Channels for search & purchase: does mobile Internet matter?

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Abstract

Recent industry reports indicate that consumers own four digital devices on an average, and switching devices during shopping is the "new normal." The addition of mobile Internet as a new channel of search and purchase has spurred the adoption of the digital medium, and easy accessibility of the Internet on multiple devices is influencing shopping patterns. A consumer may prefer some channels for search and others for purchase or use a combination of channels to search and purchase simultaneously. As a new channel, it is unclear 1) whether mobile Internet offers greater search or purchase benefits and 2) what type of products are more suitable for mobile Internet search and purchase. In this study, we develop a framework that describes the factors that drive the use of mobile Internet in a multi-channel environment. We test the framework using survey data from a sample of U.S consumers. The main findings from our study indicate that 1) the choice of channel combinations that include mobile relative to other channel combinations increases with an increase in perceived search convenience of mobile channel. 2) in the digital channel, mobile and desktop differ in their utility along search dimensions. The probability of choosing channel combinations that include mobile increases due to search convenience whereas desktop is attractive due to perceived gains of price comparison search; and 3) mobile Internet search increases for consumers searching for utilitarian products.

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The insights from this study deepen our understanding of how digital media is used in the search-purchase process and have important managerial implications.

Keywords: Mobile Internet; Digital Marketing; Consumer choice; Consumer search; Multiple channels

1. Introduction

"*Consumer has decided digital isn't just part of the shopping experience. Digital is the foundation of it."*

Mike Parker, Chief Executive, Nike, March 22, 2017

"*Our traffic [store] is down but our conversion is up significantly. Deloitte estimates that 50 percent of all retail transactions by the end of next year will have a digital experience involved, they buy it or they research it. I argue that at J.C. Penney we are already beyond 50 percent. And what we are seeing in our traffic by device is very indicative of this.*"

Mike Rodgers, Executive Vice President, Omni-channel, J.C. Penney, October 8, 2014 Analyst Conference

The retail landscape is changing with more consumers shopping online and fewer visiting retail stores. This behavioral shift has led to an increase in digital shopping[3]. Recent industry reports indicate that U.S consumers own four digital devices on average[4], and switching devices during shopping is a common occurrence (Deloitte 2015[5]; Adobe Digital Index report 2017). The role of the Internet has increasingly changed over the years from an important channel of information acquisition (Verhoef et al. 2007; Ratchford et al. 2003) to becoming a useful channel for search and purchase (Bucklin and Sismeiro 2009). Of particular interest is the mobile Internet as a channel of search and purchase.

[3] http://fortune.com/2017/03/21/nike-ceo-retail-landscape-unsteady/
[4] http://www.nielsen.com/us/en/insights/reports/2014/the-us-digital-consumer-report.html
[5] Pdf document "us-cb-navigating-the-new-digital-divide-v2-051315.pdf" Available from *https://www2.deloitte.com; https://blogs.adobe.com/digitalmarketing/campaign-management/learning-consumer-trends-marketing-customers-across-digital-devices-2/*

With increasing adoption of the mobile, consumers are spending a significant proportion of time on mobile devices as compared to other devices (Deloitte 2015). While previously mobile was primarily an information and entertainment channel (e.g., read news, magazine articles or use gaming apps), consumers are now increasingly engaging on mobile Internet to obtain quick answers and information while traveling, visiting websites to find product information, and their mobile activities imply a greater intent to purchase[6]. With increasing reliance on the Internet and availability of mobile Internet and desktop Internet channels, consumers have started to experience wide and rich selection of retail shopping environments (Dholakia et al. 2010). Switching within the digital[7] channel, and switching across digital and offline channels is increasingly influencing consumer shopping patterns. For instance, a consumer may search for information on mobile and laptop but purchase in store or search on mobile and purchase using desktop. In such an environment, a consumer may prefer some channels for search and others for purchase or use a combination of channels to search and purchase simultaneously. It therefore becomes necessary to understand which factors influence the use of mobile Internet channel in a multi-channel environment; these factors are not currently well understood. Even less understood is whether mobile Internet plays a role in search or as a purchase device or both, and what types of products are best suited for mobile marketing efforts. Marketers are aggressively allocating a greater proportion of advertising budgets to mobile marketing, yet research in the digital search and shopping space is still evolving (Shankar et al. 2016).

[6] https://www.marketingweek.com/2015/11/20/how-consumers-shop-on-mobiles/

[7] Throughout this paper, we refer to "digital" as consisting of mobile Internet and desktop Internet. The desktop Internet is a composite category of horizontal scrolling devices including desktop, laptop and tablets such as ipad etc. This classification is followed in industry and academia.

The extant literature examines the role of the Internet as an information channel (Verhoef et al. 2007; Ratchford et al. 2003) and pays considerable attention to consumer shopping in multiple channels such as consumer spending on the web, catalog and store (Kumar and Venkatesan 2005; Kushwaha and Shankar 2013). However, the existing literature does not examine search and purchases in the mobile Internet channel, which is differentiated in crucial ways: a) mobile Internet is accessible anytime-anywhere even though it has limited scrolling capabilities; and b) while using search engines on the mobile Internet, the search ads display a phone icon for consumers to click and initiate instant communication. Therefore, mobile Internet behavior is likely to be different from web usage behavior on other devices, and is expected to influence shopping. Consumer's mobile Internet shopping behavior in multichannel environments is under-researched, and an in-depth understanding of factors that drive the use of mobile Internet is important for marketers to strategically target shoppers with advertising and promotions. To address this gap in the existing literature, we examine search and purchase in digital (mobile and desktop) and offline channels and research the following questions:

1.) What is the role of mobile Internet in search and purchase? Do mobile Internet specific attributes influence consumer's choice of channel combinations for search and purchase?
2.) Within the digital channel, what factors distinguish the use of mobile Internet and desktop?
3.) Does product category moderate the influence of mobile Internet specific attributes on selection of channel combination for search and purchase?

We examine survey data of a random sample of U.S consumers to understand the varying shopping patterns in the digital and offline shopping environment. The main findings of this study follow below:

a. First, mobile Internet is a useful channel for search. The perceived utility of mobile channel offering search convenience significantly increases the choice of channel combinations that include mobile relative to other channel combinations.
b. Second, in the digital channel, mobile and desktop differ in their utility along search dimensions. The probability of choosing channel combinations that include desktop increases due to perceived gains of price comparison search using desktop, whereas mobile is attractive due to search convenience.
c. Third, the mobile Internet channel is useful to search for utilitarian products. Although perceived gains from price comparison search using mobile do not influence channel combination, for utilitarian categories the perceived gains to price comparison search using mobile positively influence the choice of digital search and mobile purchase.

The insights from this study provide a deeper understanding of how digital media is used in the search-purchase process, and highlight the role of mobile Internet in consumers' purchases. The findings are important from both research and managerial perspectives. First, retailer's emphasis on content design and optimization for mobile websites can facilitate easy access to product information and increase the efficiency of consumer's mobile search. Second, retailers can target consumers searching for utilitarian products in the digital channel, by providing targeted information in the mobile channel, and price comparison information using the desktop Internet channel. Third, retailers can target distinct segments of consumers using

personalized product offers to increase their engagement in the mobile channel. For consumers with high out-of-pocket expenses, retailers can offer mobile apps with secure and convenient checkouts to reduce transaction costs and offer service benefits. Retailers can target mobile coupons and deals to consumers with prior purchase experience in the mobile channel to accelerate mobile purchases. The findings of our study contribute to the multi-channel marketing literature, as well as to the extant literature by including the mobile Internet as a new channel of search and purchase. We consider the mobile Internet as distinct from the desktop Internet, and examine consumer's choice of channel combinations in the digital and offline medium.

The remainder of the paper is structured as follows. In the next section, we review the literature on search and purchase. In the subsequent sections, we discuss the conceptual framework, data description, and results. In the final section, we conclude with a discussion of the main findings and directions for future research.

2. Literature Review

The search literature has paid considerable attention to search in multiple channels. It examines consumer decisions in the online channel vs. store and offline word of mouth channel. Ratchford et al. (2003) study the determinants of the consumer's decision to search for automobile information on the Internet vs. other potential sources. The authors find that consumer characteristics such as age, income and education are important determinants of search in online and offline channels. While older consumers are less likely to search using the Internet, younger and educated consumers are more likely to search online, and Internet search substitutes traditional search. The observed channel substitution effect may be attributed to the perceived quality of information. Strebel et al. (2004) examine the factors that drive consumers'

information-channel-choice behavior. The main findings of their study indicate that (a) information channels operate as substitutes as far as information quality is concerned; (b) during each segment of search, consumers tend to use multiple information channels, and the information channels act as complements.

Wendel and Dellaert (2005) find that in selecting a channel to search, a consumers' consideration of media channel is a function of the media channel's perceived benefits. Perceived benefit such as consumers' perception of information content is a key motivator of online use in a multi-channel environment (Montoya-Weiss et al. 2003). Kumar and Venkatesan (2005) focus on the purchase decision in a multichannel context and study the effect of customer characteristics on multichannel purchase behavior. The authors find that consumer characteristics such as experience in a channel and purchase frequency are among the important factors that influence purchase channel choice. In the context of mobile shopping environment, Natarajan et al. (2017) find that personal innovativeness and perceived risk play a major role in deciding the intention to use mobile shopping applications. Users who are highly innovative and with a higher intention to use mobile shopping applications are less sensitive to price. Kushwaha and Shankar (2013) examine consumer purchases of utilitarian and hedonic goods in multiple channels and find that multichannel customers are the most valuable segment for hedonic product categories.

Extant research that examines competition between online and offline channels suggest that channels should complement each other rather than compete (e.g. Brynjolfsson et al., 2009; Blázquez 2014; Wikström, 2005). During the purchase process, consumers use various channel combinations in their decision process (Balasubramanian et al. 2005; Neslin et al. 2006). For example, a consumer might use the Internet to obtain product information and prescreen options, then visit a retail outlet to view and examine their consideration set, and finally order the chosen

brand via phone (Ansari et al. 2008) suggesting the complementary role of channels in search and purchase. Verhoef et al. (2007) investigate the research shopping phenomenon, i.e., consumers search in one channel and purchase in another. Using consumer's stated preference data, the authors examine the Internet as a search channel and retail as the purchase channel, and find that consumers' search preferences need not be the same as their purchase preferences. Furthermore, consumer usage of various channels is apt to vary greatly by category (Bhatnagar and Ghose 2004). For example, book purchases may predominantly involve a single channel, whereas shopping for automobiles may engage the customer in multiple channels. While the Internet and retail may be complementary search channels, they are substitute purchase channels.

With the introduction of new channels such as the mobile Internet, the role of channels in consumer decision making process has become even more complex. Shoppers can search for product information in the digital channel using one or more devices such as mobile and desktop, then purchase in the digital medium eliminating the use of the traditional store channel. Alternatively, consumers may engage in research shopping or search in digital and purchase in store channel.

However, there is little empirical research linking search and purchase behavior on the mobile Internet with other channels, nor that provides an understanding of what types of products are best suited for mobile marketing. Our study addresses this gap, and extends the existing literature on multi-channel marketing to provide insights into consumer's usage of channels and devices within a channel.

3. Conceptual Framework

We present a framework to examine channel specific attributes that influence the use of a channel combination for search and purchase. The underlying idea of the framework is that consumers engage in various search and purchase strategies such as research shopping wherein they search in online channel and purchase offline, or search in multiple channels and purchase in one of their search channels. In choosing their preferred channel combination, it is unclear whether channel-specific search attributes or channel-specific purchase attributes provide greater utility to consumers in choice decisions.

Figure 1 presents the framework, on the right hand side of which are listed different channels and combinations that can be used for search and purchase. Consumers can either search and purchase in a single channel, or search and purchase in the digital channel, i.e., mobile and desktop. Alternatively, consumers can search and purchase in one of the digital-store channel combinations.

We treat the online channel as the mobile Internet channel and the desktop Internet channel. We consider these as distinct channels because the scrolling capability of devices when accessing the Internet is a key differentiator of search and purchase, and influences behaviors. The mobile Internet involves vertical scrolling using narrow screens as compared to horizontal scrolling in devices such as desktops/laptops and ipads. The narrow screen of mobile device limits the amount of information visible to a consumer and vertical scrolling leads to information chunking. This leads to differences in search behavior, such as clicking on the topmost links when using google search (Ghose et al. 2012).

Our modeling framework is based on the economics of information search. According to this framework, consumers search until the perceived returns to search equal perceived marginal costs of search (Stigler 1961). The gains to information search may arise from two sources:

perceived benefit of price comparison and perceived benefit of search convenience (Verhoef et al. 2007). The perceived costs of search would depend on the effort it takes to search in a channel. Likewise, the perceived benefits to purchasing in a channel are driven by how quickly consumers can obtain a product when buying in a channel, i.e., purchase convenience, and the ease of negotiating prices in a channel. The costs of purchase are driven by consumers' perceived effort to purchase in a channel, as measured by the amount of time necessary to buy the product. The abovementioned channel-specific attributes are enumerated on the left-hand side of Figure 1.

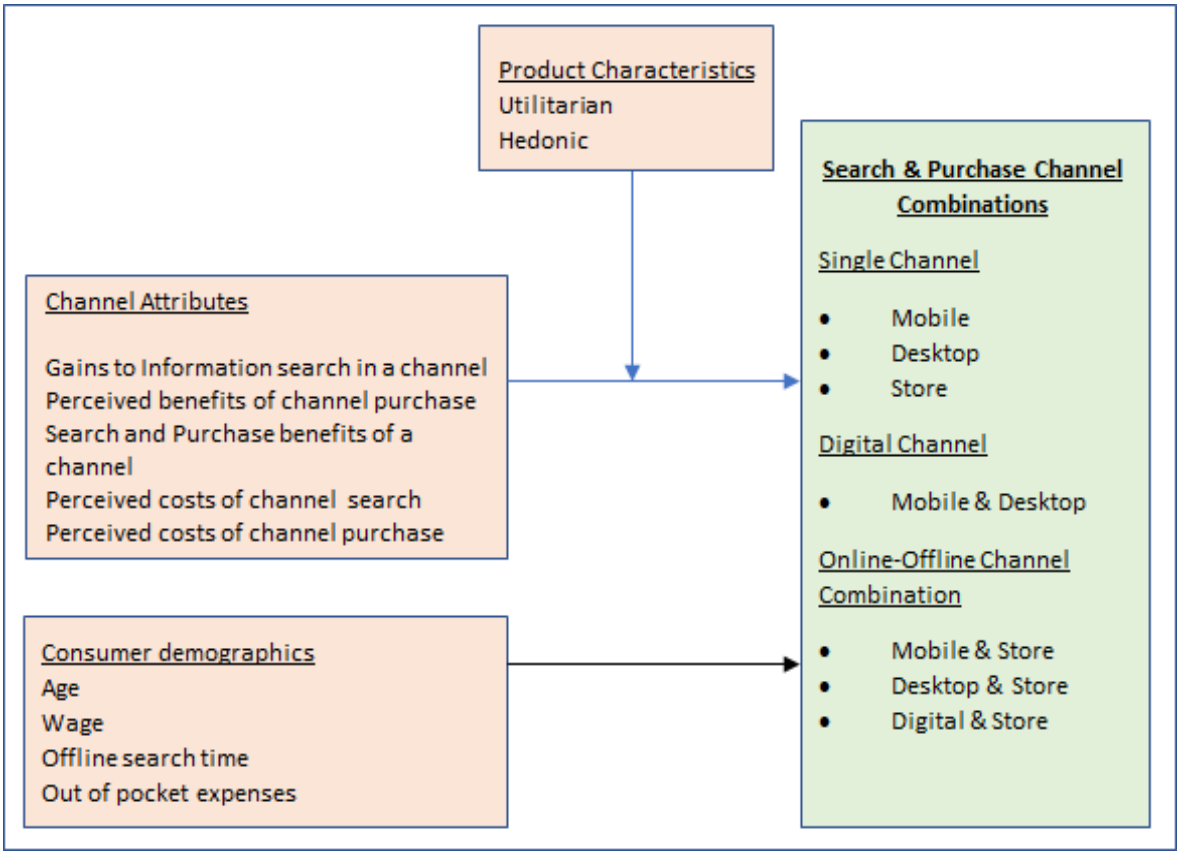

Fig.1. Modeling Framework for Drivers of Search and Purchase Channel Combinations

Besides perceived benefits and perceived costs in a channel, prior research finds that product characteristics may influence consumers' channel preference. For instance, utilitarian

categories mostly have search attributes and involve considerable cognitive effort (Novak et al. 2003). Therefore, consumers engage in goal directed search and maximize the efficiency of search (Mathwick et al. 2002). The efficiency of time utilization in a shopping task increases when both search and purchase are done habitually and repeatedly in a single channel (Kushwaha and Shankar 2013). Therefore, for utilitarian products, consumers are likely to prefer using a single channel to multiple channels. The digital channel (desktop plus mobile) facilitates efficiency of time utilization due to greater breadth and depth of search and low costs of search. Therefore, we expect that shoppers searching for utilitarian goods are more likely to search and purchase using mobile Internet or use the digital channel to maximize their efficiency of time utilization. For hedonic categories, consumers seek variety or enjoyment, have a greater promotion focus and may indulge in impulse buying and variety seeking (Novak et al. 2003). Therefore, consumers shopping for hedonic categories are more likely to search in multiple channels, say, digital and store.

Due to individual differences such as technological proficiency in executing digital search or individual characteristics, the benefits of search may be varied and uncertain (Klein and Ford 2003). Similarly, psychographic characteristics are also related to benefits consumers seek in their channel selections (Konus et al. 2008). Kukar-Kinney et al. (2009) find that shopping motivations such as seeking information variety, and shopping enjoyment influence consumers' preferences for the Internet channel when purchasing apparel. Similarly, Ratchford et al. (2003) find that consumers who use the Internet to search for automobiles are younger and more educated. Socioeconomic characteristics such as household size and income influence store shopping (Bucklin and Lattin 1991). Therefore, based on the extant literature and our conceptual framework, we summarize the main propositions as follows:

1. When perceived gains to mobile search convenience increase, the choice of channel combinations is more likely to include mobile Internet.
2. When perceived gains to ease of price comparison search increase, the choice of channel combinations is more likely to include mobile Internet.
3. When perceived costs of search increase, the choice of channel combinations is less likely to include mobile Internet.
4. When perceived benefits of mobile purchase increase, the choice of channel combinations is more likely to include mobile Internet.
5. When perceived costs of purchase increase, the choice of channel combinations is less likely to include mobile Internet.
6. The choice of channel combinations is more likely to include mobile Internet to search for utilitarian categories.

Our study contributes to multi-channel marketing literature by investigating whether search and purchase attributes drive the choice of mobile Internet in a channel combination for search and purchase, and whether the type of product moderates the effect of channel-specific characteristics. The dependent variable is the choice of a channel combination. The key independent variables are gains to search in a channel, perceived benefits of purchase in a channel, perceived costs of purchase in a channel and type of product category.

4. Data Description

To test our framework, and identify the factors that drive multi-channel search and purchase, we use survey data, collected in 2016 using a panel provider, from a sample of U.S. shoppers using their self-reported measures on search and purchase in digital and store channels.

Prior to the main survey, the survey instrument was designed and pre-tested on 25 shoppers using the m-Turk platform. Based on a preliminary analysis of responses, the survey questionnaire was improved further and data was collected using an online panel provider. A total of 353 responses were obtained, and of these, 11 responses were excluded because of incomplete surveys. The analysis sample was therefore constituted of 342 respondents.

Since the objective of our study is to examine the determinants of use of channel combinations for search and purchase, the survey design is based on prior studies on consumer search and purchase (Verhoef et al. 2007; Ratchford et al. 2003; Klein and Ford 2003). The questionnaire is designed to capture consumers' motivations to search for the recently purchased product category, motivations to engage in digital search for their most recent purchase, the time spent and depth of digital Internet search, and the type of product purchased. The survey questionnaire consists of four sections to record the abovementioned aspects of search behavior.

In part one, respondents indicated their most recent purchase from a list of 19 product categories (see Appendix A for the complete list). These product categories consist of utilitarian (e.g., computing equipment, home and garden equipment) and hedonic product categories (e.g., wines, gifts and holidays). We select these categories because these are commonly purchased in stores as well as in the Internet channel (Kushwaha and Shankar 2013). The respondents indicated their general frequency of use of each channel, and general opinion about benefits of search, costs of search, and benefits and costs of purchase in each channel (see Table 1 for survey questions). The abovementioned measures of search and purchase attributes in the digital and store channel are adopted from Verhoef et al. (2007). Although Verhoef et al. (2007) use multi-item measures to capture different dimensions of costs and benefits in the Internet channel, we restrict our survey questions to 7-point Likert scales (measured as 1=Strongly agree to

7=Strongly disagree), single item measures to reduce the cognitive burden of answering the same items for each of the multiple channels. Specifically, we measure search costs as the search effort required to collect information in each channel, as for example, "Collecting information on this product costs a lot of effort when searching on Mobile". Three items are used to capture different dimensions of search benefits. For example, the item "I can quickly get this product's information on Mobile" measures search convenience; "the information quality of this product category on Mobile is good" measures information availability. Another search benefit is price comparison measured using the item "I can easily compare prices of this product on Mobile." In part two, the respondents indicate the price of the product purchased, the brand purchased, month and year of purchase, and channel of purchase.

Table 1
Survey design

Survey Question	Measure
I can quickly get this information on Mobile	Search convenience
I can easily compare prices of this product category on Mobile	Search benefit-price comparison
The information quality of this product category on Mobile is good	Information availability
I can quickly obtain this product when buying using a Mobile	Purchase convenience
It costs a lot of time to buy this product on Mobile	Purchase effort
It is fun to search and buy this product on Mobile	Perceived hedonic value of shopping in a channel
It is difficult to judge the quality of this product on Mobile	Perceived risk
Collecting information on this product costs a lot of effort when searching on Mobile	Perceived search cost
I can easily negotiate prices when buying on Mobile	Perceived purchase benefit

Note: All items are measured on a 7 point Likert scale ranging from 1=Strongly Agree-7=Strongly Disagree.

Requesting the respondent to reflect on their most recent purchase experience, part three of the survey records their prior information about brands, interest in obtaining information about prices and promotions, and the total time spent to search for the product. Prior information is

measured by whether the respondent knew which brand to buy (Ratchford et al. 2003). The shoppers indicate the time spent to search for product related information in store, time spent on offline sources such as print and offline word of mouth, and digital search time on mobile device and desktop. The measure for time spent to search is based on Klein and Ford (2003) and Ratchford et al. (2003). The respondents indicate the information sources used while searching on the mobile Internet and desktop. The online information sources are classified based on Klein and Ford (2003). These sources include online word-of-mouth sources such as social media, online retailer sources such as manufacturer/retailer websites, and independent sources such as online advertising etc., and video websites such as YouTube. Those who search in-store indicate the activities undertaken in store such as talking to salespeople, visually inspecting the product, and comparing brand prices in store. The respondents indicate their most recent purchase, overall category usage, purchase experience in the channel, and overall purchase experience.

Finally, the fourth part of the survey captures consumers shopping enjoyment, and demographic characteristics such as age, income, marital status, education, household size, preferred payment method, and work status.

A potential issue of survey studies is the common method bias attributed to measurement method (Bagozzi and Yi 1991). The same method used to measure the dependent and the independent variables may induce spurious correlation and inflate the parameter estimates. To address this issue, we conduct the Harmen's single factor test. For the single factor test, an unrotated exploratory factor analysis is conducted (using SAS proc factor), which yields a 16-factor solution. The first factor explains 13.62% of variance in the data. This is considerably lower than the suggested 50% cutoff level indicating a lack of common method bias (Podsakoff et al. 2003).

Another issue in survey studies related to search is the issue of recall. For the sample respondents in our data, 80% purchased two months prior to survey, 12% respondents purchased three to six months prior to survey, and 8% respondents purchased more than six months prior to survey. Since more than 80% of purchases were made two months prior to the survey, we do not expect recall to influence our results. However, to check for recall, in the survey design we elicit the consumer's response to total time spent to search for product as well as the time spent in each channel and offline print sources. Following prior research (Ratchford et al. 2003), we examine the discrepancy between total search and actual stated search, and delete four observations where the discrepancy is greater than 50 hours. A total of 338 survey responses are used in the analysis. The sample consists of 48% males and 52% females, and 54% of respondents have income less than $50,000 dollars, closely approximating the distribution of U.S population[8].

Table 2
Data description: Demographic characteristics

Variable	Median	Mean	Std. Dev.	Min	Max
Offline Search time (hours)	0	0.57	2.9	0	44
Age	39.5	40	15.0	21	66
Weekly expenditure		123.1	94.1	15	310
Household Size		4	1.6	2	12
Household Income	37500	54618	37556	12500	151000

Percentage of Respondents in the sample	
Gender	48.0%
Marital Status-Married	45%
Work-full time	62%
Work-part-time	30%
Unemployed	7%
Purchase Low-Risk product	42%
Purchase High-Risk product	58%
College Education	62%

[8] The U.S population median age is 36.7 years, the population consists of 49% males and 51% females (source: https://www.census.gov/population/age/data/2010comp.html), and 51% of U.S households have income less than $50,000 (Source: U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement).

High School Education	29%
Post-Graduate Education	8.58%

Table 2 indicates that the average age of sample respondents is 40 years, average household size is 4 members and the average household income is 54,618 dollars. Of all respondents, 62% work full-time, 61.5 % have a college degree or above, or have some college education, and 44% are married. Table 4 indicates the various search activities undertaken during mobile search. Of all respondents 14% saw mobile ads, 31% visited websites to find product related information, and 20% visited video websites such as YouTube to watch product related videos. Some respondents made product related mobile calls (17%) and 10% of all respondents requested for price quotes while accessing websites for product related information.

4.1 Dependent Variable

Because the objective of our study is to examine consumer's channel use for search and purchase, the dependent variable of interest is the channel combination chosen by a consumer for search and purchase. The main channels for search and purchase are mobile, desktop and store. All three channels are useable for search as well as purchase. We examine channel search (see Figure 2a) and observe that 50% of consumers have searched using mobile, 71% used desktop, and 64% consumers searched in stores. However, of all respondents, 44% consumers purchased in-store, followed by 37% consumers who purchased using desktops and only 19% respondents purchased using mobile devices[9]. Examining product purchase, we observe that 66% of respondents purchased hedonic categories and 34% of respondents bought utilitarian categories. A further breakdown of the type of products bought in each channel indicates that of all the

[9] The desktop purchase rate of 70% and 19% mobile purchase rate observed in our sample is similar to industry observation. According to a recent report by Marketing Manager Insider, the conversion rate of desktop and mobile device in 2016 was 70% and 20% respectively (https://www.webpagefx.com/blog/general/desktop-vs-mobile-converts-better-infographic/).

respondents that purchased using mobile, 12% bought hedonic products whereas 7% bought utilitarian products (see Figure 2b). Likewise, the percentage of respondents that bought hedonic and utilitarian products using desktop is 23% and 14%, respectively. Of all respondents that bought in-store, 30.18% bought hedonic categories whereas 14% bought utilitarian categories. The above statistics indicate that desktop and store are popular purchase options whereas mobile is preferred for search rather than purchase.

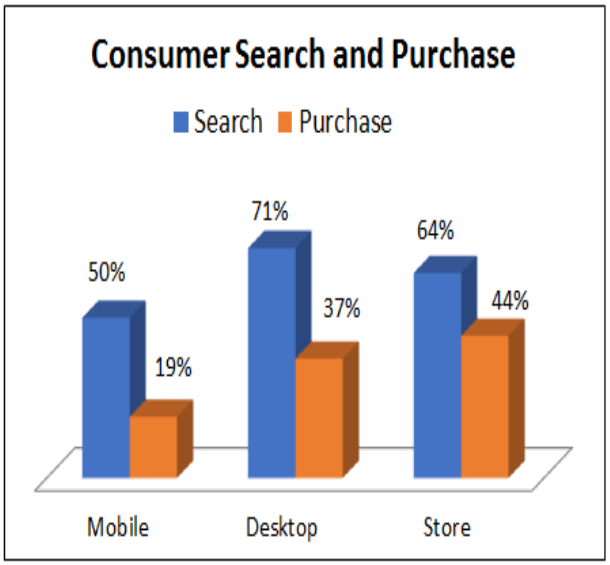

Fig. 2a

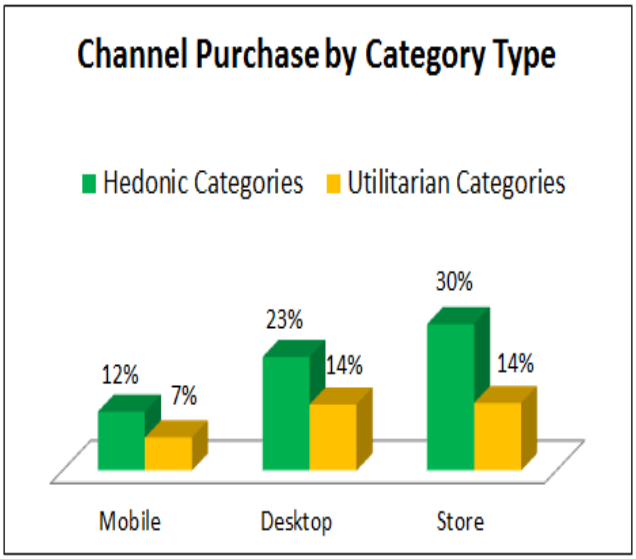

Fig. 2b

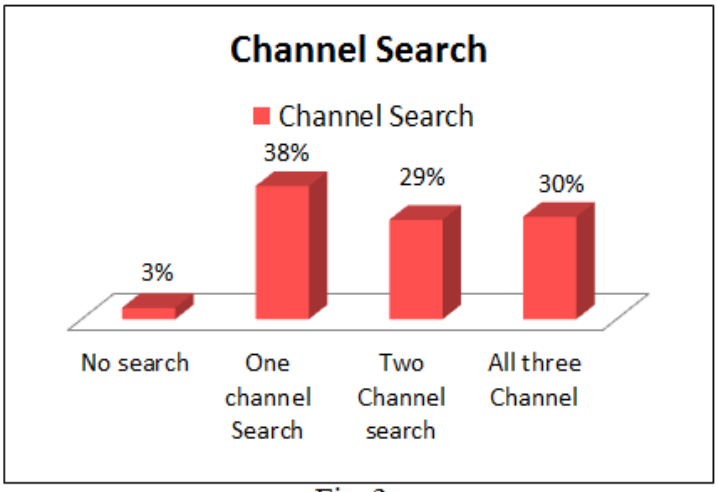

Fig. 2c

We find that 59% consumers search in two or more than two channels (Figure 2c), 38% search in one channel and 3% consumers do not search. Next, we examine the consumer's channel combinations for search and purchase (see Table 3).

Table 3
Channel combinations for search and purchase

	Channel Description		Respondents	
Combination Code	Channel use	Channel use-Purchase	Frequency	Percent
6	Store Search	Store	58	17.16
5	Desktop search	Desktop	53	15.68
3	Digital Search & Store search	Store	42	12.43
1	Digital Search & Store search	Mobile	31	9.17
2	Digital Search & Store search	Desk	29	8.58
9	Desktop search & Store search	Store	26	7.69
8	Digital Search	Desktop	21	6.21
7	Digital Search	Mobile	18	5.33
10	Desktop search & Store search	Desktop	16	4.73
4	Mobile search	Mobile	12	3.55
11	Mobile Search & Store search	Store	11	3.25
12	No search	Desktop	11	3.25
13	Research Shopping		10	2.96

Note: Digital search refers to using both mobile device and desktops to search for product information.

The respondents in our sample have used thirteen different combinations for search and purchase. Our data shows that 17% respondents search and purchase in store followed by 16% consumers who search and purchase on desktops, and only 4% of consumers search and purchase using mobile devices. Examining search and purchase in channel combinations, 42% consumers have used mobile devices in conjunction with desktops and store search, but only 9% purchased using mobile device. Only 3% consumers have used mobile along with store search, and purchased in-store. We examine research shoppers and find that only 3% of sample respondents engage in research shopping, i.e., search using desktop or in store and purchase in

store or using desktop. These statistics suggest that reliance on mobile devices as a stand-alone channel of both search and purchase is low. However, mobile may be more useful for search in conjunction with other channels. Our data replicates previous studies in that we find that desktop and store channels are the most commonly used channels for purchasing products.

Considering mobile, desktop and store as channels of search and purchase, there are 2^6 possible combinations. However, some combinations are more preferred than others and warrant an investigation as to why consumers choose these channels. We code each of these channel combinations, and use the channel combination as the dependent variable to examine the factors that influence consumer choice of these channels.

4.2 Independent Variables

The key variables of interest are gains to search in each channel, type of product category (hedonic or utilitarian, dummy-coded as =1 if utilitarian else 0) and shopper characteristics. Gains to search are measured as difference of benefits to search and costs of search. The benefits arise from two sources: benefits to price comparison search and benefits from search convenience. To measure benefits from search convenience, we sum item ratings for search convenience and information availability to capture the ease of collecting good quality information. We use ease of price comparison as a measure of benefits to price comparison search. Table 4 presents the mean ratings of consumer's perceived benefits of search and costs of search in each channel. All items are measured on a 7 point Likert scale where 1=strongly agree and 7=strongly disagree.

Table 4: Descriptive statistics for perceived benefits and costs of search

n=338

Channel	Variable	Mean	Std Dev	Min	Max
Mobile	Perceived Search Convenience	2.60	1.78	1	7
	Perceived Ease of price comparison	2.82	1.77	1	7
	Perceived Information availability	2.85	1.72	1	7
	Perceived Purchase Convenience	2.97	1.79	1	7
	Perceived purchase cost	4.01	1.91	1	7
	Perceived hedonic value of shopping in the channel	3.30	1.76	1	7
	Perceived purchase risk	3.70	1.87	1	7
	Perceived search cost	3.92	1.88	1	7
	Perceived negotiation possibility	4.11	1.90	1	7
	Perceived financial risk-Mobile	4.12	1.92	1	7
Desktop	Perceived Search Convenience	4.59	2.23	2	7
	Perceived Ease of price comparison	4.38	2.22	2	7
	Perceived Information availability	4.32	2.17	2	7
	Perceived Purchase Convenience	4.43	2.12	2	7
	Perceived purchase cost	4.96	1.77	2	7
	Perceived hedonic value of shopping in the channel	4.14	1.93	2	7
	Perceived purchase risk	4.86	1.78	2	7
	Perceived search cost	4.92	1.77	2	7
	Perceived negotiation possibility	4.53	1.83	2	7
	Perceived financial risk-Desktop	4.06	1.84	1	7
Store	Perceived Search Convenience	2.64	1.51	1	7
	Perceived Ease of price comparison	2.89	1.65	1	7
	Perceived Information availability	2.60	1.41	1	7
	Perceived Purchase Convenience	2.24	1.28	1	7
	Perceived purchase cost	3.93	1.86	1	7
	Perceived hedonic value of shopping in the channel	2.95	1.51	1	7
	Perceived purchase risk	4.56	2.00	1	7
	Perceived search cost	3.98	1.84	1	7
	Perceived negotiation possibility	3.55	1.78	1	7

Perceived financial risk-Store	3.83	1.76	1	7

Note: The measures of search and purchase benefits are Likert scale measures where 1=strongly agree and 7=strongly disagree.

The average ratings indicate that among all channels, the mobile device is perceived highest on search convenience (2.60) and price comparison search (2.82). However, the perceived quality of information availability (2.60) and perceived hedonic value of shopping is highest for store (2.95) followed by mobile. Noting that perceived search cost is negatively worded, the data show that perceived search cost of collecting information is highest for mobile (3.92) and lowest for desktop (4.92).

As a channel of purchase, store is rated as the most convenient purchase channel (2.24) with highest purchase negotiation possibility (3.55), although it has the highest average purchase cost (3.93[10]) indicating that store visits are still considered as an expense. The purchase risk is highest for mobile device (3.70) and lowest for desktop (4.86). The average rating for perceived financial risk (measured as likelihood of credit card misuse) is approximately 4.00 (neutral) for all three channels.

The sample statistics offer a useful snapshot of perceived utility of each channel: mobile offers highest search convenience, store offers greater shopping enjoyment and information availability whereas search costs are lowest for desktops. The convenience of mobile search observed in our sample is further validated by recent industry reports indicating that 81% of consumers use mobile for its convenience and speed (mobile search stats by cision.com 2013). Furthermore, as a purchase channel store is the most convenient channel of purchase, offers purchase negotiation benefit, however store visits are an expense. Desktop has the lowest perceived risk of purchase among all three channels. To understand how consumers use the

[10] Similar to search costs, perceived purchase cost and perceived purchase risk are negatively worded items.

various digital devices in search and purchase, and to understand the factors that influence the use of mobile devices in particular, we estimate a multinomial logit choice model. The results of the empirical estimation are given in the next section.

5. Empirical Estimation

The dependent variable is the choice of channel combination for search and purchase, and the channels (denoted as τ) are mobile, desktop and store. For analysis, channel combination choice=1 if a combination is chosen and 0 otherwise. A consumer *i* is faced with faced with a set of 13 unordered alternatives from which to choose, and each alternative, denoted as *j*, consists of a different combination of channels for search and purchase and a set of channel-specific attributes. The indirect utility associated with each alternative can be expressed as:

$$V_{ij} = \beta_j + \theta_j Cat_j + \sum_k \beta_k S_{ijk} + \sum_k \delta_k P_{ijl} + \sum_k \gamma_k I_{ijk} + \delta_j SPB_{ij} + \sum_d \varphi_{\tau d} Z_{i\tau d} \qquad (1)$$

Where,

β_j Channel combination specific constant

Cat_j Dummy for Product category

S_{ijk} Consumer *i*'s perception of channel combination j along gains to search attribute *k*

P_{ijl} Consumer *i*'s perception of channel combination j along purchase attribute *l*

I_{ijk} Interaction effect of product category and gains to search attribute *k*

SPB_{ij} Consumer *i*'s perception of search-purchase benefit of channel combination *j*

$Z_{i\tau d}$ Consumer *i*'s characteristic *d* in channel τ

An individual *i* chooses channel combination *j* if it offers the highest value of indirect utility. The observed choice y_j of consumer *i* is therefore represented as:

$$y_{ij} = \begin{cases} 1 & if\ V_{1i} > V_{mi} \\ 2 & if\ V_{2i} > V_{mi}. \\ \quad . & \\ \quad . & \\ J & if\ V_{Ji} > V_{mi}, \end{cases} \text{, for all } m \text{ not equal to } j$$

The choice probability of a channel combination *j* can be expressed as:

$$P_{ij} = \frac{\exp(V_{ij})}{\sum_{m=1}^{M} \exp(V_{im})} \tag{2}$$

The above model specification incorporates channel-specific attributes related to gains to search and purchase in each channel. These attributes assume different values for each alternative and the impact of one unit of channel-specific attribute is assumed to be constant across alternatives. Thus, the impact of gains to search or purchase related attributes is derived from the difference in values across alternatives.

The coefficient for product category is identified for each channel combination by interacting the product category dummy with alternate-specific constants of each channel combination j. The vector of consumer characteristics Z_i consists of age, wage, out-of-pocket expenses and offline search time. The coefficients for individual specific characteristics are identified by interacting them with channel specific constant. For the identification of fixed effects, alternative j=13 (research shopping) acts as reference and its constant is set to zero. The choice model parameters, presented in the next section, are estimated using maximum likelihood.

6. Results

Table 5 presents the results of the multinomial logit (MNL) choice model that links search and purchase attractiveness of a channel to the choice of a channel combination. We did not find significant results for perceived costs, and therefore we present the results of the reduced form model. As noted before, the channel combination "research shopping" is the base reference category. The results show that relative to research shopping, combination specific coefficients for channel combination 1-10 are positive and significant at 95% confidence level. Of these combinations, combination 1-3 involve search in all three channels whereas channels 9 and 10 involve search in both store and desktop. Channels 4, 5 and 6 are own channel search and purchase (mobile, desktop and store respectively), and channels 7 and 8 are digital search and purchase in digital channel.

Table 5

Logit choice model estimation

Conditional Logit Estimates	
Model Fit Summary	
Dependent Variable	Channel combination
Number of Observations	337
Number of Cases	4381
Log Likelihood	-689.0388
Log Likelihood Null (LogL(0))	-864.38793
AIC	1448
Schwarz Criterion	1582

Discrete Response Profile				Channel Description	
Index	i	Frequency	Percent	**Search**	**Purchase**
0	1	31	9.2	Digital Search & in-store search	Mobile
1	2	29	8.61	Digital Search & in-store search	Desktop
2	3	42	12.46	Digital Search & in-store search	Store
3	4	12	3.56	Mobile search	Mobile
4	5	53	15.73	Desktop	Desktop
5	6	58	17.21	In-store Search	Store
6	7	18	5.34	Digital Search	Mobile
7	8	21	6.23	Digital Search	Desktop

8	9	26	7.72	Desktop & in-store search	Store
9	10	16	4.75	Desktop & in-store search	Desktop
10	11	11	3.26	Mobile Search & in-store search	Store
11	12	10	2.97	No search	Desktop
12	13	10	2.97	Research Shopping	

Note: Research shopping refers to shopping on desktop and purchase in store or vice-versa

Table 5 contd.

Goodness-of-Fit Measures

Measure	**Value**	**Formula**
Likelihood Ratio (R)	350.7	2 * (LogL - LogL0)
Upper Bound of R (U)	1728.8	- 2 * LogL0
Aldrich-Nelson	0.51	R / (R+N)
Cragg-Uhler 1	0.6468	1 - exp(-R/N)
Cragg-Uhler 2	0.6506	(1-exp(-R/N)) / (1-exp(-U/N))
Estrella	0.6875	1 - (1-R/U)^(U/N)
Adjusted Estrella	0.597	1 - ((LogL-K)/LogL0)^(-2/N*LogL0)
McFadden's LRI	0.2029	R / U
Veall-Zimmermann	0.6094	(R * (U+N)) / (U * (R+N))

Parameter Estimates

	Parameter	Est.	Std Error	t Value	Approx Pr > |t|
Alternative specific constants	Channel combination 1	**2.864[a]**	0.758	3.780	0.000
	Channel combination 2	**2.541**	0.769	3.300	0.001
	Channel combination 3	**2.710**	0.748	3.620	0.000
	Channel combination 4	**2.088**	0.778	2.690	0.007
	Channel combination 5	**3.838**	0.820	4.680	<.0001
	Channel combination 6	**2.550**	0.792	3.220	0.001
	Channel combination 7	**2.630**	0.770	3.420	0.001
	Channel combination 8	**2.681**	0.734	3.650	0.000
	Channel combination 9	**2.188**	0.866	2.530	0.012
	Channel combination 10	**1.886**	0.870	2.170	0.030
	Channel combination 11	1.019	0.782	1.300	0.193
	Channel combination 12	1.186	0.773	1.530	0.125
Product Category	Channel combination 7	-0.773	0.737	-1.050	0.294
Product Category	Channel combination9	-0.505	0.722	-0.700	0.484

Purchase attributes	Past purchase in a channel	**0.033**	0.006	5.820	<.0001
	Purchase convenience	0.050	0.046	1.100	0.273
	Purchase risk*	-0.014	0.047	-0.290	0.772
	Financial risk	-0.066	0.075	-0.880	0.378
Gains to search	Mobile-gains from price comparison search	-0.037	0.115	-0.320	0.746
	Desktop-gains from price comparison search	**0.160**	0.086	1.860	0.063
	Store-gains from price comparison search	**0.138**	0.086	1.610	0.106
	Mobile-gains from search convenience	**0.188**	0.083	2.280	0.022
	Desktop-gains from search convenience	**-0.112**	0.056	-1.990	0.047
	Store-gains from search convenience	-0.002	0.062	-0.030	0.975

* Perceived purchase risk is negatively worded items, and we use reverse code it for estimation purposes.

Table 5. contd.

	Parameter	**Est.**	Std Error	t Value	Approx Pr > |t|
Search-Purchase attribute	Hedonic value of shopping enjoyment in a channel	0.079	0.051	1.540	0.123
Channel combination 7	Gains to price comparison in mobile channel*product category	**0.538**	0.175	3.080	0.002
Channel combination9	Gains to price comparison in store channel*product category	**0.423**	0.164	2.580	0.010
Consumer characteristics					
Mobile	Offline search time	**0.396**	0.231	1.710	0.087
	Age	**-0.057**	0.011	-5.180	<.0001
	Out of pocket expenses	**0.035**	0.017	2.130	0.033
	Wage	0.008	0.005	1.470	0.142
Desktop	Offline search time	**3.281**	1.411	2.320	0.020
	Age	-0.012	0.010	-1.270	0.203
	Out of pocket expenses	-0.009	0.015	-0.580	0.563
	Wage	-0.003	0.005	-0.640	0.523

a: Bold are significant at 95 percent confidence level.

The gains to search in a channel combination significantly influence channel combination choice. The results indicate that gains to price comparison search on desktop is significant and positively influences the choice of channel combinations that include desktop relative to other channel combinations (β=0.160; odds ratio=1.17; significant at 10% level of significance). In fact, the odds of choosing combinations that include desktop increase by 17%. The coefficient for gains to price comparison search in a store is marginally significant and positive (β=0.138).

The coefficient for gains to price comparison search in mobile channel is negative but not significant.

Our results show that gains to search convenience are significant for mobile channel (β=0.188; odds ratio=1.21; significant at 5% level of significance) indicating that a unit increase in search convenience relative to search costs in mobile channel significantly increases the choice of channel combinations that include mobile as search channel relative to other channel combinations. In contrast, the coefficient of gains to search using desktop is significant negative (β= -0.117; odds ratio=0.894; significant at 5% level of significance) indicating that desktop is less likely to be chosen by consumers that assign a higher weight to search convenience. For consumers that value search convenience in the shopping process, the odds of choosing channel combinations that include mobile increase by 21%, while the odds for combinations that include desktop reduce by 11%. The magnitude of coefficients of gains to search for desktop suggests that gains to price comparison search are stronger than the disutility of the channel on search convenience. The coefficient of gains to search convenience in store is negative but not significant.

We find that type of product category does not significantly influence the choice of a channel combination. Interestingly, the effect of gains to price comparison search on mobile Internet depends on the type of product category. For utilitarian product categories (as compared to hedonic products), the gains to price comparison search on mobile Internet positively increase the choice of digital search and mobile purchase relative to other channel combinations (β=0.538). An increase in gains from price comparison search in store significantly increases the likelihood of choosing desktop and store search, and store purchase for utilitarian products relative to other channel combinations (β=0.423).

The results show that purchase-related attributes such as purchase risk and purchase convenience do not influence search/purchase channel combination choice. Similarly, hedonic value of shopping in a channel, a search/purchase attribute, does not influence choice. Consistent with prior literature, we find that past purchases in a channel influence the choice of combination including that channel (β=0.0328).

We control for consumer search in offline sources (print and word of mouth), and examine demographic characteristics. We find that offline search positively influences the choice of channel combinations that include mobile or desktop options relative to other channel combinations (β=0.396 for mobile and β=3.281 for desktop). Older consumers are less likely to choose combinations that include mobile relative to other combinations (β=-0.057) whereas consumers with high out-of-pocket expenses are more likely to choose combinations that include mobile (β=0.035). We find no significant impact of wage rate on channel combinations for search and purchase.

To summarize findings: first, the perceived gains to search convenience in the mobile channel significantly increases the choice of channel combinations that include mobile Internet search relative to other channels. This result indicates support for proposition 1. Second, the probability of choosing channel combinations that include desktop search increases significantly with perceived gains of price comparison search using desktop. Third, perceived gains from price comparison search using mobile Internet do not influence the choice of a channel combination. However, for utilitarian categories, the perceived gains to price comparison search using mobile Internet positively influences the choice of digital search and mobile purchase, thus indicating support for proposition 2 and proposition 6. Offline search time, past purchases in a

channel, age and out of pocket expenses are significant predictors of channel combination choice.

7. Discussion

Initially, mobile devices were primarily used for communication, entertainment, news or to play games. However, with technological advances such as mobile computing and the mobile Internet, consumers are increasingly spending a greater proportion of time on mobile devices relative to other devices. The addition of mobile Internet as a new channel of search and purchase has spurred the adoption of digital media, and easy accessibility of the Internet on multiple devices is influencing shopping patterns. Consumers can now shop in more and different ways than in the past, e.g., search and purchase within the same channel, search on mobile Internet and purchase in store or using desktop, use various digital-store channel combinations in search and purchase, or engage in research shopping. As a new channel, it is unclear whether mobile Internet offers greater search benefits or purchase benefits and what type of products are more suitable for mobile Internet search and purchase.

In this research, we have attempted to provide deeper insights into consumer shopping patterns in the mobile Internet, desktop Internet and offline channels. We develop a framework that 1) describes different channel combinations commonly used to search for and purchase products, and incorporates the mobile Internet channel; 2) describes how consumers choose among the various channel combinations based on search and purchase attributes associated with each channel; and 3) models the moderating effect of type of category purchased on channel combination choice.

We examine consumer choice of channel combinations for search and purchase using a MNL model. The estimation results indicate that mobile and desktop differ in their influence on choice of a channel combination along the two search dimensions as shown in figure 3a and 3b. The perceived utility of the mobile channel as offering greater search convenience significantly increases the choice of channel combinations that include mobile relative to other combinations. Mobile devices have a smaller screen size and limited scrolling capabilities, but despite these limitations, the search convenience of mobile devices (anytime-anywhere Internet and computing capabilities) offer greater utility to consumers in their search for information. For example, while commuting from office to home or vice versa, consumers can browse on their mobile devices to search for quality information or complete a transaction. The convenience of obtaining reliable product information offers greater utility from mobile Internet search.

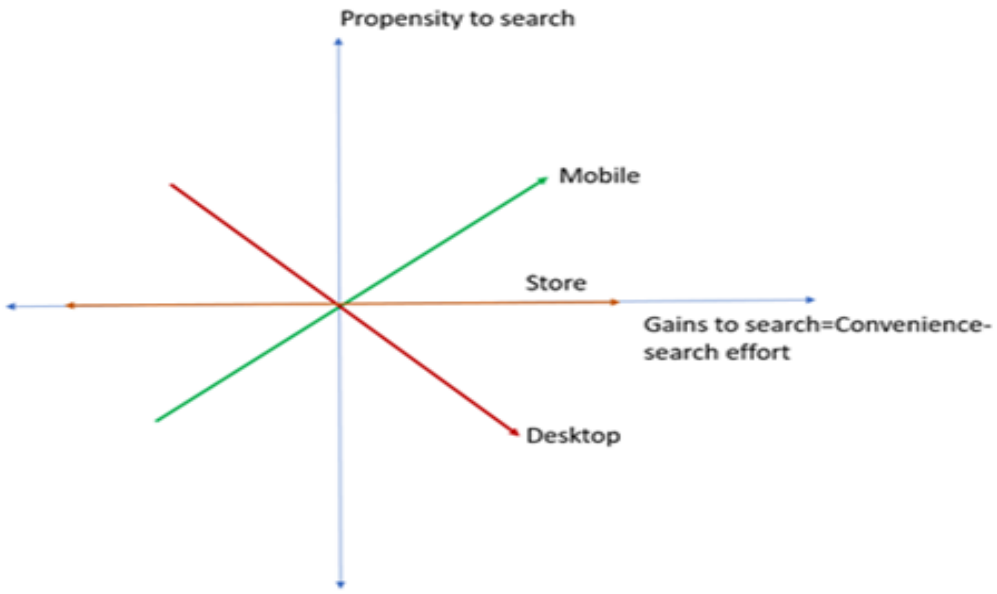

Fig.3a. Propensity to search in digital and store channel and gains from search convenience

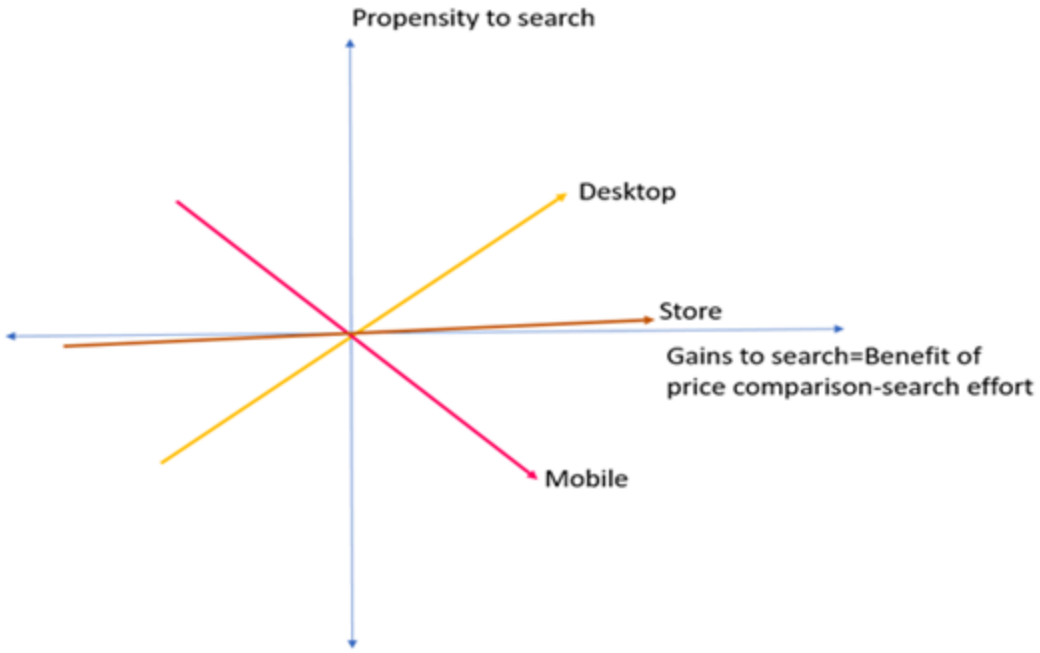

Fig.3b. Propensity to search in digital and store channel and gains to information

In contrast to the mobile channel, the probability of choosing channel combinations that include desktop increases due to perceived gains of price comparison search from desktop (see Figure 3b). Due to relatively large screens and horizontal scrolling capabilities, consumers can search efficiently by navigating across several websites, viewing and comparing information of competing brands. The store channel offers marginal utility of price comparison although store visits are an expense and therefore store channel is inconvenient.

Another interesting finding of our study is that for utilitarian categories, the perceived gains to price comparison search using the mobile Internet positively influence the choice of digital search and mobile purchase. These findings help explain the observed increase in digital experience in search and purchase of products. While mobile is currently a nascent medium for purchase, as people's perceptions of search benefits of mobile increase they tend to emphasize combinations where mobile plays a role in search whereas desktops can be useful devices to search and purchase. Since utilitarian categories are dominant on search attributes, and involve

considerable cognitive effort, their search in the digital channel enables consumers to seamlessly switch devices, search conveniently in greater breadth and depth and increase the efficiency of time utilization. Therefore, digital search facilitates goal-directed search and efficient purchase. Although we find significant effects of perceived search benefits and not for perceived search costs, however, further examination of cost perceptions is an open area for further research.

The increased use of mobile devices due to convenience of mobile Internet is likely to influence consumer shopping behaviors such as time spent to search in various channels and patterns of use of digital devices. In any given shopping task, consumers allocate time and money to search and purchase. Time is a scarce commodity, and mobile Internet as anytime-anywhere source offers convenience and efficiency of time utilization. We examine the odds of search time spent on mobile Internet to desktop at different times of the day (see figure 4). We find that the odds of using mobile Internet search are 1.6 times higher than desktop search in the morning and substantially reduce to 0.3 by evening.

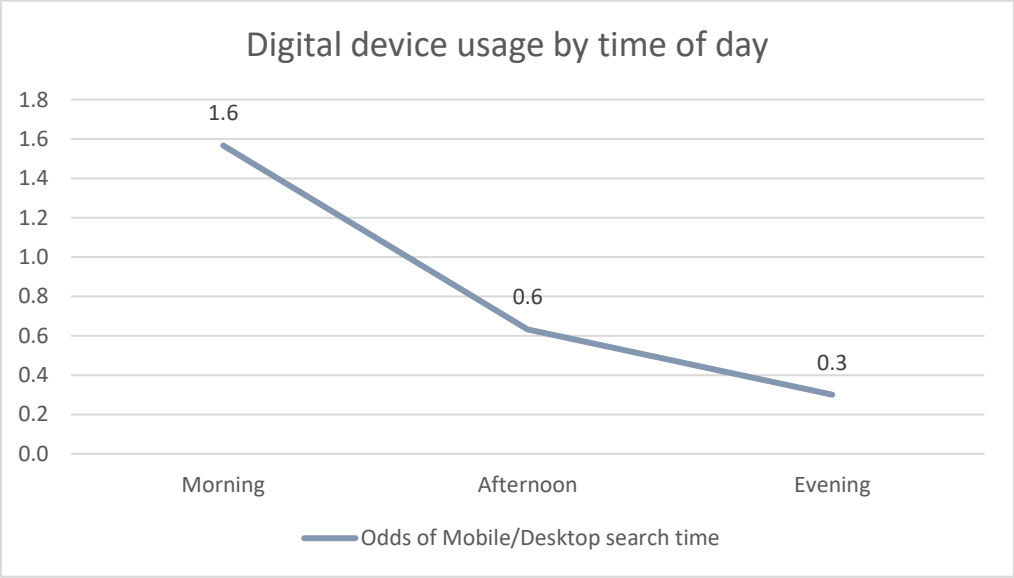

Fig. 4. Digital Device usage by time of day

This pattern of time allocation is indicative of different kinds of searches being done. The evidence that mobile Internet search is high in the mornings suggests that mobile Internet facilitates consumers to utilize their dead time such as travel time more efficiently by creating a shopping environment during a journey. The pattern of use of mobile in our sample is in agreement with mobile usage behavior observed in industry reports such as Marketing Week (2015, see footnote 6). While travelling, consumers can search for specific product information, whereas searches such as price comparison of competing products require an elaborate screen display, and hence the observed increase in desktop search time in the evening. Therefore, time allocation to mobile Internet will affect not only the device usage at specific times of a day but also drive the allocation of time to other media.

We believe that our results have face validity. The insights from this study have important managerial implications for retailers and brands. First, we discuss the implications for retailers' mobile and in-store marketing strategies. Managers can design marketing strategies to facilitate search or purchase or both in the digital channel. Retailers can use the two dimensions of search to offer added benefits in digital channel. For example, retailer's emphasis on content design and optimization for mobile websites can facilitate easy access to product information and increase the efficiency of consumers' mobile search. Retailers can enhance the convenience of using mobile Internet by integrating mobile Internet with in-store experience, such as in-store mobile payments.

Retailers can communicate relevant product information in the digital channel based on category characteristics, and consumer search and purchase patterns. Consumers shopping for hedonic categories have greater promotion focus and may engage in variety seeking whereas those shopping for utilitarian categories are more information focused, and maximize the

efficiency of their shopping task. Retailers can effectively communicate information to consumers searching for utilitarian products by providing targeted information in the mobile channel, and price comparison information in the desktop Internet channel to facilitate consumers undertaking different types of searches. On the other hand, retailers can target shoppers of hedonic categories with mobile coupons, location based mobile promotions, and in store discounts.

The findings of our study indicate that young consumers, consumers with prior purchase experience in the mobile channel and those with higher out-of-pocket expenses are more likely to adopt mobile as a search and purchase channel. Our findings are substantiated by recent industry reports which find that consumers aged 44 and under, view their web-connected phones as tools for shopping whereas the middle aged and older consumers prefer computers (digitalcommerce360.com 2016). Therefore, retailers can target these distinct segments of consumers by designing personalized product offerings using mobile promotions (Khajehzadeh et al. 2014) and location-based targeting, the usefulness of which is apparent when considering that consumers are increasingly using the mobile Internet to find product related information in store (Daurer et al. 2013). For older consumers, retailers can design strategies to enhance the in-store experience such as by offering in-store specials, and faster checkouts. Retailers can design mobile coupons for in-store use to provide older consumers with a positive experience in mobile channel and push them to adopt mobile channel. Retailers can offer incentives to first time users of mobile channel to purchase in the same channel and enhance the overall shopping experience in mobile channel.

Second, the findings of our study are useful to managers for designing brand related strategies. Although mobile purchases are relatively low, however, our findings indicate that

mobile is a useful channel to search for information. Therefore, mobile brand engagement is important for marketers to influence brand consideration. Marketers can use mobile apps and games to increase brand awareness and consideration. As for example, brand wallet apps allow consumers to store and manage their plastic loyalty cards, and provide incentives to lookup coupons and store brand information etc. Quiz based games can facilitate engagement with the brand and earned points enhance interaction and purchases in the digital channel.

Our study has its limitations. The insights of our study are based on a cross-sectional, self-reported survey from consumers who made actual purchases. However, the availability of longitudinal data on consumer search and purchase will help provide deeper insights into the extent of device switching and the time spent in each channel during consumer's shopping journey. The insights from our study highlight the role of mobile Internet as an important channel offering greater search convenience, however, future research can examine the role of situational factors and the influence of retailers' services on consumer shopping patterns and mobile channel choice. In this study, we examine consumer's self-reported data on use of interactive channels relevant to multi-channel marketing. However, multichannel retailing is evolving to omni channel retailing (e.g., Rigby, 2011; Verhoef et al., 2015) and this includes, besides the store, online website and catalog, the digital channels such as social media and the mobile channel, and the mass communication channels such as TV etc. Shoppers use channels interchangeably, and customer switching across devices such as mobile, laptop and desktops is part of the omni-channel shopping experience. Therefore, future research can, in addition to the interactive channels, incorporate the use of social media, and mass communication channels to provide insights into the omni-channel shopping experience. Future research can further extend

our understanding of attribution effects of mobile Internet in consumer's shopping path in the purchase funnel.

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