

The Effect of Co-Creation on Relationship Quality: The Role of Outcome Quality

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ABSTRACT

Co-creation has been proposed as a novel approach to building relationship marketing. Communication, interaction, and value creation which are the main elements of co-creation are the stages for building relational marketing. Although there is substantial research on the role of co-creation in relationship marketing, much of the work is conceptual. This study investigated the effect of the degree of co-creation on relationship marketing using the relationship quality construct, the mediating effect of satisfaction and trust, and the moderating role of outcome quality in this relationship. An experimental approach was employed to achieve those objectives. Study 1 tested the effect of the degree of co-creation on relationship quality and the mediation effect of satisfaction and trust in the relationship between the degree of co-creation and commitment. Study 2 extended the results by demonstrating the moderation role of outcome quality. The findings showed that the degree of co-creation affects relationship quality and confirm that satisfaction and trust mediate the influence of the degree of co-creation on commitment. The moderating effect of outcome quality was confirmed; when outcome quality is less than expected, the degree of co-creation affects relationship quality.

Keywords: degree of co-creation, relationship quality, outcome quality

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INTRODUCTION

Relationship Marketing (RM) research has been growing since the early 80s. The rapid development of RM research assumes that high relationship quality (RQ) enables companies to achieve effectiveness and efficiency (Hoppner, Griffith, & White, 2015). RM has been shown to increase loyalty and positive word-of-mouth (Hennig-Thurau, Gwinner, & Gremler, 2002), increased purchase intention (Lacey, Suh, & Morgan, 2007), increased approval, reducing conflict and uncertainty (Morgan & Hunt, 1994). RM research shows that this field is still growing in marketing research (Payne & Frow, 2017). Nevertheless, Sheth (2017) stated the need for revitalization of RM research.

Sheth (2017) proposed the shift of RM focus from managing customers to joint ventures with customers. The joint venture denotes value creating collaborations through mutual commitment in resources and capabilities by all parties involved. A similar view was expressed by Payne and Frow (2017) who stated that one of the priorities of RM research is to conduct RM research using the co-creation value framework. They argued that co-creation value requires the active participation of customers in sharing and contributing resources and improving relational outcomes. Co-creation value in the ‘joint sphere of responsibility’ is a critical point for strengthening customer-company relationships.

Value co-creation is a core concept in the service-dominant (S-D) logic proposed by Vargo and Lusch (2004). The S-D logic and RM perspective are compatible for the following reasons. First, these perspectives emphasize the importance of interaction with various parties as an ongoing process. Second, both perspectives use a customer-centric approach. Putting customers and their needs at the center of business processes and actions is a basic aspect of marketing philosophy (Deshpande & Webster, 1989). The essence of the RM concept is the idea that customers are unique individuals that need special treatment to foster long-term bonds. Value co-creation emphasizes the importance of creating value that suits customer needs. Therefore, value co-creation is considered a customer-centric approach (Sheth, Sisodia, & Sharma, 2000). Third, the S-D logic is in line with the RM definition which stated that RM is marketing which is seen as a relationship, network, and interaction (Gummesson, 1994).

Previous research has discussed the effect of co-creation on marketing outcomes such as increasing sales revenue (Nishikawa, Schreier, & Ogawa, 2013), increasing customization capability and company service capability (Zhang & Chen, 2008), increase purchase intention, positive word-of-mouth (Gebauer, Füller, & Pezzeri, 2013) and a decrease in customers' intention to switch to other companies (Revilla-Camacho, Vega-Vázquez, & Cossío-Silva, 2015). However, very few discuss the role of value co-creation on relationship building. This study fills the gap by investigating co-creation role in building relationships with customers, using the RQ concept. The RQ dimensions used in this study consisted of customer satisfaction, trust, and commitment.

Furthermore, it also sought to identify the boundary in which this relationship works effectively. Previous research has revealed that outcome quality moderates the relationship between co-creation and satisfaction. However, the findings are varied. For example, Bendapudi and Leone (2003) found that when outcome quality is less than expected, co-creation increases satisfaction, when participants choose to participate. However, Roggeveen, Tsiros, and Grewal (2012) stated that when an outcome does not meet expectations, co-creation negatively affects customer evaluations. In this respect, this research will contribute to three main aspects. Firstly, it unfolds the influence of the degree of co-creation on relationship quality. Secondly, it investigates the role of customer satisfaction and trust as mediators in the relationship between the degree of co-creation and commitment. Lastly, it shows the moderation of outcome quality on the relationship between the degree of co-creation and relationship quality.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Relationship Quality and Co-creation

Previous research shows that relationship quality (RQ) is widely used as the determinant of relationship marketing (Moliner, Sánchez, Rodríguez, & Callarisa, 2007; Mullins, Ahearne, Lam, Hall, & Boichuk, 2014; Wang & Hajli, 2014). Developing and sustaining quality relationships with customers generate favorable firm outcomes such as (positive) customer

word-of-mouth and sales performance (Palmatier, Dant, Grewal, & Evans, 2006). RQ is defined as the degree of appropriateness of a relationship (Hennig-Thurau et al., 2002). Relationship is evaluation of the strength of a relationship between a service provider and a customer (Crosby, Evans, & Cowles, 1990). It forms the overall impression that a customer has concerning the whole relationship. Previous research has confirmed that RQ is a high order construct consisting of customers' satisfaction, trust, and commitment (Hennig-Thurau et al., 2002; Mullins, Ahearne, Lam, Hall, & Boichuk, 2014).

Collaboration is considered a core concept in RM. Sheth and Parvatiyar (2000) suggested that RM is a continuous process involving cooperative and collaborative programs and activities with customers to create and increase mutual economic value, at a lower cost. This definition views RM as a process and emphasizes cooperation and collaboration between companies and customers. Collaboration with customers is seen as the most prudent approach in tracking changing on customers' expectations and influencing customers appropriately (Sheth, Parvatiyar, & Sinha, 2015). Collaboration means that all parties involved in a relationship are actively responsible for the success of the relationship (Gummesson, 1996).

Research on marketing channels collaboration underlies the development of RM research (Anderson & Narus, 1990; Weitz & Jap, 1995). However, very few RM studies have employed the co-creation approach. Co-creation is a form of collaboration with customers to solve problems and develop issues through an integrated perspective and approach (Grönroos, 2009). Tynan, McKechnie, and Chhuon (2010) defined co-creation as a process of value creation based on the exchange of knowledge and skills between customers and a company to build successful experiences between them.

The co-creation approach has several facets similar to RM. RM focuses on customers and customer selectivity, which entails treating individual customers differently (Sheth, 1995). Value co-creation is a customization process that actively involves customers (Kristensson, Matthing, & Johansson, 2008). During this process, the customer has customization opportunities when creating customers' solutions with a service provider. Through value co-creation, customers can obtain better service by controlling

the service process and the opportunity to engage in customization (Chan, Yim, & Lam, 2010). Value co-creation also requires communication and information exchange between providers and customers. Communication builds strong relationships through the exchange by overcoming disputes, adjusting goals, and revealing new value creation opportunities (Morgan & Hunt, 1994). Therefore, value co-creation is the opportunity for relationship building (Hoyer, Chandy, Dorotic, Krafft, & Singh, 2010).

Degree of Co-creation and Customer Satisfaction

In this study, satisfaction refers to cumulative customer satisfaction, defined as the overall satisfaction with a certain company's services and various aspects of the company (Garbarino & Johnson, 1999). Cumulative satisfaction is also mentioned as overall satisfaction, which represents an overall evaluation based on the total experience of buying and consuming products or services (Anderson, Fornell, & Lehmann, 1994). Providing services that satisfy customers has become the main goal for most of today's companies (McDougall & Levesque, 2000), co-creation with customers can increase the efficiency and effectiveness of this process (Agrawal & Rahman, 2015). Co-creation enables a customer to get better service, customization, and control (Chan et al., 2010). Active customer involvement in the co-creation process allows a customer to monitor service processes, it helps to ensure quality and achieve goals. Co-creation also allows customers to provide direct input, make choices, and collaborate to create customizations (Auh et al., 2007). Hence, the value obtained through co-creation increases customer satisfaction (Edvardsson, Tronvoll, & Gruber, 2011). Grisseemann and Stokburger-Sauer (2012) proved that the degree of co-creation positively affects a customer's satisfaction with a company. A high degree of co-creation increases the intensity of interaction between customers and providers. This high intensity gives a greater opportunity for customers to monitor, ensure, and provide input when developing the offering, thus enabling a firm's offering to better fit with customer needs. This offering ultimately increases customer satisfaction. Interactions between providers and customers also facilitate customers' learning of providers' capabilities, enabling customers to predict more precisely the services that will be received (Ennew & Binks, 1999). It is therefore reasonable to anticipate that:

H1: Customer satisfaction is higher at a high degree of co-creation than at a low degree of co-creation.

Degree of Co-creation and Customer Trust

Trust is defined as customer expectations that service providers are dependable and reliable in fulfilling their promises (Sirdeshmukh, Singh, & Sabol, 2002). Customer trust can be built and maintained through co-creation with customers (Busser & Shulga, 2018; Iglesias, Markovic, Bagherzadeh, & Singh, 2018; Shulga, Busser, Bai, Kim, & Research, 2021). Massey and Kyriazis (2007) stated that customer engagement in intensive communication during a new product co-development increases customer trust in the company. Communication and dialogue gives the opportunity for companies to form bonds of integrity and share risks with the customer community (Pralhad & Ramaswamy, 2004). Dialogue with customers is an essential element of co-creation (Rialti, Caliandro, Zollo, & Ciappei, 2018). Co-creation is also a function of interaction (Payne et al., Payne et al., 2008). Interactions between customers and employees help to build trust and form customers' perceptions about service attributes, such as reliable information and transaction efficiency; trust is also formed when customers can observe employees' knowledge and responsiveness (Chu, Lee, & Chao, 2012). Previous research in the field of co-production reveals that customer involvement in co-production increases customer trust (Chien, Wu, & Huang, 2018).

Customization is a co-creation activity (Chathoth, Altinay, Harrington, Okumus, & Chan, 2013). Customization reduces customer uncertainty and vulnerability and increases customer trust (Moorman, Zaltman, & Deshpande, 1992). The perception that a company is willing to engage in customization increases trust (Coelho & Henseler, 2012; Koufaris, Hampton-Sosa, & management, 2004). The firm's willingness to adapt to customer needs is proven to develop customer trust (Walter, Ritter, & Gemünden, 2001). Customization through co-creation also encourages customers to believe in the benevolence of the company, thereby encouraging trust (Sirdeshmukh et al., 2002). It is assumed that the higher the co-creation activities, the higher the intensity of dialogue and interaction as well as a higher opportunity for customization. Based on those studies, it is therefore prudent to hypothesize that:

H2: Customer trust is higher at a high degree of value co-creation than at a low degree of value co-creation.

Degree of Co-creation and Customer Commitment

Commitment is defined as the desire to maintain a valuable relationship (Moorman et al., 1992). This study focussed on an emotional dimension of commitment that is categorized as affective commitment, which refers to customer emotional attachment to an exchange partner (Fullerton, 2003). The co-creation experience has a positive effect on customers' emotional attachment (Hussain et al., 2020). A high degree of customer participation is proven to create emotional and relational bonds between customers and employees (Chan et al., 2010). Firms employing their co-creation capabilities affect their customers' affective commitment positively (Karpen, Bove, Lukas, & Zyphur, 2015). Interaction and dialogue between customers and sellers during co-creation help to build commitment. The quality of interactions strengthens customer relationships, which are defined in terms of trust and commitment (Palmatier et al., 2006). Personalized interactions and customized problem-solving solutions during co-creation facilitate close and strong seller-buyer relationships (Claycomb & Martin, 2001) and create a commitment to the company.

Customization requires joint investment in an exchange relationship. Customers spend time and effort expressing their needs and desires. Companies analyze those needs and desires and tailor their products/services, implying a repudiation of economies of scale; this investment by a partner to an exchange relationship is a relationship-specific asset that fosters relationship continuity (Coelho & Henseler, 2012). Gupta and Zeithaml (2006) proved that customization affects customer commitment. A customized product is viewed as more attractive, appealing, and positive than a non-customized product, thereby increasing affective attachment and causing a higher perceived cost and stronger intention to stay with the offering. A combination of the offering's attractiveness and the investment in the effort and time into customized products through co-creation increases customer commitment to the offering. Based on these studies, a higher degree of co-creation is presumed to lead to a higher intensity of interaction, dialogue, and collaboration, yielding an offering that fits with customer desires, hence, fostering stronger commitment. Drawing from those studies, it is reasonable to suggest that:

H3: Customer commitment is higher at a high degree of co-creation than at a low degree of co-creation.

Mediation of Customer Satisfaction and Trust

The relationship among customer trust, satisfaction, and commitment has been studied as dimensions that promote relationship outcomes in the form of loyalty and positive word-of-mouth (Hennig-Thurau et al., 2002). This relationship varied across studies. Previous research has demonstrated that customer trust is the antecedent of customer satisfaction (Macdonald, Wilson, Martinez, & Toossi, 2011; Razzaque & Boon, 2003; Swanson, Davis, & Zhao, 2007). However, several studies also demonstrated that customer satisfaction is an antecedent of customer trust (Sanchez-Franco, 2009; Ulaga & Eggert, 2006; Van Vuuren, Roberts-Lombard, & Van Tonder, 2012). Geyskens, Steenkamp, and Kumar (1999) confirmed that customer satisfaction reduces conflicts, minimal conflicts increase customer confidence, and trust increases commitment. Trust is viewed as the main antecedent of commitment (Gupta & Zeithaml, 2006). Individuals cannot be committed to a company unless they believe in the company's ability to meet their expectations (Aurier, Aurier, N'Goala, & N'Goala, 2010).

Value co-creation allows customers to obtain better service quality, customization, and control (Chan et al., 2010). Interaction and collaboration through value co-creation allow customers to articulate their desires and, ultimately, create products that meet their desires and lead to their satisfaction. In turn, this customer satisfaction increases customer trust in the company. Geyskens et al. (1999) showed that satisfaction is the antecedent of trust. Ulaga and Eggert (2006) demonstrated that customer trust is a mediator of customer satisfaction and customer commitment to a company; customer confidence ultimately increases customer commitment to the company. It is therefore, suggested that:

H4: Customer satisfaction and trust mediate the relationship between the degree of co-creation and commitment.

The Role of Outcome Quality

Outcome quality refers to the outcome of the service act or what customers have received from their interactions with a company (Gupta

& Zeithaml, 2006). Previous research has revealed that outcome quality influences customer satisfaction (Baker & Crompton, 2000; Grönroos, 2008), trust (Bell & Eisingerich, 2007), and customer commitment (Wetzels, De Ruyter, & Van Birgelen, 1998). In this study, outcome quality refers to the quality of an outcome from the collaboration between companies and customers. Previous studies have demonstrated that co-creation decreases self-serving bias (Bendapudi & Leone, 2003). Self-serving bias refers to an individual's tendency to take personal responsibility for desired outcomes but attribute responsibility to others for undesirable outcomes (Campbell, Sedikides, Reeder, & Elliot, 2000; Miller & Ross, 1975). Co-creation encourages individuals to take responsibility for the outcome even when the outcome is less than expected, hence co-creation is decreased self-serving bias (Bendapudi & Leone, 2003; Troye & Supphellen, 2012).

Prahalad and Ramaswamy (2004) stated that customers share the responsibility for the risks that they consciously accept during co-creation. Thus, customers involved in co-creation are more tolerant of either positive or negative results. This phenomenon was demonstrated in Bendapudi and Leone (2003). It shows that when outcome quality is less than expected, customers who participate in co-creation have higher satisfaction than non-participating customers. This result demonstrates that participants accept responsibility for a less than expected outcome quality by not blaming the company, or in other words participating in co-creation decreases self-serving bias. When the co-creation outcome is less than expected, customers attribute this outcome to themselves (Heidenreich, Wittkowski, Handrich, & Falk, 2015). Customers often perceive that service failure is also co-creation outcomes, when they engage in a high degree of service co-creation (Zhu, Nakata, Sivakumar, & Grewal, 2013).

Conversely, when the outcome quality is better than expected, customers who participate experience lower satisfaction than non-participants (Bendapudi & Leone, 2003). This finding demonstrates that customers' sense of responsibility and contribution to better outcome quality leads to lower satisfaction among participating customers relative to non-participating customers. Frieze and Weiner (1971) stated that in successful outcome conditions, an individual tends to attribute success to internal factors (ability and effort) compared to in failure conditions. These findings indicate that, in high outcome quality conditions, a high degree of

co-creation does not improve customer satisfaction. In this situation, the success attribution goes not only to the company but also to the customer's effort. The success attribution does not increase a customer's satisfaction with the company. Therefore, the following hypotheses were proposed.

H4a: When outcome quality is less than expected, a high degree of co-creation affects customer satisfaction.

H4b: When outcome quality is better than expected, a high degree of co-creation does not affect customer satisfaction.

Trust is a belief in the reliability and integrity of others (Grönroos, 2008). Service quality has been confirmed to influence customer trust (Chu et al., 2012). Improving service quality increases customer trust because good service quality denotes the reliability of the company. When outcome quality is better than expected, customer trust is high. In this condition, increasing the degree of co-creation does not increase trust. Customers believe that the company is reliable based on its outcome. However, if the outcome quality is lower than expected, customer trust can be increased through increasing the degree of co-creation. Increasing the degree of co-creation gives the opportunity for customers to witness partners' reliability when designing products to fit their needs. Trust is formed when customers can observe employees' knowledge and responsiveness (Chu et al., 2012). A high degree of co-creation also indicates that the customer contribution to the outcome is high. A combination of witnessing employees' ability and customers' sense of responsibility for the outcome quality leads customers to not fully attribute less than expected outcome quality as a reflection of an unreliable company. Based on the above discussion, the following hypotheses were proposed.

H5a: When outcome quality is less than expected, a high degree of co-creation affects customer trust.

H5b: When outcome quality is better than expected, a high degree of co-creation does not affect customer trust.

Value co-creation is a collaborative process (O'Hern & Rindfleisch, 2017) for creating value, which is characterized by relatively high customer contributions to the outcome. A sense of customer contribution to product development increases a customer's preference for a product. Atakan,

Bagozzi, and Yoon (2014) stated that when customers are involved in product design, they become more committed to the product. Co-creation has been shown to increase self-integration to the outcome (Troye & Supphellen, 2012). “I made it myself” effect leads to more positive customer ratings of co-creation product (Franke, Schreier, & Kaiser, 2010). Franke et al. (2010) showed that customers have higher perceived product value, even for less attractive products compared to the same products that do not involve customers. It can be said that outcome quality has a moderating effect on the relationship between co-creation and commitment.

When outcome quality is high, customer commitment is predicted to be influenced by two sources, namely, better outcome quality and the customer contribution effect. However, better outcome quality is estimated to have a more dominant effect relative to the customer contribution effect. In this condition, applying a high degree of co-creation does not affect commitment compared to a low degree of co-creation. However, when outcome quality is less than expected, a high degree of value co-creation might increase customer commitment. Co-creation has been shown to shift the failure attribution to oneself, and increase expectation and motivation for successful co-creation in the future (Sugathan, Ranjan, & Mulky, 2017). The absence of a better outcome quality leads to low commitment and employing a high degree of co-creation may result in a sense of customer contributing and, hence, increasing his or her commitment. Therefore, it was reasonable to propose the following hypotheses.

H6a: When the outcome quality is less than expected, a high degree of co-creation affects high customer commitment.

H6b: When the outcome quality is better than expected, a high degree of co-creation does not affect customer commitment.

STUDY 1

Study 1 aimed to examine the degree of co-creation effects on customer satisfaction, trust, and commitment. Study 1 also investigated the mediating effect of customer satisfaction and trust in the relationship between the degree of co-creation and commitment.

Methodology

Study 1 comprised a single factor between-subject design with two conditions for the degree of co-creation (low and high). Sixty-five academic staff members from the largest open and distance university in Indonesia voluntarily participated in the study in return for a souvenir. All participants were told that the purpose of the study was to elicit their perception of travel package booking behavior. Participants were gathered in a room and randomly assigned to one of the conditions of a degree of co-creation. They were given a scenario that was constructed to represent one of the two experimental conditions (low and high degrees of co-creation). The scenario described customer and travel agent cooperation in designing holiday travel packages. After reading the scenario, participants provided their evaluations regarding satisfaction, trust, and commitment. It was followed by a manipulation check for the degree of the co-creation scenario. The final section asked for participant demographic information.

Scenarios were carefully pretested for their realness and degree of co-creation manipulation to a population of academic staff ($n = 66$, 27 males, 39 females, with an average age of 43 years). Realness received an average rating of 7.5 ($SD = 1.638$) on a ten-point scale, anchored by 1 (“very impossible”) and 10 (“very possible”). The realness question was adopted from Yi, Natarajan, and Gong (2011), and it stated, “...how likely is the situation described in the scenario to occur in the real world.” Manipulation was measured using a ten-point scale on the extent of the degree of co-creation between customer and travel agent (1 = “low” and 10 = “high”). The question was adapted from Dong, Sivakumar, Evans, and Zou (2014) and Roggeveen et al. (2012), which stated “how much collaboration did you do with the travel agent in designing the holiday package?” The mean score of participants’ collaboration was significantly different between the two conditions, ($M_{DC\text{High}} = 7.533$; $M_{DC\text{Low}} = 4.472$; $t = 8.3$, $p = 0.000$). Therefore, the manipulation was concluded as being successful.

Satisfaction was measured using three items adapted from Grisseman and Stokburger-Sauer (2012) and Monferrer, Moliner, and Estrada (2019). Trust and commitment measurements were adapted from Hennig-Thurau et al. (2002) and they were measured using three items. All items were measured on a six-point scale, with 1 = “strongly disagree” and 6 =

“strongly agree.” Confirmatory factor analysis was conducted to evaluate the reliability and validity of the indicators. Following Fornell and Larcker (1981) constructs’ discriminant validity was tested using the Average Variance Extracted (AVE). Meanwhile, the reliability of the scales was assessed by calculating Composite Reliability (CR) and Cronbach’s alpha statistic (α). The descriptive statistics and the scale’s reliability scores are depicted in Table 1.

Table 1: Relationship Quality Scale: Descriptive Statistics, Reliability, Correlations and AVEs

Construct	Mean	SD	α	CR	1	2	3
Satisfaction	5.06	0.79	0.88	0.91	0.77	0.51**	0.70**
Trust	5.15	0.71	0.82	0.84	0.71	0.64	0.46**
Commitment	4.98	0.79	0.86	0.90	0.84	0.68	0.76

Note: The score in the left upper part of the table are squared correlation. The bold value in the diagonal are AVEs
 **p-value < 0.01

Fornell and Larcker (1981) stated that AVE values should be greater than 0.50 and higher than the squared correlations in order to support discriminant validity. As can be seen in Table 1, all measurement scales meet these criteria. Reliability was also achieved, as both the CR and Cronbach’s alpha statistics were above the threshold of 0.70 (Malhotra, 2006). Therefore, it can be concluded that the three variables were valid and reliable.

Results

The results of the independent t-test showed that the average participant satisfaction for the high degree of co-creation condition ($M_{DCChigh} = 5.372$; $SD = 0.511$) was higher than that for the low degree of co-creation condition ($M_{DCClow} = 4.720$; $SD = 0.911$), $t(46) = 3.513$, $p = 0.001$. Similarly, participant trust for the high degree of co-creation condition ($M_{DCChigh} = 5.431$; $SD = 0.461$) was higher than for the low degree of co-creation condition ($M_{DCClow} = 4.839$; $SD = 0.807$), $t(63) = 3.677$, $p = 0.000$. Average commitment also showed similar results. The average participant commitment for the high degree of co-creation condition ($M_{DCChigh} = 5.353$; $SD = 0.525$) was higher than for the low degree of co-creation condition ($M_{DCClow} = 4.570$; $SD = 0.826$), $t(63) = 4.601$, $p = 0.000$. Therefore, average customer satisfaction, trust, and commitment for the high degree of co-creation condition was higher than for the low degree of value co-creation condition. These findings supported hypotheses 1, 2, and 3. Table 2 depicts these findings.

Table 2: Degree of Co-creation Impact on Relationship Quality

Dependent Variables	Low DCC (n = 31)	High DCC (n = 34)	t-value
	Mean (SD)	Mean (SD)	
Satisfaction	4.720 (0.911)	5.372 (0.511)	3.513**
Trust	4.839 (0.807)	5.431 (0.461)	3.677**
Commitment	4.570 (0.826)	5.353 (0.525)	4.601**

Notes: *p-value < 0.05; **p-value < 0.01, DCC = degree of co-creation

Following Fernandes and Mandel (2014), a serial regression was conducted to test the mediating effect of satisfaction and trust in the relationship between co-creation and commitment using the Hayes process script (model 6). Using 5,000 bootstrap samples, this analysis revealed a positive indirect effect of the degree of co-creation on commitment through customer satisfaction and trust (95% CI: 0.123 to 1.132). Participants in the high degree co-creation condition had higher satisfaction ($\beta = 0.326, t = 3.560, p = 0.000; 95\% CI: 0.145 \text{ to } 0.507$) and, subsequently, had more trust on the company ($\beta = 0.677, t = 9.233, p = 0.000; 95\% CI: 0.530 \text{ to } 0.824$) compared to those in the low degree co-creation condition. Ultimately, these participants had higher commitment to the company ($\beta = 0.271, t = 2.323, p = 0.024; 95\% CI: 0.038 \text{ to } 0.504$). Figure 1 illustrates the relationship.

The results of Study 1 support the theoretical framework that the average of participants’ trust, satisfaction, and commitment is higher in a high degree of co-creation than in a low degree of co-creation. These results also confirm that satisfaction and trust mediate the effect of the degree of co-creation on commitment. This mediation indicated that the degree of co-creation positively affected customer satisfaction. Then, customer satisfaction positively affected customer trust and, subsequently, customer trust positively affected commitment. Therefore, hypothesis 4 was supported.

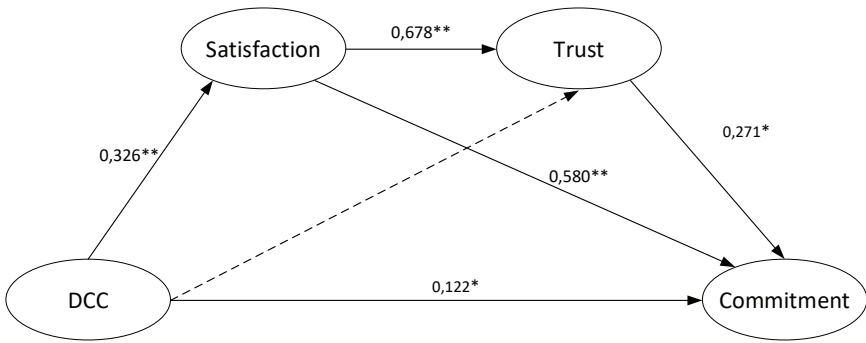


Figure 1: Degree of Co-creation Effect on Relationship Quality

Notes: *p-value < 0.05; **p-value < 0.01, DCC = degree of co-creation

STUDY 2

Study 2 aimed to evaluate the condition under which the relationship between the degree of co-creation and RQ will be more or less pronounced. Previous research has revealed that there is a bias of customer evaluation for different outcome quality. Bendapudi and Leone (2003) and Troye and Supphellen (2012) reported that co-creation had a significant effect on customer evaluation when outcome quality is low. It was also predicted that the degree of co-creation has a stronger effect on customer trust and commitment when outcome quality is low. Therefore, Study 2 elaborated the moderating role of outcome quality on the relationship between the degree of co-creation and relationship quality.

Methodology

A total of 120 participants (62 males, 58 females, with an average age of 40 years) completed the study. The participants were recruited in conditions identical to those described in Study 1. The study adopted a 2 (degree of co-creation: low vs. high) by 2 (outcome quality: less than expected vs. better than expected) between-subject design. Following Study 1 procedures, participants were gathered in a room and randomly assigned to one of the four conditions. They were asked to read the degree of co-creation scenario, followed by the outcome quality scenario. Subsequently, they evaluated satisfaction, trust, and commitment questions. Finally, the participants indicated their demographics.

The degree of co-creation was manipulated in two levels using the same scenario employed in Study 1. Adopting Bendapudi and Leone (2003) outcome quality was manipulated into two levels namely less than expected and better than expected. The outcome quality instrument was developed by conducting a literature review and interviews with six customers who had experience with purchasing travel packages from travel agencies. Interviews were conducted to discover how customers defined a travel package that met their expectations. Based on the literature review and interview, two scenarios were designed that illustrated a travel package that was less than expected and better than expected. Outcome quality was designed to be independent of the influence from the degree of co-creation by informing that the actual production of travel package had no problems (“... the tour package has been arranged properly and as promised”).

A pilot study was carried out to evaluate outcome quality manipulation by asking participants to assess the quality of a travel package (“... to what extent is the package meet your expectations?”) and was measured using a seven-point Likert scale (1 = low, 7 = high). The realness of the outcome quality scenario was measured using a seven-point Likert scale (1 = very unlikely, 7 = very likely) by asking the question, “... how likely do you evaluate the travel package as described in the scenario?” The sample consists of 99 participants (47 males, 52 females, average age of 39 years). Independent t-test on outcome quality manipulation showed that participants in the better than expected condition had higher than average ratings of outcome quality perception than those in the less than expected condition ($M_{OQhigh} = 6.333$; $M_{OQlow} = 3.982$; $t = 9.181$, $p = 0.000$). The realness results showed an average of 5.242 (SD = 1.604), which indicated that the scenarios displayed real-world situations. Therefore, it can be concluded that the scenarios worked as expected. The measurement of satisfaction, trust, and commitment were identical to that of Study 1.

Results

ANOVA test showed that the variance error for satisfaction ($F = 1.158$; $p = 0.329$), trust ($F = 1.086$; $p = 0.358$), and commitment ($F = 0.717$; $p = 0.544$) were homogeneous, therefore it can be concluded that the ANOVA assumption was met. The two-way ANOVA results on 2 degrees of co-creation (high vs. low) x 2 outcome qualities (better than expected vs. less than expected) showed the main effect of the degree of co-creation on

satisfaction ($F = 19.043$; $p = 0.000$; $M_{DCClow} = 4.067$; $M_{DCChigh} = 4.750$), trust ($F = 18.984$; $p = 0.000$; $M_{DCClow} = 4.383$; $M_{DCChigh} = 5.089$), and commitment ($F = 19.923$; $p = 0.000$; $M_{DCClow} = 3.911$; $M_{DCChigh} = 4.617$). The results also reveal the main effect of outcome quality on satisfaction ($F = 81.849$; $p = 0.000$, $M_{OQlow} = 3.700$; $M_{OQhigh} = 5.117$), trust ($F = 29.756$; $p = 0.000$, $M_{OQlow} = 4.383$; $M_{OQhigh} = 5.089$), and commitment ($F = 101.746$; $p = 0.000$; $M_{OQlow} = 3.467$; $M_{OQhigh} = 5.061$).

The analysis showed that there was a joint effect of degree of co-creation and outcome quality on satisfaction ($F = 4.684$, $p = 0.032$), trust ($F = 4.156$; $p = 0.023$), and commitment ($F = 6.583$; $p = 0.012$). The simple effect test showed that when the outcome quality was less than expected, participants in a high degree of co-creation ($M_{DCChighOQlow} = 4.211$) had higher satisfaction than those in a low degree of co-creation ($M_{DCClowOQlow} = 3.189$), ($F(1,116) = 21.308$, $p = 0.000$). However, when the outcome quality was better than expected, there was no difference on participants satisfaction between a low and a high degree of co-creation conditions ($M_{DCChighOQhigh} = 5.289$; $M_{DCClowOQhigh} = 4.944$; $F(1,116) = 2.419$, $p = 0.123$). These findings supported hypotheses H4a and H4b, and are illustrated in Figure 2.

Table 3: Moderation of Outcome Quality

Dependent Variables	Outcome less than expected		Outcome better than expected	
	Low DCC (n = 30)	High DCC (n = 30)	Low DCC (n = 30)	High DCC (n = 30)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Satisfaction	3.189 (0.953)	4.211 (0.819)	4.944 (0.991)	5.289 (0.837)
Trust	3.756 (0.978)	4.833 (0.825)	5.011 (1.041)	5.344 (0.652)
Commitment	2.911 (0.811)	4.022 (1.005)	4.911 (0.884)	5.211 (0.740)
Effect			F (1,116)	p
Degree of co-creation (DCC)				
Satisfaction			19.043	.000
Trust			18.984	.000
Commitment			19.923	.000
Outcome Quality (OQ)				
Satisfaction			81.849	.000
Trust			29.756	.000
Commitment			101.746	.000
DCC x OQ				
Satisfaction			4.684	.032
Trust			5.284	.023
Commitment			6.583	.012

Similar findings were observed for customer trust and commitment. When outcome quality was less than expected, participants in high degree of co-creation conditions had higher trust than those in low degree of co-creation conditions ($M_{DC\text{high}OQ\text{low}} = 4.833$; $M_{DC\text{low}OQ\text{low}} = 3.756$; $F(1,116) = 22.149$; $p = 0.000$). Similarly, when outcome quality was less than expected, participants had a higher commitment in high degree of co-creation conditions than in low degree of co-creation conditions ($M_{DC\text{high}OQ\text{low}} = 4.022$; $M_{DC\text{low}OQ\text{low}} = 2.911$; $F(1,116) = 24.705$, $p = 0.000$). Meanwhile, when outcome quality was better than expected, there was no difference on trust ($M_{DC\text{high}OQ\text{high}} = 5.344$; $M_{DC\text{low}OQ\text{high}} = 5.011$; $F(1,116) = 2.119$; $p = 0.148$) and commitment ($M_{DC\text{high}OQ\text{high}} = 5.211$; $M_{DC\text{low}OQ\text{high}} = 4.911$; $F(1,116) = 1.801$; $p = 0.182$) between high and low degrees of co-creation conditions. These findings supported hypotheses H5a, H5b, H6a, and H6b. These findings are illustrated in Figures 3, and 4.

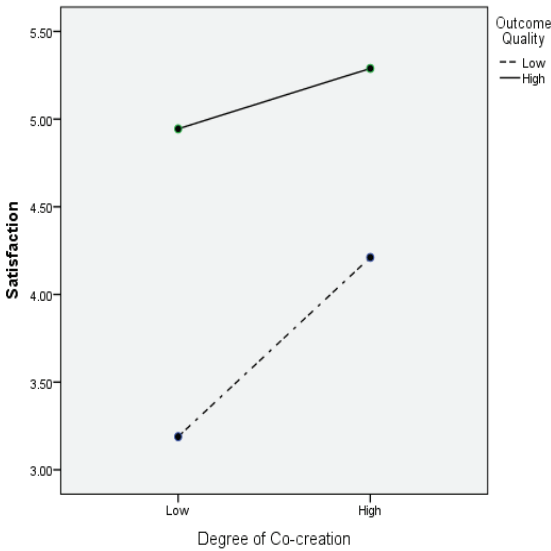


Figure 2: Customer Satisfaction as a Function of Degree of Co-creation and Outcome Quality

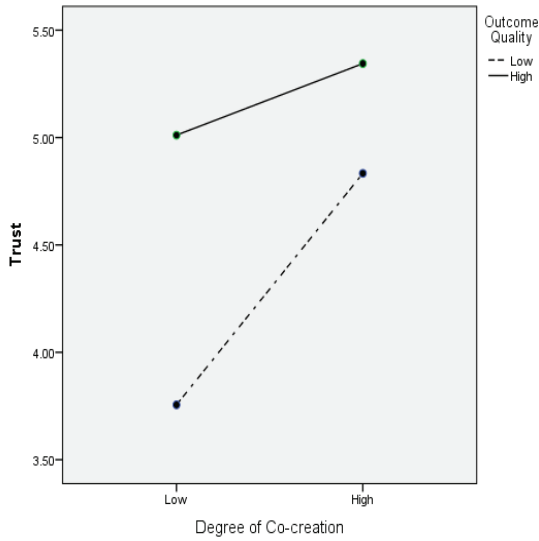


Figure 3: Customer Trust as a Function of Degree of Co-creation and Outcome Quality

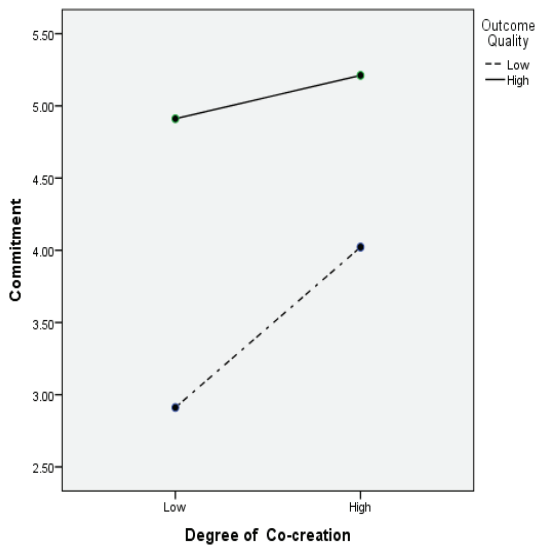


Figure 4: Customer Commitment as a Function of Degree of Co-creation and Outcome Quality

Study 2 showed that outcome quality moderates the influence of the degree of co-creation on customer satisfaction, trust, and commitment. When outcome quality was less than expected, a high degree of co-creation generated high satisfaction, trust, and commitment. When outcome quality was better than expected, the degree of co-creation had no effect on customer satisfaction, trust, and commitment.

DISCUSSION

Study 1 showed that customer satisfaction, trust, and commitment were higher in a high degree of co-creation condition than in a low degree of co-creation condition. The findings demonstrated that participants had higher trust, satisfaction, and commitment in a high degree of co-creation conditions than in a low degree of co-creation conditions. Positive interaction and engagement encourage customers to deploy more resources in order to create value for themselves (Nangpiire, Silva, & Alves, 2021). The high degree of co-creation promotes more interaction and engagement, thus it increases satisfaction, trust, and commitment. Previous studies show that a high degree of co-creation increases customer satisfaction (Devasirvatham, 2012; Grisseemann & Stokburger-Sauer, 2012; Vega-Vazquez, Revilla-Camacho, & Cossío-Silva, 2013) and customer trust (Devasirvatham, 2012; Iglesias et al., 2018). However, only a few research addressed the relationship between co-creation and commitment. For instance, Karpen, Bove, Lukas, and Zyphur (2015) stated that the company's ability to engage in value co-creation positively affects customer affective commitment. The high degree of co-creation facilitates interactions and customization, then it increases commitment. This study expanded previous research by demonstrating that increasing the degree of co-creation from low to high increases satisfaction, trust, and commitment.

Study 1 also confirmed the mediating effect of customer satisfaction and trust in the relationship between the degree of co-creation and commitment. This study showed that the effect of the degree of co-creation on commitment was mediated by customer satisfaction and trust. The degree of co-creation affects satisfaction (Grisseemann & Stokburger-Sauer, 2012; Oyner & Korelina, 2016). Then, customer satisfaction increases customer trust (Geyskens, Steenkamp, & Kumar, 1999). Finally, consumer trust

increases customer commitment (Ulaga & Eggert, 2006). This research was the first study that simultaneously demonstrated the effect of the degree of co-creation on RQ. Interaction and customer engagement during co-creation facilitate companies to design the offerings that meet customer needs, which eventually increases service satisfaction. The satisfied customer then generates trust in the company and ultimately increases customer commitment to the company. This study revealed the effect of co-creation on customer satisfaction, trust, and commitment simultaneously.

Study 2 demonstrated that outcome quality moderated the effect of the degree of co-creation on RQ. When outcome quality was less than expected, a high degree of co-creation increased satisfaction, trust, and commitment. This finding revealed that co-creation generated customers' responsibility for the outcomes even when they were less than expected. Customers who experience services failure that involve high co-creation tend to blame themselves (Heidenreich et al., 2015; Sugathan et al., 2017). Co-creation outcomes are the collaboration results between customers and producers, thus both parties are responsible for the outcome quality. When people can see the reasons for a failure, they are more willing to put blame on themselves (Mattila & Patterson, 2004). Furthermore, customer satisfaction is not affected by service failure when the origin of the failure is not from the company (Iglesias, 2009). Increasing the degree of co-creation strengthens the customer's attribution to the outcome, hence customer satisfaction, trust, and commitment are higher at a high degree of co-creation than at a low degree of co-creation.

However, this effect does not appear when the outcome quality is better than expected. The results showed that in both conditions of the degree of co-creation, participants had high satisfaction, trust, and commitment. In the better than expected condition, customers have high satisfaction, trust, and commitment because of the high-quality outcome. All parties involved in co-creation contributed to the high quality of co-creation outcome. Increasing the degree of co-creation will reinforce customer contribution to the outcome. Therefore, there is no difference in customer satisfaction, trust, and commitment between high and low degrees of co-creation. This is similar to Grisseemann and Stokburger-Sauer (2012) findings which revealed that when customers are satisfied with their co-creation performance, the effect of the degree of co-creation on satisfaction becomes insignificant.

CONCLUSIONS

This study had three aims. Firstly, it investigated the effect of the degree of co-creation on relationship quality. Secondly, it explored the mediating effect of customer satisfaction and trust in the relationship between the degree of co-creation and commitment. Lastly, it scrutinized the moderating effect of outcome quality on the relationship between the degree of co-creation and relationship quality. This study revealed that the degree of co-creation affects relationship quality. Participants in a high degree of co-creation condition had higher satisfaction, trust, and commitment than participants in a low degree of co-creation condition. The result also confirmed that satisfaction and trust mediated the relationship between the degree of co-creation and commitment. The moderating role of outcome quality on the relationship between the degree of co-creation and relationship quality was also confirmed. The effect of degree of co-creation on relationship quality was significant when the outcome quality as less than expected.

This result has practical implications for managers. The collaboration between customers and companies through co-creation increases relationship quality; therefore, companies must facilitate this collaboration by creating a supportive atmosphere, such as arranging layouts that support interactions between customers and employees. Companies need to be careful when applying a co-creation strategy with customers. The characteristics of products, services, and possible outcomes must be considered. When companies believe that the quality of their outcome is better than expected, increasing the degree of co-creation to a higher level is not an attractive strategy. A high degree of co-creation strategy is more attractive for companies whose service outcomes are influenced by several parties, hence, creating the possibility for a service outcome lower than expected.

Although this study revealed new findings in the relationship between co-creation and relationship quality, several limitations need to be considered. This study used travel packages purchases context, which is characterized by high customer involvement. Studies need to be conducted on several types of services with different nature of customer involvement to reinforce these findings. Second, this research did not consider customers' expertise. Co-creation implies involving customer skills and knowledge in developing customer solutions. Effective co-creation requires sufficient

customer skills and knowledge. Customers who are confident in their skills and knowledge react more positively to co-creation with suppliers than do customers who believe that they have limited skills and knowledge. Future studies need to include these variables when expanding the understanding of the role of co-creation in influencing relationship outcomes.

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