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Analysis of Evaluation System of Customer Experience In the Background of Multi-channel

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Abstract: On the basis of literature research and field research, the article analyzed and summarized factors that affect the customer experience, and built index system of customer experience quality evaluation and evaluation model to help businesses understand the multi-channel customers’ behavior, to be evaluated on its own channel construction and the customer experience, enabling enterprises to the targeted channel construction, to improve the quality of customer experience.

Keywords: customer experience, multi-channel, gray evaluation

1. INTRODUCTION
As commodity economy and service economy mature, the demands of customers are gradually walking close to the higher-level value of self-satisfaction, self-actualization and social-identity. They go shopping for not only the use value and function benefits of goods, but also for the need to realize themselves by the purchase which is more individualized. Many companies have found such opportunity. For example, before applying an order in the store-online, customers of Suning and Gome can reach real goods in their physical experience-stores. On October 15, 2012, the NO.1 Shop announced their underline experience way named Infinite-NO.1-Shop to give customers more chance to reach goods. Those showed that experience will be an important economic product after service.

With the rapid development of online shopping, more and more customers choose different ways in the different stages of a shopping behavior, such kind of customer is referred as a multi-channel customer. With the increasing number of multi-channel customer and of their transaction volumes, they have already become the main force in the customer market. Therefore, it has become an urgent need to know and understand the multi-channel customers’ behavior both in theory and practice. Establishing the multi-channel customer experience evaluation system can help enterprises to choose the right marketing channels to expand the amount of the source of customer. Then, by improving the conversion rate of the customers after a good experience, combined with data mining, targeted marketing to improve the customers’ activity, guiding customers and enhance the sense of value, ultimately build a good product operations chain.

2. THE CONTEXT OF MULTI-CHANNEL CUSTOMER EXPERIENCE EVALUATION OF THE STATUS QUO AND DEMAND ANALYSIS
With the development of science and technology, as well as the diversification of customer purchasing patterns, more and more customers shuttle in different channels to search information and to purchase. Nicholson³ thought that customers now have been the purchase of multi-channel, they believe that the multi-channel shopping is an effective and common way of shopping and the customer has transferred from the "brick" to the "mouse". Currently, academic research often research on the purchase stage, mainly discussed the

¹ Corresponding author. Email: zhanglu_noodle@126.com; telephone:13917334631(Lu Zhang)
impact factors that affect the customer to select online channels. Tompson & Yeong\cite{2} pointed out that researches for customers' decision-making process is still concentrated in a particular stage, instead of all stages. Some academics have also started to pay attention to multiple stages of the shopping process. Some customers may be only select one channel at different stages of the process in shopping; the other customers may select different channels at different shopping stages.

Wen Tao\cite{3} explored the mechanism of influencing factors of the customer experience. It shows that customer factors, situational factors and traffic factors are the three main factors. However, the most important factor is the quality of service function. He Heping\cite{4} discussed the experience dimension structure, on the ground of clearing the conception of experience in the research of customer and market researching. He also reviewed the measurement of experiential marketing concept, "nostalgic" experience, to experience the relationship between marketing variables. He Aizhong \cite{5} found that the on-line shopping customer experience have a significant positive impact on brand affect, brand trust and brand loyalty.

Yet the research of the behavior of the decision-making process based on customer shopping channels, however are just getting started. There is a big difference in the measurement of existing channels’ properties (including quality of service, convenience, risk and transaction costs), the concept of situational factors not taken into different shopping stages, it is not suitable for behavior research based on multi-shopping stage. It’s a question that how to find a common evaluation criteria system of customer experience. This paper tried to build a quality evaluation index system in the background of multi-channel customer experience.

3. INFLUENCING FACTORS OF THE QUALITY OF CUSTOMER EXPERIENCE AND EVALUATION MODEL

3.1 Evaluation index system

Experience is a variety of feelings. From the perspective of the enterprise, factors that create customer experience can be attributed to the products (including products in the traditional sense, as well as purely creating experiences for the target customers), process, environment, brand, and staff\cite{6}. As figure 1.

![Figure 1. Factors affecting customer experience](image)

Here, the entire process of customers’ buying is divided into three parts, including: before-shopping, shopping, after-shopping. Influencing factors that affect the customer experience and channel selection, respectively, in the three processes are shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Factors of the customer experience</th>
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<tbody>
<tr>
<td>Shopping process</td>
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<tr>
<td>Before-shopping</td>
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<tr>
<td>shopping</td>
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<tr>
<td>After-shopping</td>
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</tbody>
</table>

In the design of Multi-channel customers’ experience evaluation index system, it must follow the principle of combining scientific integrity, simplicity, quantitative and qualitative\cite{7}.
In this paper, based on field research and literature studies, the formation of multi-channel customer experience quality evaluation system is shown in Table 2:

<table>
<thead>
<tr>
<th>Table 2. Multi-channel customer experience evaluation index system</th>
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<tr>
<td><strong>Target layer</strong></td>
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<td>Product U₁</td>
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<td>Environment U₃</td>
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<td>Brand U₄</td>
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<td>Staff U₅</td>
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</tbody>
</table>

(1) Product

Whether in the traditional economic times or the coming era of experience economy, products as tangible objects of consumption, will always occupy an important position. Product in the process of purchase will greatly stimulate the generation of a better experience.

Product quality U₁₁: examine product whether to meet customers’ requirements and achieve the degree of customer satisfaction;

Product packaging U₁₂: examine appearance of the product on the sensory, tactile and aesthetic quality of the customers’ visual feeling;

Product immediate approach U₁₃: examine product sales in shopping malls, supermarkets or other sales channels, whether to allow customers to experience before buying;

Degree of product intuitive U₁₄: examine product on-line sale channels, whether to give customers a "what
you see is what you get" feeling;

Information show $U_{15}$: examine product information whether show the various level of detail as well as meeting customers’ demands for the product information;

Purchase evaluation function $U_{16}$: whether allow customers to evaluate the purchase process and the products.

(2) Process

The tremendous contribution of the processes on the customer experience is often reflected in the most extraordinary of service processes, it may be just some details of a background job processes, but it is the forefront of creating the experience.

Management order $U_{21}$: examine corporate management whether in great order and establishing a good corporate image to customers;

Flexibility $U_{22}$: examine whether the business process designed flexibility, whether the real-time processing meet the customer's individual requirements;

The directory is easy to read $U_{33}$: examine whether the customer to understand the point of web directory easily;

Payment $U_{24}$: examine the enterprise whether to support a variety of payment methods to facilitate customers’ choice;

Security $U_{25}$: refers to the ability of the companies to provide various types of information (including payment information) security;

Process by themselves $U_{36}$: customer without the need for companies to provide any additional information or help to complete the shopping process.

(3) Environment

Among the many contact points with customers, the environment assumed important responsibilities, and continue to affect its penetration into the interactive process, thus affecting the customer experience.

Geographical traffic $U_{31}$: examine whether the physical store to meet the needs of convenience;

Sanitary conditions $U_{32}$: health conditions to examine all the details of the physical store, which is the basis of good customer experience;

Oriented guidelines $U_{33}$: examine whether there is a simple and easy to understand signage to facilitate customer activities;

Internal atmosphere $U_{34}$: inspect the entity shop air, lighting, music, and other factors which give customers a good sensory experience.

The interface style consistency $U_{35}$: the style of each page of the network channels to establish a unified corporate image;

Page response speed $U_{36}$: which also have an important impact on the customer experience;

Individuation $U_{37}$: whether represent the unique, refreshing feeling to the customers.

(4) Brand

Customers in the purchase process face some risky choice: how to encourage them to make purchases, is becoming the core task of the creation and delivery of customer experience. Brand companies can take advantage of effective design elements. Brand creation and delivery is extremely important to the brand experience.

Propaganda $U_{41}$: refers to branding efforts of the enterprises in the various channels, including advertising, flyers, web ads, banners and other forms;

The propaganda form of acceptance of $U_{42}$: the various publicity in various form whether well accepted, whether customers understand the brand and produce a good impression of the brand;
Membership system U41: whether membership system give the experience of member activities to customers.

(5) Staff

In the process of enterprise passed to the customer experience, the staff is a bridge to connect businesses and their customers. If experience is the result of the interaction between the customers and the entrepreneurs, then, the staff is the spokesperson of the corporate image. Considered from the customer point of contact, product designers, sales staff, technically-supporting staff, customer service personnel are to create the experience and pass the main force of the experience.

Services respond quickly U51: examine the speed of response to customer demand of enterprises’ all kinds of channels;

Operational capacity of U52: examine the business of enterprise employees, whether offer fast and accurate answers to customers of all kinds of doubts;

Service attitude U53: examine the degree of enthusiasm for the work and efforts of the employees, service attitude will also affect the corporate brand image;

Customer care test U54: examine whether employees in the process of communication with customers for effective interaction, so that customers feel the genuine care.

Quality Evaluation System is designed based on the customer experience, the following will build the evaluation model to evaluate channel experience.

3.2 Evaluation model

Customer experience evaluation is usually performed by picking up several evaluation indexes and using certain methods to make an overall judgment. However user experience evaluation involves many influences and the relationship between the indexes that are used to make evaluation and user experience is not clear, what’s worse, the data can be obtained in reality less, the sample is small, which means that the user experience evaluation contains gray information. Obviously, user experience evaluation can’t be separated from qualitative analysis and value judgments of the evaluation expert, therefore it is difficult to completely rule out the deviation caused by human factors such as personal preference, level of knowledge, cognitive ability, which makes the evaluation of information is not quite determined and completed, namely containing gray resistance[8].

This paper uses gray system evaluation method to evaluate the customer experience.

(1) Evaluation index set

According to the previous evaluation index system, let U for elevation evaluation index set: U={U1, U2, ..., Uk} (k is the number of first-level indicators). Select indicators associated with channels based on the enterprise channel construction in the secondary indicators: U_k={U_k1, U_k2, ..., U_km} (m is the number of secondary indicators of the k-th index belongs).

(2) Determination of evaluation index weight

This paper use the Analytic Hierarchy Process (AHP) to determine the indicators of the right to re-value, construct matrix by pairwise compare on the basis of expert advice, find eigenvectors and characteristic roots and conformance testing[9]. Set the congregation of evaluation index weight U_k for \(A={a_1, a_2, ..., a_k}\), \(a_k\) represents the weight of the evaluation index \(U_k\) in \(U\) and \(\sum a_k =1\); At the same time, set the secondary index weight \(A_k={a_k1, a_k2, ..., a_km}\), \(a_k(i=1,2,...m)\) represents the proportion of indicators \(U_{ki}\) at \(U_k\) and \(\sum a_k=1\).

(3) Determination of the evaluation index \(U_{ki}\) score

This article divide the pros and cons of the extent of the evaluation index into different grades, and then assign score to each grade. This article will evaluate the pros and cons of the indicators \(U_{ki}\) attainment of four and assignment (10, 8, 5, 3). The index level between two adjacent levels, the corresponding score is 9, 6.5, 4, 1.5.
(4) Evaluators given score

If we have S evaluators, their evaluator NO h = 1, 2, ..., S. Based on scoring criteria to the evaluation U_{bi} score, and fill in the evaluation of expert ratings table. The ratings table structure evaluation matrix based on the evaluation experts

\[
D = \begin{bmatrix}
    d^1_{11} & d^1_{12} & \cdots & d^1_{1S} \\
    d^2_{11} & d^2_{12} & \cdots & d^2_{1S} \\
    \vdots & \vdots & \ddots & \vdots \\
    d^S_{11} & d^S_{12} & \cdots & d^S_{1S}
\end{bmatrix}
\]

Among the matrix, d represents the h-th reviewer’s ratings based on the scoring criteria for evaluation index U_{bi}.

(5) Seek evaluation of gray class

Set evaluation gray class n class. Grading standard of reference above, the paper decided to select n = 4, which is based gray class j = 1, 2, 3, 4 respectively, on behalf of the four evaluation gray class. Each evaluation gray class albino function:

The first category (j = 1): "excellent" score 10 points or more than 10 points, the albino function is f_1:

\[
f_1(d^b_{hi}) = \begin{cases} 
1 & d^b_{hi} \in [10, +\infty] \\
0 & d^b_{hi} \notin [0, +\infty]
\end{cases}
\]

Second class (j = 2): "good" score about 8 points, albino function is f_2:

\[
f_2(d^b_{hi}) = \begin{cases} 
\frac{d^b_{hi}}{8} & d^b_{hi} \in [0, 8] \\
\frac{16-d^b_{hi}}{8} & d^b_{hi} \in [8, 16] \\
0 & d^b_{hi} \notin [0, 16]
\end{cases}
\]

Third class (j = 3): "medium" score 5 or so, albino function is f_3:
\[ f^*_j(d^b) = \begin{cases} 
\frac{d^b_{ki}}{5} & d^b_{ki} \in [0,5] \\
\frac{1}{5}(10-d^b_{ki}) & d^b_{ki} \in [5,10] \\
0 & d^b_{ki} \notin [0,10] 
\end{cases} \]

The fourth category (j = 4): “poor” score around 3 points, or less than 3 points, the albino function is \( f^*_i; \)

\[ f^*_i(d^b) = \begin{cases} 
\frac{1}{3}(6-d^b) & d^b \in [3,6] \\
1 & d^b \in [0,3] \\
0 & d^b \notin [0,6] 
\end{cases} \]

(6) Find the gray evaluation order right vector and weight matrix

For evaluation index \( U_{ki} \) belong to the j-th evaluation gray evaluation coefficient, denoted as \( x^j_{ki} \), then \( x^j_{ki} = \sum f^*_j(d^b_{ki}) x^j_{ki} \). Thus there evaluation index belongs to each evaluation gray class of gray evaluation coefficient, denoted as \( x_{ki} \), then \( x_{ki} = \sum x^j_{ki} \).

The S reviewers advocate the j-th gray weight of gray evaluation based on the evaluation index \( U_{ki} \), denoted by \( r^j_{ki} \), then \( r^j_{ki} = x^j_{ki} / x_{ki} \).

Evaluation gray class of n, that is, \( j = 1, 2, ..., n \), there S evaluators for evaluation weight vector \( U_{ki} \) belong to each evaluation gray class: \( n^i = (r^1_{ki}, r^2_{ki}, ..., r^n_{ki}) \). Evaluation \( U_{ki} \) weight vector \( r^i_{ki} \) \( (i = 1, 2, ..., m) \) after, that \( U^i \) belongs indicators \( U_{ki} \) for each evaluation gray evaluation weight matrix \( R^i_{ki} \):

\[
R^i_{ki} = \begin{pmatrix}
    r^1_{ki} & r^2_{ki} & ... & r^n_{ki} \\
    r^1_{ki} & r^2_{ki} & ... & r^n_{ki} \\
    ... & ... & ... & ... \\
    r^1_{ki} & r^2_{ki} & ... & r^n_{ki}
\end{pmatrix}
\]

(7) Comprehensive evaluation of U

\( B_k = A_k \cdot B_k = (b_{k1}, b_{k2}, ..., b_{ka}) \), wherein \( B_k \) represents that S evaluators advocating each gray class of gray evaluation weight vectors of indicators \( U_{ki} b_{ij} \) \((1, 2, ..., n)\) indicates S reviewers advocate indicators \( U_i \) belonging to the j-th gray evaluation weight.

According to the comprehensive evaluation of the results \( B_k \), we can get gray evaluation weight matrix \( R \) which represents U belonging to various types of evaluation of gray class:

\[
R = \begin{pmatrix}
    B_1 \\
    B_2 \\
    ... \\
    B_j
\end{pmatrix} = \begin{pmatrix}
    b_{11} & b_{12} & ... & b_{1n} \\
    b_{21} & b_{22} & ... & b_{2n} \\
    ... & ... & ... & ... \\
    b_{j1} & b_{j2} & ... & b_{jn}
\end{pmatrix}
\]
So U as a comprehensive evaluation, its evaluation results:

\[ B = A \bullet R = (a_1, a_2, \ldots, a_i) \bullet \begin{pmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ b_{n1} & b_{n2} & \cdots & b_{nn} \end{pmatrix} = (b_1, b_2, \ldots, b_n) \]

Among the matrix, \( b(j=1,2,\ldots,n) \) represents gray evaluation weight of \( U \) belonging to the \( j \)-th gray class. It can be determined according to the principle of maximum membership that \( U \) belongs to evaluation gray class, that \( b^*_j, b^*_j = \max (b_j) \).

4. SUMMARY

This paper classified factors that affect the customer experience from the point view of the sales channels and customer experience, and built evaluation model which is constructed to help enterprises better understand the consumption characteristics of multi-channel customer experience and customer-to-business sales channel construction. Multi-channel customer is not a simple combination of store customers and network customers, they are not only traditional shop customers, but also rational network customers with the times, they are good at innovation, their consumption characteristics is complex and have characters of modern customer. So, when enterprises conducting multi-channel construction, they must depth-understand consumption characteristics of multi-channel customer, combined with the actual targeted channel construction.

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