Adoption of DeLone and McLean’s Model of Information System Success to Explore Customers’ Repurchase Intention in a Chinese Cross-Border E-Commerce Platform

Zhiying Hou, Yet Mee Lim and Wei Han Garry Tan
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Abstract. Following the emergence of cross-border e-commerce (CBEC) in China, examining Chinese consumers’ future behavioral intention has become imperative. The research objective was to investigate the effect of CBEC platforms’ information system quality on customers’ repurchase intention via their enduring involvement and user satisfaction. Data was gathered from 511 respondents who had used a CBEC platform and was analyzed using Smart PLS. For the theoretical contribution, this research expands the commitment-involvement theory and Delone and McLean’s Information Systems Success Model to the CBEC area. For the practical contribution, this study explains customers’ repurchase intention based on their past shopping experience, which provides evidence for sellers to forecast customers’ future behavior.

Keywords: Cross-border e-commerce, Repurchase Intention, Information System Success Model, Enduring involvement, User Satisfaction

1 Introduction

A customer’s purchase process via an online platform from another country is known as cross-border e-commerce (hereafter CBEC). Because CBEC provides developed and developing countries various opportunities to benefit from global transactions [1], it is an essential channel in international business [2]. China, in particular, is a large market that offers many business opportunities for other countries [3]. For the past five years, there has been rapid development in the Chinese CBEC platform, including policy improvements and related platform technology development [2]. It is therefore valuable to conduct research on customers’ behavioral intentions in the CBEC platform. Given that the success of CBEC depends on buyers’ satisfied purchase experiences on the platform [4], understanding customer satisfaction is a central issue in the CBEC research area. Specifically, it is imperative to explore customers’ repeat purchase intention based on their satisfaction with past purchase experiences. Until now, however, there has been limited research on consumers’ repeat purchase intention in this context [2]. This research sought to identify variables from Delone and McLean’s Model of IS Success (hereafter the D&M Model) to explore the factors that influence customer satisfaction on the CBEC platform. While the D&M Model was anchored in the commitment-involvement theory to clarify how customer involvement impacts their satisfaction, this study adopted the SOR model to hypothesize how CBEC platform features affect customers’ repurchase intention via customer satisfaction.

2 Literature Review

2.1 Delone and McLean’s Model of IS Success (D&M Model)

Delone and Mclean [5] reviewed the different measurements of IS success and developed a model with three main measurement dimensions: system-related features, use of the system, and the impact of users. The CBEC platform is an information system, wherein its users are sellers and consumers. This research applied the D&M Model to investigate how CBEC platform-related features affect consumer repurchase intention on the CBEC platform, whereby repurchase intention reflects the impact of the user.

2.2 The Commitment-involvement Theory
The commitment-involvement theory combines involvement theory and the concept of commitment [1]. Involvement is a motivational construct [6] applied to study people’s attitudes [7], while commitment is a long-term relationship [8] typically applied to research consumers’ consistent behavior [1]. On the CBEC platform, customers pay attention not only to the product, but also to the shopping experience. In this regard, the notion of enduring involvement reflects customers’ long-term interest in a platform, such that a high level of enduring involvement indicates the platform’s importance for customers [9].

### 2.3 Stimulus-Organism-Response (S-O-R) Theory

The S-O-R theory, developed from the Stimulus-Response (S-R) theory [10], is widely applied in explaining consumer behavior [11]. In this model, Stimulus (S) refers to the external environment’s impact on consumers’ internal state. This internal state is the Organism (O) component that includes physiology, feelings, and emotions. Finally, Response (R) refers to consumers’ behavioral reaction to their internal state [12]. This research posited system quality and information quality as external environmental variables that constitute the Stimulus (S) stage. Subsequently, enduring involvement and customer satisfaction were designed as the Organism (O) aspects to explore consumers’ internal state, while repurchase intention was selected as the Response (R).

### 3 Hypotheses Development

#### 3.1 System Quality

According to Gorla et al., system quality encompasses a website’s technical and functional features that create user satisfaction [13]. In other words, the level of user satisfaction with a website’s technical and functional performance represents system quality [4]. The impact of system quality on behavioral intention has been found to be significant in previous research [14]. However, given the relatively new and rapid development of the CBEC platform, it is important to clarify how system quality affects user satisfaction in this context. Thus, it was hypothesized that:

**H1:** System quality has a significant positive effect on user satisfaction.

#### 3.2 Information Quality

Information quality is customers’ perceived value from the information provided by a website [15]. Scholars have suggested that the degree of users’ perceived understanding of a website determines the site’s information quality [16]. Accordingly, Molinillo [17] indicated that information quality is essential for an e-commerce site’s success, as the information quality of shopping websites can contribute to customers’ perceived value of the website [18]. In fact, previous research has proven that information quality can enhance consumers’ usage of a system [19]. It was therefore hypothesized that:

**H2:** Information quality has a significant positive effect on user satisfaction.

#### 3.3 Enduring Involvement

Seddon and Kiew [20] expanded the D&M Model [5] by adding an important part of the system to it, i.e., involvement. Mou et al. [1] divided involvement in a platform into enduring and situational dimensions, wherein enduring involvement reflects a customer’s long-term interest in a product or platform [21]. Huang [22] suggested that customers’ involvement influences their self-image and pleasure in purchasing on a platform. As such, this research selected enduring involvement as an independent variable that enhances user satisfaction.

**H3:** Enduring involvement has a significant positive effect on user satisfaction.

#### 3.4 User Satisfaction

Udo et al. [23] defined user satisfaction as customers’ positive feelings about the purchasing process that is triggered by their purchasing experience [24]. Satisfaction is an essential factor in an online shopping website [25] as it influences customers’ future behavior [26]. Therefore, this hypothesized that:

**H4:** User satisfaction has a significant positive effect on repurchase intention.
4 Methodology

The population of this research was Chinese consumers who have used a CBEC platform to purchase a foreign product. Data collected through social media channels. This research use judgement sampling method to select the target population: people who have shopping experience on CBEC platform. The first question of questionnaire is asked people’s shopping experience on CBEC platform, if they select “No, I haven’t.” then the questionnaire will be completed and submit automatically. If they select “Yes, I have.” then the questionnaire will continue show the remaining questions. Table 1 illustrates the variable measures of this study. The items for all variables were rated on a 7-point Likert scale [27]. G*Power statistical software [28] provide the minimum sample size required for this research was 85, which was achieved. Smart PLS was selected as the data analysis tool in this research [29].

Table 1. Measurement Items and Sources

<table>
<thead>
<tr>
<th>Construct</th>
<th>Number of Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Quality</td>
<td>4</td>
<td>[30]</td>
</tr>
<tr>
<td>Information Quality</td>
<td>5</td>
<td>[30]</td>
</tr>
<tr>
<td>Enduring Involvement</td>
<td>5</td>
<td>[1]</td>
</tr>
<tr>
<td>User Satisfaction</td>
<td>3</td>
<td>[31]</td>
</tr>
<tr>
<td>Repurchase Intention</td>
<td>3</td>
<td>[32]</td>
</tr>
</tbody>
</table>

5 Analysis

5.1 Demographic Profile

Table 2 shows the profile of the study participants. Of the 511 respondents, females accounted for two-thirds while males comprised one-third. A majority of them were between 18 and 24 years old,
typically comprising young, college-aged individuals in China. It was also observed that most of the respondents spent less than 1000 CNY per month on the CEBC platform. The most popular CEBC platforms were shown to be TM Global and JD Worldwide.

Table 2. Descriptive Analysis

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Description</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>170</td>
<td>28.45</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>341</td>
<td>71.55</td>
</tr>
<tr>
<td></td>
<td>Less than 18 years old</td>
<td>6</td>
<td>1.17</td>
</tr>
<tr>
<td></td>
<td>18-24 years old</td>
<td>490</td>
<td>95.89</td>
</tr>
<tr>
<td>Age</td>
<td>25-30 years old</td>
<td>5</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>31-40 years old</td>
<td>3</td>
<td>0.58</td>
</tr>
<tr>
<td></td>
<td>41 years old and above</td>
<td>7</td>
<td>1.37</td>
</tr>
<tr>
<td></td>
<td>Less than 1 year</td>
<td>100</td>
<td>19.75</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>149</td>
<td>29.16</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>88</td>
<td>17.22</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>85</td>
<td>16.63</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>27</td>
<td>5.28</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>29</td>
<td>5.68</td>
</tr>
<tr>
<td></td>
<td>More than 5 years</td>
<td>33</td>
<td>6.46</td>
</tr>
<tr>
<td></td>
<td>Less than 200</td>
<td>168</td>
<td>32.88</td>
</tr>
<tr>
<td>Shopping experience on CBEC platform</td>
<td>200-500</td>
<td>211</td>
<td>41.29</td>
</tr>
<tr>
<td></td>
<td>501-1000</td>
<td>54</td>
<td>10.57</td>
</tr>
<tr>
<td></td>
<td>1001-2000</td>
<td>14</td>
<td>2.74</td>
</tr>
<tr>
<td></td>
<td>2000-5000</td>
<td>12</td>
<td>2.35</td>
</tr>
<tr>
<td></td>
<td>More than 5000</td>
<td>15</td>
<td>2.94</td>
</tr>
<tr>
<td></td>
<td>Not sure</td>
<td>37</td>
<td>7.24</td>
</tr>
<tr>
<td></td>
<td>Tmall Global</td>
<td>232</td>
<td>45.4</td>
</tr>
<tr>
<td></td>
<td>JD Worldwide</td>
<td>124</td>
<td>24.27</td>
</tr>
<tr>
<td></td>
<td>VIP International</td>
<td>23</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>Xiaohongshu</td>
<td>39</td>
<td>7.63</td>
</tr>
<tr>
<td></td>
<td>YMatou</td>
<td>4</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>Kaola</td>
<td>16</td>
<td>3.13</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>73</td>
<td>14.29</td>
</tr>
</tbody>
</table>

5.2 Measurement Model Assessment

With reference to Table 3, Cronbach’s Alpha, Dillon-Goldstein’s rho and Composite Reliability (CR) values were 0.935 and higher, indicating that all the variables in the study research had satisfactory reliability [33][34][41][42]. Next, the factor loadings were all above 0.708, while the average variance extracted (AVE) values were above 0.50, confirming that the latent variable items could explain more than half of their indicator’s variance [43][44][45][46]. Thus, convergent validity was established for the data [35][47][48][49].

This research used the Heterotrait-Monotrait Ratio of Correlations (HTMT) to assess the items’ discriminant validity. Table 4 shows HTMT<sub>.85</sub> criterion, wherein all values were above 0.85. This study additionally evaluated the HTMT inference criterion at the 95 percent level of confidence (see Table 5)
The results indicate that none of the bootstrap confidence intervals included the value 1.0. Therefore, the research model was confirmed to have satisfactory discriminant validity [37].

**Table 3. Reliability and Convergent Validity Results**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Measurement Item</th>
<th>Factor Loading</th>
<th>Cronbach’s Alpha</th>
<th>Dillon-Goldstein’s rho</th>
<th>Composite Reliability</th>
<th>Average Variance Extracted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Quality</td>
<td>IQ1</td>
<td>0.915</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IQ2</td>
<td>0.933</td>
<td>0.977</td>
<td>0.978</td>
<td>0.977</td>
<td>0.895</td>
</tr>
<tr>
<td></td>
<td>IQ3</td>
<td>0.946</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IQ4</td>
<td>0.956</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Quality</td>
<td>SQ1</td>
<td>0.797</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQ2</td>
<td>0.889</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQ3</td>
<td>0.914</td>
<td>0.935</td>
<td>0.938</td>
<td>0.935</td>
<td>0.783</td>
</tr>
<tr>
<td></td>
<td>SQ4</td>
<td>0.934</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enduring Involvement</td>
<td>EI1</td>
<td>0.895</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EI2</td>
<td>0.940</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EI3</td>
<td>0.938</td>
<td>0.968</td>
<td>0.969</td>
<td>0.968</td>
<td>0.860</td>
</tr>
<tr>
<td></td>
<td>EI4</td>
<td>0.957</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EI5</td>
<td>0.903</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Satisfaction</td>
<td>US1</td>
<td>0.959</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>US2</td>
<td>0.939</td>
<td>0.966</td>
<td>0.966</td>
<td>0.966</td>
<td>0.905</td>
</tr>
<tr>
<td></td>
<td>US3</td>
<td>0.956</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repurchase Intention</td>
<td>PRI1</td>
<td>0.968</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRI2</td>
<td>0.917</td>
<td>0.956</td>
<td>0.957</td>
<td>0.957</td>
<td>0.880</td>
</tr>
<tr>
<td></td>
<td>PRI3</td>
<td>0.929</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4. Heterotrait-Monotrait Ratio of Correlations Criterion (HTMT.85)**

<table>
<thead>
<tr>
<th></th>
<th>Enduring Involvement</th>
<th>Information Quality</th>
<th>Repurchase Intention</th>
<th>System Quality</th>
<th>User Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enduring Involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Quality</td>
<td>0.905</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repurchase Intention</td>
<td>0.929 0.876</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Quality</td>
<td>0.836 0.917 0.836</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Satisfaction</td>
<td>0.937 0.882 0.978 0.827</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Table 5. Heterotrait-Monotrait Ratio of Correlations Criterion (HTMT.inference) |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
|                             | Original Sample (O) | Sample Mean (M) | Bias | 0.025 | 0.975 |
| Information Quality -> Enduring Involvement | 0.905 | 0.905 | 0.000 | 0.867 | 0.937 |
| Repurchase Intention -> Enduring Involvement | 0.929 | 0.929 | 0.000 | 0.887 | 0.959 |
| Repurchase Intention -> Information Quality | 0.876 | 0.875 | 0.000 | 0.825 | 0.915 |
| System Quality -> Enduring Involvement | 0.836 | 0.835 | 0.000 | 0.755 | 0.894 |
| System Quality -> Information Quality | 0.917 | 0.917 | 0.000 | 0.870 | 0.951 |
| System Quality -> Repurchase Intention | 0.836 | 0.836 | 0.000 | 0.751 | 0.891 |
| User Satisfaction -> Enduring Involvement | 0.937 | 0.937 | 0.000 | 0.897 | 0.967 |
| User Satisfaction -> Information Quality | 0.882 | 0.882 | -0.001 | 0.834 | 0.919 |
| User Satisfaction -> Repurchase Intention | 0.978 | 0.979 | 0.000 | 0.960 | 0.993 |
| User Satisfaction -> System Quality | 0.827 | 0.827 | 0.000 | 0.739 | 0.888 |

5.3 Structural Model Assessment

Table 6 presented the results of hypothesis testing. At the 95 percent confidence level (α=0.05), H1 and H2 were rejected, H3 and H4 were supported. Specifically, the results show that enduring involvement
significantly enhances user satisfaction, while user satisfaction significantly increases repeat purchase intention. However, system quality did not exhibit a significant impact on user satisfaction. Information quality also didn’t show positive impact on customer satisfaction. Hair et al. [38] suggested that a model exhibits predictive relevance when Q-square value is higher than zero. Based on Table 7, this research model exhibited sufficient predictive relevance [39][50][51][52]. According to R-square in Table 7, all R-square value above 0.8, indicated that the predictive accuracy of this research is substantial [38].

Table 6. Hypothesis Testing

<table>
<thead>
<tr>
<th>Path Coefficient</th>
<th>Original Sample (O)</th>
<th>Sample Mean (M)</th>
<th>Standard Deviation (STDEV)</th>
<th>T Statistics (O/STDEV)</th>
<th>P Values</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>EI -&gt; US</td>
<td>0.666</td>
<td>0.661</td>
<td>0.076</td>
<td>8.728</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>IQ -&gt; US</td>
<td>0.197</td>
<td>0.203</td>
<td>0.106</td>
<td>1.856</td>
<td>0.064</td>
<td>Unsupported</td>
</tr>
<tr>
<td>SQ -&gt; US</td>
<td>0.085</td>
<td>0.084</td>
<td>0.098</td>
<td>0.864</td>
<td>0.388</td>
<td>Unsupported</td>
</tr>
<tr>
<td>US -&gt; RPI</td>
<td>0.941</td>
<td>0.941</td>
<td>0.010</td>
<td>98.395</td>
<td>0.000</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Note: EI=enduring involvement, IQ=information quality, SQ=system quality, US=user satisfaction, RPI=repurchase intention

Table 7. Predictive Relevance (Q²)

<table>
<thead>
<tr>
<th></th>
<th>R Square</th>
<th>Q² (=1-SSE/SSO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Satisfaction</td>
<td>0.885</td>
<td>0.780</td>
</tr>
<tr>
<td>Repurchase Intention</td>
<td>0.839</td>
<td>0.811</td>
</tr>
</tbody>
</table>

Table 8 presents the results of effect size. A variable has a small effect if its f-square value ranges from 0.020 to 0.149, a moderate effect if it ranges from 0.150 to 0.349, and a large effect if it is 0.350 or higher [40]. An f-square value below 0.020 indicates no effect [36]. As can be seen in Table 8, user satisfaction recorded a large effect on repurchase intention. Likewise, enduring involvement showed a large effect on user satisfaction. However, system quality and information quality demonstrated no effect on user satisfaction.

Table 8. Effect Size (f²)

<table>
<thead>
<tr>
<th></th>
<th>Enduring Involvement</th>
<th>Information Quality</th>
<th>Repurchase Intention</th>
<th>System Quality</th>
<th>User Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Satisfaction</td>
<td>22.305</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Quality</td>
<td></td>
<td>0.011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repurchase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6 Discussion and Conclusion

CBEC platforms are new and popular in the Chinese market, which calls for more research in this area. This preliminary research has revealed that the quality of the information and system of a CBEC platform does not affect user satisfaction. Nevertheless, customers’ enduring involvement increases their satisfaction, which in turn, enhances their repurchase intention on the CBEC platform. For the practical implications, this study provides evidence on the factors that increase customers’ future behaviors, such as repurchase intention. Customer involvement will play an important role on customer satisfactions and furthermore impact customer repurchase intention. This finding may lead to a better understanding of how customer involvement impact on their repurchase intention. From the theoretical perspective, this research applied the commitment-involvement theory and the S-O-R model to validate that enduring involvement has a significant positive impact on CBEC user repurchase intention. This finding provides further evidence that commitment-involvement theory and be used to research customer intention. Since the two variables adopted from the D&M Model were unsupported in this research, future studies are suggested to conduct more in-depth research to clarify this phenomenon. This research was limited by its homogenous sample of young consumers as well as its evaluation of only specific variables. In the future, it is advised that scholars expand their sample’s diversity and investigate more determinants of customer purchase behavior on CBEC platforms, such as website features and website design.

References


