A Study on Website’s Column Optimization by User Preference Analysis: Taking "Donghu Circle" as an Example

Jingjing Yan¹, Yu Yan¹, Sheng Cao²*
¹Literal and Law School, Wuhan Donghu University, Wuhan, 430212, China
²Management School, Wuhan Donghu University, Wuhan, 430212, China
*Corresponding author’s e-mail: caosheng@wdu.edu.cn

Abstract. In the era of big data, the development of localized information platform has made a certain breakthrough, which can be operated and optimized with the help of data analysis and around user preferences and column classification. Through the user's use track and browsing preference on the platform, the reaction degree of users to different column content is explored, and the most concerned and interested sections are found, so as to optimize the column classification and content filling.

1. Introduction

1.1. Project research background

1.1.1. Localized information platform and "Donghu Circle"
Localized information platform provides users with different local information, which is convenient, fast and has regional characteristics as well. In the process of operation and development, we should pay attention to the environmental characteristics of local market and the preferences of users.

The localized information platform of "Donghu Circle" is an interactive platform focusing on Wuhan Donghu University and its surrounding areas, integrating and releasing all kinds of information and services. Since its launch in November 2020, the platform has gradually improved the distribution of column sections. Through rich content and practical functions, it can attract users and accumulate traffic.

1.1.2. The importance of data analysis to localized information platform
Big data is not new. As early as 1980s, the concept of big data was put forward in the United States[1]. From its importance, it was predicted that one day data would be more important than the program and software[2]. Data analysis is the core of the whole big data process.

· Data analysis can reflect the objective situation completely and correctly
· Data analysis is an important means to play a role in supervision.
· Data analysis is an effective means to realize scientific management.
· Data analysis is conducive to the deep development and utilization of data[3].

The localized information platform has strong regional attribute, and it is not large but needs to be targeted and personalized. Therefore, data feedback and effect evaluation for the real situation of users are very important for the operation and development of the platform.
1.2. Issues in current research

1.2.1. Research status of localized information platform
At present, there are about 80,000 entries about "localized information service" on the literature website. However, how to operate and gradually improve the functional experience of the established localization platform is a subdivision of the current research field, which has not yet been substantially explored and developed.

Research issues include but are not limited to:
1) The positive effect of elaborate classification of columns on platform development
2) How to improve the richness of content and user experience
3) Depth and characteristics of local information service development

1.2.2. Existing problems of "Donghu Circle"
As a regional information platform, Donghu Circle has the bright spots of easy management, fast communication and multi-functions. At current stage, it is urgent to analyze and study the existing development results data, so as to move to the next stage. The problems include but are not limited to:
1) The number of users is small, and the scale is not formed yet
2) Lack of diverse content attraction
3) Column functions classified disorderly without emphasis

2. Materials and Methods

2.1. Case analysis based on big data
Taking "Donghu Circle" as an example, starting from the existing user and content data, this paper focuses on the attraction of column content to users, analyzes the causes, and obtains the influence of user preferences on column optimization of localized information platform and suggestions for improvement with regional characteristics. The data can be analyzed after processing. There are nine common data analysis methods, including direct evaluation method, comparative analysis method, grouping analysis method, etc.[4] Here we mainly use structural analysis method and average analysis method.

2.2. Study platform optimization scheme in depth
Supported by the data results, this research discusses the future development direction and optimization scheme of the localized platform, and further explores the characteristics and growth possibilities of the platform.

3. Results & Discussion

3.1. Research process analysis and data results

3.1.1. Data acquisition and presentation of "Donghu Circle"
After sorting and analyzing the user data of nearly four months since the launch of the platform, we can get the distribution of a certain number of samples in different columns, and visualize the data. As you can see, we have seven columns on the website. The original visit data is 1848 in total, and except for the visit times without secondary column click, the number of valid samples is 211.

Present specific data in tables: (as Table 1)

| Column       | Views |
|--------------|-------|
| Tele-consultation | 8     |

Table 1. Page views of each column
Organizations and Club 11
Message Board 12
Campus Forum 17
Article Space 50
Customer Service 56
News and Information 57
Total 211

Use histogram and pie chart to visualize the data: (as Table 2 and Table 3)

Table 2. Page views of each column

| Column                  | Page Views |
|-------------------------|------------|
| Tele-consultation       | 4%         |
| Customer Service        | 26%        |
| Organizations and Clubs | 27%        |
| Message Board           | 5%         |
| Campus Forum            | 8%         |
| Message Board           | 24%        |
| News and Information    | 27%        |

Table 3. Proportion of Page Views of Each Column

3.1.2. Data analysis of “Donghu Circle”
As shown in the tables, there are obvious differences in the distribution of data samples in various columns, mainly in the Article Space, Customer Service, News and Information. Their views are approximately 50 while others have fewer views. The functions of these three columns are:
- Article Space - browsing the details page of recent articles
- Customer Service - asking customer service based on the use of difficulties
- News and Information - obtaining the latest practical news information on campus

Using structural analysis method and direct evaluation method, we can conclude that these three columns are relatively more popular, and the content obtained by users is relatively practical and effective.
3.1.3. Further processing data of "Donghu Circle"

The conclusion of direct evaluation is not enough to explain the popularity of the column. It needs further process on data with the average analysis method. The average data is more convincing than the total index. The data is shown in the figure below. (as Figure 1)

1) Users

\[ V(t) / U = uV(a) \]

Divide the total numbers of views by the number of users to get the average number of views, which is 3.15 times.

- The users with more than 3.15 are more interested in the platform and more likely to retain. They are Users with High-intention and need to be focused on. (13 people)
- The users with less than 3.15 views need more maintenance and attraction to increase user stickiness. (54 people)

**Analysis:** This set of data reflects that most users have not established a good link with the platform, and they are not very interested in the existing function columns of the platform.

The value of users is involved here, which is not discussed in this paper.

2) Column

\[ V(t) / C = cV(a) \]
Divide the total numbers of views by the number of columns to get the average number of column views, which is 30.14 times.

- The columns with more than 30.14 views are more popular which are the main functions and need to be optimized. (3 columns)
- The columns with less than 30.14 views will be deleted or merged in the later operation. (4 columns)

**Analysis:** The three columns that are more popular with users, Article Space, Customer Service, News and Information, will be retained as the main columns, and will be optimized and upgraded in the later stage; obviously, the rest columns are not paid enough attention by users, they need to be rectified and merged, and more rich column content and classification will be added to enrich the platform information. Compared with the previous direct inference, this result is more credible and scientific with the support of data.

3.2. Discussion on the results of the study

From the macro perspective, the amount and quality of sample in this study are not enough, and the conclusions are not that universal. However, it still shows that users literally have different content preferences and browsing habits when using localized information platform.

After the platform function and content are improved in the later stage, we can conduct another further research and analysis, take enough data samples and better analysis methods to further study the operation strategy of how to localize the column content, and the operation means of how to subdivide and accurately locate the content.

4. Conclusions

Through this study, we conclude that users' preferences for columns can reflect the necessity and practicability of column classification to a certain extent. With the assistance of actual data and case analysis, we can more scientifically verify which columns are the main optimization objects while which columns need to be abandoned or rectified. Based on the reality, the preferences and habits of users in the region should be extracted, so as to optimize the function setting and use experience of the platform. "Donghu Circle" can be based on this study in the future operation and development, and gradually develop into a perfect localized information platform through phased research and experiments.

**About the author:**

Jingjing Yan, female, 21 years old, undergraduate student in School of Liberal and Law, Wuhan Donghu University. Vice president of the ‘Internet Plus Student innovation and research Association’.

**Acknowledgments**

This work was supported by the educational research project funded in 2019 by Wuhan Donghu University, the project’s name is “The study on E-commerce Innovation and Entrepreneurship Cultivation Driven by Subject Competition ‘Donghu Model’ ” in finance. And Professor Sheng Cao is the principal of this project. In the meantime, I sincerely thank Professor Sheng Cao and Tutor Yu Yan for valuable discussion and writing guidance.

**References**

[1] The Coming of Big Data Era[EB/OL].(2013-05-15). http://wenku.baidu.com/view/a1b4290b227916888486d785.html.

[2] Tu Zipei Talks about the Era of "Big Data"[EB/OL]. (2012－11－17). http://www.eeo.com.cn/2012/1117/236227.shtml.

[3] DATA-BI from CSDN. (2019-06-04) The importance of data analysis. https://blog.csdn.net/qq_37553773/article/details/90788277.

[4] Gou, JW. (2017-11) New Media Data Analysis. PTP Publishing, Beijing.