Decision-Making Experiences: Perspectives on M-Commerce and E-Commerce

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ABSTRACT

We explore multi-channel decision-making experiences, especially in m-commerce and e-commerce. 232 e-mail messages sent by participants in two experiments are analyzed using Critical Incident Technique (CIT). Our findings suggest that decision-making in m-commerce is perceived as stressful and not necessarily a positive experience. We also find that participants in m-commerce hold their prior experiences in e-commerce as points of reference to which they compare their current or subsequent decision-making experiences. Cost Theory and Expectation-Confirmation Theory provide possible explanations for the findings. We identify and categorize factors that influence decision-making (shaping positive and/or negative decision-making experiences) and identify unique and channel-specific factors.

Keywords: M-Commerce, E-Commerce, Decision-Making, Expectation-Confirmation Theory

INTRODUCTION

It is interesting to explore consumer decision-making experiences across multiple channels (e.g., e-commerce, m-commerce, in-store). Our objectives in this paper are four-fold: 1) to explore how consumers perceive decision-making experiences across multiple channels, especially m-commerce and e-commerce; 2) to explore the kinds of responses – positive or negative – that are elicited as a result of these perceptions; 3) to group these responses into underlying themes or dimensions; and 4) to identify unique and channel-specific factors.

THE CHANNELS

All communication channels have capabilities that lead to "distinct, objective richness" [2, p. 154]. These capabilities are based on feedback capability, the communications channel utilized, language variety, and personal focus. The more a channel incorporates these elements, the richer it is. The four types of channels that are identified by McGrath and Hollongshead [4] are: *text*, *audio systems*, *video systems,* and *face-to-face* communications. Hence, face-to-face is considered the richest medium and text is considered the least rich.

In our experiments, we explore e-commerce, m-commerce and in-store setting. Each channel has certain "associated characteristics" are defined in terms of the decision-making "costs". For the purpose of our experiments, the "costs" we consider in the different channels are defined in terms of cognitive search costs (as opposed to physical search costs). In-store setting, as we traditionally know it is also the most "rich". Since this channel is the most "rich" among the channels of search being investigated, it means that a *low* degree of cognitive effort and, therefore, low search costs on part of the participants is required for decision-making. E-commerce is a channel where participants undertake decision-making from a computer terminal. This channel is *more* "rich" than **m-commerce** (explored in the next section), *but less* "rich" than **in-store**. Consumers can access specific information in the text format on e-commerce as well as m-commerce, but e-commerce is more "rich" than m-commerce, because of the larger interface. The foregoing indicates that the richness of the medium results in a *lower* demands on cognitive abilities are made by the search tasks compared to when the same search tasks are carried out on a mobile device. However*, higher* demands on cognitive abilities are made by the search tasks compared to when the same search tasks are carried out at a physical store. M-Commerce provides consumers with the ability of carrying out transaction through a wireless Internet-enabled device. Two major differences between e-commerce and m-commerce are the interface (small versus large screen) *and* the portability of the mobile device. The cognitive effort associated with conducting electronic searches is further magnified when processing information from a small screen. Hence, it is argued that cognitive load is *higher* on m-commerce than e-commerce.

THEORY AND HYPOTHESES

Stigler [6] argues that the consumer will continue to engage in the decision-making process only until the utility obtained from additional information is smaller than the cost involved in obtaining it. Cost theory forms the basis of the following hypotheses:

H1: Among the three channels, decision-making in e-commerce is perceived as least stressful and most positive.

H2: Among the three channels, decision-making in m-commerce is perceived as most stressful and least positive.

H3: On m-commerce, usability/device features contribute towards the perception of added stress associated with the decision-making process

We argue that consumers have certain prior expectations about outcomes associated with each channel and the confirmation (or disconfirmation) of these expectations will lead to satisfaction (or dissatisfaction) and hence positive (or negative) experiences. This argument implies that consumer decision-making experiences a consumer in a channel will influence usage intention. Expectation-Confirmation theory [5] forms the basis of the following hypotheses:

H4: When prior consumer expectations of their decision-making experiences on a channel are confirmed (disconfirmed), there is a positive (negative) response.

H5: Consumers expect their decision-making experiences on m-commerce to be the same as that on e-commerce. Confirmation (disconfirmation) of these prior expectations leads to positive (negative) response.

METHOD AND DATA COLLECTION

The Critical Incident Technique (CIT) is selected as a method for identifying underlying critical factors that lead to positive and negative consumer experiences [3] across the three channels. Two experiments (one between-group and one within-group) are conducted in a large public university in the Southern United States. The first experiment is a 3 x 3 between-group experiment and the second one is a 2x 3 within-group experiment. Participants in the between-group experiment are randomly assigned to one of the nine cells (factor one: channels: in-store, e-commerce and m-commerce; factor two: three levels of task complexity), where each participant is asked to undertake a decision-making task for either an airlines ticket for a friend ("search" service type), or a restaurant where s/he would like to take friends out for dinner ("experience" service type). 212 volunteers sign up for the study (two experiments together). Of those who sign up, 207 participate in the experiments. Usable data are obtained for 201 participants. All participants are undergraduate business majors. Participants are each awarded an extra credit for their efforts and their names are entered into a raffle drawing of 5 gift checks of $60.00 each. All the participants are under 30 years of age (18 – 27), the mean and modal ages being 20.7 years 20 years. 53.1% are females; 35.2% have a family income of over a hundred thousand US$ and 85.2% are Caucasian Americans. Right after making the choice, participants are asked to send emails to their friends about their experiences during the decision-making task: "Now, we want you to write an email message to your best friend about your decision-making experiences on this medium. What would you say?" The participants write an email to an alias email account especially created for the experiments. From the two experiments, 232 responses are gathered and are used in the analysis.

Data Analysis

Out of the 232 e-mail responses, nine are not usable (e.g., do not talk about the shopping experience). Therefore, 223 usable responses are used in the data analysis. Of these 223 e-mail responses, 78 are from e-commerce participants, 77 are from m-commerce participants and 68 are from in-store participants. The results of these interviews are then content analyzed, as CIT proposes (see [1]). For the purposes of our paper, critical factors are defined as those factors that contribute towards consumer experiences in each of the three channels (e-commerce, m-commerce and in-store). An analysis of the e-mail responses yields critical factors (positive or negative). These critical factors are further sorted into categories and subcategories (through a qualitative analysis). Three judges independently identify three major groupings of critical factors that account for all consumer experiences in each of the three channels: **product-related** (e.g., price, product attributes), **channel-related** (e.g., convenience, ease) and **Personal**. Inter-rater agreement is 96.7%.

Results and Discussion

Table 1 shows each of the major categories (and the subcategories) of critical factors that emerge for the three channels, along with the percentage of critical factors for each

Table 1: Critical Incident Analysis

E-Commerce Participants: (78 respondents: 110 positive critical factors; 16 negative critical factors); M-Commerce Participants: (77 respondents: 78 positive critical factors; 171 negative critical factors); In-Store Participants: (68 respondents: 104 positive critical factors; 49 negative critical factors)

Critical Factors	M-Commerce Positive	M-Commerce Negative	E-Commerce Positive	E-Commerce Negative	In-Store Positive	In-Store Negative
Channel-Related						
Layout	1.21%	0.80%	6.35%	1.59%		
Ease of Use	1.61%		4.76%			
Navigability	1.61%		0.79%			
Convenience	5.62%		3.97%			
Save Time	0.40%	1.61%	3.17%		1.31%	5.88%
Usability/Device Features	2.41% [a]	12.05% [a]				
Mobility	2.41%	0.40%				
Atmosphere					1.95%	0.65%
Personal						
Decision Making	10.04% [cde]	**24.10%** [cde]	**25.39%** [bcd]	7.93% [bcd]	20.27% [c]	15.69% [c]
Amount of Information (Overwhelming)		12.85% [fg]	5.56% [fg]	3.16% [fg]	1.31% [fg]	9.15% [fg]
Physical Comfort (Tedious, Exhausting)		**3.61%**				0.66%
Emotional Comfort (Annoying, Irritated)		**3.21%**				
Compare with E-Commerce		**10.04%**				**6.54%**
Privacy			0.79%			
Product-Related						
Price	3.61%		13.5%		11.76%	
Other Product Attributes	1.61%		15.1%		15.03%	
Product Selection	0.80%		7.94%		9.80%	
Total	31.33%	**68.67%**	**87.32%**	12.68%	61.43%	38.57%

χ^2 values are calculated for these frequencies (not on the reported percentages). All values are significant at p < 0.005
[a] : $\chi^2_{35,1} = 16$; [b] : $\chi^2_{42,1} = 12.30$; [c] : $\chi^2_{180,2} = 26.66$; [d] : $\chi^2_{126,1} = 24.87$; [e] : $\chi^2_{84,1} = 14.41$; [f] : $\chi^2_{57,2} = 25.77$; [g] : $\chi^2_{42,1} = 24.32$

subcategory. Table 2 identifies the common and unique factors for each channel. These overall factors help us better understand what channel-related characteristics contribute towards what kind of consumer experiences.

Table 2: Common and Unique Factors

Critical Factors	Common / Unique Factors
Channel-Related	
Layout	α
Ease of Use	α
Navigability	α
Convenience	α
Save Time	γ
Usability/Device Features	**Unique (M-Com)**
Mobility	**Unique (M-Com)**
Atmosphere	*Unique (In-Store)*
Personal	
Decision Making	γ
Amount of Information (Overwhelming)	γ
Physical Comfort (Tedious, Exhausting)	β
Emotional Comfort (Annoying, Irritated)	**Unique (M-Com)**
Compare with E-Commerce	β
Privacy	*Unique (E-Com)*
Product-Related	
Price	γ
Other Product Attributes	γ
Product Selection	γ

α = Factors common to M-Commerce and E-Commerce; β = Factors common to M-Commerce and In-Store; γ = Factors common across all three channels

25.39% of the critical factors identified show that participants like making decisions in the e-commerce channel, a far greater percentage than 7.93%, who indicate that decision-making in this channel is not something that they would like to undertake. This finding is significant ($\chi^2_{42,1}$ = 12.30, p < 0.005), lending support to H1 and H4. The responses for *Decision Making* are further analyzed across all three channels ($\chi^2_{180,2}$ = 26.66, p < 0.005) and to compare m-commerce with e-commerce ($\chi^2_{126,1}$ = 24.87, p < 0.005), thus lending support to H1 and H2.

12.85% of the critical factors point out that the amount of information in m-commerce is "overwhelming" for the participants and account for negative feeling inducing factors. However, note that, it is the same amount of information that participants are exposed to in all three channels. The responses for *Amount of Information* are further analyzed across all three channels $\chi^2_{57,2}$ = 25.77, p < 0.005) and to contrast m-commerce with e-commerce ($\chi^2_{42,1}$ = 24.32, p < 0.005). Again, these results lend support to H1 and H2.

12.05% of the critical factors associate negative feelings with the features of the mobile device in m-commerce as opposed to 2.41% critical factors that associate positive feelings ($\chi^2_{35,1}$ = 16, p < 0.005). Overall, it seems that device features or usability features induce negative feelings, lending support for H3. Although 10.04% of the critical factors identified show that participants like making decisions in the m-commerce channel, a far greater percentage (24.10%) indicates that decision-making in this channel is not something that many participants like to undertake. This finding is significant ($\chi^2_{84,1}$ =14.41, p < 0.005). Thus, we find support for H3, H4, and H5.

IMPLICATIONS

Theoretical and Managerial

This study offers several implications for researchers. First, we extend ECT (Expectation Confirmation Theory) to the realm of decision-making in various channels. We find evidence that participants might hold their prior experiences in e-commerce as points of reference to which they compare their current or subsequent shopping experiences, which can possibly be explained through ECT. Second, participants display greater negative feelings than positive feelings about decision-making in m-commerce, which is different from how they feel in either e-commerce or in-store environments. This finding can probably be explained with the help of Cost Theory. Third, the *same* categories of **Product-Related** factors are important to consumers across all the three channels. Our study draws a parallel between traditional retailing and e-tailing, and further compares these two channels to m-commerce.

This study offers several implications for managers. First, although users perceive similarities between the three channels of search, they do not perceive them as being exact substitutes. Rather, we find that users have specific behavioral characteristics in each of the three channels. Second, PDAs are probably not suitable for carrying out complex tasks. Small and compact features are a plus in the endless pursuit of better gadgets, but our findings point out that there is probably a threshold in terms of when a product becomes too small to handle and can be used efficiently. Our findings suggest that m-commerce is best suited for very simple tasks. Third, marketers interested in sending advertising materials over a PDA would probably have to limit the amount of information to be sent. Information disseminated via mobile devices would have to be relatively simple as consumers find "scrolling" (when using a PDA) extremely "stressful".

LIMITATIONS AND FUTURE DIRECTIONS

There are several limitations associated with this paper. First, in the two experiments, participants are guided to visit sites and make decisions. Although efforts are made to replicate actual shopping environments, the findings might be different when consumers shop in more natural settings. Second, we do not consider after-sale experiences (e.g., delivery, post-services). Third, our sample consists of college students who are savvy with respect to Internet use. It is also interesting to compare the results of different demographic and characteristic groups (e.g., age, income, Internet experience).

Researchers might be interested in exploring other channels of search. In addition, different product categories might affect decision-making in various channels. Since mobile commerce is a relatively new area, it would be interesting to study what types of information can be effectively provided to consumers on the move. Also, consumer responses to usages that are specific to the m-commerce environment might be explored in greater detail. Especially, usability/device features and their effect on consumer decision-making might be studied at a greater depth.

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