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## **SERVICE QUALITY AS AN ANTECEDENT TO ENGAGEMENT IN CO-CREATION OF VALUE IN THE HEALTHCARE INDUSTRY**

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### **Abstract**

The purpose of this research was to examine service quality as an antecedent to customer engagement in co-creation of value in the European healthcare industry. Determining and examining the factors that encourage customers to collaborate with organizations is important because companies are having difficulty engaging their customers. Successful engagement has been found to result in increased loyalty, trust, competitive advantages, and performance. To examine the relationship, six hypotheses were developed based on an overall measure of service quality and each component of service quality. One hundred-thirty participants, who had recently experienced health care services, completed a survey to address the hypotheses. Pearson correlations and multiple regression analyses were used to examine the data. A significant and positive relationship with overall service quality and customer engagement in co-creation of value was determined. The results of this study will allow business leaders to develop improved strategies when attempting to engage customers in co-creation of value. This is the first study to examine service quality as a customer engagement factor in co-creation of value. As such, the research adds to the existing knowledge base.

**Keywords:** Co-creation of Value, Service Quality, Health Care Industry

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### **1. Introduction**

Health care providers in Europe, as well as most of the rest of the world, are experiencing a competitive market. Even in countries with socialized programs, patient choice is an important part of the programs. For most services, the customer has multiple provider options available to them (Vrangbaek *et al.* 2012). It is important that health care providers achieve a competitive advantage to survive in the market. Gaining competitive advantage can also have the effect of improving the customer experience because it causes improvements throughout the industry through competition (Ophof, 2013). In many cases, a competitive advantage can be obtained through improving customer experience or innovations (Banyte *et al.* 2014). Co-creation of value is one method that can initiate these advantages. Co-creation of value is collaboration between a company and its customers for the purpose of creating value. For example, a health care provider may create an online interface where customers can provide insights into what they may perceive as improvements to the organization. From there, the organization can

collaborate with the group on how to implement, thereby creating value for both the customer and the organization.

The concept of co-creation of value is used in many venues, such as point of sale, business to business, online groups, and manufacturer to consumer. While the concept seems simple, organizations have difficulty engaging customers in co-creation of value (Handrich and Heidenreich, 2013). It is the overarching purpose of this study to provide organizations insight into possible methods to increase the success of engagement efforts. Specifically, service quality has been examined as an engagement factor for customer engagement in co-creation of value. This adds to the knowledge about engagement as it has previously gone unstudied.

## **2. Literature review**

### **2.1. Value**

The definition of value varies in the existing literature. Some determine value as a comparison between items where the actual value of the item is determined by an individual's wants and needs as well as the situation of the individual (Prebensen *et al.* 2013). If an individual needs the item at a specific point in time, the value of that item to that individual increases. Therefore, the value can change at different points in time depending on the need, wants, and alternate items available. Others consider value as the benefits that customers receive from a product or service during its use (Elliot, 2012). The perceived value by the individual when the item is received may not be the actual value determined by the individual upon use of the item or service (Pinho *et al.* 2014). Still, others determine value as the total benefit to the individual throughout the process of procurement and use (Grönroos and Voima, 2013). Here, value can be either positive or negative depending on the user's net benefit. These definitions vary by where and when the benefit is received, but all agree that the individual user determines the value level.

Elliot (2012) describes the value within co-creation of value as value-in-use. That is, some individuals gain value from the process of collaboration and some receive value from the end result, or both. In co-creation of value, because the customer is involved in the value creation process, the customer has already determined some value in the result. This is in contrast to a company producing products or services without customer involvement, determining the item has value, and then releasing the item to consumers. In this case, it is more likely that a customer may not find value in the item, and is known as value-in-exchange (Grönroos and Voima, 2013). The main difference between value-in-use and value-in-exchange is that value-in-use is determined solely by the customer (Yngfalk, 2013). As value-in-use requires a customer determination, it is the accepted value type used within co-creation of value.

### **2.2. Co-creation of value**

Co-creation of value is the collaboration of an organization and its customers for the purpose of creating value (Nysveen and Pedersen, 2014). Prahalad and Ramaswamy (2004) were the first to introduce the concept of co-creation of value in scholarly literature. They determined that value could be created quicker and higher in magnitude if the customer was part of the value creation process from the start. The idea of customer involvement was not new, but it was never studied or improved empirically in the past. The service-dominant logic, as introduced by Vargo and Lusch (2004), describes a marketing switch from product centrality to service centrality. Most competitive products on the market are similar, which reduces the appeal of any individual company's product. Therefore, the actual competition is in the services surrounding that product. Service sets the company apart from its rivals except in rare cases, like an innovation. Co-creation of value can be considered as a part of the service-dominant logic as a basic tenant of the logic is that the customer always determines value. As such, co-creation of value requires effort from both suppliers and customers through sharing knowledge and solving problems towards an end goal that has value (Paswan *et al.* 2014; Vega-Vazquez *et al.* 2013). Since value can be found both in the process and the outcome, co-creation of value also includes the

entire process, not just the outcome of the process (Galvagno and Dalli, 2014; Jürgens and Leuenberger, 2014).

Co-creation of value brings much value to organizations and customers. Frow *et al.* (2015) found benefits to the organization to include better access to resources, enhancement of experiences by customers, customer commitment gain, new item creation, reduction of costs, reduction of development time, and enhanced branding. Through co-creation of value, knowledge from the customer is transferred to the organization (Ind *et al.* 2013). This allows an acceleration of the development process leading to better organizational decisions, lower costs, and innovations. The customer benefits as well through new and better products are more likely to fit their needs. Those customers who directly collaborate can benefit through knowledge gain and social interaction (Jaakkola and Alexander, 2014; Nätti *et al.* 2014). Co-creation of value accelerates knowledge development and innovation leading to an acceleration of societal value (Vargo *et al.* 2008).

### **2.3. Customer engagement in co-creation of value**

The factors that encourage customers to engage in co-creation of value can be classified as intrinsic or extrinsic. Extrinsic factors satisfy some external need and have been found to be less effective and more costly than intrinsic factors (Fernandes and Remelhe, 2016; Füller, 2010). Fernandes and Remelhe (2016) examined financial engagement factors against intrinsic factors and found that there was a relationship with engagement but it was much less effective than intrinsic factors. This was confirmed by similar research by Füller (2010). Other researchers such as Ophof (2013) and Constantinides *et al.* (2014) also examined both intrinsic and extrinsic factors, again finding that financial reward had little effect on engagement. After much research, it has been determined that extrinsic factors are much less likely to encourage engagement. Extrinsic factors are also more expensive as some sort of financial reward must be available.

Intrinsic factors that satisfy some internal need for engagement appear to be much more effective. Fernandes and Remelhe (2016) examined knowledge, enjoyment, curiosity, and experience as engagement factors and found each to have a significant and positive relationship with engagement. Banyte *et al.* (2014) determined that communication has a strong positive relationship with engagement. Füller (2010) examined curiosity as an engagement factor and found it to be effective. Roberts *et al.* (2014) found enjoyment, improvement of products, product fondness, and social aspects to be factors in engagement in co-creation of value, in a qualitative study. These results agree with the research of Jürgens and Leuenberger (2014) who found effective engagement factors in enjoyment and curiosity. Ophof (2013) examined the factors of learning, hedonic, and personal aspects and found a positive relationship with engagement. This was supported by similar research by Constantinides *et al.* (2014). A want to improve products and services was also found to encourage engagement by Jaakkola and Alexander (2014). These intrinsic factors plus trust in the company or collaborative groups have been found to be effective engagement factors (Ind *et al.* 2013).

Research pertaining to engagement in co-creation of value, specifically in the health care industry, is meager. Zhang *et al.* (2015) developed a model for creating value through gaining satisfaction feedback from patients in an attempt to help health care organizations engage customers in co-creation of value. Nambisan and Nambisan (2009) developed four models for engagement based on open source, support groups, partnership, and diffusion. Organizations can use these models to engage their customers to collaborate, however, they do not include factors that encourage customers to engage in the first place. Russo *et al.* (2019) recently examined the use of patient empowerment to increase engagement in co-creation of value and found it to be effective. Other research pertaining to co-creation of value in the health care industry pertains to the benefits of the outcomes rather than engagement strategies.

## **2.4. Service quality**

There is some disagreement in the literature of the meaning of service quality (Cronin and Taylor, 1992). The most widely accepted definition of service quality is based on a gap between individuals perceived quality judgement and what they expected. Others claim that service quality is based more on a perception and that customer satisfaction and service quality are equitable (Bell, 2017). For this research, the accepted definition of service quality will be that service quality is a customer attitude towards an organization based on a comparison between expectations and actual results (Parasuraman *et al.* 1991). This definition means that the gap between what a customer expects in a service and what they perceive from the organization determines the quality of service. Using this definition, service quality consists of five constructs: reliability, assurance, tangibles, empathy, and responsiveness. Each of these constructs represents an area of service that individuals base judgement of an organizations service on. Overall service quality is the combination of the individual's judgements of each of the constructs.

## **3. Research questions, hypotheses, and method**

### **3.1. Research question and hypothesis**

The main research question asked: If, and to what degree, is there a relationship between overall service quality and customer engagement in co-creation of value in the health care industry? This question was addressed through Hypothesis 1 and examines overall service quality, using a combination of the constructs of service quality.

*H<sub>1</sub>: There is a relationship between service quality (comprised of reliability, assurance, tangibles, empathy, and responsiveness) and customer engagement in co-creation of value among European consumers who have experienced health care services.*

The secondary research questions each addressed a different component of service quality and asked: If, and to what degree, is there a relationship between each construct of service quality (reliability, assurance, tangibles, empathy, and responsiveness) and customer engagement in co-creation of value among European consumers who have experienced health care services? The following hypotheses were developed to address this secondary question:

*H<sub>2</sub>: There is a relationship between the reliability component of service quality and customer engagement in co-creation of value among European consumers who have experienced health care services.*

*H<sub>3</sub>: There is a relationship between the assurance component of service quality and customer engagement in co-creation of value among European consumers who have experienced health care services.*

*H<sub>4</sub>: There is a relationship between the tangibles component of service quality and customer engagement in co-creation of value among European consumers who have experienced health care services.*

*H<sub>5</sub>: There is a relationship between the empathy component of service quality and customer engagement in co-creation of value among European consumers who have experienced health care services.*

*H<sub>6</sub>: There is a relationship between the responsiveness component of service quality and customer engagement in co-creation of value among European consumers who have experienced health care services.*

### **3.2. Method**

#### **3.2.1. Population and sample selection**

The population targeted for this study was Europeans who had experienced health care services. The health care industry was chosen because there had been no previous examination of the industry with respect to service quality and co-creation of value. All of Europe was included in the sample even though the health care systems vary greatly from

country to country. The instruments used in this study require variation in quality of service to obtain optimal results (Bell, 2017). Sampling from all of Europe achieved this variation. To achieve an 80% power, sample size was estimated for each planned statistical operation. It was determined that a minimum sample size of 125 was required. A sample of 130 was achieved using an online survey venue. The service delivered survey invites possible participants who were residing in the European countries of Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Gibraltar, Greece, Hungary, Ireland, Italy, Luxembourg, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, and Switzerland.

Prior to the survey, participants were asked their gender, race, age, and the type of health care provider they had most recently visited. The participants indicated that there were 38 females (29%), 91 males (70%), and one (1%) indicated as other. There were 83 Caucasians (64%), 18 Hispanic (14%), 10 Asian (8%), 9 multi-racial (7%), one Indigenous (1%), one African (1%), and 8 indicated as other (6%). Fifty-seven had recently visited a primary care physician, 35 visited a specialist, 24 had been hospitalized, and 14 had visited an urgent care facility. The mean age of the participants was  $M = 30.23$  ( $SD = 9.52$ ,  $Min = 16$ ,  $Max = 58$ ).

### **3.2.2. Measures**

Data for the independent variables of service quality and its components were collected by using the SERVQUAL instrument (Parasuraman *et al.* 1991). The components of service quality include reliability, assurance, tangibles, empathy, and responsiveness and are also components of the SERVQUAL instrument. Each subscale component is measured and combined to provide an overall service quality measure. The instrument develops a gap measure between the perceived and expected levels of service an individual receives. The instrument has been thoroughly tested previously and is considered both valid and reliable.

Data for the dependent variable, customer engagement in co-creation of value, were obtained using the customer engagement behavior instrument (Yu *et al.* 2015). The instrument is the only measure considered valid and reliable that measures engagement in co-creation of value, specifically. Both instruments were combined in a single survey and delivered to participants through an online interface.

### **3.2.3. Data analysis procedures**

The data were prepared for analysis by examining for all assumptions for the expected procedures and found suitable for analysis (Meyers *et al.* 2013; Puth *et al.* 2014). Hypothesis 1 was examined using a Pearson correlation and multiple regression analysis. In this case, the independent variable was overall service quality consisting of a combination of the subscales offered in the SERVQUAL instrument. This was examined for any relationship with the dependent variable, customer engagement in co-creation of value, as measured by the customer engagement behavior instrument. Statistical significance was held to 0.05 in both tests.

Hypotheses 2 through 6 focused on the predictive power of the individual components of service quality. Those hypotheses were tested using Pearson correlations between each service quality component and customer engagement. In addition, part correlations from the multiple regression analysis evaluated the degree to which each service quality component predicted unique variance in customer engagement.

### **3.2.4. Data Reliability and validity**

Cronbach's alpha coefficient was calculated for overall and subscale SERVQUAL scores and customer engagement behavior scores. The minimum alpha coefficient calculated was 0.87. Therefore, the internal consistency reliability of the instruments can be considered good or better (Heale and Twycross, 2015).

## **4. Results**

Table 1 shows Pearson correlations between all study variables.

**Table 1. Pearson correlation results between all variables.**

Variable	1	2	3	4	5	6	7
1. Engagement	--						
2. Reliability	0.31***	--					
3. Assurance	0.25***	0.77***	--				
4. Tangibles	0.11	0.39***	0.30***	--			
5. Empathy	0.27***	0.74***	0.79***	0.21**	--		
6. Responsiveness	0.26***	0.81***	0.76***	0.31***	0.79***	--	
7. Overall SQ	0.30***	0.91***	0.89***	0.51***	0.88***	0.91***	--

**Note:**  $n = 130$ . \*, \*\* and \*\*\* represent 10%, 5% and 1% significance level respectively.

#### 4.1. Hypothesis 1

To address hypothesis 1, a Pearson correlation between overall service quality as determined by the SERVQUAL instrument and engagement in co-creation of value was performed. This was found to be statistically significant with  $r(130) = 0.30$ ,  $p < 0.001$  (See Table 1). The correlation was found to be of moderate strength (Cohen, 1988). It was determined that as service quality increases, customer engagement in co-creation of value also tends to increase, thereby, hypothesis 1 was accepted.

Hypothesis 1 was also addressed using standard multiple regression analysis. In this case, the independent variable was the overall service quality score as determined by a combination of its constructs within the SERVQUAL instrument. Customer engagement in co-creation of value was the dependent variable as measured by the customer engagement behavior instrument.  $R^2 = 0.10$ ,  $F(5, 124) = 2.81$ ,  $p = 0.019$  meaning that  $R^2$  was found to be significant. Further, this indicates that 10% of the variance in customer engagement in co-creation of value was explained by overall service quality. Table 2 shows the results of the multiple regression analysis.

**Table 2. Results for linear regression with overall service quality predicting engagement in co-creation of value and part correlations**

Variable	Coefficient	Part Correlation
Reliability	0.25 (1.64)	.139
Assurance	-0.02 (-0.12)	-.010
Tangibles	-0.00 (-0.03)	-.003
Empathy	0.10 (0.66)	.056
Responsiveness	-0.02 (-0.13)	-.011
$R^2$	0.10	

**Note:**  $F(5,124) = 2.81$ ,  $p = .019$ . \*, \*\* and \*\*\* represent 10%, 5% and 1% significance level respectively. t statistics in parentheses.

The regression analysis resulted in a statistically significant overall service quality relationship with customer engagement. However, each of the constructs of service quality (reliability, assurance, tangible, empathy, and responsiveness) did not reach significance. This is because each construct is predicting the same, or nearly the same, portion of the variance in customer engagement. To achieve a significant overall service quality result means that at least some of the constructs also have a significant relationship with customer engagement. Hypotheses 2 through 6 explore each of the individual construct relationships with customer engagement, separately.

#### **4.2. Hypothesis 2**

To address hypothesis 2, a Pearson correlation between the reliability component of service quality as determined by the SERVQUAL instrument and engagement in co-creation of value was performed (See Table 1). The correlation was found to be of moderate strength and statistically significant,  $r(130) = 0.31$ ,  $p < 0.001$ , indicating that reliability predicted 9.6% of the variance in customer engagement (Cohen, 1988). It was determined that as the reliability component of service quality increases, customer engagement in co-creation of value also tends to increase, thereby, hypothesis 2 was accepted.

The ability of the reliability component of service quality to predict unique variance in customer engagement (variance not predicted by the other four service quality components) was evaluated using the squared part correlation associated with reliability in the standard multiple regression analysis (see Table 2). That squared part correlation was 0.0193, indicating that 1.93% of the variance in customer engagement was uniquely predicted by reliability.

#### **4.3. Hypothesis 3**

To address hypothesis 3, a Pearson correlation between the assurance component of service quality as determined by the SERVQUAL instrument and engagement in co-creation of value was performed (See Table 1). The correlation was found to be of small effect size and statistically significant,  $r(130) = 0.25$ ,  $p < 0.001$ , indicating that assurance predicted 6.3% of the variance in customer engagement (Cohen, 1988). It was determined that as the assurance component of service quality increases, customer engagement in co-creation of value also tends to increase, thereby, hypothesis 3 was accepted.

The ability of the assurance component of service quality to predict unique variance in customer engagement (variance not predicted by the other four service quality components) was evaluated using the squared part correlation associated with assurance in the standard multiple regression analysis (see Table 2). That squared part correlation was 0.0001, indicating that 0.01% of the variance in customer engagement was uniquely predicted by assurance.

#### **4.4. Hypothesis 4**

To address hypothesis 4, a Pearson correlation between the tangibles component of service quality as determined by the SERVQUAL instrument and engagement in co-creation of value was performed. This was not found to be statistically significant with  $r(130) = 0.11$ ,  $p = 0.217$  (See Table 1). It was determined that there is no correlation between the tangibles component of service quality and engagement in co-creation of value and hypothesis 4 was not accepted.

#### **4.5. Hypothesis 5**

To address hypothesis 5, a Pearson correlation between the empathy component of service quality as determined by the SERVQUAL instrument and engagement in co-creation of value was performed (See Table 1). The correlation was found to be of small effect size and statistically significant,  $r(130) = 0.27$ ,  $p < 0.001$ , indicating that empathy predicted 7.3% of the variance in customer engagement (Cohen, 1988). It was determined that as the empathy component of service quality increases, customer engagement in co-creation of value also

tends to increase, thereby, hypothesis 5 was accepted.

The ability of the empathy component of service quality to predict unique variance in customer engagement (variance not predicted by the other four service quality components) was evaluated using the squared part correlation associated with empathy in the standard multiple regression analysis (see Table 2). That squared part correlation was 0.0031, indicating that 0.31% of the variance in customer engagement was uniquely predicted by empathy.

#### **4.6. Hypothesis 6**

To address hypothesis 6, a Pearson correlation between the responsiveness component of service quality as determined by the SERVQUAL instrument and engagement in co-creation of value was performed (See Table 1). The correlation was found to be of small effect size and statistically significant,  $r(130) = 0.26$ ,  $p < 0.001$ , indicating that responsiveness predicted 6.8% of the variance in customer engagement (Cohen, 1988). It was determined that as the responsiveness component of service quality increases, customer engagement in co-creation of value also tends to increase, thereby, hypothesis 6 was accepted.

The ability of the responsiveness component of service quality to predict unique variance in customer engagement (variance not predicted by the other four service quality components) was evaluated using the squared part correlation associated with responsibility in the standard multiple regression analysis (see Table 2). That squared part correlation was 0.0001, indicating that 0.01% of the variance in customer engagement was uniquely predicted by responsibility.

### **5. Summary of findings and conclusion**

The overall aim of this research was to add to the knowledge about factors leading to customer engagement in co-creation of value, so practitioners may find it easier to collaborate with customers. Engaging customers in co-creation of value has been found to be difficult for organizations (Handrich and Heidenreich, 2013). A better understanding of the factors that encourage engagement may make engagement easier (Banyte *et al.* 2014). Specifically, the purpose of this research was to examine any relationship between service quality, each of its constructs, and customer engagement in co-creation of value. No known previous research has been performed to determine a possible relationship.

This research has shown that service quality has a significant and positive relationship with engagement in co-creation of value. The results also show that the reliability, assurance, empathy, and responsiveness constructs of service quality have a significant positive relationship with engagement in co-creation of value. This means as service quality or any of its components, except tangibles, increases, engagement in co-creation of value also tends to increase. The tangibles construct of service quality was found to have no relationship with engagement in co-creation of value. This study contributes to the knowledge base because the results of this study were not previously known.

#### **5.1. Practical implications**

The research results show that service quality has a positive relationship with engagement in co-creation of value. Therefore, service quality may be a factor preceding engagement in co-creation of value. By examining one potential engagement factor, service quality, and determining that a relationship does exist, practitioners can confidently apply the results to engagement strategies. However, even though there is a significant positive relationship between service quality and engagement in co-creation of value, strategy developers should keep in mind that service quality is only one engagement factor. Strategies should be developed using this research along with other research involving different engagement factors. Of course, increasing service quality has benefits to the organization other than engagement encouragement (Danaher and Rust, 2018). It is hoped that this research can augment



engagement strategy building and gives one more reason for organizations to strive for the best service possible.

It is interesting that the tangibles component of service quality was not found to have a significant relationship with engagement in co-creation of value. Previous research has found that this component does have a significant relationship (Bell, 2017). It is possible that within the health care industry that customers are concerned with reliability, quality of the staff and procedures, and trust, more than they are concerned with the building and equipment aesthetics. The result may be industry specific.

Through this study, the knowledge of factors encouraging customers to engage in co-creation of value has been extended. It has been shown that as overall service quality (and four of its constructs) levels increase, so does engagement in co-creation of value. Significant results were obtained that exceeded the targeted statistical power providing robust results that practitioners can confidently use in engagement strategy development. Developing these strategies is important as companies that do not collaborate with customers will be at a disadvantage to those organizations that develop value with their customers.

## **5.2. Future implications**

When customers are engaged in co-creation of value with an organization, there are benefits to both parties along with society in general. New and improved products and services can improve living standards across the world. The research presented in this paper constitutes a small addition to the ability for organizations to develop effective strategies towards engagement.

Collaboration with consumers may improve due to the results of this study. Targeting the correct customers, and those most likely to enter collaboration, is important to the success and costs involved in engaging them. This specific research steers organizations to approach customers that have a high level of perceived service quality with the company. Previously, companies may have applied an overall approach by targeting all customers, resulting in higher costs to engage and lower retention rates. In the future, organizations may combine service quality and engagement strategies, striving to increase both by leveraging the concepts together. This could result in lower costs and greater effectiveness. The future strategies created by organizations should also include other engagement factors for even better effectiveness and cost reduction. By showing that service quality has a positive relationship with engagement in co-creation of value, this study has contributed to implementation and maintenance strategies. As such, future engagement strategies will be more effective if this new knowledge is applied.

## **5.3 Recommendations and limitations**

Organizational leaders can use the results of this study to help create engagement strategies for their customers. However, the limitations of the study should be considered when developing these strategies. The sample was taken in a convenience manner, meaning that participants self-selected themselves to participate once presented with an invite. Self-selection bias can result from this type of sampling and may influence results (Oswald *et al.* 2014). Also, a specific group of individuals participated in this study, those that reside in Europe and have experienced health care services. The results of this study may not be generalizable beyond the health care industry.

Service quality has now been shown to have a significant and positive relationship with engagement in co-creation of value. The area of study requires more research as the resulting engagement is important. Replication studies could be performed in other industries, such as the culinary, travel, and dentistry industries, to confirm results and gain better generalization. There may be more factors that lead to engagement, such as culture, economic condition, and education. These other factors should be researched to determine any relationship they may have with engagement in co-creation of value. Additional knowledge towards these recommendations will further refine efforts to engage customers in co-creation of value.

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