$).

SI positively affects firm value (BE) (H2a). This investigation strongly supports the study of Dotzel et al. (2013), which argues that SI has a strong positive effect of SI on firm value, or firm performance. The statistical result also advocated by supporting the research hypothesis ($t > 46.122$, $p^* < .000$).

SI positively affects SP (H2b). According to the study of Wakelin (2001), there is a positive relationship between SI and productivity. However, the productivity used in Wakelin's study is examined by the traditional way of measuring SP. Thus, this study initially investigated the relationship between two variables, SI and SP. The statistical result supported the hypothesis ($t > 2.358$, $p^* < .020$).

SI positively affects CS (H2c). Based on the argument of Kibbeling et al. (2013), this hypothesis verified there is a positive relationship between SI and CS ($t > 8.091$, $p^* < .000$). It indicates that the degree of customer satisfaction will be increasing as much as increase in innovativeness of companies in service industry. This result is in the same vail of Menguc and Auh's study (2006) showing that innovativeness contributes to a firm's positional advantage and the competitive advantage as the result, which is positioned by customers.

CS positively affects BE (H3). Customers have played an important role for companies. Keller (1993) insists that knowledge of brand is accumulative and it is evaluated by customers. Therefore, customer who experienced satisfaction in using the brand can build a good image of the brand as one of the important indicators of brand knowledge (Keller, 2003). Thus, this result supports the arguments of previous studies, which is there is a positive relationship between CS and BE with statistical outcomes ($t > 7.897$, $p^* < .000$).

| Hypothesis | t-value | p-value | Supported? (Y/N) |
|------------------|---------|---------|------------------|
| H1a: SP → (+) BE | 2.515 | .013* | Y |
| H1b: SP → (+) CS | 2.130 | .035* | Y |
| H2a: SI → (+) BE | 46.122 | .000* | Y |
| H2b: SI → (+) SP | 2.538 | .020* | Y |

| | | | |
|------------------|-------|-------|---|
| H2b: SI → (+) CS | 8.091 | .000* | Y |
| H3: CS → (+) BE | 7.897 | .000* | Y |

Note: Sig.* at $p < .05$

Additional analyses

This study investigates the mediating effects of SP and CS, respectively. To investigate mediating effects of two variables, the study by Baron and Kenny (1986) uses three regression equations, which are from independent variable to mediator, from independent variable to dependent variable, and from mediator to dependent variable. It assumes that there is a significant relation between each variable used in each equation. As the results of table 2, each relation is significant among variables.

SP mediates the relationship between SI and BE. As shown in the table 3, there is still significantly positive relationship between SI and BE. Thus, by the explanation of Baron and Kenny (1986), there is not a mediating effect of SP in the relationship between SI and BE as the results in table 3.

CS mediates the relationship between SI and BE. As Baron and Kenny suggest (1986), to fill with the condition for mediating effect of a variable, all relationships among each variable must be satisfied; it is necessary that there is a statistically significant relationship between variable A (IV) and variable B (DV), variable C (mediator) and variable B (DV), and variable A (IV) and variable C (mediator). Then, when variable C fully mediates between variable A and variable B, it is not statistically significant in the relationship between variable A and variable B. On the other hands, if there is a partially mediating effect of variable C on the relationship between variable A and variable C, there is still a significant relationship between variable A and variable B. Thus, as CS and SI coincidentally enter in the multiple regression analysis, CS is not significant any more in the relationship with BE. Thus, it is insisted that CS does not have a mediating effect on the relationship between SI and BE.

CS mediates the relationship between SP and BE. Based on the assumption to examine the mediating effect, this study shows that CS fully mediates the relationship between SI and BE. Because there is still significantly positive relationship between CS and BE, even though it turns in that there is not significant relationship between SP and BE, as the result in table 3.

| | β | Std. Error | t-Value | p-Value | Results |
|----------------|------------|------------|---------|---------|-------------------|
| SP → BE | .134 | .053 | 2.515 | .013* | |
| SP → CS | .514 | .241 | 2.130 | .035* | |
| CS → BE | .132 | .017 | 7.897 | .000* | |
| CS → (SP & BE) | .115 (CS) | .018 | 6.432 | .000* | CS fully mediated |
| | .070 (SP) | .046 | 1.523 | .131 | |
| SI → BE | 1.049 | .023 | 46.122 | .000* | |
| SI → CS | 3.040 | .376 | 8.091 | .000* | |
| CS → BE | .132 | .017 | 7.897 | .000* | |
| CS → (SI & BE) | -.006 (CS) | .007 | -.800 | .426 | CS not mediated |
| | 1.055 (SI) | .035 | 30.399 | .000* | |
| SI → BE | 1.049 | .023 | 46.122 | .000* | |
| SI → SP | .421 | .179 | 2.358 | .020* | |
| SP → BE | .134 | .053 | 2.515 | .013* | |
| SP → (SI & BE) | .012 (SP) | .015 | .767 | .445 | |

| | | | | | |
|--|------------|------|--------|-------|-----------------|
| | 1.034 (SI) | .029 | 35.941 | .000* | SP not mediated |
|--|------------|------|--------|-------|-----------------|

Notes: Sig.* at $p < .05$

DISCUSSIONS AND CONCLUSIONS

This study initially investigated the role of service productivity (SP) and the relationship of SP with customer satisfaction (CS), service innovation (SI), and firm performance (BE). These concepts are important factors in service operation. In particular, to sustainably improve a firm's competitiveness and the ability of creating a value with customers, each factor, especially SI and SP, and the effects are very important (Jayaram and Xu, 2015). Traditionally, in marketing literature SP had a negative relationship with CS, because of the measurement issue, which is the ratio of output over input. It has been hard to look for an acute relationship between SP and CS. However, as the arguments of Rust & Huang (2012) and Grönroos & Ojasalo (2004), the concept of SP has to include not only efficiency (operational cost reduction), but also effectiveness (quality of service and the effect on customers). Therefore, this study theoretically contributes to verifying the role of SP and the relationship with CS.

Also, in this study, it is verified that CS has played an important role as a mediator in the relationship between SP and BE. Up to current, the marketing literature has limitedly stated the role of SI and the effect on customers. Peterson and Jeong (2010) argue that companies' marketing action, such as R&D investment, has direct impact on the evaluation of companies' brand. As another point of view, Menguc and Auh (2006) claim that it is possible to increase the effect of innovativeness when firms focus on market orientation, which means "into customers" as a firm's strategy. Thus, this study stands on comprehensive argument because of the findings of this study. In other words, it is that customers play a key role as the results of this study to perform brand equity, even though SI has strongly direct relationship with firm performance, especially brand equity.

As another theoretical contribution, this study arguably and empirically reveals that there is no direct relationship between SP and BE, because CS fully mediates the relationship. In other words, as noted above, customers are the key player or a group who responds and behaves toward marketing actions in market. Thus, it is not viable to obtain the effect of marketing action without any interactions with customers in market (Homburg et al., 2000). Therefore, it is necessary to reestablish the relationship between SP and BE as there is a significant relationship, because the newly defined concept of SP includes both efficiency, which is traditional concept of SP, and effectiveness, which means interactions between companies and customers.

Managerial implications

Firm value would be a central issue or goal among managers who want to increase and improve the performance of companies. Based on the results, this study suggests several managerial ideas or information about the issue, which is to increase and improve firm performance as follows.

- There are many ways to improve firm performance. One of them would be to reduce marketing expenditure (MarketingLeadershipCouncil, 2001). However, as confirmed in this study, marketing expenditure such as innovation has a strongly positive relationship to brand equity as estimated by customers. Thus, reducing an amount of the expenditure for the marketing action would lead to a negative impact on firm performance as evaluated by customers. Therefore, companies need to change their mindset from innovation expenditure

to investment. As discussed by Peterson and Jeong (2010), innovation increases the firm's brand value and finally its financial performance.

- Customers are always important for firms, even the firms do focus on B-to-B business platform. The market fundamentally consists of many customers and providers (Hunt, 1976). Therefore, it is not meaningful and impossible to evaluate or estimate firm value and the performance without customers (Keller, 1993). This study shows that customers counteract the effect of operational action or marketing action, such as service productivity. Thus, firms and the managers need to remind themselves of Drucker's statement (1954), "The purpose of business is to create the customer who determines what the business is".
- Finally, both firms and managers must consider how to improve service productivity. As noted above, the concept of SP is not only efficiency, but also effectiveness. These concepts play an important role in service operation. The traditional way of thinking on this concept only focused on efficiency, which means how to produce products without any waste of time and resources (Taylor F. W., 1988). However, service means utility that is from consumption of product/service and interaction between users (clients) and providers. Thus, it is essential for firms and managers in service sectors to increase the level of customer satisfaction, or customer's utility through optimizing SP.

Limitations and further research

This study has several limitations. First of all, it would have needed to see the difference between service and non-service, in terms of how each variable works in the research model. Thus, for the future research, it would be recommended that one intends to find the difference between service companies and non-service companies. Another limitation is that this study should have investigated the timely effect of each variable. This study used one-year data. Thus, if one is interested, it is another recommendation to examine the time effect or changes in each variable by using time series analysis. Lastly, this study only focused on secondary data to analyze the role and effects of each variable. However, if this study looked at the role and effects by using another type of data, primary data, it would have been more fruitful and meaningful research for service marketing literature.

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