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# Value of Mobile Commerce to Customers

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## ABSTRACT

Advances in wireless technology have stimulated rapid developments in electronic commerce via the use of mobile devices. This research studies the values of mobile commerce using a qualitative means-ends approach, called Value-Focused Thinking. We interviewed 30 subjects and captured their values of mobile commerce. The relationships among these values were illustrated using a means-ends objective network. For researchers, this research contributes to our understanding of mobile commerce and provides a foundation for future research. For practitioners, the results of this research highlight the concerns and issues of customers, and are valuable for strategy formulation in mobile commerce.

## Keywords

Mobile Commerce, Values, Means-Ends Network, Value-Focused Thinking

## INTRODUCTION

E-commerce conducted through radio-based wireless devices is called mobile commerce (also known as m-commerce and mobile e-commerce). Mobile commerce is, therefore, the mobile variant of e-commerce. Since mobile commerce is an extension of e-commerce, it shares some commonalities with e-commerce. However, mobile commerce differs from e-commerce in technology, nature of services, business models, and customer base (Zhang and Yuan, 2002). Its unique characteristics and features such as ubiquity, personalization, flexibility and localization (Tang and Veijalainen, 2001; Siau et al., 2001) have provided customers with added values and extra benefits including anytime and anywhere access, the capability to pinpoint mobile devices' locations for personalization and localization, and the functionality to access information at the point of need (Siau et al., 2001).

However, the limitations of mobile services and mobile technology have also posed challenges for mobile commerce. For example, new security and privacy risks that are unique to the wireless medium and devices abound in m-commerce applications (Ghosh and Swaminatha, 2001). In this research, we examine the values of mobile commerce from the customers' perspectives.

## LITERATURE ON VALUES OF E-COMMERCE

As mobile commerce is a special type of e-commerce, research on values of e-commerce can help us to understand the values of m-commerce. Keeney (1999) studied the values of e-commerce to customers by using the Value-Focused Thinking approach. He interviewed individuals about the pros and cons of using Internet commerce that they had experienced or envisioned. Then he derived a list of customer values and constructed a means-ends network to show the relationships among those values. The means-ends-objective network is presented in figure 1.

The overall objective for Internet commerce can be defined as maximizing customers' satisfaction (see figure 1). The fundamental objectives under the main objective of maximizing customers' satisfaction are: maximize product quality, minimize cost, minimize the time required to receive product (transit time), maximize convenience, minimize time spent, maximize privacy, maximize shopping enjoyment, maximize safety, and minimize environmental impact. These nine objectives were the fundamental values that Internet commerce provided to customers. Keeney (1999) also defined a number of means objectives that can help achieve those fundamental objectives, including minimize fraud, assure system security, maximize access to information, and minimize credit card misuse.

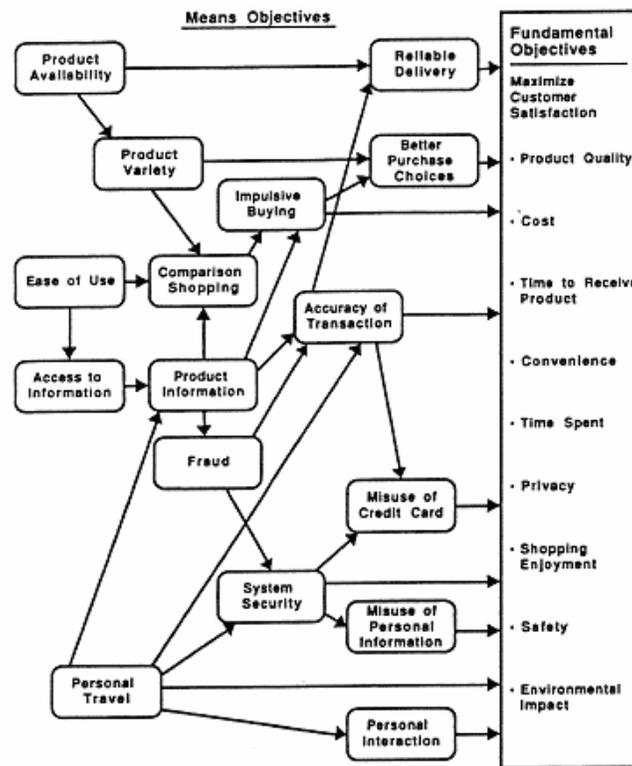


Figure 1: Means-ends objective network for values of Internet commerce  
(Adapted from Keeney, 1999, p.539)

In another study on usage and satisfaction levels of Internet shopping, reasons to use the Internet for purchasing are given as convenience, 24-hour availability, timely access to information, and quick response time (Shim et al., 2001).

Will the values of Internet-commerce be inherited by mobile commerce? What are the additional values that mobile commerce can bring to customers? How can the values of mobile commerce be maximized? What are the differences between the values of mobile commerce and those of e-commerce? This research attempts to address these questions.

**RESEARCH METHODOLOGY**

Our main research question is to understand the values of mobile commerce from the customers’ perspectives and develop a means-ends objectives network.

We used the qualitative Value-Focused Thinking approach to understand what customers want and value most about mobile commerce. The process of Value-Focused Thinking involves four steps (Keeney, 1992, 1994, 1999):

*Identify customer wishes, concerns, problems, and values in mobile commerce.* Values refer to the principles for evaluating the desirability of possible alternatives of consequences. Values are demonstrated by ethical behavior, desired traits, characteristics of consequence that matter, guidelines for action, priorities, value tradeoffs, and attitudes toward risk, and values about what customers wish to have or achieve in business activities.

*Convert user input into objectives.* Value-Focused Thinking elicits values through discussions, interviews, and brainstorming sessions with decision makers. It is useful to express values by putting them in the form of objectives. An objective is something one wants to strive toward. By using the objective format, one can cast decision maker values expressed in various forms into a coherent and consistent format.

*Distinguish between fundamental objectives and means objectives.* Keeney (1994) suggested that means objectives can be differentiated from fundamental objectives using the “Why is that important” (WITI) test.

*Build a means-ends objective network depicting specific relationships between means objectives and fundamental objectives.* The cause-effect relationships indicated in the means-ends objective network not only help to better understand the complexities of decision makers’ value systems, but also help to select alternatives designed to achieve fundamental objectives through their effect on means objectives.

## DATA COLLECTION

### Sample size and subjects

Our research adopts the four-step Value-Focused Thinking approach. A total of 30 subjects were interviewed using the Value-Focused Thinking approach. Each interview lasted about one hour. The subjects had at least two years experience with e-commerce and their average age was 28. Although most of them had no experience with mobile commerce, this is not surprising as mobile commerce is still a new phenomenon and still in its infancy stage. Mobile commerce applications are lacking and mobile devices are not conducive to commercial activities. Nevertheless, this will change in the next few years as mobile technology advances, and mobile commerce will be an important and viable means of doing commerce. The results of this research will help in realizing mobile commerce.

The Value-Focused Thinking provides a means to address new phenomenon such as mobile commerce where there are limited subjects with the necessary experience. Using the Wish List approach, an interviewer may ask the subjects, “If you had no limitations at all, what would your objectives be?” The contribution of the Wish List approach is that it solicits objectives and values that will be valuable to understand the new phenomenon and move the phenomenon forward. The results of the Wish List approach are particularly valuable to future research on the phenomenon and to the practitioners.

### Steps in data collection

The data collection processes are described as follows:

*Identifying the values:* Considering that most of the subjects in this research had no direct experience with mobile commerce, we adopted the “wish list” approach from Value-Focused Thinking to elicit their initial objectives. By asking questions such as, “If there were no limitations, what are the values you wish mobile commerce can bring to you?”, we began to form objectives related to values of mobile commerce. Once we arrived at an initial list of objectives, we expanded this list by using another interview technique from Value-Focused Thinking – “problems and shortcomings.” For example, we asked the subjects to think about the current problems or shortcomings of mobile commerce. After the interview, the interviewees were asked to review the list of objectives derived from the interview to ensure that no objectives were missed, and that the interviewer had not misinterpreted the objectives.

*Convert user input into objectives:* Following the interviews, the interviewer combined all objectives from all participants. Because the objectives presented by the interviewees were in various forms, it was necessary to convert them into a common form. According to Keeney (1992), an objective is characterized by three features: a decision context, an object, and a direction of preference. For example, some subjects mentioned that security is something lacking in mobile commerce that they wish could be improved. So, this objective can be converted to a statement such as: “Ensure transaction security”. In this objective, the transaction is the decision context, and security is the object, and the preference is more security.

This step also involves the effort to reduce redundancy. Some of the objectives were stated by more than one subject but in various forms. We removed multiple cites of identical objectives. Two researchers reviewed the objectives list to ensure accuracy and agreement.

*Distinguish between fundamental objectives and means objectives:* This process involves further refinement to clarify the structure of the objectives in the decision context. We separated the means objectives from ends objectives through the “Why Is That Important” (WITI) test. As discussed earlier, there are possibly two kinds of answers to that question. One is “it is important because it is just important.” In this case, the objective is probably a candidate for inclusion in the fundamental objectives grouping. Alternatively, the answer could be, “It is important because it would influence another objective.” This objective would be included in the means objectives grouping.

*Build a means-ends objective network.* This step linked the means and ends objectives by creating a means-ends objectives network. For instance, if one means objective is to “maximize mobility”, that might influence the objective “maximize

accessibility of mobile commerce”, which influences a fundamental objective called “Maximize convenience”. Linking all objectives together shows the cause-effect relationships of these objectives.

## PRELIMINARY RESULTS AND DISCUSSIONS

Using Value-Focused Thinking approach, we carried out our pilot interviews with subjects regarding their perceptions of value of mobile commerce. Although this is still a research-in-progress, based on interview results, we are able to identify some candidate fundamental objectives and key means objectives that help to achieve those fundamental objectives.

The subjects we have interviewed viewed “maximize customer satisfaction of mobile commerce” as the overall objective. There are six fundamental objectives that help to achieve this overall objective: maximize convenience, maximize efficiency, ensure security, ensure privacy, ensure product/service quality, and minimize cost. These six fundamental objectives are measures of products and services of mobile commerce: e.g., how convenient and efficient are the mobile commerce services to the customers?

We have also identified some means objectives. They are the “means” to provide added values and benefits to customers, thus, the means to achieve the fundamental objectives. The unique characteristics and features of mobile commerce are evident in these means objectives. For example, we have derived means objectives concerning “maximize mobility”, “enable localization”, “maximize personalization”, “maximize coverage area”, “maximize accessibility”, among others.

## CONCLUSION

This research is still on-going. We are in the process of constructing and validating the means-ends objective network. Once the network is finalized, we will compare our network with earlier research work (e.g., Keeney’s work on value of e-commerce) to identify differences between mobile commerce and e-commerce, and explain these differences using theories and prior literature. We will present the results of this study at AMCIS.

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