THE IMPACT OF THE PASSAGE OF TIME ON CONSUMER EVALUATION OF EXPERIENCE AND CREDENCE QUALITIES IN A SERVICE

by

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We accept this thesis as conforming to the required standard

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Date  Oct 28, 1991
Abstract

Although research on consumer evaluation/perception of attribute quality is extensive, few have investigated the factors influencing perception of credence qualities, qualities that cannot be determined immediately after product use. Two sets of credence qualities were identified, those that can be determined through the acquisition of expert information and those that are determinable only through the passage of time after product use. Using a home banking service as the experimental context, subjects used the service by requesting a specified transaction to be carried out. They learnt how accurate it was carried out either immediately or a simulated one month after using the service. It was found that how soon subjects received information about its transactional accuracy influenced their evaluation/perception of its credence qualities that are related to the passage of time (e.g., security of personal access code and confidentiality of financial record) but not those that were not related to the passage of time but could be determined through the acquisition of expert information (e.g., sophistication of computer language used). As predicted, subjects who learnt a month later that their requested transaction was accurately carried out rated security and confidentiality higher than those who received the same information but immediately after use. Those who experienced an inaccurate service rated such qualities significantly lower when they learnt of its inaccuracy a month later than immediately after use. No difference in perception was found for credence qualities that are determinable through an expert and not over time. The results suggest that similarity between the known and perceived attribute qualities in terms of whether they are revealed over time or independently of time (such as through expert information) is a major influence on consumer's evaluation/perception of credence qualities. Theoretical, methodological, and managerial implications arising from this research are furnished.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td></td>
<td>ii</td>
</tr>
<tr>
<td>Table of Contents</td>
<td></td>
<td>iii</td>
</tr>
<tr>
<td>List of Tables</td>
<td></td>
<td>v</td>
</tr>
<tr>
<td>List of Figures</td>
<td></td>
<td>vi</td>
</tr>
<tr>
<td>Acknowledgment</td>
<td></td>
<td>vii</td>
</tr>
</tbody>
</table>

## Chapter 1 Introduction 1

## Chapter 2 Search, Experience, and Credence Attributes 5

### 2.1 Conceptual Development of SEC Typology 5

### 2.2 Research on SEC Typology 8

#### 2.2.1 Tests of the Typology Scheme 8

#### 2.2.2 Investigations on Utility of SEC Typology 9

## Chapter 3 Literature Review 16

### 3.1 Heuristics and Unknown Quality Evaluation 16

#### 3.1.1 Attribute Quality Correlation 17

#### 3.1.2 Revelation of Attribute Quality over Time (Representativeness) 18

### 3.2 Supplementary Tests 21

### 3.3 Confidence in Evaluation of Unknown Qualities 22

## Chapter 4 Preliminary Study 24

### 4.1 Method 24

#### 4.1.1 Task and Cover Story 24

#### 4.1.2 Design 25

#### 4.1.3 Subjects 25

#### 4.1.4 Positive/Negative Quality Revealed Immediately After Use 25

#### 4.1.5 Positive/Negative Quality Revealed Some Time After Use 26

### 4.2 Results and Discussion 26

#### 4.2.1 Manipulation Check 26

#### 4.2.2 Findings 27

### 4.3 Directions for the Main Study 29

## Chapter 5 Method 35

### 5.1 Task 35

### 5.2 Cover Story 36

### 5.3 Subjects 37

### 5.4 Design 37

### 5.5 Use of Home Banking Service 38

### 5.6 Independent Variables 41

#### 5.6.1 Positive/Negative Known Attribute Quality 42

#### 5.6.2 Immediate/Delayed Revelation of Quality 43

### 5.7 Experimental Procedure 46

### 5.8 Dependent Variables 47

#### 5.8.1 Evaluation of Unknown Attribute Qualities 48

#### 5.8.2 Confidence in Evaluations 51

### 5.9 Cognitive Response 52
**LIST OF TABLES**

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.1</td>
<td>Existing Definitions of Experience/Credence Attributes</td>
<td>13</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Operationalization of Positive/Negative Qualities Revealed Immediately.</td>
<td>33</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Manipulation Check on Positive/Negative Qualities Revealed Immediately.</td>
<td>33</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>MANOVA Results for Credence Quality Evaluations based on Known Qualities Revealed Immediately/Delayed.</td>
<td>34</td>
</tr>
<tr>
<td>Table 5.1</td>
<td>Examples of Experience and Credence Attributes in a Home Banking Service.</td>
<td>54</td>
</tr>
<tr>
<td>Table 5.2</td>
<td>Steps when Requesting Mastercard Payment on HomeLine.</td>
<td>55</td>
</tr>
<tr>
<td>Table 5.3</td>
<td>Independent Variable Operationalizations.</td>
<td>57</td>
</tr>
<tr>
<td>Table 5.4</td>
<td>Operationalization of Delayed Revelation of Quality.</td>
<td>58</td>
</tr>
<tr>
<td>Table 5.5</td>
<td>Characteristics of Dependent Attributes Used.</td>
<td>59</td>
</tr>
<tr>
<td>Table 5.6</td>
<td>Classification of When is the Earliest Time a Consumer Can Determine the Quality of an Attribute.</td>
<td>60</td>
</tr>
<tr>
<td>Table 6.1</td>
<td>Descriptive Statistics for Manipulated Factors.</td>
<td>74</td>
</tr>
<tr>
<td>Table 6.2</td>
<td>Manipulation Check on Known Accuracy Quality.</td>
<td>75</td>
</tr>
<tr>
<td>Table 6.3</td>
<td>Manipulation Check on Immediate/Delayed Revelation of Quality.</td>
<td>75</td>
</tr>
<tr>
<td>Table 6.4</td>
<td>Descriptive Statistics for Evaluation Scores.</td>
<td>76</td>
</tr>
<tr>
<td>Table 6.5</td>
<td>ANOVA Results for Quality Evaluation when Attribute Quality Correlation is High.</td>
<td>77</td>
</tr>
<tr>
<td>Table 6.6</td>
<td>MANOVA Results for Credence Quality Evaluation when Attribute Quality Correlation is Not High.</td>
<td>78</td>
</tr>
<tr>
<td>Table 6.7</td>
<td>Significance Tests for the Interaction Effects on Credence Quality Evaluation when Attribute Quality Correlation is Not High.</td>
<td>79</td>
</tr>
<tr>
<td>Table 6.8</td>
<td>ANOVA Results for Experience Quality Evaluation.</td>
<td>80</td>
</tr>
<tr>
<td>Table 6.9</td>
<td>Regression Results for Mediator Effects.</td>
<td>81</td>
</tr>
<tr>
<td>Table 6.10</td>
<td>Descriptive Statistics for Confidence in Evaluation Scores.</td>
<td>82</td>
</tr>
<tr>
<td>Table 6.11</td>
<td>ANOVA Results for Confidentiality in Evaluations.</td>
<td>83</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 4.1 Evaluation of Security. 30
Figure 4.2 Evaluation of Future Security. 31
Figure 4.3 Evaluation of Future Accuracy. 32
Figure 6.1 Evaluation of Security. 72
Figure 6.2 Evaluation of Confidentiality. 73
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CHAPTER 1 INTRODUCTION

Service quality is an area which has received much research attention over the past decade. Initial research on service quality has largely been descriptive or conceptual in nature. Such research centered on defining service quality and explicating its dimensions (e.g., Parasuraman, Zeithaml, and Berry 1985; Zeithaml 1981). Research that followed sought to empirically verify the proposed conceptualizations of service quality (e.g., Bolton and Drew 1991; Brown and Swartz 1989; Zeithaml, Berry, and Parasuraman 1988). Of late, however, psychological theories have been increasingly employed to provide a theoretical foundation for explaining consumer evaluations of service quality. For instance, using experimental settings, Solomon and his colleagues (Solomon, Surprenant, Czepiel, and Gutman 1988; Surprenant and Solomon 1985) used script theory to explain effective customer personalization in a service encounter. Similarly, attribution theory was used to explain customer’s perception of service failure (Bitner 1990).

Existing research suggests that one of the ways services differ from tangible products in its composition of attributes (Zeithaml 1981). Borrowing from the literature on information economics, the search, experience, and credence (SEC) typology developed by Nelson (1974) and Darby and Karni (1974) is used to explain the distinctive features of sets of attributes present in a service. Services are considered to possess experience and credence attributes while tangible products, search and experience ones. One aspect in which these three attribute types differ is when their quality can be determined. The search qualities of a service can be evaluated prior to its purchase and use, its experience qualities immediately after the service is used, while its credence qualities cannot be easily determined despite use. Instead, to obtain information necessary for such evaluation, a consumer has to either acquire expert information or wait for the passage of time before such qualities are revealed. Time appears to be an interesting factor distinguishing these attributes. First, the time when an attribute quality is revealed differs from one attribute type to another. This implies that the passage of time reveals more and more of the attribute qualities in a service. Second, specific to credence qualities, the passage of time reveals
only certain such qualities. Certain credence qualities can be determined by acquiring expert information while others only as time passes. Hence, knowing that a particular credence quality is revealed over time may influence one's perception of its quality relative to one that is revealed through expert information. Therefore, investigating the effects of the passage of time may provide insight on consumer perception of credence qualities.

Because services are said to be predominant in experience and credence attributes (Zeithaml 1981), the present research focuses on consumer evaluation/perception\(^1\) of the qualities of these two types of attributes, with primary emphasis on the latter. Credence qualities that are eventually revealed to a consumer after a passage of time has elapsed since the service was used are said to be time-dependent. On the other hand, credence qualities that are determinable after expert information is acquired are not dependent on time to be revealed. Their quality can be determined by seeking expert information instead of waiting for the passage of time to reveal the quality. Differences among credence qualities in terms of time-dependence may account for different factors influencing consumer perception.

Relative to the evaluation of experience qualities where such qualities are verifiable upon if not immediately after service use, perception of either type of credence qualities tends to be more difficult when the service has just been used. Given such difficulty, heuristics are likely to be employed to facilitate perceptions. This research investigates the effect of two heuristics that consumers may use in their perception of credence qualities. The first is the degree of correlation between a known attribute quality and an evaluated credence quality. Past research has consistently shown that higher relative to lower correlated qualities are used to infer unknown qualities (e.g., Huber and McCann 1982). Such research however has traditionally been confined to contexts involving tangible products where their characteristics are significantly different from those of services (Shostack 1977). This research investigates the extent to which attribute quality

\(^1\) The terms "evaluation" and "perception" are used interchangeably here. This study investigates how consumers determine the qualities of credence attributes before they actually experience such qualities in a service.
correlation is used to assess unknown service qualities that are credence in nature.

The second heuristic investigated is representativeness. Representativeness is defined in this research as the degree to which a known attribute quality shares a salient characteristic with the perceived credence quality. One such characteristic is whether they are dependent on time to reveal their quality. A known attribute quality that is revealed over time is more likely to have a greater influence on perceptions of similarly time-dependent credence qualities than one that is revealed immediately after use. Investigating this phenomenon provides insights into the relevance of this heuristic in explaining perception of credence qualities. Together with the degree of correlation heuristic, this research also investigates the extent to which, if any, the representativeness of a known quality influences perception. It also identifies certain conditions when representativeness may be used in attribute quality perception.

The present research also departs from existing ones in the manner in which the experimental stimulus is administered. Previous studies on product quality evaluation/perception had subjects evaluate based on either product descriptions provided in a booklet (e.g., reading descriptions of an apartment in McGill and Anand 1989) or very limited product trial (e.g., touching but not wearing the shirts in Hoch and Ha (1986)). Such procedures do not closely resemble actual product usage. Hence, the findings may be criticized to be somewhat lacking in external validity. In this research, product trial is more realistically operationalized as subjects are allowed to have relatively greater use of the experimental service but while maintaining internal validity. Therefore, methodologically, this research presents an improvement. In addition, unlike existing SEC studies that used different attributes to represent the attribute types, the present study uses the same attribute to be manipulated as different types of credence attributes, thus providing more rigor to explaining the results obtained.

The organization of the remainder of this research is as follows: The next chapter provides a brief background on the SEC framework. Chapter 3 provides a literature review on heuristics. Three hypotheses are developed for perceiving credence qualities that are revealed only over time.
or through the acquisition of expert information. An exploratory study is reported in Chapter 4. Chapters 5 to 7 concern the main study which tests the hypotheses that known qualities vary in their influence depending on their degree of correlation and representativeness to the perceived credence quality. Chapter 5 describes the method employed to test the hypotheses, while Chapter 6 reports the statistical findings. In addition, Chapter 6 also reports the supplementary tests on experience quality evaluation as well as the process of perceiving credence qualities. Specifically, this process is investigated using (a) cognitive responses obtained when the service was used, and (b) overall measures of the service. Finally, Chapter 7 discusses the implications of the findings, limitations of the study, and suggests directions for future research.
CHAPTER 2 SEARCH, EXPERIENCE, & CREDENCE ATTRIBUTES

This chapter provides a literature review of the theoretical and empirical research employing the search, experience, and credence (SEC) attribute typology. Given that this study is on experience and credence attributes, a major part of the following review is on them. The research on search attributes is reviewed briefly. A list of the existing definitions on experience and credence attributes is provided in Table 2.1.

2.1 CONCEPTUAL DEVELOPMENT OF SEC TYPOLOGY

The tripartite classification of attributes originated from Nelson (1970) who identified two of the three attribute types in the typology. First, search attributes are those whose information about its quality can be obtained during a search procedure. Such a procedure entails the consumer's personal inspection of the product prior to its purchase. Since information about the quality of such attributes is available before purchase, verification of advertising claims concerning these attributes can be obtained by consumers. Hence, given this opportunity for verification, consumers have some confidence that when information about a product's search qualities is given in an advertisement, it bears close relation to the truth. Inspection of the product is not necessary to ascertain its search qualities.

The second attribute type developed is termed experience attributes. Nelson (1970) defined experience attributes as those for which the search procedure is inappropriate for discerning an attribute quality because of its prohibitive costs. Under such circumstances, a product is purchased without a consumer fully realizing the quality of its experience attributes. These qualities can be determined only when the product is used. Hence, unlike search qualities, there are fewer opportunities for consumers to verify advertising claims of experience qualities before purchase. Therefore, consumers' power over truth in advertising is lower for experience quality claims compared to search quality claims. Recently, Lynch and Schuler (1991) tested this attribute typology and found that experience qualities are more difficult to judge before use than search
qualities, and consumer skepticism is higher for ad claims concerning such qualities than those about search qualities.

Nelson's (1970) bipartite scheme has since been further developed to the present three-attribute typology. In particular, extensions centered on fine tuning the different attributes for which a search procedure is inappropriate. Leading these developments is the introduction of credence attributes by Darby and Karni (1973). They argued that although according to Nelson's definition, experience qualities cannot be accurately and/or costlessly discerned through search before purchase, information about such experience qualities varies in when it becomes readily available after purchase. For some such attributes, information about its quality is readily available through product use (e.g., taste of a particular brand of tuna fish); while for other such qualities, product use does not readily furnish such information necessary for an accurate evaluation (e.g., slimming quality of a particular brand of diet pills). Such information, if any, is procured at a considerable monetary and/or temporal cost. However, both such attributes were considered by Nelson (1970) to be experience qualities because they are not known without using the product. In contrast, Darby and Karni (1973) categorized these attributes into two attribute types -- experience attributes (as per Nelson's conceptualization), and credence attributes (those whose quality cannot be evaluated immediately despite product use).

Formally, Darby and Karni (1973) defined credence attributes of a product as those for which the production process or the output (or both) is stochastic whenever the product is used, hence its quality is not known immediately with certainty despite having used the product. Instead, to judge such qualities, additional costs (monetary and/or temporal) are incurred after the product is used so that additional information necessary for accurate evaluations is obtained.

Although both experience and credence attribute types share the characteristic that a pre-purchase search procedure is inappropriate (and hence, according to Nelson, belong to the same attribute type), their post-purchase informational characteristic differs substantially and importantly to warrant a separate classification of attribute types. Such a delineation is not perfect nor easy.
It has been recognized that this delineation is not always sharp, especially in situations involving the attainment of information through a considerable period of product use (Darby and Kami 1973, p.69).

Recently, Ford, Smith, and Swasy (1990) defined experience qualities as those that can be accurately evaluated only after the product has been purchased and used for a period of time that is relatively short in comparison to the product’s total life. Examples include the quality of a particular brand of carpeting to withstand mildew stains for at least three years, and whether an automobile repair service treats a customer fairly time after time. Credence qualities on the other hand are those that cannot be accurately evaluated even after the product is used because of consumer’s lack of technical expertise or because the cost of obtaining sufficient accurate information to check the quality is higher than the information’s expected value. Examples include the quality of a realty firm in providing the most qualified network of agents nationwide, and the quality of an electronic amplifier to deliver up to four times the amplifier’s rated power. These two examples illustrate that credence qualities cannot be determined by a user immediately after using the product or service. However, they can be determined by acquiring expert information. For instance, a person familiar with realty may be able to offer expert information to judge whether realty firm X has the best agents relative to other realty firms. Similarly, expert information is needed to judge whether an amplifier has a particular level of power capacity. Such expert information can be obtained without having to wait for some time to pass after using the product or service. In addition, there is a second set of credence attributes whose quality is determined through the passage of time rather than through expert information. In an earlier version of their paper (Ford et al. 1988), a credence quality identified was the quality of a recliner known by simulating 20 years of actual use. This example suggests that there is a second set of credence qualities that are revealed over time rather through an expert. A consumer may not know how durable a recliner is at time of purchase or after first few use occasions, but he/she learns of its durability as time passes. An expert may find it difficult to assess its durability because it depends
on several extraneous factors such as how a consumer takes care of it and how often it is used. For such attributes, only the passage of time can tell the quality.

In this dissertation, two categories of credence qualities are identified -- one category whose qualities are revealed only over time (e.g., only time can tell the durability of a recliner), and the other whose quality revelation is independent of time but can be obtained through expert information (e.g., the relative quality of the agents at one realty firm versus another can be learnt through expert sources who have used both firms but not over time when a consumer has used only one such firm).

2.2 RESEARCH ON SEC TYPOLOGY

Research using the SEC typology can be divided into two categories: (a) those empirically testing the validity of the different attribute types; and (b) those examining the consequences of each attribute type on various marketing tools such as advertising and distribution. This section briefly summarizes these two lines of research.

2.2.1 Tests of the Typology Scheme

Nelson (1970) tested the hypothesis that goods believed to predominantly possess experience attributes, compared to those that generally possess search attributes, should have a higher ratio of repair expenditure to sales (where repair expenditure is considered to be an experience attribute). To test this, both durable and non-durable goods were studied. He found that all but two of the 20 products studied were classified correctly as experience or search in nature. Goods that Nelson (1970) considered to be experience were found to have higher repair expenditure (hence, more "experiential" qualities) than goods he considered to be search.

In his 1970 work, Nelson used search versus experience goods; where search goods predominantly have search attributes, while experience goods essentially possess experience attributes. Reformulations based directly on attributes are later made by Nelson (1978, 1980) and Wilde (1980).
Ford, Smith, and Swasy (1988) investigated the extent of SEC claims in print advertising and how this is related to price. In so doing, they assessed inter-rater reliability in the classification of ad claims according to the SEC framework. Their results showed a high percentage of agreement in the SEC classification by their independent coders, suggesting that people categorize such claims into the three attribute types. In addition, Lynch and Schuler (1991) also found evidence that the SEC typology holds in terms of consumer's ability to judge and skepticism towards various attribute qualities/claims. In summary, these two studies suggest that various products (a) have different degrees of experience attributes and credence attributes, and (b) are perceived by consumers as having such different attributes as portrayed in the ads. Hence, recognition that products vary in the types of attributes they possess and that consumers correspondingly perceive them as such indicates further research investigating differences arising from having different types of attributes is worthwhile.

2.2.2 Investigations of Utility of SEC Typology

The SEC typology has been used to investigate advertising expenditure patterns as well as to distinguish tangible goods from intangible services. Nelson (1974, 1978) suggested that there is a qualitative difference in the advertising strategies of search and experience goods. For experience goods, advertising increases sales through increasing the reputation of the seller. For search goods, advertising increases sales through the provision of "hard" product information. Given the characteristic of non-verification of experience quality prior to purchase, there is little opportunity for "hard" information to be provided in advertisements for experience goods. Therefore, higher advertising expenditures for experience goods is anticipated in order that an association between advertising intensity and product quality via seller reputability is made by consumers. Such indirect information of advertising is considered by Nelson to be more important for experience goods than it is for search goods. The remainder of this section reviews the studies on the advertising effects of experience and credence products on consumers' search and
evaluation behavior.

In one such study, Bloom and Krips (1982) investigated the effects of advertising in the context of a credence-type product, namely, a dental service (p. 29). Consistent with Darby and Karni's (1973) proposition, advertising provides signals about how well a service performs on its credence attributes since such attributes cannot be effectively evaluated even immediately after trial. Hence, they investigated whether advertising influences the importance of certain attributes to consumers, and redirects their search activities to such attributes. They found that for the credence product -- a dental service -- advertising (a) changed consumer tastes, and (b) directed their search activities. Specifically, advertising redirected consumer thinking away from advertised attributes that they would spend studying if advertising were absent; and toward either advertised or non-advertised attributes that they would not have considered seriously when advertising was absent. In terms of search activity, advertising was found to provide a signal that directed some people toward advertised brands and others away from advertised brands.

More recently, Kirmani and Wright (1989) referred to this phenomenon as "money talks". Following Nelson's (1974) propositions, they studied whether perceptions of the amount of advertising expenses engaged in for a new product affected expectations of quality. In their study, the new product was a new brand of athletic shoes. Its quality was considered as experiential since the brand was new and quality was discerned through product use. They found that subjects who were informed that the advertising costs were higher than those of existing brands, rated the quality of the new shoes higher than those who were informed that the advertising costs were lower. Their results supported Nelson's (1974) proposition that at least for experience products, the perceived advertising expense/quality inference holds.

In terms of source information utilization, Orsini (1982) demonstrated that guidance sources (such as consumer magazines and friends) were considered to be more important in the purchase of a new brand when the product was an experience product than when it was a search product.

Together, the studies by Kirmani and Wright (1989), Orsini (1982), and to some extent,
Bloom and Krips (1982), show that for attribute qualities difficult to evaluate, consumers relied on tangible evidence such as amount of advertising as signals of the unknown quality. This means that in the SEC framework, evaluation of experience and credence qualities prior to product use is affected by known attribute qualities of the product. Known attribute qualities such as the amount of advertising expenditure can be considered as search attributes because they are known to the subjects prior to use. This suggests that inferences of unknown qualities (such as experience and credence qualities before product use) are based on known qualities (such as search qualities). Similarly, when the product is used and its experience qualities are known, unknown credence qualities are inferred from its known search and experience qualities.

On the conceptual front, the SEC framework has been used to differentiate the evaluation processes for goods and services (Zeithaml 1981). Services, particularly professional ones, are said to possess credence attributes and are more difficult to judge primarily because of their characteristics of intangibility, non-standardization, and inseparability of production and consumption\(^2\). In particular, because services are essentially intangible processes, consumers rely on physical cues when evaluating a service quality (Bitner 1990; Langeard, Bateson, Lovelock, and Eigler 1981; Shostack 1977). Given that credence qualities are known only some time (if ever) after the service is used, consumers are expected to rely more on such physical cues or known qualities of the service (such as search and experience qualities) when evaluating unknown credence qualities.

It has also been proposed that the credence nature particularly of professional services creates high consumer uncertainty before and after purchase (Bloom 1984, Bowen and Jones 1986). As a result, Bloom (1984) called for an educational rather than a persuasive emphasis in the marketing of such services to reduce consumer uncertainty and increase consumer loyalty. Two other additional consequences of the predominance of credence attributes in a product are that (a)

\(^2\) This does not imply that tangible products do not possess credence attributes. According to Zeithaml (1981) services, particularly professional ones, tend to have credence attributes more so than do tangible products.
more frequent post-purchase product evaluations are engaged in by consumers, and (b) an asymmetry in the type of information (and/or ability) for evaluation exists between consumers and the seller of the product (Ang and Leong 1989, Bowen and Jones 1986). A seller, based on his/her previous product sales, may have certain information about a product that a consumer does not know prior to use. Hence, there is an asymmetry in amount of information and ability to evaluate credence qualities between these two parties.

Finally, Ford et al. (1990) empirically investigated the skepticism consumers hold towards SEC attribute quality claims. In support of Nelson’s (1970) hypotheses, consumers were found to be less skeptical of search attribute claims than of experience attribute claims. However, no significant difference in the degree of skepticism toward experience and credence attribute claims was found. A possible reason for this insignificant finding is the stage in which subjects rated their degree of skepticism. Subjects saw the advertising claim prior to purchase and then provided their ratings of skepticism. Consistent with the earlier discussion that Nelson’s (1970) definition of experience attributes also covered credence attributes (this being that both attribute qualities cannot be easily verified before purchase), ratings of skepticism before product use are not likely to produce significant differences between experience and credence attribute claims. On the other hand, significant differences between skepticism of these two attribute claims are more likely if the ratings are made following rather than preceding product use. This research extends Ford et al.’s (1990) study by investigating a similar construct but in a post-product use setting.

In summary, the existing research on the SEC typology generally supported that (a) the typology has both face and external validity; and (b) the three types of attributes are sufficiently distinct to differentially affect consumers’ behavior in search and evaluation procedure, hence calling for distinctive marketing strategies to address each of these differences.
### TABLE 2.1
Existing Definitions of Experience/Credence Attributes

<table>
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<th>Experience Attributes</th>
</tr>
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<tr>
<td><strong>Nelson (1970)</strong></td>
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<tr>
<td>Experience attributes are those for which the search procedure is inappropriate. The search procedure is one in which (a) the consumer must inspect the product, and (b) the inspection occurs prior to purchase. It pays for the consumer to evaluate the experience attributes of a product by purchase rather than by search.</td>
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| **Darby and Karni (1973)** |
| "Experience qualities are those that can be discovered only after purchase and the product is used." (p. 68) |

| **Zeithaml (1981)** |
| Experience attributes are those whose quality "can only be discerned after purchase or during consumption." (p. 186) |
| Examples of products high in experience attributes are vacations and restaurant meals. |

| **Bloom and Krips (1982)** |
| Experience goods are "goods that must be tried to provide accurate information about specific, important product attributes." (p. 28) |

| **Naqle (1984)** |
| "Experience attributes are those that a buyer can evaluate only after consuming the product. He therefore does not know exactly what he is getting the first time he buys it. After having purchased once, however, he can repeat purchase of the product in the future, having a good estimate of its attributes based on knowledge from past experience." (p. S10) |
| Examples of experience attributes are: effectiveness of dishwashing detergent, taste of a packaged food, and durability of a paint. |

| **Bowen and Jones (1986)** |
| "Experience qualities are attributes that can be discerned only after purchase or during consumption." (p. 431) |
| For example, taste and wearability. |

| **Milgrom and Roberts (1986)** |
| Experience qualities are those where "crucial aspects of a product's quality are impossible to verify except through use of the product. Thus, unless the product is given away, one must buy without really knowing what one is getting." (p. 797) |
Ford, Smith, and Swasy (1990)
"Experience attributes are those that can be accurately evaluated only after the product has been purchased and used for a period of time, which is relatively short in comparison to the product's total life." (p. 435)

**Credence Attributes**

Darby and Karni (1973)
"Credence qualities are those which, although worthwhile, cannot be evaluated in normal use. Instead, the assessment of their value requires additional costly information." (p. 68)
"The line between experience and credence qualities of a good may not always be sharp, particularly if the quality will be discerned in use, but only after the lapse of a considerable period of time." (p. 69)
Examples are the claimed advantages of the removal of an appendix, the repair of automobiles, and the replacement of a television tube.

Zeithaml (1981)
Credence attributes are "characteristics which a consumer may find impossible to evaluate even after purchase and consumption." (p. 186)
Examples of goods high in credence attributes are appendix operations and brake relinings on automobiles.

Bloom and Krips (1982)
Credence goods (such as professional services) are those "that consumers may not be able to evaluate effectively even after trial." (p. 29)

Bloom (1984)
"Professional services are what economists sometimes call "credence" goods, in that purchasers must have great faith in those who sell the services. Professional services usually lack many attributes that a buyer can confidently and competently evaluate before -- or even after -- making a purchase decision." (p. 104)
Examples of credence attributes include whether a legal case was pleaded properly by the lawyer; whether an audit is done thoroughly; whether a building is designed safely; and whether a surgical procedure is handled competently.

Nagle (1984)
"Credence attributes are those that a buyer cannot confidently evaluate even after one purchase. He therefore must rely heavily on the product's reputation with respect to those attributes, even after repeat purchase." (p. S10)
For example, attributes differentiating brands of photographic film are primarily credence attributes (at least for the casual photographer). So is a doctor's competence after one visit for the treatment of one complaint.

Bowen and Jones (1986)
"Credence qualities are intangible characteristics that the consumer may find impossible to evaluate even after purchase and consumption. Attributes here center on the trust instilled by the service provider since consumers may lack sufficient knowledge to appraise whether the services satisfy their needs, even after consumption." (p. 431)

Ford, Smith, and Swasy (1990)
"Credence attribute claims are those that cannot be accurately evaluated even after the product
is used because of the consumer’s lack of technical expertise or because the cost of obtaining sufficient accurate information to check on the veracity of the claim is higher than the information’s expected value." (p. 435)
CHAPTER 3 LITERATURE REVIEW

This chapter provides a review of the literature on evaluation/perception of unknown qualities and confidence in such evaluations/perceptions. The sections discussed in order are: (a) heuristics used in the evaluation of unknown attribute qualities, (b) the process of evaluation, and (c) confidence in such evaluations. Specifically, the literature on attribute quality correlation and representativeness is reviewed.

3.1 HEURISTICS AND UNKNOWN QUALITY EVALUATION/PERCEPTION

In general, when evaluating an unknown quality, Tversky and Kahneman (1974, 1981) have observed that heuristics are often used to alleviate the cognitive strain. Similarly, Chaiken (1987) proposes that heuristics are adopted when people are either (a) unmotivated and/or (b) unable to process information systematically. By this she means that people do not consider issue-relevant information in making their evaluations either because (a) such information is not available and hence, even when motivated to evaluate ambiguous performances based on relevant factors, they are not able to do so; or (b) when such information is available, they are mentally not able to or not motivated to consider such information.

Heuristics are also used when an individual cannot fully assess all available information. In the rational choice paradigm literature, Simon (1957) and March and Simon (1958) have proposed that individuals evaluate and make decisions under conditions of bounded rationality. Recognizing an individual's limitation to acquire and process all information effectively, March (1978; also Agnew and Brown 1986) has further argued that under conditions of limited rationality, individuals simplify a decision problem because of the difficulties of anticipating and considering all alternatives and all information. One such means is to use simple search rules or heuristics.

Two heuristics are used here to understand consumer evaluation of unknown qualities based on knowledge of another attribute’s quality. First, evaluations may be affected by the degree of correlation between the qualities of the known and unknown attribute qualities. This heuristic is
termed here as attribute quality correlation. Attributes with high quality correlation are expected to
influence evaluations of unknown attribute qualities more than those that are less correlated.
Second, evaluations may also be based on the representativeness of the known attribute quality
to the unknown attribute quality. The more representative the known attribute quality is to the
evaluated unknown quality, the greater is its influence on consumer evaluation. In this dissertation,
representativeness is used in the form of whether quality revelation is dependent on time. The
following subsections discuss in detail the effects of attribute quality correlation and
representativeness on the evaluation of unknown attribute qualities.

3.1.1 Attribute Quality Correlation

The evaluation of unknown attribute qualities may be based on the degree of correlation
between known and unknown attribute qualities. This perceived correlation may be: (a) based on
prior experience, e.g. price-quality perceptions (Huber and McCann 1982, Johnson and Levin
1985); (b) derived from external information, e.g., perceived inter-attribute correlations found in a
set of brands; and/or (c) based on logically derived relationships, e.g., "heavier cameras are likely
to be more durable and hence more reliable." (Gardial and Biehal 1987). Consumers form
subjective conditional probabilities that certain properties go with other properties, or specifically
for this dissertation, perception that certain attribute qualities go with certain other attribute qualities.
Fishbein and Ajzen (1975) have suggested that evaluations can be based on the strength of
correlation between the known and unknown attribute qualities.

The effects of perceived correlation between two attribute qualities are also evidenced in
the literature on covariation beliefs (e.g., Bettman, John, and Scott 1984; Crocker 1984; Ofir and
Lynch 1984; Tybout and Scott 1983). Beliefs such as "big cars are safer than smaller cars"
(Bettman, John, and Scott 1986), and "higher prices mean better quality than lower prices" are
illustrations of the associations consumers may form between two attribute qualities. Such beliefs
may therefore influence their perception of an unknown attribute quality based on known quality
information of a second attribute.

Ford and Smith (1987) found that highly correlated attributes exerted a more consistent effect on inferences than did attributes that were lowly correlated. Known qualities of attributes highly correlated to the unknown attribute quality affected perception of the latter more so than did known qualities of attributes that were less correlated. Hence, for attributes with high quality correlation, we expect a known attribute quality to be used in predicting unknown qualities. Therefore, when attribute quality correlation is high, a known quality that is positive will result in higher evaluations of the unknown quality than a known quality that is negative. H1 states:

H1: When attribute quality correlation is high, a known attribute quality will be used to evaluate an unknown credence quality regardless of when information about the known attribute quality is received.

3.1.2 Revelation of Attribute Quality over Time (Representativeness)

Consumer evaluations may also be influenced by the degree of representativeness of the known attribute quality. A sample is said to be representative based on the similarity of the sample to the essential characteristics of its parent population (Kahneman and Tversky 1972, p. 431). In this research, representativeness is used as the matching of one sample (attribute) to another (attribute), where the samples come from the same population sharing some salient characteristics (say, a category of attributes characterized by qualities that are revealed over time). Hence, Attribute A is said to be representative of Attribute B if both attributes are from the same category, bearing salient characteristics of the category.

Some evidence of the representativeness heuristic at work in evaluations of unknown attribute quality is furnished by Ford and Smith (1987). They investigated the effect of same/other-brand information on attribute quality perceptions. For the same pair of known and unknown attribute qualities, same-brand attribute information was found to be more influential on a consumer's perception of the unknown quality than did other-brand attribute information, i.e., information about an attribute quality that was about the same brand as the inferred attribute quality had a greater effect than information about the same attribute quality but of another brand as the
inferred attribute quality. Presumably, same-brand attribute information was more relevant to evaluating unknown attribute quality than other-brand attribute information, where belonging to the same brand is the salient characteristic distinguishing these two categories of attribute information. According to the representativeness heuristic, consumers view attributes of the same brand as belonging to one category, while those from other brands as another category (Burke 1990). Hence, information on attribute quality of the same brand is considered to be more representative than information concerning other brands.

For this dissertation, two categories of credence qualities, distinguished by whether they are dependent on time for their quality to be revealed, are evaluated. The first category consists of credence qualities that are revealed over time where the passage of time unfolds its quality. Such qualities are said to be time-dependent. For example, how durable a washing machine is is a quality that is ascertainable only through time. An expert cannot provide unambiguous information about its durability especially if it is a new model. Time will tell how durable the machine is. Similarly, how secure a bank account is is also a credence quality that is revealed only over time as an expert cannot accurately judge its security\textsuperscript{1}. Instead, this quality is revealed over time when the account is illegally accessed. The second category concerns credence attributes whose quality does not unfold over time. Rather, its quality is revealed through the acquisition of expert information. The passage of time does not reveal its quality. Hence, such credence qualities are said to be independent of time. For instance, the sophistication of a computer system is a credence attribute whose quality cannot be ascertained as time passes. The mere passage of time does not inform a novice consumer how sophisticated the system is. Instead, to determine this quality, he/she has to seek an expert to judge this quality.

Following the representativeness argument where intra-category attribute qualities are more

\textsuperscript{1} When an account has been accessed by an unauthorized person, a bank account holder learns of this incident and this serves as confirmatory evidence of its insecurity. However, there is no confirmatory evidence when the banking system is secure as a non-violation of access code however does not imply security.
representative than inter-category attribute qualities, we expect a known attribute quality that is revealed through the course of time to have greater influence on perceptions of unknown credence qualities that are similarly revealed through time than a quality that is revealed immediately after service use and hence, not dependent on time. In particular, knowing how well the service has performed on an attribute whose quality unfolds over time provides information about how well it will perform on other attributes whose quality also unfolds over time. Consumers view the similarity in unfolding of quality information over time as a common characteristic that influences their perceptions. However, knowing how well the service performs on an attribute whose quality is known immediately after use does not provide information about how well it will perform on attributes whose quality unfolds over time. Knowing the quality of an attribute now does not provide as much information about another attribute whose quality is revealed through the course of time. On the other hand, credence qualities revealed independently of time are not affected by when known qualities are revealed. Since their qualities are not time-dependent, it does not matter whether known qualities are revealed over time or immediately after use. Therefore, we do not expect that the time when quality is revealed will differentially influence evaluations of credence qualities that are not revealed through the course of time.

The above hypothesized effects are expected to occur only when attribute quality correlation is not high. This is because between the two heuristics of correlation and representativeness, a representative attribute quality is the "best predictor" over one that is not highly correlated (Simmons and Leonard 1990). H2 states the hypothesis when attribute quality correlation is not high. Three subhypotheses for the time-dependent and time-independent credence qualities are:

H2(a): There will be a difference in consumer perception of a time-dependent credence quality if the information about another attribute quality is obtained some time after use. Specifically, the time-dependent credence quality will be perceived more positively (negatively) when the known attribute quality is positive (negative).

H2(b): There will be no difference in consumer perception of a time-dependent credence quality if information about a known attribute quality is received immediately after
H2(c): There will be no difference in consumer perception of a credence quality that is not revealed with the passage of time when information about another attribute quality is received immediately or some time after use.

3.2 SUPPLEMENTARY TESTS

We do not expect experience qualities to be differentially affected because such qualities are by definition known to consumers during service use and hence, are not significantly influenced by other known attribute qualities. Supplementary tests are also conducted to examine the process of evaluations. Consumers can evaluate an unknown attribute quality via two routes. First, such evaluations can be based on direct inferences from the known attribute quality to that of the evaluated attribute quality. The alternative route is that evaluations are made via a holistic impression of the service. This latter route, termed halo (Thorndike 1920), is said to occur if the known attribute quality leads to an overall product quality, which in turn affects the evaluation of the unknown attribute quality. In other words, the halo effect is observed when Overall Quality mediates the evaluation process between the known and unknown attribute qualities.

Beckwith and Lehmann (1975) demonstrated that the halo effect was more pervasive when the quality to be evaluated was ambiguous. Using consumers' evaluations of various television shows, they found that the halo effect was more pronounced when judging a program on its production and involvement attributes rather than on its humour, action, and suspense attributes. The former set of attributes were considered to be more ambiguous than the latter set.

Further support was provided by James and Carter (1977) who found that halo was stronger for attributes with less clearly defined physical correlates than those with clear physical correlates. Specifically, in their study concerning evaluations of various cities, several attributes varying in how ambiguous their quality was were used. The halo effect was stronger when evaluating attributes with ambiguous quality (such as "outdoor recreation" and "pleasantness of summer") compared to attributes whose quality was less ambiguous (such as "population" and
These studies suggest that the halo effect is more likely to prevail when the attribute quality to be evaluated is ambiguous. Given that credence qualities are ambiguous during use, we expect the halo effect to occur for such attributes, although no formal hypotheses are advanced. The post-hoc investigations therefore test how extensive the halo effect is when such ambiguous credence qualities are perceived.

Thus far, the hypotheses and supplementary investigations concern evaluations of credence and experience qualities. One of the major characteristics involving experience and credence qualities is the degree of uncertainty a consumer has when evaluating them before and after product use respectively (Nelson 1970, Darby and Karni 1973). The following section summarizes the literature on confidence in evaluations and how existing known qualities may varyingly affect such confidence.

3.3 CONFIDENCE IN EVALUATIONS OF UNKNOWN QUALITIES

Research has consistently demonstrated that when individuals make judgments under uncertainty, they are often overconfident in their judgments (cf. Lichtenstein, Fischhoff, and Phillips 1982). In addition, it has also been found that such overconfidence is invariant with intelligence and experience in the subject matter (Lichtenstein and Fischhoff 1977).

In the marketing literature, Berger and Mitchell (1989) found that consumers were as confident in their evaluations of a product’s various attributes when they saw the product advertisement three or four times as when they had directly used the product. Only among consumers who saw only one exposure of an advertisement, was the confidence level in their evaluation of an attribute lower (though not below the midscale point). Their study indicated that despite no product use, consumers could be equally confident in their attribute quality evaluations if they were given several exposures of the product advertisement. Their study also indicated that confidence in such evaluations was high even when consumers saw only one exposure of the
advertisement. Perhaps like subjects in studies by Fischhoff and his colleagues, people tended to be high and overconfident in their evaluations despite the lack of information.

The case of credence quality evaluation after service use is analogous to the above scenario where quality evaluation is made only after seeing the advertisement. In both situations, evaluations were made prior to receiving direct evidence of the attribute quality evaluated. Following Berger and Mitchell's (1989) finding, confidence in such evaluations is expected to be high despite the lack of direct information.

However, consistent with the reasoning that qualities revealed in the course of time are more influential on evaluations of time-dependent credence qualities than those revealed immediately after service use, confidence in such evaluations are expected to be higher than when evaluations are made based on known qualities revealed immediately after use. Confidence in evaluations of credence qualities not revealed through the passage of time is expected not to be influenced by the known qualities that are revealed immediately or some time after use. H3 states:

H3: A known quality revealed through time, relative to a quality known immediately after use, results in:
(a) a higher confidence level when evaluating an unknown credence quality that is time dependent, and
(b) a similar confidence level when evaluating an unknown credence quality that is not dependent on time.

All three hypotheses are tested in the main study. A preliminary study was conducted to explore the effects of temporal revelation of quality on credence quality perceptions.
CHAPTER 4 PRELIMINARY STUDY

This chapter covers the preliminary study which explores the effects of temporal revelation of attribute quality on evaluation of credence qualities. It presents in order the (a) method, (b) results, and (c) discussion of the findings. In so doing, it also describes the rationale leading towards the objectives of the main study.

4.1 METHOD

4.1.1 Task and Cover Story

The services chosen for both the preliminary and main studies have to satisfy three criteria: (a) they have to possess both experience and credence attributes; (b) they have to be relatively new; and (c) for administrative purposes, they should not require a particularly long time to use.

The first criterion is necessary given that the hypotheses and supplementary tests involve experience and credence attributes. The second criterion ensures that prior experience with or knowledge about the service is limited and does not affect the effectiveness of subsequent quality manipulations. For instance, subjects may have norms concerning the quality of long established services. Such services are not suitable because strong prior expectations may undermine the manipulations concerning the service's attribute qualities.

In the preliminary study, the service chosen is a telephone banking service. This service satisfies the above criteria. It has experience and credence attributes. It was also not available at the country where the study was conducted. Finally, it does not take a long time to use.

Subjects were told that as part of their Finance course requirement, they would be given an opportunity to use various banking innovations. One such innovation is a telephone banking service. They were told that a local bank was contemplating adopting this service and wanted their opinion of the service before making a decision. Appendix 1 shows the questionnaire and instructional manual used.

Subjects were asked to use the service and then evaluate it on certain attributes. They
were told that the telephone banking service would be simulated on the PC in front of them. Only
the number keys on the right of the keyboard were to be used. To further simulate the numberpad
of a telephone, two extra keys (also on the right of the keyboard) were programmed and marked
to serve as the pound (#) and asterisk (*) keys. Subjects were also told that like a telephone, a
wrong digit pressed cannot be backspaced for correction. They were instructed to request a
specified VISA Card Bill transaction be carried out.

4.1.2 Design

A 2x2 (Positive/Negative Immediate Revelation of Quality by Positive/Negative Delayed
Revelation of Quality) between-subjects design was used, where the Immediate Revelation factor
is manipulated first followed by the Delayed Revelation manipulation. Evaluations of various
unknown attribute qualities were obtained twice -- immediately after the first manipulation as well
as after the second manipulation.

4.1.3 Subjects

Subjects similarly familiar with the service class used were required. First, service class
familiarity allows subjects to be able to draw some inference based on previous experience with
other services in the same class. Second, homogeneity in familiarity eliminates competing
explanations such as service expertise when analyzing the results.

Forty-eight students were used and randomly assigned to the four conditions in Study One.
Thirty were female.

4.1.4 Positive/Negative Quality Revealed Immediately After Use

Two attribute qualities were manipulated together to achieve Positive and Negative Quality
revealed immediately after service use. Table 4.1 details the operationalization. Briefly, for subjects
in the Positive Quality condition, the telephone banking service was easy to use (the codes were
relatively simple) and did not take a long time (the transaction could be requested directly). The Negative Quality condition was manipulated to be difficult to use (the codes were long and awkward) and to take a relatively long time (the transaction had to be requested through various steps). A manipulation check, each for "Speed when Using" and "Ease when Using", was asked separately on a 7-point scale, described as “Very Poor” on “1” and “Very Good” on “7”.

4.1.5 Positive/Negative Quality Revealed Some Time After Use

After using the service, subjects were told to wait before they received their bank statement. Meanwhile, they were asked to evaluate how well they thought the service performed on two credence attributes. These were (a) how accurate the service will carry out their transaction, and (b) how secure the service is.

After answering these questions, subjects were told that a month has passed and that their bank statement was ready. Subjects received their bank statement (shown on the PC screen). Hence, the quality of its “Accuracy in Carrying Out Transaction” is delayed and known only some time after service use. A Positive Quality condition was one where the bank statement showed the correct transaction and amount; while a Negative Quality condition showed a bank statement with a wrong transaction and a wrong amount. Then, subjects evaluated the following attribute qualities: (a) how secure the service was, (b) how secure the service will be in their next use, and (c) how accurate the service will be in their next use. These three attributes are considered as time-dependent as the passage of time unfolds their quality.

4.2 RESULTS AND DISCUSSION

4.2.1 Manipulation Check

Subjects rated the service on Ease at 6.08 and 4.58 in the Positive and Negative Immediate Revelation of Quality conditions respectively. Similarly, Speed was rated at 6.13 and 3.96 respectively (see Table 4.2). On both these attributes, their qualities were significantly different
(Ease: F(1,46)=18.91, p<0.01; Speed: F(1,46)=35.22, p<0.01). Hence, the manipulation of Positive/Negative Immediate Quality Revelation was effective.

4.2.2 Findings

The preliminary study explored whether consumer perceptions of unknown attribute qualities change when information about the quality of other attributes is known. As shown in Table 4.3 and Figures 4.1 to 4.3, the MANOVA test shows a significant effect due to Positive/Negative Delayed Quality Revelation (p<0.05 for each of the dependent attributes at both the univariate and multivariate levels). In addition, no interaction or main effect due to Positive/Negative Immediate Quality Revelation was observed.

This means that when consumers learn how well the service performs on an attribute whose quality is revealed after a lapse of time, they use such information to infer how well it will perform on other attributes where qualities are similarly revealed over time. Specifically, compared to an inaccurate service, an accurate service was judged to be more secure in carrying out this particular transaction (5.45 versus 3.92); more secure in its next use (5.40 versus 4.47); and more accurate in its next use (6.00 versus 3.61) if such information was revealed over time. Attribute quality known immediately after use did not influence such evaluations.

This finding is consistent with the representativeness explanation. In terms of this heuristic, qualities that are revealed after a lapse of time (i.e., time-dependent) may have been considered by subjects to be representative of unknown attribute qualities that are similarly known only over time rather than through the acquisition of expert information (i.e., also time-dependent). Attribute qualities that are known immediately after use (i.e., independent of time) are considered as less representative of time-dependent qualities because they belong to a different category where quality revelation is not dependent on time. Hence, the more representative the known attribute quality is to the unknown attribute quality, the greater is its influence on perceptions of the latter.

The insignificant interaction effect indicates that regardless of how well or badly the service
performed (on Speed and Ease) when a subject used it, it is only the outcome of time-dependent qualities that influences such evaluations/perceptions. Immediate receipt of attribute qualities not only do not attenuate such evaluations but they also do not affect the evaluations when information about other qualities revealed over time.

**Alternative Explanations**

However, the effect of the known delayed quality on the perception of the unknown credence qualities may also be similarly explained by recency. Because such information was the most recent, its effect may be argued to be the most influential. However, if recency is the underlying phenomenon, then earlier experience qualities should likewise be significant in evaluations of credence qualities when the service was just used. Immediately after the service was used, information about its experience qualities was the most recent and hence following this, it should significantly affect credence quality perceptions. As alluded to earlier, measurements of perceptions were obtained immediately after experience quality was manipulated but before credence quality was manipulated. No significant difference was found (Accuracy was evaluated at 5.50 and 6.00, and Security at 5.25 and 5.13 when experience quality was negative and positive respectively\(^1\)). Since no main effect was found, it is less plausible that recency is the explanation for the significant effect of delayed quality information had on the evaluation of other time-dependent qualities. Hence, the more plausible explanation is that information about a delayed quality (compared to quality known immediately after use) is relied upon to evaluate unknown time-dependent qualities.

A second rival explanation is that both the known attribute qualities may have different degrees of attribute quality correlation to the perceived attribute quality, independent of its time-dependency characteristic. Accuracy may have a higher attribute quality correlation to Security than does Speed or Ease. This difference would similarly account for the significant effect due to

\(^1\) For Accuracy, \(F(1,46)=2.52, p>0.10\). For Security, \(F(1,46)=0.19, p>0.10\).
credence quality (Accuracy) and not experience quality (Speed and Ease together). Since two different attributes were used to represent immediate and delayed revelation of quality, this alternative explanation cannot be discounted. The use of different attributes also suggest competing explanations such as differing attribute importance in influencing the findings.

4.3 DIRECTIONS FOR THE MAIN STUDY

The main study controls for possible differences arising from the use of different dependent attributes by using the same attribute whose quality is revealed immediately or delayed. It investigates whether the effect of representativeness on attribute quality perception is affected by the attribute quality correlation between the known and unknown attribute qualities. Specifically, by using different dependent attributes with varying degrees of attribute quality correlation to the manipulated attribute quality, the main study investigates whether the effect of quality revelation over time is observed when attribute quality correlation is high and low.
Security is a credence attribute.

FIGURE 4.1
Evaluation of Security

Evaluation of Security

Accurate Bank Statement (Positive Quality Known Later)

Inaccurate Bank Statement (Negative Quality Known Later)

0 1 2 3 4 5 6

Negative  Positive
Quality Known Immediately

Accurate Statement  Inaccurate Statement
Future Security is a credence attribute.
FIGURE 4.3
Evaluation of Future Accuracy

Future Accuracy is a credence attribute.
TABLE 4.1
Operationalization of Positive/Negative Qualities Revealed Immediately

POSITIVE QUALITY (Known Immediately)  NEGATIVE QUALITY (Known Immediately)

Easy to Use  Difficult to Use
- Systematic code pattern for each step.
- Simple correction procedure when a typing error is made by subject.
- No forced error instituted near the end of service use.

Fast to Use  Slow to Use
- Short codes for each step.
- Short waiting time between steps.
- Direct procedure for requesting a transaction.
- Long codes for each step.
- Long waiting time between steps.
- Menu-driven procedure for requesting a transaction.

TABLE 4.2
Manipulation Check on Positive/Negative Qualities Revealed Immediately

<table>
<thead>
<tr>
<th>Manipulated Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
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<tr>
<td>Ease in Using</td>
<td>27.0000</td>
<td>1</td>
<td>65.6667</td>
<td>18.91</td>
<td>.001</td>
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<tr>
<td>Speed in Using</td>
<td>56.3333</td>
<td>1</td>
<td>73.5833</td>
<td>35.22</td>
<td>.001</td>
</tr>
</tbody>
</table>
### TABLE 4.3
**MANOVA Results for Attribute Quality Evaluations based on Known Qualities Revealed Immediately/Delayed**

#### Positive/Negative Qualities Revealed Immediately (I)

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>.96854</td>
<td>1</td>
<td>87.27233</td>
<td>.48831</td>
<td>.488</td>
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<tr>
<td>Future Accuracy</td>
<td>1.14433</td>
<td>1</td>
<td>69.02308</td>
<td>.72947</td>
<td>.398</td>
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<tr>
<td>Future Security</td>
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<td>1</td>
<td>73.60480</td>
<td>.00953</td>
<td>.923</td>
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#### Positive/Negative Qualities Revealed Later (D)

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<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
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<tbody>
<tr>
<td>Security</td>
<td>27.67467</td>
<td>1</td>
<td>87.27233</td>
<td>13.95274</td>
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<tr>
<td>Future Accuracy</td>
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<td>69.02308</td>
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<td>.001</td>
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<td>Future Security</td>
<td>10.12901</td>
<td>1</td>
<td>73.60480</td>
<td>6.06550</td>
<td>.018</td>
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</table>

#### (I) x (D) Interaction Effect

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
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<tbody>
<tr>
<td>Security</td>
<td>2.65936</td>
<td>1</td>
<td>87.27233</td>
<td>1.34077</td>
<td>.253</td>
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<tr>
<td>Future Accuracy</td>
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<td>Future Security</td>
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#### Multivariate Hotelling Statistic

<table>
<thead>
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<th>Source of Variation</th>
<th>Exact F</th>
<th>Sig F</th>
</tr>
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<tr>
<td>(I)</td>
<td>.51992</td>
<td>.671</td>
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<td>Positive/Negative Immediate Revelation (I)</td>
<td>22.41131</td>
<td>.001</td>
</tr>
<tr>
<td>Positive/Negative Delayed Revelation (D)</td>
<td>1.34908</td>
<td>.271</td>
</tr>
</tbody>
</table>

34
CHAPTER 5 METHOD

This chapter discusses the research method employed to test the hypotheses developed in Chapter 4. Nine sections are discussed: (a) Task; (b) Cover story; (c) Subjects; (d) Design; (e) Independent Variables; (f) Experimental Procedure; and (g) Dependent Variables; and (h) Cognitive Response.

5.1 TASK

A computerized home banking service was chosen for the main study. It is a service that links a client’s home computer to the bank’s computer, allowing the client to request certain financial transactions be carried out by the bank’s computer. The user can identify him or herself and request transactions by punching codes into the home computer.

This service satisfies the three criteria outlined in Chapter 4, namely it (a) has both experience and credence attributes, (b) is relatively new, and (c) does not take a long time to use. First, a fairly large array of experience and credence attributes can be found in such a service. Table 5.1 shows a list of these attributes. Consistent with the operational definition of experience attributes as those whose quality is ascertainable to consumers when the home banking service is used, these attributes include how clear the on-line instructions provided by the service is in guiding a client when he/she uses the service, the time it takes to use the service, and how easy it is to enter each step when the service is used. These are experience attributes because their quality is ascertained when a consumer uses the home banking service to carry out a transaction but is not known if the service is not used. Hence, they are consistent with Nelson’s (1970) definition of experience attributes.

On the other hand, examples of its credence attributes include its security, its confidentiality, and its ability to include other types of transactions in the future. These are credence attributes because consumers do not have the information to evaluate how well the home banking service is on these attributes despite having just used the service to request a financial transaction.
be carried out.

The array of attributes from either attribute type as listed in Table 5.1 provides the experimenter with a greater choice in the selection of independent and dependent attributes for this home banking study. It also provides the opportunity for future replication of this study using the same service context but with a different set of attributes. This latter advantage allows for testing the generalizability of the findings.

On the second criterion of relative service newness, the home banking service was non-existent in the country where the study was conducted. However, there exist several banking services that are similar to the home banking service in terms of generic banking features. These include the security and confidentiality of the system, accuracy in carrying out requested transactions, etc. These similar services allow consumers to (a) on one hand, be first-time users of the home banking service, and yet, (b) have some service-class experience to form attribute quality relatedness beliefs. Hence, the home banking service provides a suitable setting to test the hypotheses concerning attribute quality evaluations. Finally, this service is also easy to administer and does not require subjects to take a long time to use.

5.2 COVER STORY

The cover story used in this study is a computer programming competition in which subjects were asked to judge an entry. Appendix 2 shows the questionnaire containing the cover story. Subjects were told that although there is an official panel of judges to judge the technical merit of the programs, opinions from potential users are also important. In addition, they were also told that the programs sent in varied in design and quality. Together, the competition setting and the explicit information about varying quality made subjects less certain of the program quality prior to evaluation, and less likely to harbor strong expectations of its quality.

Also, as part of the cover story, subjects were told that because judging an entire program takes a long time, each program has been split into parts so that different people evaluate different
features of it. Therefore, information not essential to their particular evaluation had been removed. Subjects were told that this saved them time when judging.

In fact, the information given to subjects was the manipulated information in the study. Other information was controlled for. Hence, the cover story of judging selected portions of the program and saving the subjects time served two purposes. It disguised the control the experimenter has over the information given to subjects, and it made subjects appreciative of the supposedly time-saving characteristic of this judging procedure.

5.3 SUBJECTS

The subjects were undergraduate Commerce students at a North American university. In exchange for their participation, they were given a 5% bonus to their grade in a Marketing course as well as a chance to win cash prizes in a raffle. They were also informed that the 5% bonus is independent of their performance in this project. This minimizes the occurrence of subjects providing socially acceptable responses. As elaborated in Chapter 4, students were used because they are familiar with PC-related services.

There were 82 subjects initially. However, six subjects were dropped from the analyses. Two were dropped because they could not find the designated room and were late for the experiment. To achieve equal cell sizes, four other subjects were randomly chosen and dropped from the analyses. The equal cell sizes of 19 subjects each eliminates the problem of heterogeneity of variance, which otherwise may arise causing a multivariate extension of the Behrens-Fisher problem (see Hakstian, Roed, and Lind 1979). Of the remaining 76 subjects, 43 are male and 33 are female. The results obtained were no different when equal or unequal cell sizes were used.

5.4 DESIGN

A 2x2 between-subjects design was used. The two manipulated factors were: (a) Known Attribute Quality (Positive/Negative), and (b) Time when Quality is Revealed (Immediate/Delayed).
The latter factor provides the degree of representativeness between the known and unknown qualities. In addition, dependent attributes with varying degrees of attribute quality correlation to the known attribute quality were used to test how pervasive the effect of immediate/delayed quality revelation is, and whether attribute quality correlation influences evaluations of unknown qualities.

5.5 USE OF HOME BANKING SERVICE

Subjects were required to request a specified transaction be carried out through the home banking service. The transaction is Payment of MasterCard Bill for $33.21. MasterCard is a popular credit card that subjects recognize immediately. Therefore, it is unlikely that there will be problems with not knowing what this bill is about. The amount of $33.21 is used for two reasons. First, it is not too large an amount such that it is unrealistic and beyond a student's monthly budget for credit card expenses. Second, a less than .50 fraction of a dollar is used ($33.21 instead of say, $33.81) so that the subsequent negative credence quality manipulation will not be misconstrued by the subjects as being a rounding error to the larger amount. This point becomes more evident when the Positive/Negative Credence Quality manipulation is discussed.

There were nine steps involved in using this service. These are:

1. Log on to HomeLine (the name of the home banking service).
2. Enter bank account number.
3. Enter personal access code.
4. Enter transaction code for Payment of Mastercard Bill.
5. Enter amount to be paid.
6. Confirm/Change amount entered.
7. Be informed that request is completed.
8. Be informed that a transaction has been carried out and when the transaction record is due.

Steps 1 to 6 involved subjects pressing codes to initiate each step, while Steps 7 and 8
involved subjects receiving information from HomeLine about steps undertaken by the program. The first six steps are of particular importance to this study. These steps were developed such that they control for (a) inter-subject differences in typing skills, and (b) the type of information learned. In addition, these steps also improve the face validity of the product use experience. These points are elaborated below.

Specifically, a different letter key is used to enter the code at each step from 1 to 4. Subjects need to type a different one-letter key to symbolize a different code being entered at each step. Table 5.2 describes each step together with its simulated codes and instructions given to the subjects. For example, to log on to HomeLine, subjects pressed the "S" key. To go to the second step, they pressed a different letter key (the "T" key), and so on. These one-letter key represent a code, hence, subjects do not know how long or complicated each actual code is.

These letter keys provided several advantages to the experimenter. First, if subjects entered the actual codes, differences in typing skills may result in some subjects encountering typing errors while others did not. The one-letter keys (versus string codes) minimize this possibility. This is an advantage because variations in typing skills can potentially create differences in the information learned among subjects in the same condition. Subjects who committed errors may learn something more about the program than subjects who did not (for example, they may infer that the program is good enough to be able to recognize errors). Or, such subjects may also differentially perceive the same program to be less user friendly than those who committed no errors. The experimenter cannot control the errors committed and hence, has less control over the homogeneity of subjects within any one condition. However, with the use of the one-letter keys, the differential possibility of errors due to differences in typing skills is reduced.

Based on several pretests conducted, subjects were found not to commit any errors when entering the one-letter keys. Therefore, the stimulus program was not programmed to measure the number of errors made by each subject. However, the experimenter casually observed the subjects to determine those who made mistakes. Only a small group (less than five) made any mistake of
any kind throughout the study. Hence, very few differences exist in the range of errors made by subjects. In any case, a wrong letter key pressed makes a slight beep and the subjects were alerted to look (again) for the correct key to be entered.

Second, the use of a different letter key for each step (vis-a-vis the same letter key being used at all steps) helps subjects understand that a different code is entered for each step (like in actual usage). In addition, because subjects do not know a priori what letter key to press for the next step, they become more involved with the task. Hence, pressing a different letter key at each step becomes a more meaningful task to them than pressing the same letter key at every step.

To summarize, the use of a different one-letter key for each step provides the experimenter with (a) control over individual differences in subjects' typing skills, (b) control over the type and the amount of information learned at from Steps 1 to 4, and (c) a tool to improve the face validity of the task.

Because it is important that the subsequent manipulation of the key attribute quality (given in Step 9) remains strong and not be overwhelmed by prior information learned in the earlier steps, Steps 1 to 4 provide only limited information. A description of each step is provided to enhance both the face validity and experimental realism of this study without endangering its internal validity.

As will be elaborated in the section on Positive/Negative Known Attribute Quality, the manipulated attribute quality is "Accuracy in Carrying Out a Transaction". An inaccurate transaction is one for which the dollar amount but not the transaction is wrong. In order that subjects know the correct amount was entered, they were required to personally enter Steps 5 and 6. In Step 5, subjects entered the amount, and in Step 6, they confirmed or changed the amount if wrongly entered. In the latter situation, they were required to enter the correct amount and confirm it (i.e, do Steps 5 and 6 again). Regardless of whether subjects entered the amount correctly or wrongly at the first try, the eventual confirmed amount would have been checked by the subjects to be correct.

Although this procedure is flawed by the lack of experimenter control over subjects'
mistakes when typing in the amount and hence, possibly allowing such subjects to learn more about the service than subjects who did not make such errors, this scenario is unlikely to occur. As observed by the experimenter, few subjects (less than five) made errors when typing in the amount. Whenever such an error was made, it was rectified and the second amount entered was correct. Hence, at the most, such subjects had only two trials at entering the amount compared to one trial for those who did not make mistakes.

Although it is possible to program the task such that any amount mistakenly entered by subjects is treated by the program to be $33.21, this procedure is not without flaws. If a subject were to realize his/her mistake in typing in the amount, but the program read the intended correct amount of $33.21 instead and informed the subject as such, he/she would (a) have doubts about the quality of the program, and (b) possibly be aware of the hypotheses investigated. Hence, this procedure was not adopted.

Once the request was completed, subjects were informed that the transaction had been carried out. A transaction record was issued to them either immediately or later as part of the monthly statement. For the latter, they were instructed to press a button to log off from HomeLine immediately after being informed that the transaction was made. This prompted the PC screen to show the “log-off” sign, informing them that they had completed using the service and had logged off from HomeLine.

The manipulation of immediate or delayed issue of the transaction record will be discussed later. When the transaction record was issued, it remained on the personal computer (PC) screen until subjects completed answering the questionnaire. This procedure resembles the receipt of a hardcopy version of the transaction record (as in real life), where the physical receipt is always handy for reference when making such evaluations.

5.6 INDEPENDENT VARIABLES

A summary of the independent variables and their respective operationalizations is given
in Table 5.3.

5.6.1 Positive/Negative Known Attribute Quality

The manipulated attribute was "Accuracy in Carrying Out Transaction". Inaccuracy can be about (a) the type of transaction carried out, (b) the dollar amount involved, or (c) both the transaction and the amount. In this study, the service was inaccurate because a wrong dollar amount was paid for the transaction requested.

As described in Section 5.4, subjects entered the dollar amount personally. They were asked to check the amount entered against the bill. Hence, unlike a "transactional" inaccuracy where subjects may attribute the incorrect transaction as being due to the organizers' fault in setting the wrong one-letter key code or to their personal error when entering the simulated transaction code, an "amount" inaccuracy would be attributed to the home banking service and not to other sources. This is because subjects would have personally checked that the amount entered was correct, and hence an inaccurate payment was a direct failure of the service. This operationalization eliminates possible effects that self-attribution of failure may have on evaluation of HomeLine qualities.

The "amount" inaccuracy is operationalized as an overpayment rather than as an underpayment of the bill. The bill of $33.21 is paid at $34.00 instead. This rounding to the higher figure is inaccurate but assumed not to be as negatively perceived as would a rounding to a lower figure. The bill has been paid, though paid more than was necessary.

Alternative Operationalization

Since subjects used HomeLine to request only one transaction be carried out, it means that the manipulation is either 100% accurate or 100% inaccurate. There are several drawbacks to this single-transaction operationalization. First, like the one-letter key code punching procedure, the use experience may be too simplistic and hence lack face validity. Second, the single transaction may
provide subjects with very limited experience with the service, and hence are less likely to be confident in their predictions. These drawbacks can be addressed by using a multiple transaction service use where for example, four transactions were accurately carried out (for the Accurate condition) or three out of four were correct (for the Inaccurate condition).

However, although face validity is improved, internal validity is compromised. To illustrate, subjects having an inaccurate multiple transaction experience may varyingly focus on (a) the inaccurate transaction when making their predictions; or (b) the three accurate transactions; or (c) a composite of all four transactions, in which case, either the averaging or adding model of information integration may be used in the evaluations. Subjects may view this multiple transaction experience as multiple discrete experiences rather than a single but longer experience. The experimenter has no control over which of these routes is used by the subjects. To measure this will be too impractical while asking subjects how they arrived at their evaluation would be treating them as mini-scientists. In addition, although multiple transactions provided subjects with more service experience, the interest of this study is with the first service experience where the experience in and of itself is limited in information about credence quality and hence confers less evaluative confidence to the subjects. Using multiple transactions may compromise the integrity of the first-use experience given the possibility that additional information may be learned.

5.6.2 Immediate/Delayed Revelation of Quality

Two levels of when attribute quality is revealed are investigated: These are immediate and delayed revelation. When the dependent and the manipulated attributes are both time-dependent, they belong to the same category. When one is revealed immediately after use and the other is known over time, they belong to different categories.

**Manipulated Attribute Chosen**

The same attribute was used whose quality was revealed either immediately after use or
after a lapse of time. Internal validity remains intact because possible rival explanations of results arising from the use of two different attributes are controlled for. The attribute chosen for this manipulation was “Accuracy in Carrying Out Transaction”.

**Immediate Quality Revelation:** In this condition, transactional accuracy is known immediately after HomeLine was used. Specifically, information about HomeLine’s accuracy is available to subjects in the form of a transaction record issued immediately after the request was completed and the transaction carried out. Subjects are then able to evaluate how good HomeLine is in terms of transactional accuracy.

**Delayed Quality Revelation:** In this condition, transactional accuracy is known only after a lapse of time following the completion of such steps. Hence, information about this quality is only available a month after the request has been completed and a transaction carried out. The passage of time (one month) reveals its transactional accuracy.

**Impression of Immediate and Delayed Quality Revelation**

It is possible that in the Delayed condition, negative perception of HomeLine may be associated with the delayed issue of the transaction record. To minimize this possibility, the delay is described in terms of the transaction record being issued as part of the monthly statement. Such a description puts the delayed availability of information as a normal and acceptable feature of such banking services.

Moreover, pretest measures of overall impression of the service either with the immediate or one-month delay feature but before the transaction record is issued showed that this operationalization did not differentially affect the favorability of the service. Pretest subjects (n=13) rated HomeLine with or without the one-month delay at 4.17 and 4.43 respectively. These two scores were not statistically different from each other (F(1,12)=.119, p>0.05). Moreover, a review of the comments given by subjects in the main experiment did not suggest that when Accuracy was known one-month after use, HomeLine was less favorably regarded. Only three of the 38 subjects
who received the transaction record a (simulated) month later commented on the length in time. This small number suggested that the operationalization of the delay in quality revelation did not raise negative comments about the service. Hence, the one-month delay did not make HomeLine less favorable than HomeLine whose Accuracy information was available immediately.

**Operationalization of Delayed Quality Revelation**

The one-month delay in the receipt of information about HomeLine's accuracy was operationalized as follows: (a summary of the following steps is furnished in Table 5.2). After subjects in this condition had completed their request and HomeLine had carried out a transaction, they logged off from HomeLine.

To begin the one-month wait, a calendar task was used. A calendar for the month when the study was conducted and its following month was printed on one page of the questionnaire. Subjects were asked to put an "X" on the date they used HomeLine (i.e., the date they participated in the experiment). Then, they were asked to put an "X" on each of the 29 days after they used the service. While marking the "X"s, subjects were required to read all the events that were listed on the calendar during this period. To ensure that subjects similarly imagined the passage of time, the same events on the calendar were given to all subjects.

After the crossing task was completed, five time-related questions were asked. The first two questions contrasted the date when HomeLine was used and the date 29 days later. To make the 29-day period more personally meaningful to subjects, they were also asked to list three additional events that they, as students, may have engaged in. Although soliciting this question may produce differing affective thoughts among subjects, this possibility is minimized by asking them to list "student-type" events. Given that the subject pool comprised students, the events generated were unlikely to be very different both in kind and in affect. The fourth and fifth questions asked subjects to count the number of Mondays and Thursdays that had gone by since they used HomeLine.
To further reinforce the passage of time, subjects were asked to imagine that it was now the thirtieth day since their HomeLine use. They pressed a key on the PC which informed them that their transaction record would be issued at the end of the thirtieth day. To simulate the passing of one day on the thirtieth day, the program included a 30-second delay before the transaction record was ready.

A manipulation check on Immediate/Delayed Quality Revelation was measured at the end of the questionnaire. Subjects were asked how soon they thought the transaction record was issued to them after they had completed their request. Subjects in the Immediate condition were expected to indicate that the record was issued to them sooner than those in the Delayed condition.

5.7 EXPERIMENTAL PROCEDURE

Appointments were made with the subjects to meet at a designated room and time. The same room was used in all but the last session. Except for this session, the room used had six personal computers (PCs) installed. Each PC was placed at least four feet apart from the next PC so that subjects were isolated from each other when they used HomeLine. To further minimize interaction, the PCs were placed such that subjects had to face the wall when using HomeLine. Two facing walls were used. Hence, subjects had their backs facing those who used PCs on the other facing wall.

For the last session, a bigger room with 24 PCs was used. However, only eight subjects were ran in this session. Therefore, although the room was different, the number of subjects and the isolation of subjects from each other were kept as similar to the earlier sessions as possible. Each session was spaced 45 minutes apart so that subjects had plenty of time to complete the experiment and were unlikely to meet those arriving for the next session.

As subjects entered the room, they were told to sit in front of a randomly assigned PC. They were then told about the competition and the service that they would be evaluating. They
were also told that the booklet placed next to each PC was self-explanatory and they could begin their task. In the booklet, the cover story explaining the competition and the subjects' role was given. Then, subjects used HomeLine to request the transaction to be carried out. The information given when using HomeLine was either favorable or unfavorable with respect to its accuracy quality. Such information was furnished either immediately after service use or after the calendar task was completed. Once the transaction record was received, both factors had been manipulated.

Subjects then evaluated HomeLine's quality on several attributes. The first question was their evaluation of HomeLine's transactional accuracy, followed by evaluations of other attribute qualities. After each evaluation, subjects also indicated how confident they were of their evaluations. Confidence was asked after each evaluation so that subjects need not retrieve their evaluations again if the confidence question was measured at a later time.

After the dependent variables were measured, a manipulation check on the Immediate/Delayed revelation of Quality factor was made. Following this, measures from the literature concerning the effects of direct experience were taken. Subjects were also asked to write the thoughts they had while using HomeLine. This helped to determine the face validity and demand characteristics (if any) of the study. General questions concerning how well HomeLine met their expectations, and how satisfied they were as well as their behavioral intention towards HomeLine were also asked.

Finally, subjects' computer and banking experiences were measured, followed by questions concerning their demographic characteristics. An open-ended question of what they thought of the competition was asked to assess the efficacy of the cover story. Subjects were then thanked and requested not to discuss the study with anyone.

5.8 DEPENDENT VARIABLES

Two main dependent variables were studied. These were (a) evaluations of unknown attribute qualities, and (b) confidence in such evaluations. Subjects were asked to evaluate several
unknown attribute qualities of HomeLine that vary from each other on two dimensions. First, the
unknown qualities may or may not have high attribute quality correlation with the known attribute
quality. Second, the unknown attribute qualities are either those that can be ascertained after a
passage of time has elapsed since product use or through acquisition of expert information.

5.8.1 Evaluation of Unknown Attribute Qualities

Subjects were asked to evaluate how well they thought HomeLine was in processing their
transaction. The following attribute qualities were evaluated: (a) security of personal access code;
(b) confidentiality of financial record; (c) ability to expand to include newer transactions; (d) relative
advantage over other home banking programs; (e) sophistication of computer language used; (f)
accuracy in fee charges; (g) clarity of instructions when using; (h) ease in entering the codes; and
(i) overall quality of first use. Table 5.5 describes each of these attributes in terms of the
characteristics useful in the analyses.

Briefly, attributes (a) to (e) are credence in nature, while (f) to (h) are experience attributes.
In addition, attribute (f) was pretested to have a high attribute quality correlation to the manipulated
attribute of transactional accuracy. Overall quality of HomeLine specific to first use was used as
a mediator in understanding the process through which evaluations of such specific attribute
qualities are made (i.e., directly from one attribute to another, or via a halo effect through general
impression).

Attribute Quality Correlation

Different degrees of attribute quality correlation are achieved by the choice of dependent
attributes. One has a high attribute quality correlation to the manipulated attribute (this is Accuracy
in Fee Charges) and the remaining credence attributes have lower quality correlation (these are

A pretest (n=11) was conducted to assess the degree of attribute quality correlation.
Subjects were asked on a 7-point scale to indicate how much their evaluations of these unknown qualities would be affected if they knew the quality of HomeLine’s accuracy in carrying out a transaction (the independent attribute used). A lack of attribute quality correlation is rated at “1” while a strong quality correlation is rated at “7”.

The results showed that subjects expected their evaluation of “Accuracy in Charging Service Fees” to be highly affected by how well HomeLine performed on the independent attribute “Accuracy in Carrying Out Transaction” (x=6.27). Their evaluations of “Security of Access Code,” “Confidentiality of Financial Record,” “Ability to Expand,” “Relative Advantage over Other Programs,” and “Sophistication of Computer Language Used” were less highly correlated to “Accuracy in Carrying Out Transaction” (x=4.64, 4.26, 4.00, 4.91, and 3.36 respectively). Hence, “Accuracy in Fee Charges” is the only attribute with a high attribute quality relatedness to “Accuracy in Carrying Out Transaction,” to be used in testing H1.

**Dependency on Time to Reveal Credence Quality**

To test H2, the less highly correlated attributes found in the above pretest must be further tested to measure whether their quality is revealed through the passage of time. They should vary in their time-dependency. To measure which dependent attributes are time-dependent, subjects were given a description of the steps involved in using HomeLine. For 11 subjects, how accurate HomeLine was in carrying out the requested transaction was revealed immediately after use. This parallels the Immediate Revelation condition in the main study. The other 17 subjects learned of its transactional accuracy only a month after use. This is the corresponding Delayed Revelation condition used in the main study (see Appendix 3 for a copy of the pretest questionnaire). They were then asked to indicate the earliest time they can determine the quality of various attributes of HomeLine. Five categories of attributes were given. Prior to their response, descriptions of four of the five categories of attributes were given. This is similar to the procedure adopted by Ford et al. (1990). The fifth category, concerning attributes whose quality can be determined immediately
after use, was not described in the preamble because it is self explanatory. Subjects were told that there were certain attributes of HomeLine whose quality can be determined while using the service; others that cannot be determined immediately after using the service but information about them can be obtained from experts; still others that an expert cannot provide accurate judgments of but a consumer may eventually learn of the quality as events unfold over time; and there are those whose quality no one can ever tell at all even over time. Of particular interest to this study are the second and third categories, termed as “Only an expert can tell” and “I might eventually know as events unfold over time” for short respectively. Attributes whose quality is known eventually as events unfold over time are time-dependent. Those whose quality is known through an expert are not dependent on time. In addition, as a check on whether these attributes can be categorized as credence (rather than experience), their quality should not be revealed while or immediately after use.

Non-parametric tests showed that responses from subjects in the two groups did not differ significantly for each of the five credence attributes investigated. Two attributes were indicated to have qualities that are determined over time. Confidentiality of financial record was considered by 22 subjects (or 78.6%) to be revealed when events unfold eventually over time (see Table 5.6). Security of personal access code was indicated to be known only over time by 19 subjects (or 67.9%). Three attributes were considered to possess qualities that cannot be determined immediately after use but are determinable with the help of an expert. They were the sophistication of computer language used in writing HomeLine (indicated by nine and 13 subjects from the Immediate and Delayed Revelation conditions respectively); the relative advantage of HomeLine compared to other programs (indicated by 5 and 10 subjects from the Immediate and Delayed conditions respectively); and HomeLine’s ability to expand in the future (indicated by 5 and 14 respectively). In percentage terms, this means that 78.6%, 53.6%, and 67.9% of the total.

1 Chi-square values were 0.11 (p>0.10), 2.20 (p>0.10), 0.75 (p>0.10), 0.97 (p>0.10), and 3.58 (p>0.05) for Confidentiality, Security, Relative Advantage, Sophistication of Computer Language, and Ability to Expand respectively. Therefore, responses from both groups of subjects are no different.
respondents indicated that computer language sophistication, relative advantage, and ability to expand respectively, are attributes whose quality is known only through expert information. As given in Table 5.6, the second highest category is indicated by 15%, 36%, and 29% of the subjects for each of the three attributes respectively. Therefore, the percentage of subjects indicating the highest category is much higher compared to those who indicated the second highest category, implying that subjects generally agree on when the attribute quality is known. Specifically, these five attributes vary in whether their quality is revealed over time or independently of the passage of time. In addition, none of the subjects considered the five attributes to possess qualities that are knowable during or immediately after use. Hence, these attributes are not experiential in nature.

Scales Used

After using HomeLine, subjects were asked to evaluate the service on several attributes. This part of the questionnaire reads:

Now that you have used HomeLine, PLEASE THINK ABOUT WHAT HOMELINE WAS LIKE WHEN YOU FIRST USED IT .

We are interested in (a) what you think HomeLine was like when you first used it, and (b) how confident you are in your evaluation.

(A description of the scales used is provided here.)

When I used HomeLine to pay my MasterCard bill, I think the program was:

Not likely to be 1 2 3 4 5 6 Likely to be
(attribute inserted here) (attribute inserted here)

5.8.2 Confidence in Evaluations

Following an evaluation of each unknown attribute quality, subjects were asked how confident they were in their evaluation. This pattern of questions -- evaluation followed by confidence for each attribute at a time -- helped subjects indicate their confidence after each
evaluation is made. The form of the Confidence question was a variation of that used by Fazio and Zanna (1978a and 1978b) and Berger and Mitchell (1989). In Berger and Mitchell's (1989) study, two 7-point scales for Confidence were used, anchored by the statements "not at all certain"/"very certain" and "completely confident"/"not at all confident," respectively. Fazio and Zanna used an 11-point scale to measure Confidence. For this study, the question is a 6-point scale phrased as:

I am Not confident of my 1 2 3 4 5 6 Confident of my evaluation.

The anchor statements are not as extreme as those used by Berger and Mitchell (1989). From the pretests, it was felt that subjects seldom claimed to be not at all confident in their evaluations. Hence, a way to make the scale a more sensitive measure of confidence and yet provide anchor descriptions that lend themselves to be easily interval scaled and interpreted by subjects is to use the above anchor descriptions.

5.9 COGNITIVE RESPONSE

An open-ended question on subjects' thoughts while they were using HomeLine was asked (a) to ascertain demand effects, as well as (b) for possible post-hoc insights on their evaluative process. Two trained independent coders were used to code subjects' cognitive response. Eight thought categories were established. These are subjects' thoughts about HomeLine's: (a) accuracy, (b) immediate/one-month delay in provision of accuracy information, (c) security, (d) userfriendliness, (e) convenience, and (f) overall quality. In addition, thoughts about the realism of the use experience were also coded. All other thoughts not specific to the dependent or independent attributes were categorized under "Other". These largely included those on the physical layout of the service, the number of transactions offered, and the cost for using such a service. Finally, a category for the total number of thoughts generated was also established. For each category, the (a) total number of thought units, (b) total number that are positive, (c) total
number negative, and (d) total number neutral for each subject were recorded. These cognitive
responses were used in post-hoc investigations of the evaluative process engaged when
experience and credence qualities are evaluated. Two trained coders -- one the experimenter and
the other a trained researcher in cognitive psychology -- coded the responses independently. To
ensure that both coders understood the various thought categories, they worked together on the
cognitive responses of a few pretest subjects. This serves as training for this particular coding
scheme. After which, they coded independently the responses of subjects from the main study.
### TABLE 5.1
Examples of Experience & Credence Attributes
In a Home Banking Service

<table>
<thead>
<tr>
<th>Experience Attributes</th>
<th>Credence Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Clarity in Instructions provided on computer screen.</td>
<td>* Security of Personal Access Code.</td>
</tr>
<tr>
<td>* Speed when Using.</td>
<td>* Relative Advantage over other home banking services.</td>
</tr>
<tr>
<td>* Accuracy in carrying out transaction.</td>
<td>* Technical quality (e.g., efficiency in the way the program was written).</td>
</tr>
<tr>
<td></td>
<td>* Sophistication of computer language used.</td>
</tr>
<tr>
<td></td>
<td>* Ability to expand.</td>
</tr>
</tbody>
</table>
TABLE 5.2
Steps when Requesting Mastercard Payment on HomeLine

Subject presses the "S" key and sees the following information on the PC screen:

STEP 1: (You are now logged on to HomeLine.)

Please press T to go to the next step.

Subject presses "T" key and sees:

STEP 2: (Please enter your Bank Account Number here.)

The H key simulates your account number. When pressing the H key, please pretend that you are actually entering your account number. Please press H now.

Subject presses "H" key and sees:

STEP 3: (Please enter your Personal Access Code here.)

The W key simulates your access code. When pressing the W key, please pretend that you are actually entering your access code. Please press W now.

Subject presses "W" key and sees:

STEP 4: (The Transaction Code identifying the transaction "Payment of Mastercard Bill" is entered here.)

The L key simulates this transaction code. When pressing the L key, please pretend that you are actually entering the transaction code. Please press L now.

From here on, the instructions provided and the processing made are according to the HomeLine program.

Subject presses "L" key and sees:

STEP 5: Please enter the amount of the transaction in dollars and cents by pressing only the digits and decimal point, and the ENTER key.

E.g., $50.12 is entered as 50.12 and press ENTER.

Subject presses 33.12 (the specified amount) and sees:

STEP 6: The Dollar Amount entered is (the amount as entered by subject).

Please check your bill that this is the correct amount.

If correct, press Y.

To change amount, press N.
If wrong amount, Subject presses N and goes through STEPS 5 and 6 again.

If correct amount, Subject presses Y and sees:

STEP 7: You have completed your request on HomeLine. Please wait.

After 10 seconds, the PC screen changes to:

(FOR IMMEDIATE REVELATION OF QUALITY CONDITION)
STEP 8: A transaction has been carried out for you. Your Transaction Record, showing details of the transaction we have carried out for you, is available now. Please check it.

Please press P to see your transaction record.

(FOR DELAYED REVELATION OF QUALITY CONDITION)
STEP 8: A transaction has been carried out for you. Your Transaction Record, showing details of the transaction we have carried out for you is available in a month's time with your monthly statement. When you receive your transaction record, please check it.

Your transaction record is not available as yet. Please press S to log off from HomeLine. Then, turn the page on the booklet for further instructions.

Subjects in the Immediate Revelation Condition see the Transaction Record immediately after pressing P.

Subjects in the Delayed Revelation Condition see a "LOG OFF" sign immediately after pressing S. Then, they proceed with the Calendar task before seeing the Transaction Record.

The Transaction Record looks like this:

**Excerpt of your HOMELINE TRANSACTION RECORD**

<table>
<thead>
<tr>
<th>TRANSACTION CARRIED OUT</th>
<th>DOLLAR AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay MasterCard Bill.</td>
<td>$33.21</td>
</tr>
<tr>
<td></td>
<td>($34.00 if in Inaccurate Condition)</td>
</tr>
</tbody>
</table>

Your Bank Statement will be issued to you in a month's time. (this line is left blank if in Delayed Revelation of Quality Condition).
### TABLE 5.3
Independent Variable Operationalizations

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Attribute Used</th>
<th>Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known Attribute Quality</td>
<td>Accuracy in Carrying Out Transaction.</td>
<td>Correct Amount was Paid or Incorrect Higher Amount was Paid.</td>
</tr>
<tr>
<td>Immediate/Delayed Revelation of Quality</td>
<td>Accuracy in Carrying Out Transaction.</td>
<td>Transaction Record was issued immediately or (simulated) one month after the request was completed.</td>
</tr>
</tbody>
</table>
TABLE 5.4  
Operationalization of Delayed Revelation of Quality

Steps to simulate the one-month wait before information about attribute quality is available:

* Subject logs off of HomeLine.

* Subject marks an "X" on the day transaction was requested.

* Subject marks each of the 29 days following the day transaction was requested. He/She is also asked to imagine that each "X" simulates the passing of one day.

* While marking, subject also reads the events that occur on some of the days during the 29-day period. He/She is asked to imagine that the events occurred to him/her.

* After marking 29 days, subject is asked:
  (a) The date when transaction was requested.
  (b) The date of the 29th day after (a).
  (c) and (b) contrasts the time difference between using HomeLine and receiving the transaction record.
  (d) To list three activities that he/she may have engaged in during this period.
  (e) The number of Mondays that have elapsed.
  (f) The number of Thursdays that have elapsed.

* Subject presses "P" key to initiate the 30th day.

* Subject waits 30 seconds for the end of the 30th day.

* Subject receives transaction record at the end of the 30th day.
<table>
<thead>
<tr>
<th>Dependent Attribute</th>
<th>Attribute Type</th>
<th>Attribute Quality Correlation</th>
<th>Occasion Evaluated</th>
<th>Attribute Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security of Access Code</td>
<td>Credence&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Not High</td>
<td>First Use</td>
<td>High</td>
</tr>
<tr>
<td>Confidentiality of Financial Record</td>
<td>Credence&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Not High</td>
<td>First Use</td>
<td>High</td>
</tr>
<tr>
<td>Accuracy in Fee Charges</td>
<td>Experience</td>
<td>High</td>
<td>First Use</td>
<td>High</td>
</tr>
<tr>
<td>Instructional Clarity</td>
<td>Experience</td>
<td>Not High</td>
<td>First Use</td>
<td>n.m.&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ease in Entering Codes</td>
<td>Experience</td>
<td>High</td>
<td>First Use</td>
<td>n.m.</td>
</tr>
<tr>
<td>Ability to Expand</td>
<td>Credence&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Not High</td>
<td>General</td>
<td>High</td>
</tr>
<tr>
<td>Relative Adv. over other programs</td>
<td>Credence&lt;sup&gt;2&lt;/sup&gt;</td>
<td>High</td>
<td>General</td>
<td>n.m.</td>
</tr>
<tr>
<td>Quality of Computer Language Used</td>
<td>Credence&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Not High</td>
<td>General</td>
<td>n.m.</td>
</tr>
</tbody>
</table>

<sup>1</sup> Quality is revealed over time.
<sup>2</sup> Quality is not revealed over time.
<sup>3</sup> Not measured.
### Table 5.6
Classification of When is the Earliest Time a Consumer Can Determine the Quality of an Attribute

<table>
<thead>
<tr>
<th>Attribute</th>
<th>While I was using it.</th>
<th>Immediately after logging off HomeLine.</th>
<th>Immediately after logging off.</th>
<th>Only an expert can tell.</th>
<th>No one can ever tell at all.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidentiality of financial record.</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>82 (76)</td>
<td>9 (12)</td>
<td>9 (12)</td>
</tr>
<tr>
<td>Security of access code.</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>55 (76)</td>
<td>9 (18)</td>
<td>36 (6)</td>
</tr>
<tr>
<td>Sophistication of computer language used.</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (6)</td>
<td>82 (76)</td>
<td>18 (12)</td>
</tr>
<tr>
<td>Relative advantage over other services.</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>36 (35)</td>
<td>45 (59)</td>
<td>18 (6)</td>
</tr>
<tr>
<td>Potential for future expansion.</td>
<td>9 (6)</td>
<td>0 (0)</td>
<td>45 (12)</td>
<td>45 (71)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

Percentage of subjects in Immediate Revelation group of 11 who indicated this category. In parentheses, percentage of subjects in Delayed Revelation group of 17 who indicated this category.
CHAPTER 6 RESULTS AND ANALYSES

This chapter discusses the results obtained in testing the hypotheses. Briefly, the results supported the hypotheses concerning attribute quality evaluations/perceptions but not those about confidence in evaluations/perceptions. In particular, consistent with the H2, an attribute whose positive or negative quality that is revealed some time after service use influenced more strongly perceptions of qualities that would be also revealed over time. This was not true if the known quality was revealed immediately after use. Perceptions of attribute qualities that were not revealed over time but through other means such as expert information were not affected. It appears that representativeness of a known attribute quality to a perceived credence quality in terms of whether both are revealed after a passage of time has a major influence on consumer's perception of the latter. However, such representativeness does not differentially affect the degree of confidence held in the perceptions.

The following section provides the results of the checks on manipulation and demand effects. The subsequent sections deal with the results of the hypotheses testing. Then, supplementary investigations on and results of experience quality evaluations and the process of the evaluation are presented.

6.1 PRELIMINARY CHECKS

Preliminary checks on (a) the manipulation of one independent factor and (b) the possibility of subject awareness bias were conducted. A manipulation check on whether transactional accuracy was perceived by subjects to be revealed immediately or some time after service use was conducted.

6.1.1 Immediate/Delayed Revelation of Quality

It was first necessary to determine whether subjects correctly perceived that the information about transactional accuracy was available to them immediately or some time after service use.
The Analysis of Variance (ANOVA) results indicated that subjects in the Immediate condition correctly judged that they received the transaction record soon after the request was completed (x=2.32; where "1" means "Immediately after request was completed", and "6" means "Only a long time after"). Subjects in the Delayed condition rated the time when the transaction record was received as long after the request was made (x=4.61). The difference between the Immediate and Delayed conditions was significant at p<0.001 (see Table 6.3). Moreover, the mean values fell correctly on either side of, and equally apart from, the scale midpoint of 3.5. This meant that subjects in the Delayed condition did not think that information about HomeLine's accuracy quality was available to them as soon as did subjects in the Immediate condition. In addition, the manipulation of Immediate/Delayed Revelation of Quality was effective across both levels of Accuracy/Inaccuracy. As shown in Table 6.1, the difference in Immediate/Delayed scores was significant at p<0.001 for both Accurate and Inaccurate conditions.

6.1.2 Subject Awareness Biases

Two types of subject awareness biases were assessed: (a) subjects' awareness of the hypotheses, and (b) experimenter's demand on subjects. These were assessed by means of (a) two open-ended questions on what subjects were thinking when they used HomeLine and what they thought of the (disguised) computer programming competition, (b) their response during the debriefing session, and (c) their responses to the dependent variable questions.

All cognitive responses were coded and used in the analysis. However, due to the large number of subjects and several number of thoughts evoked per subject, Appendices 3 and 4 show only samples of the comments to the two open-ended questions, randomly selected through a random number generator. They praised the competition, believing that this was one means by which creative and innovative ideas could be developed. The thoughts they had as they used
HomeLine were related to the service (e.g., how secure or time saving the system is). Moreover, a debriefing held a week after the experiment showed that subjects were surprised that the entire project was an experiment and that there was no computer competition at all. Together, the open-ended questions and the debriefing suggested that subjects were not likely to have guessed the true purpose of the experiment.

Second, because subjects did not provide the same responses to all the questions asked, the demand effect of pleasing the experimenter was unlikely to be operating. Although the same experimenter was used in all conditions and was aware of the condition each subject was in, the possibility of inadvertent experimenter influence on subjects' responses (Rosenthal 1963) was less severe given that two to six subjects were run at any one session, with each session having a mix of the various conditions. Therefore, experimenter's knowledge of the condition a subject was in is not likely to affect the responses because several different conditions were carried out simultaneously.

6.2 EVALUATION OF UNKNOWN QUALITIES

Hypothesis 1 was tested using ANOVA because it involved only one dependent measure. Hypothesis 2, involving five dependent measures, was tested using Multivariate Analysis of Variance (MANOVA). Descriptive statistics for the five dependent attribute perceptions and the supplementary analyses are contained in Table 6.4. The following sections provide the results for Hypotheses 1 and 2.

6.2.1 Hypothesis 1

Statistical Results

Hypothesis 1 tests the effect of Known Accurate/Inaccurate Quality on perceptions of an

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1 Only three subjects said they suspected the project to be a psychological experiment. However, they did not state what they thought the hypotheses were. All three subjects were from different conditions.
attribute quality that is highly correlated with transactional accuracy. In testing Hypothesis 1, one dependent attribute was used. "Accuracy in Fee Charges" was pretested to be an attribute with high attribute quality correlation to transactional accuracy. As shown in Figure 6.3 and Table 6.5, the results supported Hypothesis 1. Only a significant main effect for Accuracy/Inaccuracy was observed ($F(1,72)=100.78; p<0.001$). Subjects who received an Accurate transaction record rated HomeLine to be likewise accurate in its fee charges ($x=4.95$ and $x=5.47$ for Immediate and Delayed conditions respectively); while those who received an Inaccurate record thought it would also be inaccurate in charging a service fee ($x=2.42$ and $x=2.74$ for Immediate and Delayed conditions respectively). These perceptions did not differ when Accuracy/Inaccuracy was revealed immediately after service use or was revealed sometime after use ($F(1,72)=2.58, p>0.10$). There was also no significant interaction ($F(1,72)=0.16, p>0.10$). Hence, Hypotheses 1 is supported.

Discussion

The results indicate that when a known quality has a high correlation with an unknown quality, subjects used it to evaluate the latter, regardless of when information about the known quality was received. The representativeness of the known quality to the unknown quality in the form of whether both attributes are dependent on time to reveal their quality does not affect perceptions. Attribute quality correlation and not whether the attributes share the characteristic of when their quality is revealed is perceived to be the "best predictor" of the unknown quality.

6.2.2 Hypothesis 2

Statistical Results

Hypothesis 2 investigated the effect of Immediate/Delayed Revelation of Quality on the perception of various credence qualities for which attribute quality correlation is not high. To test H2, five credence qualities varying in time-dependency were evaluated. As per the pretest results reported in the Method chapter, the time-dependent credence attributes were Security and Confidentiality. Those whose quality is revealed independently of time were Relative Advantage,
Sophistication of Computer Language, and Ability to Expand. The general form of H2 would be confirmed by a significant interaction. The MANOVA test showed a significant main effect for Known Attribute Quality (Accuracy/Inaccuracy) \( (F(2,71)=7.50, p<0.001) \), as well as a significant interaction effect \( (F(2,71)=5.32, p<0.001) \). Specifically, the interaction effects were significant when evaluating Confidentiality \( (F(1,72)=11.20, p<0.001) \) and Security \( (F(1,72)=26.41, p<0.001) \), both attributes whose quality is revealed over the passage of time. No significant main effect for Immediate/Delayed was observed. The results are shown in Table 6.6 and Figures 6.1 and 6.2.

When HomeLine was positive on a known attribute quality (i.e., is accurate), subjects perceived the service to be more secure and confidential \( (x=4.84 \text{ and } 4.55 \text{ respectively}) \) compared to subjects who experienced an inaccurate HomeLine \( (x=3.42 \text{ and } 3.72 \text{ respectively}) \). In addition, a significant interaction effect was observed, implying that interpretation of the above main effects should be qualified. Specifically, for Security, subjects who received the transactional record some time after service use (i.e., Delayed Revelation of Quality) rated HomeLine at 5.26 and 2.63 when HomeLine was accurate and inaccurate respectively. Those who received the record immediately rated it at 4.42 and 4.21 respectively. For the latter two perceptions, the simple main effect test showed that they were not significantly different from each other. For the former two perceptions (when HomeLine was accurate or inaccurate but known only after a time delay), the perceptions were significantly different. Knowing HomeLine was accurate led subjects to perceive HomeLine as being more secure when transactional accuracy was known later than immediately (Points \( (b)> (a) \text{ in Figure 6.1}) \); and lower when HomeLine was inaccurate but known later than immediately after use (Points \( (d)< (c) \text{ in Figure 6.1}) \). Table 6.7 provides the detailed statistical results for the simple main effects tests.

For Confidentiality, similar results were obtained. Subjects who received information about HomeLine's accuracy a month later (i.e., Delayed Revelation of Quality condition) rated the service to be significantly more confidential when it was accurate than inaccurate \( (x=5.05 \text{ vs } 3.37) \). However, no difference in perception of HomeLine's Confidentiality was found when information
about its accuracy was received immediately ($F=0.02$, $p>0.10$). Therefore, Hypotheses 2(a) and 2(b) are supported. Table 6.7 shows the results of the simple main effect tests.

Hypothesis 2(c) predicts no influence of Immediate/Delayed Revelation on perceptions of credence qualities that are not dependent on time to reveal their quality. Three such credence qualities were evaluated. These were how sophisticated was the computer language used in writing the HomeLine program, how much better HomeLine is relative to other programs in terms of the range of transaction services it offers, and whether HomeLine has the ability to expand in the future. These qualities were pretested to be determinable by an expert rather than through a passage of time (see Method chapter). As expected, no significant main effect of temporal revelation and no interaction effects were found. Hence, Hypothesis 2(c) is supported. However, a main effect for Accuracy/Inaccuracy was found for perception of HomeLine's relative advantage over other programs in terms of range of transactions offered ($x=3.79$ vs 3.22). Perceptions of its computer language and ability to expand were no different when it was accurate or inaccurate in carrying out the requested transaction.

Discussion

The results indicate that when attribute quality correlation between the known quality and unknown credence qualities was not high, the former had varying degrees of influence on perceptions of the latter depending on whether they belonged to the same or different time-dependency category. As stated in Hypothesis 2, the representativeness heuristic was observed to be used in perceptions of unknown credence qualities that are revealed over time. Delayed information is more pertinent to subjects in such perceptions than similar information received immediately after use. Because the passage of time tells subjects how accurate HomeLine is, subjects think that if HomeLine is accurate over time, it is also likely to be secure and confidential. For subjects who received information about transactional accuracy immediately after use, such information does not influence perceptions of how well HomeLine will perform on any attribute whose quality unfolds over time. Hence, transactional accuracy known later over time compared
to accuracy known immediately has greater effect on perceptions of attribute qualities that similarly unfold over time. Furthermore, the consistent interaction results for Security and Confidentiality provide greater confidence in the validity of the results.

Moreover, the effects on evaluation of credence qualities is not the result of a simple passage of time. If the mere passage of time influenced the evaluations, we would have observed similar patterns of results for both time-dependent and time-independent credence attributes. Since the effect of time was observed only for time-dependent credence attributes, the effect cannot be due to the simple passage of time.

The results also show that for attributes whose quality can be determined through expert information, independently of time (e.g., Sophistication of Computer Language Used), the time when information of a known attribute quality is received is irrelevant.

### 6.3 SUPPLEMENTARY ANALYSES

#### 6.3.1 Evaluation of Experience Qualities

Supplementary tests on the effects of Immediate/Delayed Revelation of Quality on the evaluations of experience qualities were conducted. The dependent experience attributes used were "Clarity in Instructions Provided" and "Ease in Entering Codes".

The tests showed no significant main or interaction effects on evaluations of these two dependent experience attribute qualities (see Table 6.8). This meant that neither a service that was accurate nor inaccurate affected subjects' evaluations of how well HomeLine was on "Instructional Clarity" or "Ease in Entering Codes" ($F(1,72)=1.96$ and $1.07$ respectively; $p>0.10$). Also, neither were these evaluations affected by whether transactional accuracy was revealed immediately or some time after use ($F(1,72)=0.60$ and $0.22$ for Instructional Clarity and Ease respectively; $p>0.10$). The mean values for both experience quality evaluations were above the scale midpoint 3.5.

#### 6.3.2 Process of Evaluation
Two sets of evaluative processing tests were made. One consisted of using cognitive responses to understand what thoughts (if any) mediated the evaluative outcomes. The second investigated (a) whether the process of evaluation was direct from attribute to attribute, or via a general impression; and (b) whether the process was different for attributes that had or had not a high attribute quality relatedness with the given attribute quality information. Although no formal hypothesis was advanced, we expect evaluations of the latter type of attribute qualities to be more affected by holistic impressions of the service. The results of the post-hoc tests are reported below.

**Cognitive Response: Statistical Results**

Both Pearson correlation and paired t-tests were first conducted to assess inter-rater reliability. On all the thought units coded, the correlations between the two coders were significant at p<0.01. The correlation figures ranged from 0.70 to 0.98. The insignificant individual paired t-test results indicated that the coders were not different in their coding of subjects' cognitive responses (p>0.10 for every category). Hence, the mean value of each thought category across the coders was used to ascertain whether that thought category mediated evaluation.

The ANOVA results showed the following to be significantly affected (p<0.05) by the Positive/Negative Accuracy Quality: (a) Total Number of Thoughts on Accuracy, (b) Number of Negative Thoughts on Accuracy, (c) Total Number of Thoughts on Ease/Difficulty in Using, and (d) Number of Negative Thoughts on Ease/Difficulty in Using. Specifically, subjects who received an Inaccurate transaction record had more thoughts on accuracy and ease/difficulty than those with an accurate record (x=0.73 versus 0.11 for Total Number of Thoughts on Accuracy; x=0.67 versus 0.03 for Number of Negative Thoughts on Accuracy; x=0.90 versus 0.43 for Total Number of Thoughts on Ease/Difficulty; and x=0.25 versus 0.03 for Number of Negative Thoughts on Ease/Difficulty). Hence, these four sets of thoughts were possible significant covariates mediating the effects on evaluation.

The manipulation of Immediate/Delayed Revelation of Quality did not affect the number of thoughts generated on when the transaction record was made available to them (p>0.05). This
suggests that the delay in making transactional accuracy known was generally viewed by subjects not to be one of unusual concern.

Since significant effects were earlier found when testing Hypotheses 1 and 2, these hypotheses are again tested but with covariates. Four tests were conducted for each hypothesis, where each test used one of the four significantly affected thoughts as a covariate. The post-hoc results replicated the original\(^2\). Although the amount of each of the four thoughts varied from condition to condition, they did not influence evaluative outcomes.

Halo Effect: Statistical Results

A series of regression models was tested, following Baron and Kenny's (1986) recommendation on testing mediator effects. This technique had been used in previous studies (e.g., Kirmani and Wright 1989). Briefly, to test whether Overall Quality mediated the evaluation process, the following steps were conducted: (a) regress Overall Quality (the possible mediator) on Known Accuracy Quality (the independent variable); (b) regress Security and Confidentiality (as

\(^2\) Using Total Number of Thoughts on Accuracy as the covariate, the F values when Security was evaluated were 2.22 (p>0.10), 30.38 (p<0.01), 25.01 (p<0.01) for Immediate/Delayed Revelation of Quality, Known Accuracy Quality, and its interaction respectively. When Confidentiality was evaluated, the corresponding F values were 0.65 (p>0.10), 13.84 (p<0.01), and 9.44 (p<0.01). When Fee Accuracy was evaluated, the corresponding F values were 2.23 (p>0.10), 76.20 (p<0.01), and 0.23 (p>0.10).

Using Total Number of Negative Thoughts on Accuracy as the covariate, the F values when Security was evaluated were 2.19 (p>0.10), 28.74 (p<0.01), and 23.22 (p<0.01) for Immediate/Delayed, Known Accuracy Quality, and its interaction respectively. When Confidentiality was evaluated, the corresponding F values were 0.42 (p>0.10), 5.97 (p<0.05), and 8.87 (p<0.01). When Fee Accuracy was evaluated, the corresponding F values were 2.60 (p>0.10), 88.83 (p<0.01), and 0.11 (p>0.10).

Using Total Number of Thoughts on Ease/Difficulty in Using as the covariate, the F values when Security was evaluated were 2.60 (p>0.10), 28.99 (p<0.01), and 23.81 (p<0.01) for Immediate/Delayed, Known Accuracy Quality, and its interaction respectively. When Confidentiality was evaluated, the corresponding F values were 0.48 (p>0.10), 6.21 (p<0.05), and 9.35 (p<0.01). When Fee Accuracy was evaluated, the corresponding F values were 2.88 (p>0.05), 86.73 (p<0.01), and 0.05 (p>0.10).
examples of the dependent variables) on Known Accuracy Quality; and (c) regress Security and Confidentiality on both Accuracy and Overall Quality. To establish mediation, the regression tests must show that (a) Accuracy affected Overall Quality; (b) Accuracy affected the dependent attribute qualities; and (c) the dependent attribute qualities were affected by Overall Quality. This procedure was used for dependent attributes whose qualities registered a significant difference due to the manipulated factors, i.e., those for which condition (b) above held. Specifically, these were Security, Confidentiality, and Accuracy in Fee Charges.

Because of the significant interaction between Known Accuracy Quality and Immediate/Delayed Revelation of Quality when evaluating Security and Confidentiality, the mediation tests were conducted for those conditions where significant effects were observed. When Accuracy quality was revealed some time after service use, the above regression tests were ran to assess the evaluation process from Accuracy quality to Security and Confidentiality evaluations. If no significant interaction effects were detected (as was the case of Accuracy in Fee Charges), the regression tests were ran collapsing across the non-significant factor. For this dependent attribute, the tests were conducted with Accuracy as the independent variable collapsed across Immediate/Delayed conditions.

Table 6.9 shows the results. The first regression test (Step (a) above) indicated that Accuracy significantly affected Overall Quality. Hence, the first condition was held. This step was the same for all the investigated dependent attributes. Step (b) was conducted when the hypotheses were tested. By investigating only the dependent attributes whose qualities were found to be significantly affected by the manipulated Accuracy factor, the second condition held for the dependent attributes Security, Confidentiality, and Accuracy in Fee Charges. The regression tests for Step (c) showed that Overall Quality did not significantly affect the perceptions of these two credence qualities (p>.10 for Security and p>.05 for Confidentiality). Since this third condition failed, no mediation of Overall Quality was established when evaluating Security and Confidentiality. As will be discussed further in the next chapter, this implies that the halo effect did not take place
when evaluating Security and Confidentiality.

For Accuracy in Fee Charges, the mediating effect of Overall Quality was significant. Hence, how accurate HomeLine was in carrying out the requested transaction affected subjects' perception of Overall Quality, which in turn affected their perception of its Accuracy in Fee Charges. As will be discussed in the following chapter, this means that the halo effect is found to operate when evaluations of highly correlated attribute qualities are made.

Discussion

Evaluations of highly correlated attributes are found to be characterized by the halo effect. Subjects' evaluations of HomeLine's transactional accuracy influenced their evaluations of overall service quality, which in turn influenced their evaluations of its accuracy in charging fees. When attributes are less correlated, evaluations were direct from one attribute to another rather than via an impression of overall quality.

6.4 CONFIDENCE IN EVALUATIONS OF UNKNOWN QUALITIES

In general, the results indicated that confidence in evaluation was not differentially affected by Accuracy/Inaccuracy or the Immediate/Delayed Revelation of the Known Quality. Tables 6.10 and 6.11 provide the descriptive statistics and the univariate results.

6.4.1 Hypothesis 3

No difference in confidence of evaluations for various attributes was found. Subjects who used an accurate HomeLine were just as confident in their evaluations as those who experienced an inaccurate service ($F(1,70)=0.83; p>0.10$). Similarly, subjects who received information about transactional accuracy a month after using the service were just as confident in their evaluations as those who received the same information immediately ($F(1,70)=0.51; p>0.10$). Moreover, the confidence measures were generally high across the four conditions (above the midscale point of 3.5).
Security does not have High Attribute Quality Correlation to Accuracy in Carrying Out Transactions.
Confidentiality does not have High Attribute Quality Correlation to Accuracy in Carrying Out Transaction.
### TABLE 6.1
Descriptive Statistics for Manipulated Factors

(A) POSITIVE/NEGATIVE ACCURACY QUALITY MANIPULATION

<table>
<thead>
<tr>
<th>Manipulated Level</th>
<th>Experience Att Mean Score</th>
<th>Credence Att Mean Score</th>
<th>Row Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate</td>
<td>5.58*¹</td>
<td>5.68*¹</td>
<td>5.63*²</td>
</tr>
<tr>
<td>Inaccurate</td>
<td>1.74*²</td>
<td>1.47*²</td>
<td>1.61*²</td>
</tr>
</tbody>
</table>

Mean scores with same letters vertically are significantly different from each other at p<0.05.

(B) IMMEDIATE/DELAYED REVELATION OF QUALITY MANIPULATION

<table>
<thead>
<tr>
<th>Manipulated Level</th>
<th>Accurate Mean Score</th>
<th>Inaccurate Mean Score</th>
<th>Row Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Revelation</td>
<td>2.47*³</td>
<td>2.16*³</td>
<td>2.32*¹</td>
</tr>
<tr>
<td>Delayed Revelation</td>
<td>4.37*⁴</td>
<td>4.84*⁴</td>
<td>4.64*¹</td>
</tr>
</tbody>
</table>

Mean scores with same numbers horizontally from each other are not significantly different from each other at p<0.05.
### TABLE 6.2
Manipulation Check on Known Accuracy Quality

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>308.132</td>
<td>2</td>
<td>154.066</td>
<td>235.225</td>
<td>.001</td>
</tr>
<tr>
<td>Revelation (T)</td>
<td>.118</td>
<td>1</td>
<td>.118</td>
<td>.181</td>
<td>.672</td>
</tr>
<tr>
<td>Acc. Qlty (Q)</td>
<td>308.013</td>
<td>1</td>
<td>308.013</td>
<td>470.270</td>
<td>.001</td>
</tr>
<tr>
<td>Interaction (T) x (Q)</td>
<td>.645</td>
<td>1</td>
<td>.645</td>
<td>.984</td>
<td>.324</td>
</tr>
<tr>
<td>Explained</td>
<td>308.776</td>
<td>3</td>
<td>102.925</td>
<td>157.145</td>
<td>.001</td>
</tr>
<tr>
<td>Total</td>
<td>47.158</td>
<td>72</td>
<td>.655</td>
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</tr>
</tbody>
</table>

### TABLE 6.3
Manipulation Check on Immediate/Delayed Revelation of Quality

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>99.711</td>
<td>2</td>
<td>49.855</td>
<td>45.855</td>
<td>.001</td>
</tr>
<tr>
<td>Revelation (T)</td>
<td>99.592</td>
<td>1</td>
<td>99.592</td>
<td>99.592</td>
<td>.001</td>
</tr>
<tr>
<td>Acc. Qlty (Q)</td>
<td>.118</td>
<td>1</td>
<td>.118</td>
<td>.118</td>
<td>.742</td>
</tr>
<tr>
<td>Interaction (T) x (Q)</td>
<td>2.961</td>
<td>1</td>
<td>2.961</td>
<td>2.725</td>
<td>.103</td>
</tr>
<tr>
<td>Explained</td>
<td>102.670</td>
<td>3</td>
<td>34.224</td>
<td>31.506</td>
<td>.001</td>
</tr>
<tr>
<td>Residual</td>
<td>78.211</td>
<td>72</td>
<td>1.086</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>180.882</td>
<td>75</td>
<td>2.412</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent Variable</td>
<td>Accurate Condition</td>
<td>Inaccurate Condition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------</td>
<td>--------------------</td>
<td>----------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td><strong>Immediate Revelation of Quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>4.421</td>
<td>.902</td>
<td>4.211</td>
<td>1.584</td>
<td></td>
</tr>
<tr>
<td>Confidentiality</td>
<td>4.053</td>
<td>1.079</td>
<td>4.105</td>
<td>1.100</td>
<td></td>
</tr>
<tr>
<td>Instructional Clarity</td>
<td>5.579</td>
<td>.607</td>
<td>5.421</td>
<td>.838</td>
<td></td>
</tr>
<tr>
<td>Ease</td>
<td>4.527</td>
<td>1.124</td>
<td>4.368</td>
<td>1.422</td>
<td></td>
</tr>
<tr>
<td>Fee Charges Accuracy</td>
<td>4.947</td>
<td>1.026</td>
<td>2.421</td>
<td>1.387</td>
<td></td>
</tr>
<tr>
<td>Overall First Use Quality</td>
<td>5.211</td>
<td>.855</td>
<td>3.368</td>
<td>1.342</td>
<td></td>
</tr>
<tr>
<td>Expansion Capability</td>
<td>5.263</td>
<td>1.046</td>
<td>4.895</td>
<td>1.197</td>
<td></td>
</tr>
<tr>
<td>Relative Advantage</td>
<td>4.842</td>
<td>.834</td>
<td>4.105</td>
<td>1.524</td>
<td></td>
</tr>
<tr>
<td>Computer Language</td>
<td>4.105</td>
<td>1.524</td>
<td>3.579</td>
<td>1.774</td>
<td></td>
</tr>
<tr>
<td>Overall System Quality</td>
<td>5.053</td>
<td>.621</td>
<td>4.000</td>
<td>1.491</td>
<td></td>
</tr>
<tr>
<td><strong>Delayed Revelation of Quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>5.263</td>
<td>.562</td>
<td>2.632</td>
<td>.761</td>
<td></td>
</tr>
<tr>
<td>Confidentiality</td>
<td>5.053</td>
<td>.970</td>
<td>3.368</td>
<td>1.342</td>
<td></td>
</tr>
<tr>
<td>Instructional Clarity</td>
<td>5.526</td>
<td>.612</td>
<td>5.211</td>
<td>.855</td>
<td></td>
</tr>
<tr>
<td>Ease</td>
<td>4.789</td>
<td>1.182</td>
<td>4.368</td>
<td>1.116</td>
<td></td>
</tr>
<tr>
<td>Fee Charges Accuracy</td>
<td>5.474</td>
<td>.513</td>
<td>2.737</td>
<td>1.408</td>
<td></td>
</tr>
<tr>
<td>Overall First Use Quality</td>
<td>5.211</td>
<td>.855</td>
<td>3.211</td>
<td>1.032</td>
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</tr>
<tr>
<td>Expansion Capability</td>
<td>5.053</td>
<td>.848</td>
<td>4.842</td>
<td>1.015</td>
<td></td>
</tr>
<tr>
<td>Relative Advantage</td>
<td>4.368</td>
<td>1.012</td>
<td>3.737</td>
<td>1.147</td>
<td></td>
</tr>
<tr>
<td>Computer Language</td>
<td>4.000</td>
<td>1.491</td>
<td>3.379</td>
<td>1.610</td>
<td></td>
</tr>
<tr>
<td>Overall System Quality</td>
<td>4.895</td>
<td>.658</td>
<td>3.579</td>
<td>1.071</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 6.5
ANOVA Results for Quality Evaluation when Attribute Quality Correlation is High

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>134.95</td>
<td>2</td>
<td>67.47</td>
<td>51.68</td>
<td>.001</td>
</tr>
<tr>
<td>Revelation (T)</td>
<td>3.37</td>
<td>1</td>
<td>3.37</td>
<td>2.58</td>
<td>.113</td>
</tr>
<tr>
<td>Acc. Qlty (Q)</td>
<td>131.58</td>
<td>1</td>
<td>131.58</td>
<td>100.78</td>
<td>.001</td>
</tr>
<tr>
<td>Interaction (T) x (Q)</td>
<td>.21</td>
<td>1</td>
<td>.21</td>
<td>.16</td>
<td>.689</td>
</tr>
<tr>
<td>Explained</td>
<td>135.16</td>
<td>3</td>
<td>45.08</td>
<td>34.51</td>
<td>.001</td>
</tr>
<tr>
<td>Residual</td>
<td>94.00</td>
<td>72</td>
<td>1.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>229.16</td>
<td>75</td>
<td>3.055</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 6.6
MANOVA Results for Credence Quality Evaluation when Attribute Quality Correlation is Not High

**Immediate/Delayed Revelation of Quality (T)**

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>2.57895</td>
<td>1</td>
<td>75.89474</td>
<td>2.446</td>
<td>.122</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>0.32895</td>
<td>1</td>
<td>92.10526</td>
<td>.257</td>
<td>.614</td>
</tr>
<tr>
<td>Expansion</td>
<td>3.36842</td>
<td>1</td>
<td>96.42105</td>
<td>2.515</td>
<td>.117</td>
</tr>
<tr>
<td>Relative Advantage</td>
<td>0.32895</td>
<td>1</td>
<td>76.94737</td>
<td>.308</td>
<td>.887</td>
</tr>
<tr>
<td>Computer Language</td>
<td>0.05263</td>
<td>1</td>
<td>185.0526</td>
<td>.020</td>
<td>.581</td>
</tr>
</tbody>
</table>

**Positive/Negative Accuracy Quality (Q)**

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>38.36842</td>
<td>1</td>
<td>75.89474</td>
<td>36.39</td>
<td>.001</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>12.64474</td>
<td>1</td>
<td>92.10526</td>
<td>9.88</td>
<td>.001</td>
</tr>
<tr>
<td>Expansion</td>
<td>8.89474</td>
<td>1</td>
<td>96.42105</td>
<td>6.64</td>
<td>.012</td>
</tr>
<tr>
<td>Relative Advantage</td>
<td>1.59211</td>
<td>1</td>
<td>76.94737</td>
<td>1.49</td>
<td>.226</td>
</tr>
<tr>
<td>Computer Language</td>
<td>4.26316</td>
<td>1</td>
<td>185.0526</td>
<td>1.66</td>
<td>.202</td>
</tr>
</tbody>
</table>

**(T) X (Q) Interaction Effect**

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>27.84211</td>
<td>1</td>
<td>75.89474</td>
<td>26.41</td>
<td>.001</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>14.32895</td>
<td>1</td>
<td>92.10526</td>
<td>11.20</td>
<td>.001</td>
</tr>
<tr>
<td>Expansion</td>
<td>.05263</td>
<td>1</td>
<td>96.42105</td>
<td>.04</td>
<td>.843</td>
</tr>
<tr>
<td>Relative Advantage</td>
<td>.11842</td>
<td>1</td>
<td>76.94737</td>
<td>.11</td>
<td>.740</td>
</tr>
<tr>
<td>Computer Language</td>
<td>.05263</td>
<td>1</td>
<td>185.0526</td>
<td>.02</td>
<td>.887</td>
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</table>

**Multivariate Hotelling Statistic**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Exact F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revelation (T)</td>
<td>1.28934</td>
<td>.279</td>
</tr>
<tr>
<td>Accuracy Quality (Q)</td>
<td>7.50341</td>
<td>.001</td>
</tr>
<tr>
<td>(T) x (Q) Interaction</td>
<td>5.31962</td>
<td>.001</td>
</tr>
</tbody>
</table>
TABLE 6.7
Significance Tests for the Interaction Effects on Credence Quality Evaluation when Attribute Quality Correlation is Not High

(A) Immediate Revelation of Quality Condition; Accurate vs Inaccurate

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>.421</td>
<td>1</td>
<td>59.589</td>
<td>.254</td>
<td>.618</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>.026</td>
<td>1</td>
<td>42.737</td>
<td>.022</td>
<td>.882</td>
</tr>
</tbody>
</table>

(B) Delayed Revelation of Quality Condition; Accurate vs Inaccurate

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>65.789</td>
<td>1</td>
<td>16.105</td>
<td>147.05</td>
<td>.001</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>26.947</td>
<td>1</td>
<td>49.368</td>
<td>19.65</td>
<td>.001</td>
</tr>
</tbody>
</table>

(C) Accurate Condition; Immediate vs Delayed

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
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<td>20.316</td>
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<td>.001</td>
</tr>
<tr>
<td>Confidentiality</td>
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<td>1</td>
<td>37.895</td>
<td>9.025</td>
<td>.005</td>
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</table>

(D) Inaccurate Condition; Immediate vs Delayed

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
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<td>55.579</td>
<td>15.341</td>
<td>.001</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>5.158</td>
<td>1</td>
<td>54.211</td>
<td>3.425</td>
<td>.072</td>
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</table>
TABLE 6.8
ANOVA Results for Experience Quality Evaluation

Immediate/Delayed Revelation of Quality (T)

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruc Clarity</td>
<td>.32895</td>
<td>1</td>
<td>39.15789</td>
<td>.604</td>
<td>.439</td>
</tr>
<tr>
<td>Ease</td>
<td>.32895</td>
<td>1</td>
<td>106.73684</td>
<td>.222</td>
<td>.639</td>
</tr>
</tbody>
</table>

Positive/Negative Accuracy Quality (Q)

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruc Clarity</td>
<td>1.06579</td>
<td>1</td>
<td>39.15789</td>
<td>1.960</td>
<td>.166</td>
</tr>
<tr>
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<td>1</td>
<td>106.73684</td>
<td>1.074</td>
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</table>

(T) x (Q) Interaction

<table>
<thead>
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<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruc Clarity</td>
<td>.11842</td>
<td>1</td>
<td>39.15789</td>
<td>.218</td>
<td>.642</td>
</tr>
<tr>
<td>Ease</td>
<td>.32895</td>
<td>1</td>
<td>106.73684</td>
<td>.222</td>
<td>.639</td>
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</table>
### TABLE 6.9
Regression Results for Mediator Effects

**Step (a) Regress Mediator on Independent Variable**

Mediator: Overall Quality of First Use.

<table>
<thead>
<tr>
<th>Indep Variable</th>
<th>Beta</th>
<th>SE Beta</th>
<th>T</th>
<th>Sig T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>.60</td>
<td>.27</td>
<td>2.232</td>
<td>.029</td>
</tr>
</tbody>
</table>

**Step (b) Regress Dependent Variable on Independent Variable**

This test was conducted when testing Hypotheses 1 to 5.

**Step (c) Regress Dependent Variable on Independent Variable & Mediator**


<table>
<thead>
<tr>
<th>Indep Variable</th>
<th>Beta</th>
<th>SE Beta</th>
<th>T</th>
<th>Sig T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Quality</td>
<td>.01</td>
<td>.11</td>
<td>.109</td>
<td>.914</td>
</tr>
<tr>
<td>Accuracy, as a credence att.</td>
<td>.89</td>
<td>.11</td>
<td>8.027</td>
<td>.001</td>
</tr>
</tbody>
</table>

Dependent Variable: Confidentiality of Financial Record.

<table>
<thead>
<tr>
<th>Indep Variable</th>
<th>Beta</th>
<th>SE Beta</th>
<th>T</th>
<th>Sig T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Quality</td>
<td>.34</td>
<td>.19</td>
<td>1.748</td>
<td>.089</td>
</tr>
<tr>
<td>Accuracy, as a credence att.</td>
<td>.35</td>
<td>.19</td>
<td>1.805</td>
<td>.080</td>
</tr>
</tbody>
</table>

Dependent Variable: Accuracy in Fee Charges.

<table>
<thead>
<tr>
<th>Indep Variable</th>
<th>Beta</th>
<th>SE Beta</th>
<th>T</th>
<th>Sig T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Quality</td>
<td>.33</td>
<td>.10</td>
<td>3.359</td>
<td>.001</td>
</tr>
<tr>
<td>Accuracy</td>
<td>.33</td>
<td>.10</td>
<td>5.429</td>
<td>.001</td>
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TABLE 6.10
Descriptive Statistics for Confidence in Evaluation Scores

<table>
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<tr>
<th>Dependent Variable</th>
<th>Accurate Condition</th>
<th>Inaccurate Condition</th>
</tr>
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<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td><strong>Immediate Revelation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
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</tr>
<tr>
<td>Confidentiality</td>
<td>4.632</td>
<td>.955</td>
</tr>
<tr>
<td>Instruc. Clarity</td>
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<td>.820</td>
</tr>
<tr>
<td>Ease</td>
<td>4.526</td>
<td>1.307</td>
</tr>
<tr>
<td>Fee Charges Accuracy</td>
<td>4.842</td>
<td>.765</td>
</tr>
<tr>
<td>First Use Quality</td>
<td>5.105</td>
<td>.737</td>
</tr>
<tr>
<td>Expansion</td>
<td>4.842</td>
<td>1.068</td>
</tr>
<tr>
<td>Computer Language</td>
<td>4.158</td>
<td>1.425</td>
</tr>
<tr>
<td>Rel. Advantage</td>
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<td>1.665</td>
</tr>
<tr>
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<td>1.068</td>
</tr>
<tr>
<td><strong>Delayed Revelation</strong></td>
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<td></td>
</tr>
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<td>1.071</td>
</tr>
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<td>.838</td>
</tr>
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<td>Instruc. Clarity</td>
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</tr>
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</tr>
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<td>System Quality</td>
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<td>.705</td>
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TABLE 6.11
ANOVA Results for Confidentiality in Evaluations

Immediate/Delayed Revelation of Quality (T)

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
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<td>92.105</td>
<td>.093</td>
<td>.762</td>
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</tr>
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<td>.763</td>
</tr>
<tr>
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<td>.092</td>
<td>.762</td>
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</table>

Positive/Negative Accuracy Quality (Q)

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Fee Charges Acc</td>
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<td>Comp. Language</td>
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(T) x (Q) Interaction

<table>
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<th>Hyp. SS</th>
<th>DF</th>
<th>Error SS</th>
<th>F</th>
<th>Sig F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>.013</td>
<td>1</td>
<td>92.105</td>
<td>.010</td>
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<td>89.263</td>
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<td>.413</td>
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<tr>
<td>Expansion</td>
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<td>.000</td>
<td>1.000</td>
</tr>
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<td>Comp. Language</td>
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<td>.167</td>
<td>.684</td>
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</tbody>
</table>
CHAPTER 7 DISCUSSION AND CONCLUSION

This chapter provides the theoretical implications of the results reported in Chapter 6. Methodological and managerial contributions are also discussed. Finally, it discusses the weaknesses of the research and proposes suggestions for future research.

7.1 THEORETICAL IMPLICATIONS

7.1.1 Evaluations of Attribute Qualities

This research offers several theoretical implications. Conceptually, it adds a theoretical dimension to existing service quality research. Such research has largely focused on the conceptual and empirical identification of service quality dimensions (e.g., Parasuraman et al. 1985). More recently, there has been some but limited application of psychological theories in explaining consumer evaluation of service quality (e.g., Bitner 1990). The present research provides an additional theoretical perspective of service quality evaluation by employing the heuristics of attribute quality correlation and representativeness in explaining the results.

It has been argued in the psychological literature that heuristics are used under conditions of uncertainty to alleviate cognitive strain (cf. Kahneman and Tversky 1974). The results from this study supports this argument in the evaluation of certain credence qualities. Specifically, the results demonstrate that in the presence of a highly correlated known quality, evaluations of an unknown attribute quality are inferred based on the known quality. Hence, the heuristic of attribute quality correlation is used. This finding is therefore consistent with past research on ecological correlation (cf. Pinson 1986). However, unlike previous research that tends to use tangible products as the context of their study (e.g., Ford and Smith 1987, Huber and McCann 1982), the present study utilizes a service whose characteristics are significantly different from that of tangible products (Shostack 1977). Hence, the present finding that attribute quality correlation has an effect on evaluation not only reinforces previous findings but more importantly, extends the applicability of this heuristic to services that are different from tangible products usually used in consumer
A second heuristic employed in this research is the representativeness heuristic. An attribute quality is considered to be representative of another if they share salient characteristics. One such characteristic is whether their quality is revealed over time or independently of time such as through the acquisition of expert information. Credence qualities were conceptually defined in this study to possess qualities that are revealed over time or from the acquisition of expert information. This distinction is conceptually consistent with Ford et al.'s (1990) definition that credence qualities "cannot be accurately evaluated even after the product is used because of consumer's lack of technical expertise" (p. 435). In so doing, it identifies a difference among credence qualities that can potentially influence consumer evaluation differently. Using when an attribute quality is revealed as a means to distinguish representativeness of known and evaluated credence qualities, this research found that time-dependent credence qualities were more influenced by known qualities that were similarly revealed over time than those revealed immediately after use. Attribute qualities that were revealed from an expert were not differentially affected. The results imply that the representativeness heuristic is used in certain cases by consumers in their evaluation of qualities characterized by uncertainty. Again, this is consistent with the psychological literature suggesting the use of heuristics in such evaluations. Although this study did not examine whether consumers use these heuristics to judge experience attributes before actual use, the literature does not suggest that such heuristics are less applicable in such instances. Future research can therefore investigate the applicability of such heuristics in the evaluation of experience attributes before actual product use.

Together, the results on attribute quality correlation and representativeness suggest that what consumers consider to be the "best predictor" (Leonard and Simmons 1989) changes depending on the characteristics of the attributes understudied. Representativeness in terms of when an attribute quality is revealed is considered by consumers to be a better predictor than attribute quality correlation when such correlation is not very high. Therefore, this research extends
existing work by identifying different best predictors under different circumstances.

The present research also demonstrated that the SEC framework advanced by the information economists (Darby and Karni 1974, Nelson 1974) is relevant to services marketing. Although conceptual research has been proposed concerning its relevance to services (Zeithaml 1979), empirical research on this is somewhat limited. Empirical services marketing research using the SEC typology has focused mainly on identifying the different attribute types in a service (e.g., Lynch and Schuler 1990) or using credence attributes as the context of the study (e.g., Bloom and Krips). This research contributes by demonstrating the usefulness in identifying attributes belonging to the same attribute type (such as whether they are experience or credence qualities) as well as their distinguishing characteristics (such as when their quality is revealed) in understanding evaluations. Furthermore, in investigating experience and credence qualities, the current research builds on the pioneering work by Ford et al. (1990) in the marketing literature. Ford et al. (1990) tested the validity of the SEC framework in print advertisements. The present study tests the utility of categorizing experience and credence qualities in explaining consumer evaluation. Specifically, consumer evaluations of experience and credence qualities are different despite similar information given.

In testing the process of evaluation, the present study found that evaluations of attributes highly correlated to transactional accuracy were characterized by the halo effect. When attributes were less correlated, evaluations were direct from one attribute to another rather than via an impression of overall quality. Research on the halo effect (e.g., Beckwith and Lehmann 1975) suggests that it is more prevalent when evaluating ambiguous qualities, an example of which would be unknown credence qualities. The findings of the present study does not support this argument. One possible reason is that the halo effect operates when there is at least a certain degree of attribute quality correlation, which the credence qualities in this study may not have with the known quality. This is an area for future research to reconcile the differences in the present and previous studies.
7.1.2 Confidence in Evaluation

Although the SEC literature suggests that uncertainty is high when evaluating credence qualities (Darby and Karni 1973), the results of Hypothesis 3 demonstrated otherwise. Confidence in evaluations were found to be high in all cases. This finding however is consistent with that found by Ford et al. (1990) where skepticism in experience and credence ad claims (similar to confidence in evaluation of experience and credence qualities) was no different and high. It also supports Berger and Mitchell's (1989) finding that consumers tend to be highly confident in their evaluations despite limited information given in the form of single ad exposure.

7.2 METHODOLOGICAL CONTRIBUTIONS

Six methodological issues are discussed: (a) the use of direct experience to simulate actual service use; (b) the use of the same attribute whose quality is revealed either immediately or some time after use; (c) the operationalization of lapse of one-month; (d) the natural setting of the evaluation; and (e) the Evaluation-Confidence pattern of questions asked.

Both the preliminary and main studies simulated actual service use. Previous studies on product evaluation under uncertainty or limited information generally used written description of the product (e.g., Ford and Smith's (1987) bicycle description) or limited product trial (e.g., feeling the texture of polo shirts in Hoch and Ha 1986). Although the present study limited the availability of certain service information for internal validity purposes, subjects went through the process of using the service. This is an improvement over previous studies because the evaluations obtained were based on conditions that were similar to actual service use. Therefore, the external realism of the present study (while controlling for the crucial internal validity issues) allowed for evaluations that were likely to be made if subjects had actually used the service.

The use of the same attribute "Accuracy in Carrying Out Transaction" whose quality is revealed immediately or some time after use provided the advantage of eliminating competing explanations arising from characteristics of the attributes used. If different attributes were used for
each level of this manipulation, any difference between these two attributes can account for the findings obtained. Instead, all differences except the time when information about its quality was available were controlled for by the use of the same attribute for both attribute types. Hence, the results obtained are more cleanly attributed to the factor manipulated.

On this same factor of Immediate/Delayed Revelation of Quality, the latter level was operationalized as a simulated one-month lapse before information about the attribute quality is available. Because of administrative difficulties involved in letting subjects actually wait a month before such information was available, a simulated technique involving a calendar task was used. During the pretests, subjects were asked after the completion of the pretests, what they thought of the calendar task. They said that they knew the purpose of the task was to make them imagine that a month has passed since using HomeLine. One subject even said she was “transported to a month later”. In the main experiment, the manipulation check indicated that the calendar task simulation was effective.

This successful operationalization of time passage suggests that future research may utilize it instead of letting the actual period of time lapse. The drawback of discussions among subjects (particularly when studies are longitudinal) can be prevented, hence, eliminating some threats to internal validity. Moreover, the calendar task is quite flexible and can be customized to the context of the study by listing various activities that are relevant to the subjects. This makes the waiting period more meaningful to them than a task involving puzzles which may be perceived by subjects to be irrelevant to the experiment and a waste of their time. Moreover, the calendar task is simple to administer. It requires only a paper-and-pencil procedure.

It can also be expanded to situations involving the passage of a few days. Instead of identifying the days in a month, the calendar task can be varied to include hours in a day. Using the underlying same principle in the calendar task, it can be varied to include situations that do not involve calendar months but the passing of time in hours.

Finally, unlike Bettman et al.'s (1986) study on attribute correlation where subjects were
given detailed instructions on the relationship between the attributes, this research does not make explicit the relationships before consumers evaluate the unknown attribute quality. It therefore tested consumers' evaluation under conditions of natural product use when no explicit attribute relationship was evoked through special instructions. In this sense, this research has better external application.

7.3 MANAGERIAL CONTRIBUTIONS

The managerial contributions can be discussed in terms of (a) what attributes management should focus on in their marketing communication; (b) how management can utilize such attributes to their advantage; and (c) possible drawbacks and advantages from consumers' high confidence in their evaluations.

Arguably, the most useful benefit is the finding that dependency on time to reveal an attribute's quality differentially affected evaluations of selected unknown credence qualities; specifically, those that are similarly time-dependent and are not highly correlated. The finding that an attribute quality known some time (compared to immediately) after use affected evaluation of these credence qualities suggests that to enhance evaluations, management should ensure that (a) such known attributes perform well, and (b) perhaps delay giving positive qualities until some time after use. The latter suggestion is tentative as management has to further explore what consumers consider to be a suitable delay in time. The delay should not be too long such that it makes consumers uncertain about the attribute quality and hence, uneasiness with the product decision. Therefore, the delay must not be too long but sufficiently enough so that consumers perceive the attribute quality to be revealed over time. Following this, the results also suggest that perhaps management can control when the quality of certain attributes is revealed. This way, management not only controls (a) the degree to which a known attribute quality can influence another, but in so doing, also (b) the evaluation of the unknown credence qualities. Management should therefore take an inventory of their product's strong and weak points and select the strategically superior ones to possess characteristics of delayed revelation. Based on the results
of this study, this would enhance their influence on the evaluation of selected credence qualities. To do this, management has to communicate in its ads or through sales personnel when these qualities will be revealed. For attributes that consumers are unfamiliar with, this would educate them on how to evaluate the quality as well as assure them that non-receipt of information about the quality is not evidence of inferior quality. The latter step helps in reducing possible psychological discomfort arising from consumer's lack of complete information about a product's performance. However, one should recognize that this is difficult to implement in light of intense competition. On the other hand, if the chosen strong attributes are ones that consumers believe to have qualities that can be known immediately after use, then management through its promotion campaign, should provide reasonable justification for the delay in providing information on the attribute quality.

The present findings also suggest that consumers do not necessarily rely on any available quality information even when such information is the only one available. Consumers may disregard such information and instead evaluate unknown qualities as similar to the average quality of comparable products. This means that given scarce resources, management can maximize their returns by focusing on those attributes whose qualities are used to evaluate unknown qualities, and not on all attributes. For the latter attributes, management can focus on building relationships between such attribute qualities and unknown qualities. Consumers can be educated on how such attribute qualities are related. Communications programs must be geared towards achieving this objective. Resources allocated to attributes whose quality serves no impact on evaluations can be put to better use by diverting them to attributes that affect such evaluations.

The main study also investigated the confidence subjects held of their evaluations. The relatively high confidence despite the lack of relevant information has at least two implications. First, similar to the disconfirmation paradigm (Churchill and Surprenant 1982), any subsequent information about quality that contradicts the earlier confident evaluation is likely to result in greater disappointment and dissatisfaction than if such evaluations were less confidently made. Therefore,
management must consider ways to either (a) fulfill adequately these expectations (as indicated by the evaluation), and/or (b) reduce such high confidence when evaluations are negative. This can be achieved by ensuring that the promotions do not oversell the service and/or stringent service concept and quality testing is implemented. Such efforts would reduce the gap between external communications and service delivery as identified by Parasuraman et al. (1985).

When evaluative confidence is high but quality evaluation is poor, it implies that changing such evaluations through communication would be difficult. Management has to find means to overcome high confidence in evaluations of low quality. One such means is to embark on a service improvement program, followed by allowing consumers to sample the improved service. Personal experience of the improved quality is a more effective means to change confident negative evaluation than communication through advertising. When confidence is high and attribute quality is positive, consumers would be more inoculated against communication from competing brands. Confidently held evaluations are more stable (Fazio and Zanna 1981) and are less changeable when contradictory but not conclusive information is given. Hence, when attribute quality is not known, high confidence in the perceived high quality wards off contradictory but inconclusive information from sources such as comparative advertising of rival brands.

7.4 LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The first weakness of this research concerns the generalizability of the results outside the realm of services. Although the services used in the preliminary and main studies were different, they were banking related. Also, the results pertained to only evaluations made after the first use occasion and are not applicable to evaluations made after multiple usage. Therefore, generalizability is limited.

Single-item measures were used for evaluation and evaluative confidence. Therefore, the scales may not be as reliable as multiple-item measures. However, because the dependent variables were evaluations of various attribute qualities, we are limited by the number of ways in
which we can ask how good the service performed on each attribute. This limitation is recognized in the marketing literature where evaluations of attribute quality have similarly been measured with single-item (e.g., Ford and Smith 1987). Therefore, future research could perhaps develop multi-item scale to measure dimensions of a specific attribute quality.

In addition, the lack of significant differences in evaluative confidence suggests that perhaps the scale used was not sufficiently sensitive. To address this, it is recommended that future research utilize a different data collection procedure other than a pencil-and-paper test as used in the present study. Specifically, subjects' evaluative responses can be obtained by asking them to press the value corresponding to the number key on a PC keyboard (as used by Berger and Mitchell 1989). The PC can be programmed to record in milliseconds the amount of time it takes for each evaluation be made. Evaluations that take a longer time indicate that they are less confidently held, while those that are made more quickly are more confidently held. This behavioral procedure is not only unobtrusive, but is also a more sensitive measure than paper-and-pencil tests. In addition, this procedure also saves the task of data punching. Although this method of measuring evaluative confidence was considered for this study, it was not adopted because of the similarity in this form of obtaining consumer response and the use of the HomeLine service. Subjects may be confused when the PC is used for using HomeLine and when it is used for obtaining consumer response. This can potentially influence their evaluation of HomeLine. For research not involving the PC as part of the experimental context, this method of measuring evaluative confidence is appropriate.

The research could have been more complete if more attributes were evaluated. In particular, Hypothesis 1 used only one dependent attribute. Investigating more attributes that are highly correlated to transactional accuracy would provide a more stringent test of the validity and generalizability of the findings. However, the chosen home banking service has limited attributes that are as highly correlated as fee accuracy is to transactional accuracy. Another improvement would be using highly correlated attributes that vary in time-dependency. This would provide a
more stringent test of the hypothesis that the effect of Immediate/Delayed Revelation has no influence on evaluations of a range of highly correlated attributes that differ on time-dependency. Again, the chosen service context does not possess attributes that satisfy all these ideal requirements. However, as discussed in Chapter 4, the home banking service was chosen because it possesses several attributes and is easily administered. These attributes include those that are necessary for testing H2. Given that H2 is the main hypothesis in this study, the advantage of using a service that possesses the necessary attributes for this hypothesis testing appears to outweigh the limitations identified above.

This research also investigated whether the effects of Immediate/Delayed Revelation of Quality hold under conditions of high and low attribute quality correlation, manipulated through the choice of different dependent attributes. By using various dependent attributes that vary in degree of correlation, the present study does not allow for testing possible interaction effect between quality correlation and immediate/delayed revelation. Although using the degree of correlation as an independent factor would allow such an interaction effect to be investigated, we did not use this design because manipulating the degree of correlation between two attributes that consumers are likely to have a strong a priori of may be difficult. Moreover, given that this the first study investigating the effects of attribute representativeness in terms of time-dependency, future research can build on the present research by designing degree of correlation as a manipulated factor.

The present research involved student subjects who may employ different evaluative strategies from adults and/or working people. Adult/working consumers may have different experiences and concerns from that of student consumers. Hence, the application of the results and its interpretation are limited. They are generalizable only within similar student consumers. Generalization to other types of consumers is tentative and qualified. If student consumers are strongly believed to behave differently from adult/working consumers, future research may employ such subject pools to test the generalizability of the results.
In addition, the use of laboratory experiments raises the question of external validity of results. We do not know whether the behavior exhibited under the experimental setting would likewise occur in the real world. This is a limitation facing lab experimental research. Recognizing this weakness, we sought to overcome it in the experimental set-up. Specifically, we think that being judges for a computer programming competition is likely to produce high involvement among the subjects (though this was not explicitly measured). This would resemble that in the real world when a consumer is a first-time user of the banking service. Attentiveness when evaluating the service is likely to be high in the experimental judging scenario as well in the real world of a first-time user. We hope that this experimental realism would compensate for the lack of external reality present in lab research. Future research may use real settings to test the validity of the results obtained here.

Other future research directions include extending the present findings beyond the current setting. The experiment can be replicated in other product contexts, either using tangible goods or intangible services. Moreover, characteristics of different products (e.g., shopping versus convenience products; highly involving versus lowly involving products) can also be systematically studied singly or in combination, to examine the generalizability of the findings. Future research may also use mediating variables that result in different outcomes from those obtained in this research. The expertise of a subject may influence the effect of Immediate/Delayed Revelation of Quality on evaluation. This may be an important mediating variable since consumer expertise may influence whether an attribute is credence or experiential (note that Ford et al. included technical expertise in their definition of the former attribute type). Other mediating variables include involvement and amount of experience with the service. In addition, the halo effect found in evaluations of highly but not less highly correlated attributes suggests that future research should further investigate the conditions when halo effects is more pervasive. Finally, the calendar task employed in this research appears to have nomological validity. Future methodological research may test its convergent and discriminant validity.
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This is a tutorial project to familiarize you with a new banking service known as telephone banking.

We will provide you with some information about a particular banking service. As each piece of information is given to you, we will be asking you some questions about what you think of the service. The same set of questions tends to be repeated as more information is given to you. Such a technique of repeatedly asking the same set of questions has been used before in understanding how people evaluate a product. We will be using this same technique in this tutorial to help you understand and evaluate the telephone banking service.

It has been shown that when more information is provided, some people change their minds about what they think of the service while others do not. Thus, it is all right if you change or do not change your mind about what you think of the telephone banking service as more information is given to you. There are no right or wrong responses.

PLEASE TURN PAGE FOR MORE INFORMATION ABOUT TELEPHONE BANKING.
WHAT IS TELEPHONE BANKING?

Telephone banking is a service in which a client can pay bills and transfer funds by simply dialing the bank's computer. It involves a direct electronic interface between the client and the bank's computer. Using a push-button phone, a client contacts the computer and then taps in the appropriate number codes that identify himself/herself and the transactions he/she wishes to make. At the end of the month, a bank statement is issued indicating the transactions carried out by the bank. This way, a client knows whether the transactions he/she requested have been accurately carried out by the bank.

Most telephone banking systems install several computer lines to minimize waiting time when calling. A good system usually takes about 2 minutes for a first time user to dial and carry out a transaction.

PLEASE TURN PAGE.
There are several telephone banking systems available in North America. We will be introducing you to one particular telephone banking system called TeleBank.

Below is part of a brochure on TeleBank used by United Bank (a disguised name).

THIS IS AN EXCERPT FROM UNITED BANK'S BROCHURE ON TELEBANK

"... United Bank introduces TeleBank -- its own innovative telephone banking service. With TeleBank, you can:

* transfer funds from one account to another.
* pay banking-related bills such as VISA Card and MasterCard bills.
* pay non-banking related bills such as telephone and electrical bills.
* check your current bank balance.
* stop payment on checks you have written.

TeleBank is available for use twenty-four hours a day everyday. ..."
Assume that you have decided to use TeleBank. You are about to become a first time user of TeleBank.

Next to you is a PC that has been programmed to work like a telephone. In order to simulate how TeleBank works, United Bank has allowed us to duplicate the TeleBank system on a PC instead of on a phone. This PC has been programmed to be like a mini-TeleBank system. The transactions you request on the PC will be carried out as if you were actually requesting it on a phone, and be processed according to the actual TeleBank computer program.

As a user of TeleBank, you will receive an instruction manual explaining to you the steps required to use TeleBank on a PC. All the steps are similar to those an actual TeleBank user would go through on a phone.

In front of you is yellow envelope containing the instruction manual on how to use TeleBank.

We would like you to do the following transaction on TeleBank:

Pay VISA Card Bill of $195

PLEASE OPEN THE ENVELOPE AND READ THE INSTRUCTION MANUAL.

CARRY OUT THE ABOVE TRANSACTION WHEN YOU'RE READY.

DO NOT TURN THIS PAGE UNTIL YOU HAVE COMPLETED YOUR USE OF TELEBANK.
Now that you have personally used TeleBank, we would like to know what you think of your first TeleBank use.

**QUESTION 1**
How good do you think your first TeleBank use was in terms of

"TIME IT TAKES TO USE THE SERVICE"

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good

**QUESTION 2**
How good do you think your first use of TeleBank was in terms of

"EASE OF USING THE SERVICE"

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good
Now, we would like to know what you think about other attributes of TeleBank.

QUESTION 3
Given that you have used TeleBank, how good do you think your first TeleBank use will be in terms of
**** ACCURACY IN CARRYING OUT THE TRANSACTION YOU HAVE JUST REQUESTED ****

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good

QUESTION 4
Given that you have used TeleBank, how good do you think your first TeleBank use will be in terms of
**** SECURITY OF YOUR ACCESS CODE YOU HAVE JUST USED ****

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good
Assume that it is now the end of the month. The one transaction you earlier requested of TeleBank is the only one you have made for the month.

To refresh your memory, the only transaction you made was:

Pay VISA Card Bill of $195

Your Bank Account Number is 4373-5 and your Opening Balance is $300.00.

Your monthly TeleBank Statement from United Bank has been issued.

Press "1" and "ENTER" on the keyboard to see your monthly TeleBank Statement.

DO NOT TURN PAGE UNTIL YOU HAVE CHECKED YOUR BANK STATEMENT ON THE SCREEN.
Now that you have used TeleBank and received your Bank Statement, we would like to know what you think of your first TeleBank use.

**QUESTION 1**
How good do you think your first TeleBank use was in terms of

**** ACCURACY IN CARRYING OUT THE TRANSACTION YOU HAVE REQUESTED A MONTH AGO ****

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good

**QUESTION 2**
How good do you think your first TeleBank use was in terms of

**** SECURITY OF YOUR ACCESS CODE THAT YOU USED A MONTH AGO ****

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good
We would like to know what you think your future experiences with TeleBank will be like.

QUESTION 3
How good do you think your future TeleBank use will be like in terms of
*** ACCURACY IN CARRYING OUT FUTURE TRANSACTIONS THAT YOU MIGHT REQUEST ***

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good

QUESTION 4
How good do you think your future TeleBank use will be in terms of
*** SECURITY OF YOUR ACCESS CODE THAT YOU MIGHT USE IN THE FUTURE ***

1. Very Poor
2. Poor
3. Slightly Poor
4. Average
5. Slightly Good
6. Good
7. Very Good
Overall, considering everything else, how close did TeleBank come to your initial expectation of the service?

1 2 3 4 5 6 7
Very much poorer than expected

Very much better than expected

Overall, considering everything, how satisfied are you with TeleBank?

1 2 3 4 5 6 7
Not satisfied at all

Very satisfied

Would you use TeleBank when it is available in Vancouver?

1 2 3 4 5 6 7
Definitely Not

Definitely Yes

Have you ever used a telephone banking system before?

Yes ________ No ________

How many times do you usually use an Automatic Teller Machine each month? _______ (Put "0" if you don't use an Automatic Teller Machine)

What impact do you think such innovations such as TeleBank will have on financial markets?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Now, some background information about yourself please.

How familiar are you with using computers?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>None at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very familiar</td>
</tr>
</tbody>
</table>

When did you use Telereg at UBC? ________

How easy was it to you to use Telereg the first time?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not easy at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very easy</td>
</tr>
</tbody>
</table>

Before this tutorial, did a friend tell you what he/she did for his/her tutorial this week?

Yes ______ No ______

If "Yes", what did your friend think of TeleBank?

Good _____ Bad _____ I don't know _____

Now, please give us some information about yourself . . . . .

Age ______

Sex ______

Year ______

Average Grade (%) at UBC ______

Please write down any other thoughts you have about this tutorial:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

PLEASE LEAVE THIS BOOKLET ON THE TABLE.
PLEASE DO NOT DISCUSS THIS TUTORIAL WITH YOUR FRIENDS.
The TeleBank software has been installed into the PC in front of you for your use. What you do here is similar to what a TeleBank user would do on a phone. Each of the steps is given below. After you do each step, press "ENTER" so that TeleBank knows you have completed that step.

The number keys, and the Star (*) and Pound (#) keys are located on the right od the keyboard.

Because the keyboard is supposed to simulate the keypad on a phone, you cannot backspace to change a digit once you have pressed it. Like a phone, once a digit is pressed, you cannot change or backspace over it. To correct an error, see "IN CASE OF ERRORS" on the second last page for details.

TeleBank allows **only one transaction per call**. To make multiple transactions, you have to hang up after each transaction and call TeleBank again.

TeleBank allows **7 minutes** for a transaction to be completely carried out. After 7 minutes of TeleBank use, a time-out error will be given and TeleBank will automatically be disconnected. If a transaction has not been completely carried out, a user has to call TeleBank again.

The TeleBank system is **menu-driven**, that is, to make a particular transaction, you have to go through a series of steps beginning with a general description of the transaction and narrowing down to a specific transaction you want to do. Note: Each step is different from another in the codes you have to press.

The next page lists the steps you need to do to use TeleBank.
Step 1
To convert the PC into a phone, press "ENTER" on the keyboard.
You will see the screen that allows you to call TeleBank.

Step 2
Dial TeleBank's number. The number is
Press "ENTER" after dialing the number and wait for a response:
If the line is busy, you will have to call again.

Step 3
When you are connected to TeleBank, TeleBank will ask you to enter your personal access code.
(Your personal access code is your student ID number).
Begin with Star (*), Pound (#), Pound (#), your student ID number, and end with Star (*), Star (*), Pound (#).

For example, if your student ID number is 12345678, you will press:
Star - Pound - Pound -1 - 2- 3- 4- 5- 6- 7- 8- Star - Star - Pound

Press "ENTER" after this.

Step 4
You are now in the first menu. There are three categories of transaction available:

--- Enquire current bank balance. **#290##
--- Stop payment of cheques written. **#457##
--- Other. **#816##

"Other" category includes Payment of Bills and Transfer of Funds.

Press the appropriate code and "ENTER".
See the last page for a description of each menu.
Step 5
TeleBank will ask you to confirm the category you have chosen in Step 4.
Press Star (*) followed by Pound (#), Star (*), and Star (*) to confirm the transaction.
Press "ENTER" after this.

Step 6
You are now in the second menu.
Depending on which category you have chosen in Step 4, the categories available here will be different. Some categories have fewer menus, while other categories have more menus.
Please see the last page for a description of the menus and category codes.
Press the appropriate category code and "ENTER".

Step 7
TeleBank will ask you to confirm the category you have chosen in Step 6.
Press Star (*) followed by Pound (#), Star (*), and Star (*) to confirm the transaction.
Press "ENTER" after this.

Step 8
You will proceed in a similar manner from Step 6 to 7 for the third and fourth menus.
As each category is chosen in a menu, TeleBank will ask you to confirm the category you have chosen.

Step 9
When you have reached the last menu specifying the exact transaction you wish to do, TeleBank will ask you for the dollar amount (whole dollars only) of the transaction.
Enter the amount by pressing Star (*), Pound (#), Star (*), dollar amount (without cents), Pound (#), Star (*), Star (*).

   For example, if the dollar amount of the transaction is $105.00, you will press:
   Star - Pound - Star - 1 - 0 - 5 - Pound - Star - Star.

Press "ENTER" after this.
Step 10
TeleBank will ask you to confirm the dollar amount you have entered.
Press Star (*) followed by Pound (#), Star (*), and Star (*) to confirm the dollar amount.
Press "ENTER" after this.

Step 11
When you have completed requesting your transaction, TeleBank will prompt you to press 
**###*# and "ENTER" to hang up and exit.

TIME OUT ERROR
TeleBank allows only 7 minutes for a transaction request to be completed. After 7 minutes of use, it will automatically be disconnected. If you have not completed your transaction, you will have to call TeleBank again and request the same transaction.

IN CASE OF ERRORS TYPED IN
If you have made any errors in the code or dollar amount, finish typing that particular step. TeleBank will respond by asking you to confirm your request. Do not confirm the request. Instead, press *#*# and "ENTER". This will erase your error and bring you back to the very first menu. You will have to start your choice of the first menu category all over again.

TeleBank will inform you if you make any illegal entries.
INSTRUCTION MANUAL (for Easy to Use condition)

The TeleBank software has been installed into the PC in front of you for your use. What you do here is similar to what a TeleBank user would do on a phone. Each of the steps is given below. After you do each step, press "ENTER" so that TeleBank knows you have completed that step.

The number keys, and the Star (*) and Pound (#) keys are located on the right od the keyboard.

Because the keyboard is supposed to simulate the keypad on a phone, you cannot backspace to change a digit once you have pressed it. Like a phone, once a digit is pressed, you cannot change or backspace over it. To correct an error, see "IN CASE OF ERRORS" on the second last page for details.

The next page lists the steps you need to do to use TeleBank.
Step 1
To convert the PC into a phone, press "ENTER" on the keyboard.
You will see the screen that allows you to call TeleBank.

Step 2
Dial TeleBank's number. The number is
Press "ENTER" after dialing the number and wait for a response.
TeleBank will acknowledge your call and prompt you to do the next step.

Step 3
Enter your personal access code.
(Your personal access code is your student ID number).
Begin with Pound (#), your student ID number and end with Star (*).

For example, if your student ID number is 12345678, you will press:
Pound - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - Star.

Press "ENTER" after this.

Step 4
Enter the first transaction you want.
Each transaction has a code to identify it.
The codes are:

<table>
<thead>
<tr>
<th>TRANSACTION</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer funds from Savings to Chequeing.</td>
<td>#194*</td>
</tr>
<tr>
<td>Pay Hydro bill.</td>
<td>#285*</td>
</tr>
<tr>
<td>Pay VISA CArd bill.</td>
<td>#376*</td>
</tr>
<tr>
<td>Pay telephone bill.</td>
<td>#467*</td>
</tr>
<tr>
<td>Enquire current bank balance.</td>
<td>#558*</td>
</tr>
<tr>
<td>Stop payment on cheques written.</td>
<td>#649*</td>
</tr>
<tr>
<td>Pay Mastercard bill.</td>
<td>#730*</td>
</tr>
<tr>
<td>Transfer funds from Chequeing to Savings.</td>
<td>#821*</td>
</tr>
</tbody>
</table>

Press the appropriate transaction code you want and "ENTER".
Step 5
TeleBank will ask you to confirm the transaction you have requested in Step 4.
Press Star-Star (**) and "ENTER" to confirm the transaction.

Step 6
To enter the amount of the transaction (whole dollars only), press:
Pound (#), the dollar amount (without cents), and end with Star (*).

For example, if the dollar amount of the transaction is $105.00, you will press:
Pound - 1 - 0 - 5 - Star.

Press "ENTER" after this.

Step 7
TeleBank will ask you to confirm the dollar amount you have entered.
Press Star-Star (**) and "ENTER" to confirm the dollar amount.

Step 8
TeleBank will ask you whether you want to do another transaction. If yes, enter the next
transaction code and repeat Steps (4) to (7).
If you do not want to carry out any more transactions and wish to end TeleBank use, press Star
(*), Pound (#), Star (*).
Press "ENTER" after this.

IN CASE OF ERRORS TYPED IN
If you have made any errors in the codes or dollar amounts, finish typing that particular step.
TeleBank will respond by asking you to confirm or make changes to your request. Do not
confirm the request. Instead, you can erase the error by pressing Star (*) followed by Pound
(#). Press "ENTER" after this.
This will erase the last code or dollar amount you have entered. Re-enter by pressing pound
(#), the correct code or dollar amount, followed by Star (*) and continue.

TeleBank will inform you if you make any illegal entries.
APPENDIX TWO
Questionnaire Used in Main Study

Thank you for participating in this product evaluation, which will take about half an hour.

This project concerns a new software product competition organized jointly by the Commerce and Computer Science Faculties of UBC. The competition was open to students across Canada.

Professors from the Computer Science Faculty and programming experts from IBM and Hewlett Packard have judged the entries on technical merit. But it is also important to obtain opinions from potential users like you. You do not need to be a computer expert to make an evaluation. There are no right or wrong answers in your evaluation -- we are only interested in your opinions.

As with all research projects conducted at this university, we are required to include the following statements:

You may stop participating at any time. If you complete the project, it is assumed that you have consented to participate in it.

Your identity will be kept confidential. Please do not write your name or your student number on this booklet.

This project is being co-ordinated by Dr. Charles B. Weinberg

NOW, PLEASE TURN THE PAGE.
HOMELINE: A HOME BANKING PROGRAM

You will be judging a computer program submitted in the Home Banking Program category.

Home banking programs link a client's home computer to the bank's computer, allowing the client to request that certain financial transactions be carried out by the bank's computer. The user can identify him or herself and request transactions by punching codes into the home computer. After the request is made and the transaction carried out, a record of the transaction is issued as part of the monthly statement. It shows details of the transaction that was actually carried out.

Several entries of varying design and quality were submitted in the Home Banking Program category. The program you will be evaluating is "HomeLine".

Because it takes a long time to evaluate the entire program, we have split it into parts so that different people can evaluate different features of HomeLine. You will be using HomeLine and then evaluating it on several features. We have removed some parts of the program that are not necessary for your evaluation (like requiring you to type in a password).

PLEASE TURN THE PAGE FOR INSTRUCTIONS ON HOW TO USE HOMELINE.
Please imagine that you are a first time user of HomeLine.

In front of you is a personal computer (PC) that contains the HomeLine program. The transaction you request on the PC will be carried out and processed according to the HomeLine program.

In actual usage, a user would have to punch in specific codes at each step in order to request a transaction. However, to save you time in judging, you only have to press a different letter key at each step. Each letter key pressed simulates a different step being entered. We will inform you which key to press at each step. At the final step, you will be asked to personally enter the dollar amount of the transaction. For your convenience, we have also shortened some of the instructions on the PC screen programmed by HomeLine.

You will be using HomeLine to pay the bill shown below:

```
Card Number

Amount due
$33.21
```

When you are read to pay the bill, please press the "S" key to start the program. The "S" key simulates your logging on to HomeLine. You may begin now.

PLEASE DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO.

PLEASE FOLLOW THE INSTRUCTIONS ON THE PC SCREEN.
Your Transaction Record is available at the end of the month together with your monthly statement. It will show what transaction was actually carried out. We would like you to imagine that a month has passed since you used HomeLine. In order to simulate this, we would like you to complete the following task.

On the calendar below, put an "X" on today's date. This is the day you had completed a request and HomeLine had carried out a transaction for you. Please put an "X" now.

Then, put an "X" on each of the 29 days after today to signify that 29 days have passed by. When crossing out each day, please imagine that the events indicated in the calendar are events that you will be doing. Please put the "X"s now.

**MARCH 1990**

<table>
<thead>
<tr>
<th>SUNDAY</th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
<th>SATURDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mid-term exam</td>
<td></td>
<td>Library books due.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dermatologist appointment 3 p.m.</td>
<td></td>
<td>Johns' party 7 p.m.</td>
<td></td>
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<tr>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meeting for term project</td>
<td></td>
<td>House sitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Dinner with the Americas 4 p.m.</td>
<td>Get term paper typed</td>
<td></td>
<td>Term paper due.</td>
<td></td>
<td>Pick up from airport of 38.4 p.m.</td>
</tr>
</tbody>
</table>

**APRIL 1990**

<table>
<thead>
<tr>
<th>SUNDAY</th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
<th>SATURDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Lunch with David, 8 p.m.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hockey</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
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</tr>
<tr>
<td>29</td>
<td>30</td>
<td>Exam end</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AFTER CROSSING OUT EACH OF THE 29 DAYS THAT HAVE GONE BY, PLEASE TURN TO THE NEXT PAGE.
(a) On what date did HomeLine carry out your request? ____________ 1990.

(b) What is the last date before HomeLine sends the transaction record to you (i.e., the 29th day after (a))? ____________ 1990.

(c) Imagine that it is now the 29th day after you have used HomeLine. As a student, please list 3 additional events that you might have done during this 29-day period (e.g., met for a class project).

1.
2.
3.

(d) How many Mondays have elapsed since HomeLine carried out your transaction? ____________

(e) How many Thursdays have elapsed since HomeLine carried out your transaction? ____________

Imagine that it is now the 30th day. A month ago, you had requested the following bill be paid and HomeLine had informed you that it had carried out a transaction for you.

```
MasterCard

Card Number

Amount due
$33.21
```

Your Transaction Record will be issued to you on this 30th day. Please press "P" on the keyboard for further instructions.

PLEASE DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.
Now that you have used HomeLine, PLEASE THINK ABOUT WHAT HOMELINE WAS LIKE WHEN YOU USED IT FOR THE FIRST TIME.

We are interested in (a) what you think HomeLine was like when you first used it, and (b) how confident you are in your evaluation.

Please circle the number that best indicates your evaluation of HomeLine. For example, on the first scale below, a circle around "1" would indicate that it is inaccurate in carrying out your transaction; a "2" would indicate that it is somewhat inaccurate; a "3" would indicate that it is slightly inaccurate; a "4" would indicate that it is slightly accurate; a "5" would indicate that it is somewhat accurate; and a "6" would indicate that it is accurate.

When I used HomeLine to pay my Mastercard bill, I think the program was:

<table>
<thead>
<tr>
<th>Inaccurate in carrying out my transaction.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am</td>
<td>Not confident of this evaluation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

STILL THINKING ABOUT WHAT YOUR FIRST USE OF HOMELINE WAS LIKE.

We are interested in what you think of other features of HomeLine. We know that some of these features may be difficult to evaluate because you have limited information about HomeLine. But, please give us your best guess.

Please circle the number that best describes your evaluation. For example, on the first feature below, a circle around "1" means that it is not likely to keep your personal access code secure; a "2" means that it is somewhat not likely to keep it secure; a "3" means that it is slightly not likely to keep it secure; a "4" means that it is slightly likely to keep it secure; a "5" means that it is somewhat likely to keep it secure; and a "6" means that it is likely to keep it secure.

When I used HomeLine to pay my Mastercard bill, I think the program was:

<table>
<thead>
<tr>
<th>Not likely to keep my personal access code secure.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am</td>
<td>Not confident of this evaluation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

When I used HomeLine to pay my Mastercard bill, I think the program was:

<table>
<thead>
<tr>
<th>Not likely to charge me the correct service fee.</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tr>
<td>I am</td>
<td>Not confident of this evaluation.</td>
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<td>4</td>
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</table>
When I used HomeLine to pay my Mastercard bill, I think the program was:
Not likely to keep my financial record confidential. 1 2 3 4 5 6 Likely to keep my financial record confidential.

I am Not confident of this evaluation. 1 2 3 4 5 6 Confident of this evaluation.

When I used HomeLine to pay my Mastercard bill, I think the program was:
Not likely to have provided clear instructions. 1 2 3 4 5 6 Likely to have provided clear instructions.

I am Not confident of this evaluation. 1 2 3 4 5 6 Confident of this evaluation.

When I used HomeLine to pay my Mastercard bill, I think the program was:
Not likely to have easy codes to enter. 1 2 3 4 5 6 Likely to have easy codes to enter.

I am Not confident of this evaluation. 1 2 3 4 5 6 Confident of this evaluation.

When I used HomeLine to pay my Mastercard bill, I think the program was:
Poor in overall quality. 1 2 3 4 5 6 Good in overall quality.

I am Not confident of this evaluation. 1 2 3 4 5 6 Confident of this evaluation.
NOW, PLEASE THINK ABOUT HOMELINE IN GENERAL

We are interested in (a) your evaluation of more general features of HomeLine, and (b) how confident you are in your evaluation.

<table>
<thead>
<tr>
<th>In general, I think the HomeLine program is:</th>
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<tr>
<td>Not likely to have the ability to include other transactions in the future.</td>
<td>Likely to have the ability to include other transactions in the future.</td>
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<td>Not likely to break down often in the future.</td>
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<td>Not likely to offer as many types of transactions as the other programs in this competition.</td>
<td>Likely to offer as many types of transactions as the other programs in this competition.</td>
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<tr>
<td>Not likely to be written in an advanced computer language.</td>
<td>Likely to be written in an advanced computer language.</td>
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</table>
In general, I think the HomeLine program is:
Poor in overall quality. 1 2 3 4 5 6 Good in overall quality.

I am  Not confident of this evaluation. 1 2 3 4 5 6 Confident of this evaluation.

Based on your use of HomeLine, how soon do you think the Transaction Record was issued to you after you have completed your request?

Very soon after I had completed my request. 1 2 3 4 5 6 7 Only a long time after I had completed my request.

How would you describe the way you learned about HomeLine's accuracy in carrying out a transaction?

Indirect. 1 2 3 4 5 6 Direct.
Passive. 1 2 3 4 5 6 Active.
"Hands off". 1 2 3 4 5 6 "Hands on".
Not involving. 1 2 3 4 5 6 Involving.

We are also interested in what you feel about the information you have learned so far concerning HomeLine's accuracy in carrying out a requested transaction?

I think the information I have about how accurately HomeLine carries out a transaction is

Not likely to influence my decision to use this service. 1 2 3 4 5 6 Likely to influence my decision to use this service.
Something I am likely to forget. 1 2 3 4 5 6 Something I am not likely to forget.
Not believable. 1 2 3 4 5 6 Believable.
Not reliable. 1 2 3 4 5 6 Reliable.
Tells me little about its accuracy. 1 2 3 4 5 6 Tells me a lot about its accuracy.

Now, please tell us what thoughts had when you were using HomeLine?
NOW, WE WOULD LIKE YOUR GENERAL IMPRESSIONS OF HOMELINE PLEASE.

In general, how well did HomeLine perform to your expectations?
Much below 1 2 3 4 5 6 7 Much above expectations.

Overall, considering everything, how satisfied are you with HomeLine?
Not satisfied at all. 1 2 3 4 5 6 7 Very satisfied.

Would you recommend that HomeLine be in the final round of the competition?
Definitely no. 1 2 3 4 5 6 7 Definitely yes.

NOW, PLEASE GIVE US SOME INFORMATION ABOUT YOURSELF . . . .

Have you heard of a home banking service before?
No _____ Yes _____ If yes, where from? ______________________

Before today, how much did you know about home banking services?
Very little. 1 2 3 4 5 6 7 A lot.

How much experience do you have with computers?
Very little. 1 2 3 4 5 6 7 A lot.

How many times do you usually use an Automatic Teller Machine each month? ________
(Put "0" if you don't use an Automatic Teller Machine).

Your Age _____ Your Sex _____ Year of Study _____ Grade _____

Please write down what you think of this Computer Programming Competition.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

THANK YOU FOR BEING A JUDGE IN THIS COMPETITION.

Since we are interested in each person's evaluation of HomeLine, please do not discuss anything about this competition with anyone.

The success of this competition depends on your co-operation. Thank you.
APPENDIX 3
PRETEST QUESTIONNAIRE (Immediate Revelation Condition)

USING A HOME BANKING SERVICE: HOMELINE

Thank you for taking part in this short survey. The objective of this survey is to find out when the earliest time is for you as a consumer to be able to determine the quality of the features of a product. For some features, you may be able to determine their quality while you are using the product, others you will know eventually as events unfold through the course of time after you've used it. Still for other features, the passage of time after use does not reveal its quality and you need the opinions of experts.

The product we are interested in is a home banking service called HomeLine. HomeLine is a computer program that links a consumer's home computer to the bank's computer, allowing the consumer to request certain financial transactions to be carried out by the bank.

How to Complete this Questionnaire

When completing this questionnaire, we would like you to assume that you are a first time user of such a service. You are about to use HomeLine from your personal computer. Imagine that you have completed the following steps:

(1) log on to HomeLine.
(2) enter your bank account number.
(3) enter your personal access code.
(4) enter the code that identifies the transaction you want to make (e.g., to pay your Mastercard bill).
(5) enter the amount of the transaction (e.g., $33.21 for the Mastercard bill)
(6) confirm the amount of the transaction.
(7) receive information that HomeLine has carried out a transaction.
(8) after a few seconds, a record confirming the transaction HomeLine has carried out for you is displayed on the PC screen.
(9) log off HomeLine.

Assume that you used HomeLine to pay a Mastercard bill. This is the only time you have used a home banking service.

We will be asking you when is the earliest time you can learn about the quality of certain features of HomeLine. HomeLine has several features which vary in when you can determine their quality.

• For some features such as how fast HomeLine takes to respond to each of the above steps, you can evaluate this feature while using the service.
• For other features you can't tell their quality even some time after you've used the service. For example, even though you may know how userfriendly HomeLine is by using the service, you may not know how userfriendly it is compared to other home banking services that you've yet to try. To evaluate its comparative userfriendliness, you may need to seek the opinion of an expert who has tried several of such services.
• For still other features, even an expert cannot be sure about their quality. Instead, you may eventually learn of the quality as events unfold over time after you've used HomeLine. These events indicate how well or badly HomeLine is on that feature.
• For other features, no one can ever tell its quality at all even over time.
PRETEST QUESTIONNAIRE (Delayed Revelation Condition)

USING A HOME BANKING SERVICE: HOMELINE

Thank you for taking part in this short survey. The objective of this survey is to find out when the earliest time is for you as a consumer to be able to determine the quality of the features of a product. For some features, you may be able to determine their quality while you are using the product, others you will know eventually as events unfold through the course of time after you've used it. Still for other features, the passage of time after use does not reveal its quality and you need the opinions of experts.

The product we are interested in is a home banking service called HomeLine. HomeLine is a computer program that links a consumer's home computer to the bank's computer, allowing the consumer to request certain financial transactions to be carried out by the bank.

How to Complete this Questionnaire

When completing this questionnaire, we would like you to assume that you are a first time user of such a service. You are about to use HomeLine from your personal computer. Imagine that you have completed the following steps:

1. log on to HomeLine.
2. enter your bank account number.
3. enter your personal access code.
4. enter the code that identifies the transaction you want to make (e.g., to pay your Mastercard bill).
5. enter the amount of the transaction (e.g., $33.21 for the Mastercard bill)
6. confirm the amount of the transaction.
7. receive information that HomeLine has carried out a transaction.
8. log off HomeLine.
9. wait till end of month.
10. at the end of the month, you will receive a record confirming the transaction that HomeLine had carried out for you. This record is part of your end-of-month bank statement.

Assume that you used HomeLine to pay a Mastercard bill. This is the only time you have used a home banking service.

We will be asking you when is the earliest time you can learn about the quality of certain features of HomeLine. HomeLine has several features which vary in when you can determine their quality.

- For some features such as how fast HomeLine takes to respond to each of the above steps, you can evaluate this feature while using the service.
- For other features you can't tell their quality even some time after you've used the service. For example, even though you may know how userfriendly HomeLine is by using the service, you may not know how userfriendly it is compared to other home banking services that you've yet to try. To evaluate its comparative userfriendliness, you may need to seek the opinion of an expert who has tried several of such services.
- For still other features, even an expert cannot be sure about their quality. Instead, you may eventually learn of the quality as events unfold over time after you've used HomeLine. These events indicate how well or badly HomeLine is on that feature.
- For other features, no one can ever tell its quality at all even over time.
Now we would like to ask you a few questions.

REGARDING YOUR FIRST USE OF HOMELINE, PLEASE INDICATE WHEN IS THE EARLIEST TIME YOU MIGHT BE ABLE TO DETERMINE THE QUALITY OF EACH OF THE FOLLOWING FEATURES BY CIRCLING THE APPROPRIATE NUMBER.

<table>
<thead>
<tr>
<th>Feature Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>While I was using it.</td>
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<td></td>
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<tr>
<td>Immediately after I logged off HomeLine.</td>
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<tr>
<td>I might be able to tell eventually as events unfold over time, but I'm unlikely to know immediately after logging off.</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No one can tell.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Whether HomeLine is easy to use</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether HomeLine provides clear on-line instructions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether my financial record is confidential</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether HomeLine accurately carried out my Mastercard transaction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether HomeLine charged me the correct service fees</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether HomeLine is written in an advanced computer language</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether HomeLine offers more transactions than other home banking services I've yet to try</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether my personal access code is secure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Whether HomeLine has the potential to include new transactions in the future</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

• If I were to ask you when you consider you have completed using HomeLine, you would say "I have completed using HomeLine when I . . . . . . . . . (tick one)

Have finished requesting the transaction I wanted but before I logged off.       Have logged off HomeLine on the computer.       Have received my monthly bank statement.
APPENDIX FOUR
Sample of Cognitive Responses

"I think this program has much potential in the future. The convenience of "in home banking" would save the consumer valuable time and energy. However, implementing this type of system in everyone's home would be in all likelihood very costly. Therefore, only high income households would be able to afford this convenience." (Subject #109)

"Easy to use. But so far, not enough info to assess." (Subject #116)

"If this program really is implemented, it will be good in terms of time saved running to the bank to pay bills or other transactions. I would like this program so I do my bills at once, but I have reservations as to people (computer-oriented people) breaking into the system via home computers." (Subject #201)

"Was worried I punched in wrong $ amount. Also thought about how much more efficient this would be if I could do it at home." (Subject #207)

"I wondered what else this could be used for -- deposits -- etc. How it would be set up in the home for security etc." (Subject #306)

"Very straightforward and easy to understand." (Subject #312)

"Transaction record should have more information (i.e., amount of bill, amount paid, balance owed to Mastercard, breakdown of service fees). Would be easier to use with graphic interface or menus." (Subject #403)

"The set up of the program is good, the displays and instructions were easy to understand. It seemed like a really good, workable program. When I received an inaccurate dollar amount, I had to look twice to make sure it was wrong. There seemed like there could not really be a reason for the mistake. If they could get rid of the glitch, I would give HomeLine another try." (Subject #408)
APPENDIX FIVE
Sample of Comments to “What do you think of this Competition?"

"It is a great idea because the finalists in the competition could be good enough to be marketed." (Subject #104)

"Seems like a good idea to have it although I believe a better evaluation would be provided if more transactions were done or if another program could be evaluated as well (for better comparisons in judging)." (Subject #108)

"Excellent way to provide information about new technology." (Subject #211)

"Hard to compare or judge, without trying another system." (Subject #216)

"This method of judging is very efficient, non-biased, and fair. I realize that there are certain limitations to making situations as life-like as possible, but I feel that I could have gotten a better feel for the program in a more real-to-life way, e.g., actually press in the access codes to know how complicated they are or to be able to see if my personal code would show up on the screen or not." (Subject #305)

"It is a good opportunity for exceptional students with new ideas to develop them towards a real life outcome (rather than just a grade on a project)." (Subject #311)

"I feel that this competition is a good idea because it is a more interesting way of evaluating products. However, limiting people's views to one winner may be a poor way of overall rating because perceptions of people in marketing will be different than average computer user/business." (Subject #402)

"It is a good idea that you are getting feedback from users of the program." (Subject #415)