Empirical online big data analysis shopping behaviour based on fsQCA approach

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Abstract: Social media networks flourishing make electronic store (e-store) to become wider variety of multimedia services. In order to provide customers with more high service quality, we must understand the key factors of customer shopping behaviour that improve e-store performance by reference. In order to understand the impact of business relationship between the customer and the e-store, we use fuzzy set qualitative comparative analysis (fsQCA) method to analyse the framework of the study with empirical data and conclude three directions as below: 1) the results of fsQCA reveal that situations combining promising positive reliability, responsiveness, assurance, environment quality, delivery quality and outcome quality can lead to a higher level of customer satisfaction and affective commitment; 2) the results exhibit that customers are more willing to purchase again if they experience positive service satisfaction or highly affective commitment; 3) positive affective commitment supports customer advocacy intention.

Keywords: social media; e-store; multimedia services; service quality; fuzzy set qualitative comparative analysis; fsQCA.


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This paper is a revised and expanded version of a paper entitled ‘A study of identifying online shopping behavior by using fsQCA method’ presented at 5th International Conference on Frontier Computing – Theory, Technologies, and Applications, Tokyo, Japan, 13–15 July 2016.

1 Introduction

Due to the rapid rise of online store make many forms of commercial activity to follow changes. In order to improve electronic store (e-store) competitiveness that not only develops new customers but also retain existing customers. Because the internet has the ubiquitous characteristics, that transfer product information to the consumer fast that change the traditional store business and trading patterns. The majority of the consumers are through the information technology (IT) (Drigas et al., 2009) and internet that can get more rapid and convenient services, but also reduce the degree of asymmetry of products information. In order to provide better services to meet customer needs, and how to attract customers that is a key issues. Service quality is an important factor to affect the relationship between e-store and customer. That is a positive impact on customer satisfaction and customer loyalty. Therefore, improving service quality and build
customer loyalty that can stimulate to purchase intention of customers. That is an important indicator of the profitability of the e-store.

This study examines e-stores, in light of the impact of service quality on customer loyalty antecedents and loyalty behaviour, to find out whether the dimension of service quality affects customer loyalty-related intentions. Among previous studies of service quality, including discussions of both traditional service quality and electronic service quality, many studies have assessed the overall service quality or dimensions of service quality. However, various dimensions of service quality still influence antecedents of customer loyalty and loyalty behaviour differently. In this study, we select appropriate research methods based on research motivation and purpose to explore the influence of service quality dimensions on customers’ antecedents of loyalty and behaviour.

We use the fuzzy set qualitative comparative analysis (fsQCA) method for advanced research of the experimental outcome of the combined cause-effect situations. Such finding may help explain some of macro-society phenomena and the different effects of the results based on the influence of causal relationships.

2 Literature review

2.1 Service quality models

2.1.1 PZB SERVQUAL model

Since being proposed by Parasuraman et al. (1985), SERVQUAL is a good way to measure service quality. Parasuraman et al. (1985) conducted exploratory research and proposed five gaps of perceived service quality: consumer expectation – perception gap (Gap1), management perception – service quality specification gap (Gap2), service quality specification – service delivery gap (Gap3), service delivery – external communications gap (Gap4) and expected service – perceived service gap (Gap5), respectively. Later, in order to avoid overlaps between dimensions, the aforementioned dimensions were simplified into five dimensions:

1. reliability
2. responsiveness
3. assurance
4. empathy
5. tangibles, in the SERVQUAL model also developed (Parasuraman et al., 1988).

2.1.2 Quality of electronic services model

We may indeed draw upon the notions of effectiveness and efficiency from the present definition, which bring to mind that not only the process of service delivery has to be considered (efficiency) but also the outcome (effectiveness). On the basis of these insights and in view of the aim to capture the domain in a broader sense, Fassnacht and Koese (2006) defined quality of electronic services (QES) as the degree to which an electronic service is able to effectively and efficiently fulfill relevant customer needs. QES differs from traditional service quality in two important ways. First, there is the self-
service character of electronic services. Second, the service environment is largely created by specific design features of the graphic user interface (Fassnacht and Koese, 2006). Fassnacht and Koese (2006) briefly outlined the service quality framework proposed by Rust and Oliver (1994), which serves as a theoretical reference for their conceptualisation. According to the framework of Rust and Oliver (1994), three dimensions of service quality have to be considered: service environment, service delivery, and service product. In a traditional service setting, service environment relates to the physical ambiance of the service encounter. Service delivery is viewed as the process of interaction between employees and customers. Service product is the core benefit that customers receive after service delivery, that is, the outcome of the service exchange. As Rust and Kannan (2002) have shown, these three dimensions are also applicable to electronic services: The appearance of the user interface on a website represents the service environment. Service delivery is characterised by the interaction of the customer with the user interface during service usage. Finally, service product may also be applied to electronic service as an outcome dimension. Evidence suggests that service quality dimensions should be viewed as higher-order constructs that have various sub-dimensions (Carman, 1990; Dabholkar et al., 1995). In combination with the Rust and Oliver (1994) framework, this results in the notion of service quality as a three-dimensional, hierarchical construct. In this context, hierarchical means that the sub-dimensions are treated as first-order factors and the dimensions as second-order factors of the service quality construct. Fassnacht and Koese (2006) adopted the view of a hierarchical construct with the three dimensions of environment quality, delivery quality, and outcome quality as a basis for their conceptualisation of QES.

2.2 Customer loyalty and its antecedents

2.2.1 Customer loyalty

Early approaches for assessing customer loyalty emphasised the behavioural aspect as repeat patronage or purchase frequency (Anderson and Srinivasan, 2003). Nevertheless, behaviour-oriented customer loyalty suffers a major shortcoming in that it does not tell the marketer why a brand was selected as a customer may be making a repeat purchase not because of true commitment but because of convenience, price, availability, or inertia due to habit (Zikmund et al., 2003). The attitudinal customer loyalty approach proposes that loyalty involves much more than repeat purchase behaviour and includes a favourable attitude reflecting a preference or commitment expressed over time (Zikmund et al., 2003). The work of Oliver (1997) constitutes the most comprehensive evaluation of the construct of loyalty (Harris and Goode, 2004; Oliver, 1997). According to Oliver (1997), loyalty is comprised of four distinct, sequential phases including cognitive, affective, conative, and action loyalty. These different phases of loyalty emerge consecutively rather than simultaneously (Oliver, 1997, 1999). Cognitive loyalty is the first loyalty phase that refers to the existence of beliefs that a brand is preferable to others (Harris and Goode, 2004). Loyalty in this stage derives from previous/explicit knowledge or recent information based on experiences (Oliver, 1997, 1999). Specifically, customers develop cognitive loyalty through comparisons between their preferred product and alternatives based on impressed knowledge regarding the offering, its attributes, and its performance or current experience-based information (Oliver, 1997, 1999). The second loyalty phase is referred to as affective loyalty. At this stage, more advanced loyalty is
established from customers’ pleasurable fulfilment from and favourable attitude toward a product/brand, and their overall evaluation of it (Oliver, 1997, 1999). Due to the severe threats from competitive products, it is not sufficiently guaranteed at the affective stage. Product and service providers have to push their customers to the conative loyalty stage. Oliver (1997) defined conation as “an intention or commitment to behave toward a goal in a particular manner”. Therefore, conative loyalty constitutes the development of behaviour intentions characterised by a deeper level of commitment (Harris and Goode, 2004; Zeithaml et al., 1996). Finally, true loyalty is accomplished at the action loyalty stage, which is the last phase of loyalty (Oliver, 1997, 1999).

2.2.2 Satisfaction

Many studies from a variety of fields have contributed to the discussion of satisfaction. This is because all commercial activities can generate customer satisfaction. Satisfaction is defined as an effective response to a purchase situation (Anderson and Narus, 1990; Bennet et al., 2005).

2.2.3 Affective commitment

The concept of commitment has been introduced by marketing scholars and extended to the market field, and it can be traced back to organisational behaviour, and the loyal relationship between employees and organisations. Commitment is a compulsory element in marketing. The definitions differ among different scholars. Morgan and Hunt (1994) argued that commitment is the fundamental and most valuable element leading a trading partner to trust and maintain cooperation with another party. Both partners put forth their greatest efforts to ensure that the relationship continues. Thus, commitment is the guarantee that trading partners will continue the relationship (Dwyer et al., 1987). From the perspective of intention, Venetis and Ghauri (2004) suggested that commitment occurs when one party intends to keep a business relationship with another party. This definition not only refers to the future intention of one party, but also points out that a committed relationship results from careful consideration. This kind of relationship is not only limited to trading. In addition, commitment can be viewed as inhibiting feature in that business partners cannot be easily replaced (Young and Denize, 1995), since commitment is closely related to mutual benefit, loyalty and alternative abandonment (Gundlach et al., 1995). In their discussion of organisational behaviour, Allen and Meyer (1990) stated that affective commitment is the affective attachment of an organisation’s member to the organisation. When a member has an affective commitment towards the organisation, the members is devoted to the organisation and enjoys their close linkage with the organisation. In other words, affective commitment involves the members’ recognition of and attachment to the organisation. Thus, the organisation’s members establish their relationship with the organisation because they want to (Meyer and Allen, 1991). They feel loyalty and a sense of belonging (Geyskens et al., 1996). Affective commitment can also be considered as a psychological status.

2.3 Fuzzy set qualitative comparative analysis

Coding work is the most basic research tool and skill in the field of social science. Coding sustains study of all causal conditions through the examination of each recipe and
definition of activities or events within it through line-by-line coding. However, the weakness the QCA method is that coding work is highly professional and also time consuming. Thus, Ragin (2008b) developed fsQCA (fuzzy set QCA) which adopts the concept of QCA within its framework and process flow. Ragin (2008b) compared two categories of methods and explained that the differences between fsQCA and QCA are:

1. fsQCA selects and defines objects from literature reviews, not from QCA coding work
2. fsQCA data collection is bound under specifically designed questionnaires rather than based on free interviews
3. fsQCA uses setups of the fuzzy range scope for fuzzy membership function, calculation of membership scores, and the logic concept of Boolean algebra to convert and categorise membership scores into trust tables with multiple combinations and different levels of standards instead of grounded QCA.

Fuzzy set QCA was developed as a reaction to the shortcomings, limitations, and critiques on QCA. Contrary to crisp sets, sets are those sets in which an element is not limited to be a member or a non-member, but in which different degrees of membership exist. Consequently, fsQCA enables the researcher not only to decide if democracy exists or not, but also to which degree it exists in a given case.

QCA uses Boolean algebra to identify the causal conditions associated with an outcome. The core idea is that a subsidiary is the member of multiple sets. QCA provides techniques to identify patterns between set memberships and outcomes. QCA techniques allow for equifinality (Fiss, 2007), and are therefore appropriate in the present study, because prior analysis suggests multiple causes of customer loyalty orientation. Building on fuzzy-set theory (Zadeh, 1965), fuzzy-set analysis departs from standard QCA in that it recognises that set membership is not always binary.

The first step in performing fuzzy-set analysis is to calibrate set membership. Unlike quantitative approaches that treat all variance as equally important (Ragin, 2008a), the aim of calibration is to identify meaningful groupings of cases. This requires substantive knowledge of the cases at hand or theoretical knowledge (Rihoux and Ragin, 2009). This study uses the direct method of calibration proposed by Ragin (2007) to calibrate set membership. The direct method uses three important qualitative anchors to structure calibration: the threshold for full membership, the threshold for full non-member ship, and the cross-over point. The cross-over point is the value of the interval-scale variable where there is maximum ambiguity as to whether a case is more in or more out of the target set. We use the value of 4 as the cross-over point. For the threshold of full membership in the target set, we use the value of 7, which is a deviation score of 3.0. In the reverse direction, the threshold for full non-membership in the target set is 1, which is a deviation score of –3.0. The value of deviation can be obtained through equation (1).

\[ \text{deviation} = \text{score} - \text{cross over} \]  

Once these three values (full membership, full non-membership and cross-over point) have been selected, it is possible to calibrate degree of membership in the target set. The main task at this point is to translate the cross-over centred score into the metric of log odds, utilising the external criteria that have been operationalised in the three qualitative anchors. For deviation scores above the cross-over point, this translation can be
accomplished by multiplying the relevant deviation scores by the ratio of the log odds associated with the verbal label for the threshold of full membership (3.0) to the deviation score designated as the threshold of full membership. For deviation scores below the cross-over point, this translation can be accomplished by multiplying the relevant deviation scores by the ratio of the log odds associated with the verbal label for the threshold of full non-membership (−3.0) to the deviation score designated as the threshold of full non-membership. The value of scalars can be obtained through equation (2).

\[
\text{scalars} = \begin{cases} 
-3/(\text{full non-membership} – \text{cross over point}, \text{scores} < \text{cross over point} \\
+3/(\text{full membership} – \text{cross over point}, \text{scores} \geq \text{cross over point})
\end{cases} \tag{2}
\]

Then, the deviation scores are translated into the log odds metric, using the three qualitative anchors to structure the transformation via the two scalars. The value of log odds can be obtained through equation (3).

\[
\text{log odds} = \text{deviation} \times \text{scalars} \tag{3}
\]

Finally, the log odds step reports the degree of membership values. It is necessary to apply the standard formula for converting log odds to scores that range from 0.0 to 1.0, namely:

\[
\text{degree of membership} = \frac{\exp(\text{log odds})}{1 + \exp(\text{log odds})} \tag{4}
\]

where ‘\exp’ represents the exponentiation of log odds to simple odds. The value of the degree of membership can be obtained through equation (4).

The second step involves the construction of a truth table to identify combinations of causal conditions associated with the outcome. The truth table lists all logically possible combinations. This study involves seven conditions, producing 2^7 causal combinations. To identify the relevant combinations, we delete combinations not associated with any of the subsidiaries in the dataset, maintaining only those associated with at least two observations. Setting a frequency threshold of two observations is acceptable when the aim is to build a theory from a relatively small sample (Ragin et al., 2008).

We then specify a consistency threshold. Consistency measures the degree to which a combination of causal conditions is reliably associated with the outcome of a broad stakeholder orientation. Consistency thresholds of at least 0.75 (Ragin et al., 2008) and up to 0.95 (Epstein et al., 2008) are recommended, but should not be applied mechanistically. One approach is to choose a threshold that corresponds to the gap observed in the distribution of consistency scores (Schneider et al., 2010).

The next step involves using an algorithm to simplify the causal combinations and to arrive at a more parsimonious understanding of the drivers of customer’s loyalty orientation. We employ the truth table algorithm (Ragin, 2008b), which generates a range of possible solutions. The reason for this range is that most datasets, especially those of an intermediate size, do not contain instances of all logically possible causal configurations. The truth table algorithm uses counterfactual analysis to speculate about the most plausible outcomes of the combinations that do not exist in the dataset. The logically simplest solution is the parsimonious solution which contains only those conditions considered core and takes advantage of all possible simplifying assumptions. This parsimonious solution is contained within an intermediate solution. The intermediate
solution is more conservative, because it only takes advantage of the most plausible simplifying assumptions (Ragin, 2008b). This solution contains not only core conditions but also peripheral conditions.

Epstein et al. (2008) indicated that fsQCA offers several advantages. First, it is better-suited than regression for exploring causal configurations – situations in which variables have an impact only in combination with a high or low degree of one or more other factors. Second, fsQCA allows researchers to identify multiple pathways to an outcome. Third, whereas regression is useful for examining tendentious relationships – the general tendency of a particular factor to influence an outcome of interest – fsQCA is helpful in exploring a different kind of relationship: causal sufficiency. fsQCA is widely used for online social networks (Mozas-Moral et al., 2016), multimedia teaching materials (Jiang et al., 2016) and corporate bankruptcy research (Boratyńska, 2016).

3 Research methodology

3.1 Research framework

This section describes the use of fsQCA to find the results of the key elements and examine the logic of the object of analysis. The research framework of this study is shown in Figure 1.

Figure 1  Research framework of this study

![Figure 1](image)

3.2 Data collection

In this study, the survey sample was a consumer of online shopping experience, and a number of samples need to meet the research requirements. It hopes that a wide range of information will collect, therefore, the gender, age and educational background are not restricted. Two questionnaires delivered: the first questionnaire was pilot study for convenient sampling. According to the results, the items had been adjusted slightly, and built a formal questionnaire. Sending online questionnaire for convenient sampling collect the necessary quantities of samples. The regular questionnaires use the Google Forms. The questionnaire put on the social networks platform that it is voluntarily to
complete. Finally, removing the invalid questionnaires improve the reliability and validity of the information.

In this study, a questionnaire was used as the survey instrument. Close-ended questions were provided. There are four main parts: The first part: basic background of the subject. The second part to the fourth part: it is the main dimension of this research. Including problems of ‘service quality’, ‘commitment’ and ‘customer loyalty’ are put forward. In addition, using the Likert seven-point scale for the measurement method divide into seven grades (strongly disagree, do not agree, some do not agree, average, some agree, agree and strongly agree). ‘Strongly disagree’ to ‘strongly agree’ are 1, 2, 3, 4, 5, 6, 7 scores respectively. Before giving out the formal questionnaire, this study carried out pre-tests in two phases order to avoid any error generated by the misunderstanding or incomprehension of the questions. A pretest was delivered in the first stage, for which experts and scholars of related disciplines were asked to review the content of the questionnaire. Based on their recommendations, the questionnaire was modified. A pilot study was conducted in the second stage, for which 10–20 persons where selected to complete the questionnaire. They were later asked to modify the vague question further to determine the validity of the content.

Through the Cronbach’s $\alpha$ coefficient is used to measure the consistency and stability of the questionnaire. If Cronbach’s $\alpha$ is greater than or equal to 0.7, it means highly reliable (Numally, 1978). Cronbach’s $\alpha$ coefficients of the variables are between 0.834 and 0.936, all greater than 0.7 from the table. Therefore, the study of the questionnaire project is considered high reliability and high degree of credibility.

Through social networks platform (Facebook and PTT), 466 online questionnaires were returned, 11 of online questionnaires were invalid samples which it is 2.3% of the total amount of questionnaires; there were 455 valid samples which it is 97.7% of the total questionnaires.

3.3 Data analysis and results

This study conducts fsQCA analysis by using the software program fs/QCA 2.5. The program simplifies data patterns to identify potentially ‘sufficient’ causal associations. Its ultimate products are a set of logical statements identifying factors or combinations of factors that appear as subsets of an outcome, along with mathematical measures with which to assess their utility. The framework of evolutionary fsQCA provides the methodology for exploring multiple relationships among service quality and customer loyalty. Not all of these combinations have exploratory power to explain the causal relationships. The combinations should enable the examination of the consistency value using threshold criteria that should be greater than 0.75 (Ragin et al., 2008).

3.3.1 Linking service quality dimension to satisfaction

Following the above approach, we apply the frequency threshold of 20 and the consistency of 0.85. A fuzzy truth table algorithm is based on the logic concepts of Boolean algebra. The truth table is an analytic device that displays all logically possible combinations of causal conditions, indicates cases’ distribution across these combinations and provides a simplified data map. The fsQCA program originally produced a 128-row table, representing all $2^7$ logically possible combinations of the causal conditions. The ‘number’ column denotes how many cases conform to the listed combination. Truth table
rows directly correspond to the logical possibility of a particular causal combination. Only 2 of these combinations are actually represented empirically in our data. All other logically possible configurations are ‘remainders’ – counterfactual configurations that lack empirical instances. The partial truth table associated with high customer satisfaction outcome is shown in Table 1.

Table 1  Fuzzy truth table of how service quality predicts satisfaction

<table>
<thead>
<tr>
<th>Causal relationship</th>
<th>rel</th>
<th>res</th>
<th>asu</th>
<th>emp</th>
<th>enq</th>
<th>deq</th>
<th>ouq</th>
<th>Number</th>
<th>sat</th>
<th>Raw consist.</th>
<th>PRI consist.</th>
<th>SYM consist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>268</td>
<td>1</td>
<td>0.990801</td>
<td>0.984681</td>
<td>0.993992</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>28</td>
<td>1</td>
<td>0.983861</td>
<td>0.945499</td>
<td>0.957869</td>
</tr>
</tbody>
</table>

In this model, the following solution for the most complex solution is reported and shown in Table 2.

Table 2  Algorithm models where service quality predicts satisfaction

<table>
<thead>
<tr>
<th>Model $X_1 \rightarrow Y_1$</th>
<th>Raw coverage</th>
<th>Unique coverage</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>rel<em>res</em>asu<em>enq</em>deq*ouq</td>
<td>0.859122</td>
<td>0.859122</td>
<td>0.973940</td>
</tr>
</tbody>
</table>

Having established the presence and absence of the relevant factors in each of the cases, we next present which combinations of the abovementioned seven factors lead to customer satisfaction. Although this part of fsQCA analysis requires the use of some Boolean algebra, the interpretation of these analyses is rather intuitive and straightforward. Moreover, we keep the use of mathematical expressions to a minimum, and focus instead on their substantive interpretation. Systematic analysis of the case combinations is presented in Table 2. Based on Table 2, the following formula is then obtained for the ‘1’ configurations:

$$\text{rel} \times \text{res} \times \text{asu} \times \text{enq} \times \text{deq} \times \text{ouq} \rightarrow \text{sat}$$

The above formula should be interpreted as follows. Each of the items denotes a factor in this study. The symbol ‘+’ denotes the logical operator ‘or’; ‘*’ denotes the logical operator ‘and’; ‘~’ denotes the logical operator ‘not’; and ‘→’ denotes the logical implication operator. When one interprets the formula accordingly, it can thus be deduced that cases that combine a high level of reliability (rel) with a high level of responsiveness (res), high assurance, high environment quality (enq), high delivery quality, and a high level of outcome quality will have a high level of customer satisfaction (sat).

3.3.2 Linking service quality dimensions to affective commitment

Following the same approach, we apply the frequency threshold of 20 and the consistency of 0.85. Truth table rows directly correspond to the logical possibility of a particular causal combination. Only 2 of these combinations are actually represented empirically in our data. All other logically possible configurations are ‘remainders’ – counterfactual configurations that lack empirical instances. The partial truth table associated with high customer satisfaction outcome is given in Table 3.
Table 3  Fuzzy truth table of how service quality predicts affective commitment

<table>
<thead>
<tr>
<th>Causal relationship</th>
<th>rel</th>
<th>res</th>
<th>asu</th>
<th>enq</th>
<th>deq</th>
<th>ouq</th>
<th>Number</th>
<th>acm</th>
<th>Raw consist.</th>
<th>PRI consist.</th>
<th>SYM consist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>28</td>
<td>1</td>
<td>0.922445</td>
<td>0.727931</td>
<td>0.737748</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>268</td>
<td>1</td>
<td>0.873670</td>
<td>0.768552</td>
<td>0.838397</td>
</tr>
</tbody>
</table>

In this model, the following solution for the most complex solution is reported and shown in Table 4.

Table 4  Algorithm models where service quality predicts affective commitment

<table>
<thead>
<tr>
<th>Model $X_1 \rightarrow Y_2$</th>
<th>Raw coverage</th>
<th>Unique coverage</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>rel * res * asu * enq * deq * ouq</td>
<td>0.852156</td>
<td>0.852156</td>
<td>0.846442</td>
</tr>
</tbody>
</table>

Solution coverage: 0.852156

Having established the presence and absence of the relevant factors in each of the cases, we next present which combinations of the abovementioned seven factors lead to customer affective commitment. Systematic analysis of the case combinations is presented in Table 4. Based on Table 4, the following formula is then obtained for the ‘1’ configurations:

$$\text{rel} \times \text{res} \times \text{asu} \times \text{enq} \times \text{deq} \times \text{ouq} \rightarrow \text{acm}$$

The above formula should be interpreted as follows. When one interprets the formula accordingly, it can thus be deduced that cases that combine a high level of reliability (rel) with a high level of responsiveness (res), high assurance, high environment quality (enq), high delivery quality, and a high level of outcome quality will have a high level of customer affective commitment (acm).

3.3.3 Linking antecedents of loyalty to repurchase intention

Following the above approach, we apply the frequency threshold of 20 and the consistency of 0.9. Truth table rows directly correspond to the logical possibility of a particular causal combination. Only three of these combinations are actually represented empirically in our data. All other logically possible configurations are ‘remainders’ – counterfactual configurations that lack empirical instances. The partial truth table associated with high customer satisfaction outcome is shown in Table 5.

Table 5  Fuzzy truth table of how antecedents of loyalty predict repurchase intention

<table>
<thead>
<tr>
<th>Causal relationship</th>
<th>sat</th>
<th>acm</th>
<th>Number</th>
<th>rep</th>
<th>Raw consist.</th>
<th>PRI consist.</th>
<th>SYM consist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>23</td>
<td>1</td>
<td>0.969735</td>
<td>0.888742</td>
<td>0.906257</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>259</td>
<td>1</td>
<td>0.962141</td>
<td>0.937185</td>
<td>0.979062</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>70</td>
<td>1</td>
<td>0.918632</td>
<td>0.775989</td>
<td>0.831602</td>
</tr>
</tbody>
</table>

In this model, the following solution for the most complex solution is reported and shown in Table 6.
Having established the presence and absence of the relevant factors in each of the cases, we next present which combinations of the abovementioned two factors lead to customer repurchase intention. Systematic analysis of the case combinations is given in Table 6. Based on Table 6, the following formula is then obtained for the ‘1’ configurations:

\[ \text{sat} + \text{acm} \rightarrow \text{rep} \]

The above formula should be interpreted as follows. When one interprets the formula accordingly, it can thus be deduced that cases that combine a high level of satisfaction (sat) or cases that combine high level of affective commitment (acm) will have a high level of customer repurchase intention (rep).

### 3.3.4 Linking antecedents of loyalty to advocacy intention

Following the same approach, we apply the frequency threshold of 20 and the consistency of 0.9. Truth table rows directly correspond to the logical possibility of a particular causal combination. Only three of these combinations are actually represented empirically in our data. All other logically possible configurations are ‘remainders’ – counterfactual configurations that lack empirical instances. The partial truth table associated with high advocacy intention outcome is shown in Table 7.

<table>
<thead>
<tr>
<th>Causal relationship</th>
<th>sat</th>
<th>acm</th>
<th>Number</th>
<th>adv</th>
<th>Raw consist.</th>
<th>PRI consist.</th>
<th>SYM consist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>23</td>
<td>1</td>
<td>0.934317</td>
<td>0.610182</td>
<td>0.642377</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>259</td>
<td>1</td>
<td>0.925516</td>
<td>0.855207</td>
<td>0.940504</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>70</td>
<td>0</td>
<td>0.873194</td>
<td>0.539166</td>
<td>0.599374</td>
</tr>
</tbody>
</table>

In this model, the following solution for the most complex solution is reported and shown in Table 8.

<table>
<thead>
<tr>
<th>Model $X_2 \rightarrow Y_4$</th>
<th>Raw coverage</th>
<th>Unique coverage</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>acm</td>
<td>0.886236</td>
<td>0.886263</td>
<td>0.880854</td>
</tr>
</tbody>
</table>

Solution coverage: 0.886236
Solution consistency: 0.880854
Having established the presence and absence of the relevant factors in each of the cases, we next present which combinations of the abovementioned two factors lead to customer repurchase intention. Systematic analysis of the case combinations is presented in Table 8. Based on Table 8, the following formula is then obtained for the ‘1’ configurations:

\[ \text{acm} \rightarrow \text{adv} \]

The above formula should be interpreted as follows. When one then interprets the formula accordingly, it can thus be deduced that cases that combine a high level of affective commitment (acm) will have a high level of customer advocacy intention (adv).

4 Conclusions

Based on our comparative case study of service quality dimensions, we draw three major conclusions, which we elaborate below. We also discuss the implications of these conclusions for e-store management. The first major conclusion of the present study suggest that in order to improve service quality and thus enhance customer satisfaction and affective commitment, e-store managers should be committed to improving service quality dimensions, including reliability, responsiveness, assurance, environment quality, delivery quality and outcome quality. Analysis results indicate that cases that combine a high level of reliability with a high level of responsiveness, high assurance, high environment quality, high delivery quality, and a high level of outcome quality will have a high level of customer satisfaction and affective commitment. The second conclusion of the present study has to do with promoting customer repurchase intention; e-store managers should be devoted to improving customer satisfaction or affective commitment. This result indicates that cases that combine a high level of satisfaction or cases that combine a high level of affective commitment will have a high level of customer repurchase intention. The third conclusion of the present study concerns encouraging customer advocacy intention; e-store managers should make efforts to improve customer affective commitment. This result indicates that cases that combine a high level of affective commitment will have a high level of customer advocacy intention. Final, the bringing together of complexity theory, fsQCA, and pattern research in service quality dominant logic is a fit-like-a-glove union for advancing theory, method, and practice in service quality research. Complexity theory is a useful lens for seeing that simple antecedent conditions relate to positive, negative and neutral outcome conditions– which of these three relationships occur depends on the observed complex antecedent conditions in which the simple antecedent conditions occur. Individual service facets in service performances with successful service outcomes do not all have to consist of positive ingredients in all possible complex but parsimonious patterns.

References


