The Value Evaluation System and Applications of Digital Cultural Resources

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Abstract—**This paper discussed the situation of value system of digital cultural resources at present. Through a variety of researches about methods of value evaluation, digital cultural resources are discussed and defined briefly. And its values are estimate depending on its own characteristics of different digital cultural resources. The particularity of the digital culture resources, its value indicators, using the analytic hierarchy process (AHP), Delphi method, and the user survey method to estimate the value of cultural resources are then studied. Finally the appropriate value evaluation system of digital culture resources is established. Taking an example to test it is right. It provided the value system with a good reference views for its future studies, provided a strong support to its acquisition, organization, management and services. So that it could lead the sharing of nationwide digital cultural resources and promote the construction of public culture service system as well.**

Keywords-culture resources; value estimate; value factor; AHP; delphi method

I. INTRODUCTION

At present, there is no unified value estimation method for digital culture resources. Digital culture resources to enter the market to become a commodity circulation, such as the process of trading in the digital copyright and digital cultural resources, will involve the transaction price of the cultural resources [1]. It needs to have a reasonable price accurately, to establish a complete set of digital culture resources value estimation system.
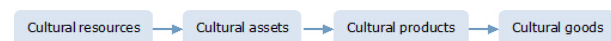

Figure 1. The figure of the flow chart of digital cultural resource pricing

II. THE CLASSIFICATION OF THE DIGITAL CULTURE RESOURCES

The digitization of resources is divided into two categories: the first is the digitization of traditional cultural resources, which end up to digital products (such as digitization of cultural resources in National Library of China or National Museum of China); the second type is directly in the form of the digital cultural goods (e.g., network novel).

III. THE FLOW CHART OF THE INDUSTRIALIZATION OF THE DIGITAL CULTURE

To price a type of digital cultural resources, first of all, we should change the resources through the industrialization process into the products that can be priced, then through the market adjustment and various trading models we determine a reasonable price. So the first thing is to systematical review the entire industry.

For the digital process, the following figure 1 is cultural industrialization process:

In the practical transaction, the digitization of resources is divided into two categories: the first is the digitization of traditional cultural resources digitization, which end up to digital products (such as digitization of cultural resources in National Library of China or National Museum of China). The second type is directly in the form of the digital cultural goods (e.g., network novel). And this project mainly discussed the first category, the digitization of traditional cultural resources. So the definition of digital cultural resources will be the digital process of traditional cultural resources.

IV. THE DEFINITION AND CONTACT BETWEEN ANY PARTS OF INDUSTRIALIZATION OF DIGITAL CULTURE

A. Resources to assets

As for cultural resources, mainly considering its social value, the public value and influences, it does not need to make qualitative judgment of its economic value. Like a photo, it is a work as well as cultural resources, the first thing is to turn it into an asset, which means we should clear and definite the rights of the photographer, including the rights of the thought to sell, the capability to sell, and the confirmation of the buyer's thought and action to buy. For problems of stipulating the rights, we should use the application mechanism of copyright and corresponding means of credit promotion, and thus make it into a tradable item through the standard framework. In addition, from resources to assets, it involved right ownership problems. So the next step is the process of the promotion of credit digital copyright.

B. Assets to the product

By standardized packaging, cultural assets become cultural products. Cultural assets mainly consider its value assessment, covering the participants, previous investment, policy, and the prospective market, previous and prospective revenue. In practice, we use the cost method and income method, change assets into the use of products [2].

C. Products to the goods

Products entered the circulation after confirmation of their prices. And then, after confirming that buyers' and sellers' rights to trade, we use specific pricing methods and pricing model to price the goods. Finally, products can be converted to goods and take part in the market transactions. After arriving at the intention to make a deal, it should make sure the form and quality of the deal in the delivery payment link. In addition, we should consider that in what way, how often we pay. Later in the rights protection link, the relevant institutions supervise the buyer to confirm if it has the right to use all the purchases, and whether he or she is beyond the scope of right to use and so on.

D. Goods

In the aspect of cultural products, we mainly consider trading patterns or trading model, generally use the way of disposable trading or long-term trading, the purpose is to form the flow of goods into the economic circle, and coordinate the benign development of the business operations. And trade pattern will in turn affect the commodity pricing and value evaluation.

To sum up, because the digital copyright is a unique field, which has little comparability with ordinary goods, this article has a relatively clear systematical arrangement. In a word, cultural resources to the asset level are about the resource value assessment. In cultural product level, it is assessed by the pricing method, identifying its initial price. In cultural commodity level, it is to consider the market, trading patterns, adjust the final price—the market pricing.

V. DIGITAL CULTURE RESOURCE ASSESSMENT PROCEDURES

This research uses the analytic hierarchy process (AHP) [3], Delphi method [4], and the user survey method to estimate the value of the digital culture resources. Now, let's take electronic books of "See" as an example and compare the price on the douban (a website in China) reader terminal.

(1) For the digital books, assess the factors which influence the value and get the value index.

(2) Using Delphi method to get expert advice and scores, with 1 to 4 according to experts on the evaluation of the index weight. As shown in Table 1, the value index of "See":

TABLE I. THE VALUE INDEX OF "SEE".

Influence Factor		Percentage (P_i)	4 (X_1)	3 (X_2)	2 (X_3)	1 (X_4)
Content value (Y_1) 0. 3856	Abundance (P_1)	0.0253	Very abundant	Quite abundant	A little abundant	Not abundant
	Authority (P_2)	0.0919	Very high	Quite high	Common	No
	Originality (P_3)	0.2431	Very high	Quite high	Common	No
	Update frequency (P_4)	0.0253	Very high	Common	Low	No
Property value (Y_2) 0.0895	Usability (P_5)	0.0746	Very	Common	Low	No
	Access speed (P_6)	0.0149	High bandwidth, wonderful Software performance	Common	Low	No
Visual value (Y_3) 0.0734	Novelty (P_7)	0.0367	Enterprise original, without copying and imitation	Partial imitation	Large-scale imitation	Complete plagiarism
	Epidemicity (P_8)	0.0367	Very high	Quite high	Common	No
Browsing experience (Y_4)	Recommendation and introduction (P_9)	0.0054	Set up a takeaway, and provide wonderful content recommendations	Quite high	Common	No

0.0323	Clean-slate design (P_{10})	0.0269	Fine	Common	Low	No
Interaction experience (Y_5) 0.2087	Convenience (P_{11})	0.0393	User does not need to learn professionally	The user needs a small amount involved	Users need instructions	Users do not know how to operate
	Answers and feedback (P_{12})	0.0169	The background can timely feedback and reply	Common speed	Low speed	No feedback
	Convenience of information searching (P_{13})	0.1525	Can show a clear list and relevant characters in different colors to distinguish	Quite	Little	No
Emotional experience (Y_6) 0.0393	Friendly interface (P_{14})	0.0066	giving users a variety of greeting friendly tip,	Quite many	Low	No
	User engagement (P_{15})	0.0328	Very broad	Quite broad	Common	No
Trust experience (Y_7) 0.1712	Reliability (P_{16})	0.0856	The reliability of the information content and the operation is extremely high	Quite high	Common	Low
	Safety (P_{17})	0.0856	Well protected	Common	Low	No

(3)User Survey Method [5]: Analyzing the feedbacks of users' questionnaires (407 copies). Then sorting the importance of the value of indexes of digital book, get the base of comparison matrix.

Content Value > Interaction Experience > Trust Experience > Property Value > Visual Value >Emotional Experience > Browsing Experience. The important degree on price is: 9 (Very Important); 7 (Quite Important); 5 (A Little Important); 3 (Not So Important); 1 (Not Important).

Given the result as follows:

9: Content Value

7: Interaction Experience, Trust Experience

5: Property Value, Visual Value

3: Emotional Experience, Browsing Experience

(a) AHP: Taking the result above into YAAHP to analysis and calculate the weight of each index as shown as Figures 2 and 3.
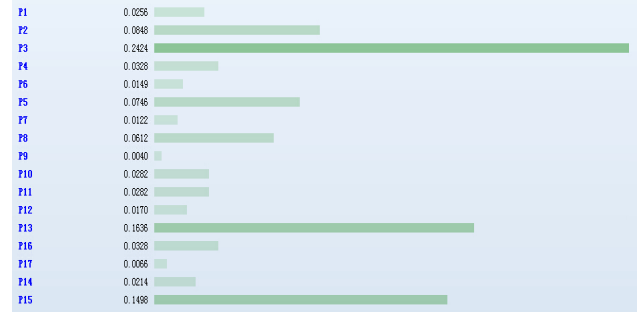

Figure 2. Judgment matrix of value

Figure 3. The weight of value index

(b) For a specified digital cultural resources, we determine the specific variables, then plug in pricing formula, it is concluded that the final price:

$$P = A * \sum_{j=1}^{17} X_i P_j \tag{1}$$

P is the price of the digital book; A is a constant, means price. X_i is variables, namely the value system of each variable in the corresponding grade; $i = 1, 2, 3, 4$; P_j is the weight, $j = 1, 2, 3, ..., 17$

Issuing questionnaires (100 copies) to users to know that people's willingness to pay for this book is 3–15 yuan. So A is:

$$A=(3+15)/2*2.5=3.6 \text{ (yuan)} \tag{2}$$

Then based on the corresponding weights in the price formula and value system, obtain the final price is:

$$P=3.6*3.4175=12.303 \text{ (yuan)} \tag{3}$$

So according to the method in this paper, calculated result of the digital books of "See" is CNY 12.303, and the price on the website of douban (a website in China) is CNY 10.50, the prices have no big difference, so the method was established.

VI. Summary

This article through to the value of the digital culture resources estimation, integrated use of three kinds of ways, and an example is given to prove the validity of the method. An estimation for the future provides strong theoretical basis. But there are still some shortages, at present only in the e-book, would be to verify in other ways, augmented digital cultural resources to adapt to the range of value estimation system.

VII. Acknowledgments

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