The Effects of Simplicity and Interactivity in Blog Services

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Abstract

The main goal of this study is to propose a model of simplicity and interactivity effect on usability in the blog services. As web-based applications become increasingly complicated, the need for simplicity in user interface design has grown for better usability. Also, interactivity has been known to influence on usability. Previous studies argued that usability is a key factor for system success. Usability is concerned with attributes of an application that makes it understandable, learnable, easy to use, and attractive. For the complicated technology, perceived control, related to direct manipulation of an object, is important. In this regard, we posit that simplicity, interactivity, and perceived control makes important antecedents to usability. Finally, we tested that the effect of usability on user's loyalty with the blog services along with trust and satisfaction. Future studies will empirically examine the proposed model, emphasizing the importance of simplicity and interactivity for the user interface design.

Keywords:

Simplicity; Interactivity; Perceived Control; Usability; Trust; Satisfaction; Loyalty

Introduction

The recent generation of web applications and web sites has been considered to be fundamentally different from the early web. The generation is known as "Web 2.0," including blogs which are online journals or diaries hosted on a web site and often distributed to other sites or readers. McKinsey survey on Internet technologies [1] revealed that blog leads Web 2.0 trends in the area of business. Technorati were tracking more than 50 million blogs in 2006, and about 175,000 blogs were created daily [2]. This fact indicates that the number of blog doubles every six months. In this sense, because of the importance of blogging these days, the blog is selected as the target service for this study.

As the complexity dramatically increases with technological development, the usability of blog has been regarded as a critical factor for what. One of the factors explaining usability is simplicity. Simplicity has recently been suggested as an important concept for a successful user interface design by John Maeda [3, 4]of the MIT Media Lab. The concept of simplicity not only refers to a simple layout, as stated in previous studies, but also embraces interface organization, functionality, structure, work flow and framework [4, 5]. From the literature review, we define simplicity as the antecedent to usability and classify it into four sub-dimensions: reduction, organization, integration, and prioritizing. Interactivity is another important factor that affects usability. User interaction with sites that presents higher than normal usability have been significantly associated with performance improvement [6]. Johnson et al.[7] addressed that relationship between interactivity and web site attitude. Thus, we posit the interactivity as a significant construct on usability.

In addition to simplicity and interactivity, we also bring in perceived control as an important antecedent to usability. Control theory explains that control is conceptually related to the direct manipulation of an object and also related to users' psychological status when they use the object [8-11].

In this study, we propose a model of simplicity and interactivity through perceived control on usability, which predicts user trust and satisfaction from the blog service. The model includes an ultimate dependent variable, user loyalty toward the blog service.

The finding of this study will shed light on the role of simplicity and interactivity in designing blog interface and building loyalty of the blog services.

Hypotheses Development

Antecedents of Usability: Simplicity, Interactivity, and Perceived Control

Figure 1 illustrates the conceptual model of relationship among simplicity, interactivity, perceived control, and usability. This section explains the relationship between each constructs in Figure 1.
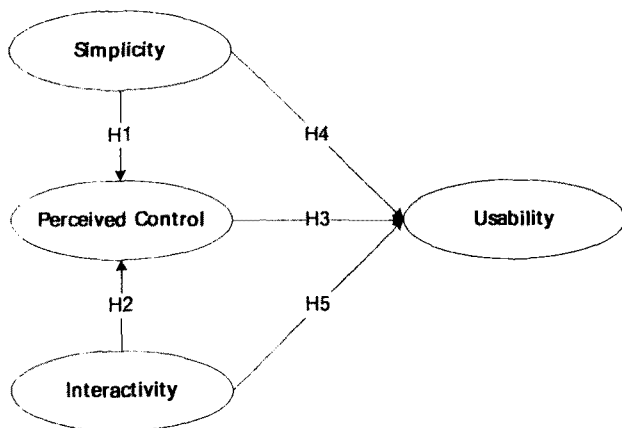
Figure 1 – A Conceptual Model of Developing Usability

Simplicity

Simplicity is the key issue in designing products that are easy to use. Many companies implement simplicity in their products and interface design [3, 4, 12]. In this study, we introduce simplicity as a new construct for information system usability, in particular, for blog services. This study posits based on Arnett et al. [13]'s elucidation that simplicity is a second-order formative factor to reduction, organization, integration, and prioritizing. First order-constructs of simplicity represent specific aspects of the construct and as whole form simplicity. Accordingly, changes in any of sub-constructs would cause a change in the simplicity and changes in one of the sub-constructs are not necessarily accompanied by changes in any of other sub-constructs.

Reduction can be applied to all aspects of application design: to reduce the functionality (goals), the structural and navigational complexity, and the interface (screen) complexity [5].

Organization refers to the extent to which a application's structure, functionality, and navigation are organized. Organizing and structuring an application is similar to being the architect of a building. The SAP Design Guide [5] noted, "Human memory is large amount of knowledge structure that is organized according to principles that we are not aware of. But we do know that human performance depends on an efficient organization of facts and procedures. User's performance is better if an application's overall structure, navigation, functionality, and screens are well organized." An efficient organization also simplifies an application, which has an additional positive impact on performance. The task of organizing and structuring an application relates to: the general application structure (screens, pages, and so on), the navigational structure, the structure of the functionality and the screen or page layout [4, 5].

Integration denotes the aspect of simplicity that puts fragmented components of application into a coherent framework. According to the SAP Design Guide [5], "Simplification can lead to the creation of many simple, isolated task, and thus applications. It is necessary to integrate these tasks in order to make them accessible to users. Integration is often provided through a huge menu

tree, leaving the users alone in a maze of functionality. Abstract integration using trees or net structures does not conform to human mental habits and is often a very inefficient way to organize tasks. The principle of integration is the importance of integrating simple, elementary tasks into a coherent framework."

Prioritizing means that applications should focus on the essential tasks and not try to serve a multitude of diverse goals [5]. This includes optimization with respect to the important aspects of a task [4, 5].

Tilson et al.[14], in the IBM Ease of Use Group, provide UI design principles which include simplicity for usability. Nielsen [15] suggested that simplicity is a key factor behind creating a usable design, indicating that simplicity means "users on the web are able to get what they came for." Also, users are extremely goal driven on the web, and will not compromise anything between themselves and their goals.

In September 2004, Philips launched a brand promise of "Sense and Simplicity" [4]. They said that simplicity refers to their ability to provide easy access to those meaningful benefits [16]. Philips websites noted that "Around 30% of home networking products are returned because people can't get them to work and 48%of people have put off buying a digital camera because they see them as too complicated" [17]. Through global consumer research in January 2003, it was found that people around the world (regardless of where they live) want the benefits of technology without the hassles. In other words, the world is already complicated enough and consumers want simplicity [4, 17].

Interactivity

The meaning of interactivity is the bidirectional flow of information between a sender and a receiver in communication. It is very similar to the concept of feedback in communication[7]. Johnson et al.[7] reviewed existing definitions of interactivity and they offer a comprehensive conceptualization, based on behavioral interactivity. They defined interactivity as "the extent to which an actor involved in a communication episode perceives the communication to be reciprocal, responsive, speedy, and characterized by the use of nonverbal information" [7]. In this study, we draw on their definition of interactivity with four facets where, interactivity is a second-order formative construct[13].

The four factors identified that constitute interactivity are reciprocity, responsiveness, speed of response, and nonverbal information[7].

Reciprocity means that "the extent to which communication is perceived to be reciprocal or to allow mutual action" [7, 18-22].

Responsiveness means that "the degree to which the responses in a communication are perceived to be appropriate and relevant, and resolving the information need of the interaction episode or event" [7, 18, 23-25].

Speed of response means that "the extent to which a response to a communication event is perceived to be immediate or without delay" [7, 18, 23, 26].

Nonverbal information refers to "the extent to which

communication is characterized by nonverbal information (the use of multiple channels for communicating information)" [7, 23, 27].

Perceived Control

Rothbaum et al.[8] proposed the two-process model of perceived control. They argue that perceived control can be divided into primary control and secondary control. They define primary control as attempts to change the world so that it fits in with the self's needs. Secondary control is defined as attempts to fit in with the world and to "flow with the current." The processes of secondary control include positive reappraisal, positive thinking, cognitive restructuring, acceptance, distraction, downward comparison, attributional bias, and goal disengagement [9, 28].

Heckhausen and Schulz [9] define primary control as bringing the environment (object) into line with one's wishes, and secondary control as bringing oneself in line with the environment, implying that action is directed outward to the external world in primary control and inward toward the individual in secondary control. In other words, the process of primary control involves direct action on the environment, whereas secondary control processes are primarily cognitive. Thus, primary control targets the external world to achieve effects in the immediate environment external to individual, whereas secondary control targets the self to achieve changes directly within the individual. The major function of secondary control is to minimize losses in, maintain, and expand existing levels of primary control. Since these two types of control are closely interconnected, they have been theoretically distinguished but it is difficult to obviously separate them.

When an individual finds it difficult to make the object part of the extended self, or fails to directly control it, he might invest in the target, or need more time to get to know it intimately. This behavior is typical of secondary control. Secondary control not only helps in dealing with failures, but also promotes primary control directly by managing its selectivity. Through secondary control, the individual can gain better primary control over the target. In this regard, behaviors of "investing the self into the target" and "getting to know it more intimately", as suggested by Pierce et al.[10, 11], can be explained by "secondary control."

Therefore, perceived control can be modeled as a second order construct of, primary control and secondary control[13].

Based on the control theory, we argue that control is conceptually related to direct manipulation of an object, as well as related to users' psychological status when they first use the object [8-11]. In both perceiving and visually representing the natural organization of objects, we are supported by the mind's powerful ability to detect and form patterns [4]. With regard to the visual mind, Gestalt psychology is particularly relevant. The principle of Gestalt seeks the most appropriate conceptual fit; it is the key of the discipline of design. Maeda [4] explained simplicity with the gestalt of the iPod interface. Also, interactivity has significant relationship with control [7, 19, 22] and user

manipulation of the information provided via web site is strongly influenced by interface design. Interactivity includes "the ability to the web site's look, feel, and content as well as provides interaction with the user"[6] Thus, simplicity and interactivity expected to be associated with increased perceived control to use the blog services.

H1: There is a positive relationship between simplicity and perceived control in using blog services.

H2: There is a positive relationship between interactivity and perceived control in using blog services.

Usability

ISO/IEC 9126-1 definition of the usability is mainly associated with easy-to-use interface and is concerned with attributes of the product that make it "understandable, learnable, easy to use, and attractive" [29]. Niesen [30] defined that usability is identified with ease of use and learning, and excludes utility. More recently, website usability is suggested to be "a quality attribute that assesses how easy user interfaces are to user" [31]. These definitions indicates the "coincidence between the concept of ease of use and usability"[6].

Taylor and Todd [32] found that perceived control was a significant determinant of intention. Venkatesh[33] found that internal and external control would be important for the formation of early system-specific perceived ease of use. Kieran et al.[34] found that perceived control was related to usability. Thus, perceived control is expected to have a positive influence on usability in their interaction with the blog services.

H3: There is a positive relationship between perceived control and usability in using blog services.

According to the literature [4, 12, 14, 15], simplicity is expected to have a positive influence on a user's perception of usability while interacting with blogs. Tilson et al.[14], in the IBM Ease of Use Group, provide UI design principles which include simplicity for usability. Simplicity is the key factor of design aesthetics [35]. Tractinsky[36] found that when user interface is considered aesthetically pleasing in the beginning of the use, users are likely to perceive it more easy to use, also after using it for some time. Dianne et al.[37] found that the design aesthetics of a mobile site positively influences usability. Therefore, simplicity is expected to have a positive influence on usability during the interaction with blogs.

H4: There is a positive relationship between simplicity and usability in using blog services.

Teo et al. [38] found that interactivity appears to positively influence the usability. Also, Ghose and Dou[39] suggested the potential of web design features such as interactivity in improving web usability. Thus, interactivity is expected to have a positive influence on usability during the interaction with blogs.

H5: There is a positive relationship between interactivity and usability in using blog services.
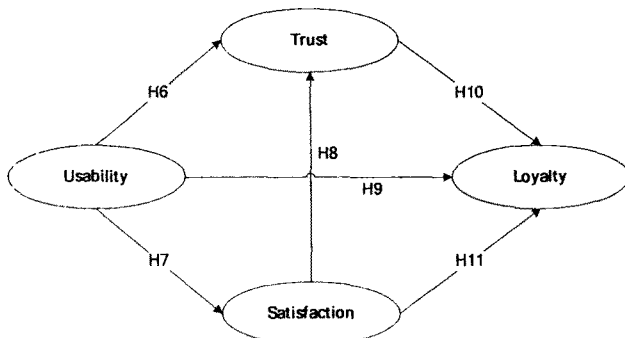
Building Loyalty from Usability

Figure 2 – A Conceptual Model of the Relationship between Usability, Trust, Satisfaction, and Loyalty [40]

In this study, Flavian et al.[40]'s loyalty model is employed to examine the blog interface usability on users loyalty towards the service. (Figure 2)

Trust

Trust is defined as "a group of beliefs held by a person derived from his or her perceptions about certain attributes.[41]" Flavian et al. [40] defined trust as a construct made up of three dimensions: honesty, benevolence and perceived competence in a website. Previous studies [42, 43] argued that usability may influence the perceptions of the consumer about the website, which in turn affects trust with the web site. Flavian et al. [40] also suggested that the usability of a computer system allows more complete learning and a greater capacity to infer how the system will act so that the users can rely on the web site for their activities. Thus, usability may have a positive influence on trust.

H6: There is a positive relationship between perceived usability of a blog service and trust of the user in the blog service.

Satisfaction

Satisfaction is defined as "an affective consumer condition that results from a global evaluation of all the aspects that make up the consumer relationship.[44]" Previous studies have looked at factors that influence satisfaction among website users [45] and website design influences on the Internet consumer satisfaction [46]. Also, satisfaction has been linked to the trust in a relationship[47, 48]. Thus, we posit H7 and H8.

H7: There is a positive relationship between perceived usability of a blog service and satisfaction of the user with the blog service.

H8: There is a positive relationship between user satisfaction with a blog service and trust shown in the blog service.

Loyalty

Website loyalty depends on consumer skills in managing and controlling the website, cognitive lock-in [40]. Also, the necessary skills are not only depending on the time to manage website, but also on the facilities that the website offers its users [40]. Therefore, usability is expected to have positive influences on loyalty in their interaction with the blog services (H9). In addition, Lee et al.[49] and Flavian et al.[40] stated that loyalty directly depends on the degree of trust (H10). Also, several studies[40, 44, 50] pointed out that higher consumer satisfaction leads to greater individual loyalty (H11).

H9: There is a positive relationship between perceived usability of a blog service and user loyalty to the blog service.

H10: There is a positive relationship between user trust in a blog service and user loyalty to the blog service.

H11: There is a positive relationship between user satisfaction with a blog service and user loyalty to the blog service.

Research Model

This study establishes a research model based on two conceptual models and eleven hypotheses proposed above. These conceptual models and the hypotheses are integrated into a structural equation model as shown in Figure 3. In this research model, simplicity and interactivity are the second-order formative constructs and perceived control is the second-order reflective construct as indicated by previous studies.

Conclusion and Future Work

The main goal of this study was to provide a model of simplicity and interactivity in the blog services. The proposed model suggests simplicity, perceived control, and interactivity as the antecedents to usability. Also, usability, trust, and satisfaction are the antecedents to loyalty.

To date, the concepts of the simplicity, interactivity, and perceived control have not been well applied to application or service design. Especially, previous studies pointed out that simplicity is the key issue in design, especially in the web design, digital interface design, and usability engineering area. However, there has been no empirical validation of simplicity so far. This study will demonstrate the effect of those factors by empirically validating the proposed model as shown in Figure 3. It will use a cross sectional design with survey method. In so doing, we will develop measurement items for the latent variables in Figure 3 based on literature review.
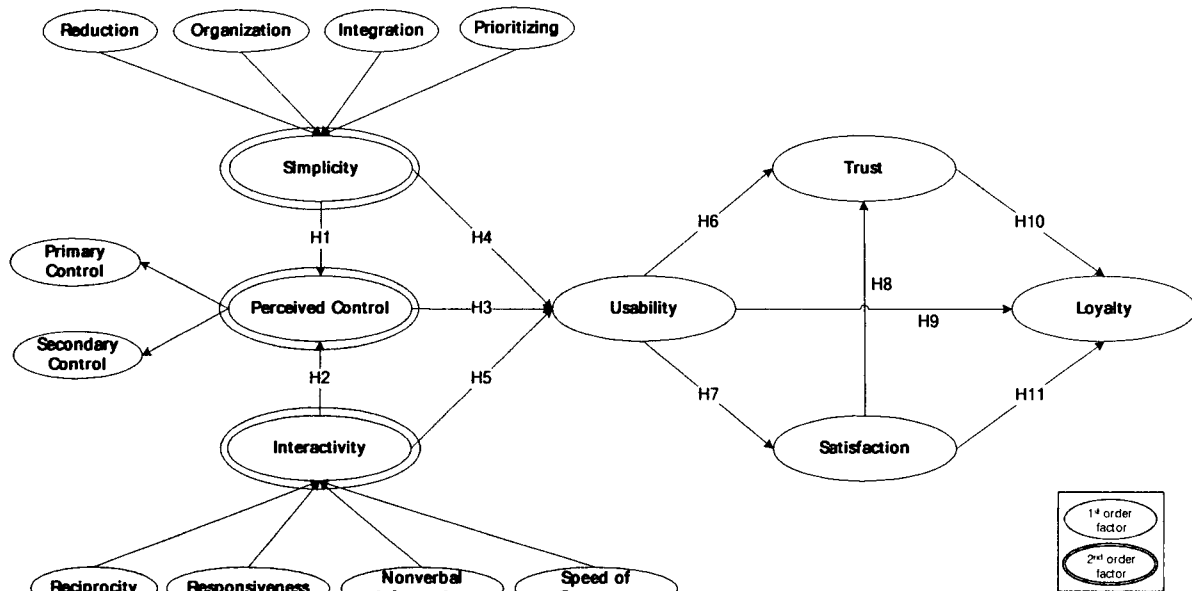
Figure 3 – Research Model and Hypothesized Relationship

Subjects will be blog users and data analysis will be conducted using the Partial Least Squares (PLS) method. Finally, the results of the empirical study will be provided to be applied to user interface design of many applications, including blog services.

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