Research on the Influence of User Perceived Overload on Information Avoidance Behavior from the Perspective of Human-Computer Interaction

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Abstract. With the development of network informatization, users can obtain a large amount of information in the process of human-computer interaction to provide a basis for self-determination. At the same time, the huge amount of information has also caused users to produce fatigue and negative usage behavior to a certain extent. The study collected 452 valid questionnaires through the questionnaire survey method, and the results showed that users' perception of information overload and function overload positively affect information avoidance behavior from the perspective of human-computer interaction, while social overload has no significant impact on information avoidance behavior. The research conclusions help to further understand the impact of user perception overload on user information avoidance behavior, and provide enlightenment for information dissemination and function setting in human-computer interaction.

1. Introduction

With the transformation and upgrading of consumption, mobile social applications have become the main way for users to obtain information, share dynamics, establish and process social relationships, and make decision-making basis and online consumption. However, in the process of human-computer interaction, users have encountered many problems such as information flooding, complicated social relationships, and technological development exceeding user needs. At the same time, reports on the use of domestic and foreign applications such as Facebook, Twitter, WeChat, QQ, Weibo, and Zhihu show that they have experienced user churn and decline in the number of active users to varying degrees. This phenomenon is likely to be caused by the user's perceptual overload in the process of human-computer interaction that affects the user's negative use behavior. The related research content of user's negative use behavior has received extensive attention from scholars. One of the manifestations of user's negative use behavior is information avoidance. Existing studies have shown that the research on users' negative usage behavior and its influencing factors is of great significance in improving functional characteristics, enhancing user stickiness, promoting information dissemination, and increasing brand reputation. Studies have also shown that the impact of social network applications on user information behavior is greater than the impact of search engines on user information behavior. Therefore, this article focuses on the process of human-computer interaction in mobile social applications, taking human-computer interaction as the research object, and exploring the main factors that affect users' information avoidance behavior. It provides theoretical reference and practical enlightenment for academia and the industry to better understand and respond to information dissemination in the process of human-computer interaction in future research and actions.
2. Literature review and hypothesis

2.1. Information overload and information avoidance behavior

Information overload is defined as a phenomenon in which the response rate drops or collapses due to the fact that the information exceeds the acceptance of the individual or the system. Studies have shown that too much information will increase the pressure and burden of SNS users, which is one of the reasons that induce user fatigue and cause the decline in SNS usage [1]. Consumer information overload will reduce consumer confidence in decision-making, and the decline in consumer confidence will cause consumers to feel dissatisfied [2]. Empirical research shows that WeChat information overload will affect users' negative behaviors such as diving, blocking, and ignoring. Therefore, put forward the hypothesis:

H1: User perception of information overload in human-computer interaction positively affects information adoption behavior.

2.2. Social overload and information avoidance behavior

The phenomenon of "social overload" means that in order to gain group support and respect, people need to invest more time and energy than they can bear to maintain social interaction, which can lead to negative emotions to a certain extent. Many scholars have found that excessive social activities resulting from excessive response, attention, or feedback to friends can cause psychological fatigue or burnout of users. Scholars conducted interviews with Facebook users and found that after they become burnout on social networks, they tend to reduce the use of social networks [3]. Therefore, put forward the hypothesis:

H2: User perception of social overload in human-computer interaction positively affects information adoption behavior.

2.3. Function overload and information avoidance behavior

System function overload refers to the increase in user perception of difficulty due to platform functions that are too complex and cumbersome. It is a phenomenon of mismatch between platform functions and user needs. Studies have confirmed that the functional overload of the perception system has a significant positive impact on user burnout [4]. There are operator push service overloads and third-party marketing service overloads in WeChat, and service overload has a positive impact on usage burnout. Therefore, put forward the hypothesis:

H3: User perception function overload in mobile social applications positively affects information adoption behavior.

3. Research model

This article discusses the impact of user perception overload on information behavior in the process of human-computer interaction from an empirical point of view, and divides perception overload into information overload, social overload and functional overload, and discusses their influence on information avoidance behavior. According to the literature review, a research model is proposed, as shown in Figure 1:
4. Research design

4.1. Survey design
The questionnaire method is used to collect data from users and conduct empirical analysis. The questionnaire design of this study refers to the measurement items of previous scholars and is modified in accordance with the research situation. The questionnaire design of this study refers to the measurement items of previous scholars, and is modified according to the research situation. This questionnaire uses the Likert 7-level scale for the scoring of the measurement items. From 1 to 7, scoring the items according to "1- strongly disagree, 2- disagree, 3- disagree, 4- general, 5- more agree, 6-agree, 7-strongly agree".

4.2. Data collection
This research mainly takes the users in the human-computer interaction as the research object to conduct questionnaire surveys, and mainly uses the questionnaire distribution and the questionnaire star network platform to send and receive the questionnaire. The questionnaire was issued within one week. A total of 500 questionnaires were issued. Invalid questionnaires were excluded and 461 were recovered. The questionnaire response rate was 92.2%. The number of valid questionnaires reached the sample size required by the empirical analysis.

4.3. Sample descriptive statistics
The sample of this research is the user in human-computer interaction. According to the collected questionnaire data, the age of the survey subjects is mainly concentrated in the 10-30 years old, of which boys accounted for 62.69% of the total number of people, and girls accounted for 37.31% of the total number of people. The user's main education is a bachelor degree, and the mobile social applications frequently used include WeChat, QQ, Douyin, Weibo, Xiaohongshu, Zhihu, etc. They use mobile social applications for more than 3 hours a day on average, accounting for nearly half of the total number of people in the survey.

5. Result analysis

5.1. Reliability and validity test
The Cronbach’s α coefficient of a variable is used to reflect the internal correlation between the various measurement items of the variable. The larger the Cronbach’s α coefficient, the better the internal consistency of the scale. The data shows that the Cronbach’s α values of information overload, social overload, functional overload, and information avoidance behavior are 0.810, 0.811, 0.836, and 0.864, respectively, which are all greater than 0.8. The CITC value of each variable is greater than 0.5, indicating that the reliability of the variables in this study is good.

Through SPSS21.0 software analysis, the KMO value of the measurement scale is 0.920, which is greater than 0.9, indicating that the relationship between the measurement items is very good. The
significance probability of Bartlett's sphericity test is 0.000, which is less than the significance level of 0.05, so the sphericity hypothesis is rejected. Therefore, the sample data collected in this study is suitable for further factor analysis. The results of the principal component factor analysis of this study showed that the variables were independent of each other and there was no crossover, and the load value of each question factor was greater than 0.5, indicating that the validity of this study was good.

5.2. The influence of perception overload on information avoidance behavior
In order to verify the impact of user perception overload in human-computer interaction on information avoidance behavior, this paper uses the linear regression function of SPSS to construct a regression equation, chooses the regression method to be stepwise, and eliminates possible collinearity. The results are shown in Table 1, Table 2, and Table 3. Information overload has a significant impact on information avoidance behavior (p=0.000<0.001), social overload has no significant impact on information avoidance behavior (p=0.152>0.050), and functional overload has a significant impact on information avoidance behavior (p=0.021<0.050). Hypothesis 1 and 3 are verified, and hypothesis 2 does not hold.

| Table 1 Model Summaryb |
|------------------------|
| Model | R | R Square | Adjust R square | Standard estimated error | Durbin-Watson |
|-------|---|----------|-----------------|-------------------------|--------------|
| 1     | .456a | .208 | .202 | .81643 | 2.087 |

a. Predictor variable: (constant), FO, IO, SO.
b. Dependent variable: IVB

| Table 2 Anovaa |
|----------------|
| Model | Sum of square | df | Mean square | F | Sig. |
|-------|---------------|----|-------------|---|------|
| 1     | Return        | 79.761 | 3 | 26.587 | 39.887 | .000b |
| Residual | 304.619 | 457 | .667 |
| Total  | 384.380 | 460 | |

a. Dependent variable: IVB
b. Predictor variable: (constant), FO, IO, SO.

c. Model | Non-standardized coefficient | Standard coefficient | t | Sig. | 95.0% Confidence interval for B |
|---------|-----------------------------|----------------------|---|------|--------------------------------|
| (constant) | 2.236 | .197 | 11.347 | .000 | 1.849 | 2.623 |
| 1 | FO | .100 | .043 | .121 | 2.311 | .021 | .186 |
| IO | .286 | .048 | .322 | 5.967 | .000 | .192 | .380 |
| SO | .069 | .048 | .081 | 1.436 | .152 | -.025 | .164 |

6. Conclusions
Declining user activity and interruption of use are issues that platform or APP operators have to face. In order to explain this phenomenon and find effective measures to alleviate the status quo, this study constructed a model of the relationship between user perception overload and user information avoidance behavior in human-computer interaction, and verified that user perception information overload and function overload positively affect information avoidance behavior, While the influence of social overload on information avoidance behavior is not significant.

At present, many mobile social applications have problems such as large amount of information, poor information quality, complicated social relationships, and complex functional structures. These
are the reasons why users do not want to continue human-computer interaction. Therefore, the following suggestions are proposed based on the research conclusions of this article. First of all, the amount of information in the human-computer interaction interface should be avoided. Accurately push information based on user needs to avoid invalid information from interfering with user human-computer interaction. Second, strengthen the supervision of the quality of business information and content push, and establish a good and orderly human-computer interaction environment. Finally, optimize and simplify the functional design to enhance the user interaction experience and strengthen the rationality of the functional design. Human-computer interaction design should promote the development of mobile social applications by improving user experience, enhancing user activity, and reducing user churn.

Although this research has enlightening significance for the operators and developers of human-computer interaction in user research, function design, and information dissemination. However, there are two limitations. First, the differences in user perception overload and information avoidance behaviors in different types of applications are not compared. Second, starting from the process of user human-computer interaction, it only explores the individual perceptual factors that affect users' information avoidance behavior, and there is insufficient research on external environmental factors and group factors. In order to effectively solve the above problems, the number of samples will be expanded in future research to enhance the universality of the research, and the research on internal mechanisms and adjustment mechanisms will be increased.

References
[1] Kwak K T, Cheon Y J, Oh S H, et al. 2012 Why people Feel Stressful in Using Mobile Social Network: from SocioTechnical Perspective based on KAK-AO TALK User Survey Data [J] (Korean Management Review) (6) p 1405-1434
[2] Grover V, Lim J, Ayyagari R. 2006 The dark side of information and market efficiency in e-markets [J] (Decision Sciences) 37(3) p 297-324
[3] Ravindran T, AC Yeow, Kuan, DG Hoe Lian., 2014 Antecedents and effects of social network fatigue [J] (Journal of the Association for Information Science and Technology) 65(11) p 2306-2320
[4] Zhang S, Zhao L, Lu Y, et al. 2016 Do you get tired of socializing? An empirical explanation of discontinuous usage behaviour in social network services [J] (Information & Management) 53 p 904-914