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Abstract

Consumer online shopping behaviors are well attended in the IS and marketing literature. Yet, there is another group of individuals who spend a lot of time online but do not purchase anything. This online window shopping phenomenon is intriguing to both scholars and marketers yet it is less studied and little understood. Questions such as what the online window shopping consumers do during their visits, how to differentiate their activities and how to design marketing strategies to stimulate them to buy are all essential and beg for investigation. To address this gap, we propose a typology of online window shopping consumers based on the Consumer Information Processing Model, then empirically validate and refine the typology using a set of clickstream data. The final typology contains four main types of online window shopper consumers: 1) promotion finders, 2) social & hedonic experience seekers, 3) information gatherers, and 4) learners & novices. This study extends consumer online behavior research in both e-commerce and social commerce by focusing on the specific group of consumers who only do online window shopping. Besides theoretical contributions, the findings also provide marketers and businesses with valuable references for designing targeted marketing strategies or promotional activities for online window shopping consumers.

Keywords: Online window shopping, E-commerce, Social commerce, Consumer behaviors, Typology

1   INTRODUCTION

There is a type of individuals who spend a lot of time in online marketplaces but never purchase anything or even without any intention to buy (Cheung et al. 2005; Kukar-Kinney & Close 2010). According to the statistics of Top 10 Chinese e-commerce websites whose number of visits is more than 2,000,000 per month during January, 2011 to October, 2011, the average conversion rate (the percentage of visits that are eventually converted to purchases) is 3.4%, with the highest rate being 6.4%, and the lowest only 2.1% (Iresearch 2011). This means that a large number of visitors do not buy online for the moment perhaps because they distrust the security on the Internet, dislike shipping charges or are reluctant to buying things without seeing them in person (Brengman et al. 2005). Some online shoppers may even visit a store without an intention of buying, since the "transportation costs" required on visiting an online store site is much lower than visiting an offline store (Moe 2003). These mentioned online visitors can be defined as online window shopping consumers.

On the other hand, the introduction and use of social media in the e-commerce context (Marsden 2009) gradually changed e-commerce into social commerce, which is defined as a form of commerce that is mediated by social media (Curty & Zhang 2011; Wang & Zhang, forthcoming). While using social media, flow experience can easily be induced. Flow represents a state of consciousness and positive psychological being where a person is so absorbed in an activity without consciously being aware of time elapses and the surroundings (Csikszentmihalyi 1988). In general, many people report experiencing flow in online environments (Hoffman & Novak 2009; Finneran & Zhang 2005); and particularly consumers are found to stick to social functions because of the flow experience (Wu et al. 2010). With the heavy involvement of social media in e-commerce (such as peer review-rating-recommendation systems, social networks, products sharing systems, forums, communities, social advertising and instant messaging tools etc.), customers can now focus more on shopping-related activities of social nature, such as seeing other shoppers, going shopping with others or even socializing (Magoulas et al. 2007), which increased the online window shopping phenomenon.

To date, few academic papers on social commerce have been published (Leitner & Grechenig 2007; Wang & Zhang, forthcoming), and even fewer studies are found to focus on online window shopping. Nevertheless, questions such as what the online window shopping consumers do during their visits, how to differentiate their activities and how to design marketing strategies to stimulate them to buy are all essential that beg for investigation, especially in social commerce environment.

To address the research gap on online window shopping, we propose a typology of online window shopping consumers by both applying the Consumer Information Processing Model and conducting focus groups and on-site observations. Then we validate and refine the typology using a page-to-page clickstream dataset. This study extends consumer behavior research in social commerce by differentiating the characteristic behaviors of a specific group of consumers who only do online window shopping. In addition, the typology can provide marketers and businesses with valuable reference information to help them design targeted marketing strategies and promotional activities according to the different characteristics of these consumers.

2   RELATED WORK

The existent research on online consumer behavior has primarily focused on the purchasing behaviors (Lala et al 2002), searching behaviors (Katz & Byrne 2003; Castro-Schez et al. 2009), browsing behaviors (Song & Shepperd 2006; Katz 2001) or consumer choice behaviors (Wu & Rangaswamy 1999). An interesting way to study consumer behavior is to examine their typology (Kau et al. 2003), which could describe the differences between consumers' behaviors, motivations or psychographics. Table 1 summarizes the related studies about typology of consumers in online environment.

The categories in Table 1 include consumers who always shop online, such as shopping lovers (Kau et al. 2003), open-minded online shoppers (Barnes et al. 2007) and active shoppers (Jayawardhena et al. 2007), and individuals who prefer to shop in bricks-and-mortar retailers and avoid using online

markets, for example, shopping avoiders (Swinyard & Smith 2003), traditional shopper (Kau et al. 2003) and store-oriented shoppers (Rohm & Swaminathan 2004).

Consumers who may exhibit online window shopping behaviors are also mentioned in some of these typologies. For example, Moe (2003) develops a typology of online store visits which includes four different types. Two of them are exploratory that may not lead to purchase: hedonic browsing is motivated by the hedonic experience, and knowledge building is motivated by learning the operations of the websites or increasing the products and market place expertise. In the typology of Kau et al. (2003), on-off shoppers are those who like to surf the online store to collect online information but prefer to shop offline, these consumers tend to present online window shopping behaviors. According to Swinyard & Smith (2003)'s typology, fun seekers resort to the internet for entertainment value instead of purchase, and fearful browsers spend a great deal of time window shopping online but have not able to get past some internet fears, which is validated in the research of Brengman et al. (2005). Brengman et al. (2005) also find positive technology mudderlers needs more training and guidance to accept online shopping, and adventurous browsers use the online markets for business, pleasure or information seeking activities but they are likely to make online purchase in the near future. Barnes et al. (2007) suggest that a large number of risk-averse doubters never purchase online because of the low trust and high perceived-risk. Ganesh et al. (2010) identify a cluster called e-window shoppers who are predominantly driven by stimulation and are motivated to visit interesting websites or to simply surf the internet, and these consumers is similar to online window shopping consumers.

	Typology Base	N	Cluster Names
Moe (2003)	Search behavior & Purchasing horizon	4	Directed buying, hedonic browsing, search/deliberation, and knowledge building
Kau et al. (2003)	Behavior	6	On–off shoppers, comparative shoppers, traditional shoppers, dual shoppers, e-laggard, and information surfers
Swinyard & Smith (2003)	Internet lifestyles	8	Shopping lovers, adventuresome explorers, suspicious learners, business users, fearful browsers, shopping avoiders, technology muddlers, and fun seekers
Rohm & Swaminathan (2004)	Motivations	4	Convenience shoppers, variety seekers, balanced buyers, and store-oriented shoppers
Brengman et al. (2005)	Web usage related lifestyles	8	Tentative shoppers, suspicious learners, shopping lovers, business users, fearful browsers, positive technology muddlers, negative technology muddlers, and adventurous browsers
Barnes et al. (2007)	Psychographic profile	3	Risk-averse doubters, open-minded online shoppers, and reserved information seekers
Jayawardhena et al. (2007)	Purchase orientation	5	Active shoppers, price-sensitive shoppers, discerning shoppers, loyal shoppers, and convenience shoppers
Ganesh et al. (2010)	Motivations	7	Interactive shoppers, destination shoppers, apathetic shoppers, e-window shoppers, basic shoppers, bargain seekers, and shopping enthusiasts

Table 1.   Researches on online shopper typologies (N is the number of clusters)

As introduced above, types of online consumers without purchasing behaviors have been discussed in current literature, yet such discussions are always packaged in the typology of the general consumer behaviors, and the specific group of online window shopping consumers has not been emphasized and examined. Further, the advent of social commerce provides businesses with new revenue opportunities, at the same time provides consumers with both economic and social rewards for sharing (Guo et al. 2011). However, since social commerce is a new business concept (Stephen & Toubia 2010), there is a lot to learn about consumer types and consumer behaviors mediated by social media in the online window shopping context.

3   TYPOLOGY DEVELOPMENT

The typology is developed based on two approaches: a top-down approach applying the Consumer Information Processing Model to the online environment, and a bottom-up approach with empirical

findings from focus groups and on-site observations. Given its focus on individual consumers, this study only considers activities carried out in Business to Consumer (B2C) and Customer to Customer (C2C) environments.

3.1   Online window shopping consumer information processing model

Before proposing the typology, possible activities of online consumers should be identified and discussed. Here we apply the Consumer Information Processing Model in traditional (offline) commerce context to the online environment. In this Consumer Information Processing model, a consumer progresses through five stages during the process of completing a purchase transaction: problem recognition, information search, evaluation and selection of alternatives, decision implementation, and post-purchase evaluation (Engel et al. 1990; Howard 1989). Although this model is not originally designed for the online environment, it has been applied to the virtual shopping environments (Vrechopoulos 1999; Bharati & Chaudhury 2006).

Applying the consumer information processing model to the online environment, the five stages may have the following characteristics. In the Problem Recognition stage, consumers may be unclear of their needs, while marketers can trigger the recognition of their needs through appropriate strategies (Stanton 1984). The homepage, recommendations, advertisements, sales promotions, news of products and pictures of products are the information sources of consumers' potential requirements or purchase problems. In the social commerce environment, the contents in social tools could be another source of purchasing problems.

In the process of Information Search, catalogs and search engines can be used. In the C2C environment, the market platform is composed of various stores opened by individual sellers, so searching stores in the C2C platform, visiting the home pages of these individual stores and searching products in specific stores should be taken into account.

In the Evaluation and Selection stage, consumers view details of products or specific stores (if they are in C2C platform) to evaluate and select from various alternatives. Further, instant messaging tool is an effective way for consumers to communicate with sellers before making decisions.

While many online consumers would continue to the decision implementation stage, the online window shopping consumers would have no evidence of purchasing. Yet, they may keep the searched product information somewhere for hedonic use (Kukar-Kinney & Close 2010) or future use that may or may not lead to potential purchases, particularly adding products into favorites/bookmark. In addition, consumers may actually have tried to buy something through online markets, for example added products into shopping carts and submitted a transaction order but did not pay successfully. To reflect these new situations, we name this stage Decision to Keep Searched Information.

The post-purchase evaluation stage may seem irrelevant to the online window shopping consumers. However, in the online environment, all visitors can evaluate and comment on their experience regardless of whether completing a purchase transaction. So for online window shopping consumers, the final stage in the information processing model can be renamed Post-Visit Evaluation. In the social commerce context, consumers can express their post-visit evaluation through the social tools.

Different from offline stores, online markets and shops can provide a series of supporting functions for consumers to administrate online accounts and learn how to operate the websites. This introduces a unique process where consumers sometimes have to deal with when online. We name this process Administration & Learning and add it to the information processing model.

Figure 1 depicts the online window shopping consumer information processing model for an episode of interacting with online stores. Administration & Learning stage is added, Decision to Keep Searched Information is revised from previously Decision Implementation, and the Post-Visit Evaluation is revised from previously Post-Purchase Evaluation. The directional lines indicate possible order of actions from stage to stage. However, in online environments online consumers may go through stages out of sequence for various reasons (Kukar-Kinney & Close 2010). For example, they may change their mind and revert to the stage of problem recognition, they may be at the evaluation stage and information search stage at the same time, or abort their visiting at any point.

Therefore, the directional lines should not be interpreted literally but take into a general consideration. For example, Problem Recognition can be an iterative process, and can influence and be influenced by both Information Search and Evaluation & Selection stages. Information Search leads to Evaluation & Selection, and can also be influenced by the results of Evaluation & Selection. One unique feature is that any of the five stages inside the dashed box can lead to and be influenced by Administration & Learning stage.
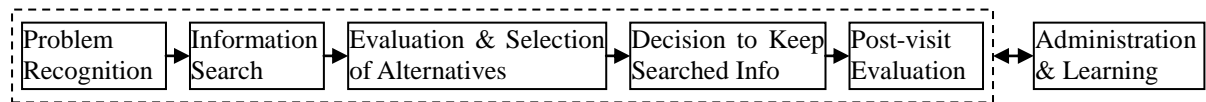

Figure 1.   The online window shopping consumer information processing model

3.2   Activities of online window shopping consumers

Besides applying the consumer information processing model, we also conducted focus group and on-site observations to identify the possible activities of online window shopping consumers. The focus group was held in the university-based research laboratory with nine participants who always visit online markets without purchasing. During the focus group session, participants described why they visit the online markets and what they do during their visits. In addition, on-site observations were made through actual online visits by the focus group participants. They were asked to go through detailed operations when visiting online markets. The focus group and on-site observation data were recorded, transcribed and content analyzed.

Id	16 general activities	Examples of activities recorded in data	Stage
A1	Visiting homepage of website	Visiting different versions of homepage	Problem Recognition
A2	Using social tools	Using forum, social networking systems or online communities	
A3	Reading news of products and looking at pictures of products	Reading news of products, looking at pictures of products.	
A4	Clicking recommendations, advertisements and sales promotions	Clicking the banner advertisements, pages of sales promotions or recommendations	
B1	Using catalog	Clicking catalog, paging through catalog	Information Search
B2	Searching products in the whole platform	Searching products in homepage, paging through search results pages	
B3	Searching stores in the whole platform	Searching stores in homepage, paging through search results pages	
B4	Visiting home page of specific stores	Visiting home page of specific stores	
B5	Searching products in specific stores	Searching products in specific stores, paging through results pages	
C1	Viewing details of products	Viewing details or comments of products	Evaluation and Selection of Alternatives
C2	Viewing details of stores	Viewing details of stores	
C3	Communicating through instant messaging tools	Communicating through instant messaging tools	
D1	Trying to buy	Adding products into shopping carts, submitting an order, paying bills	Decision to Keep Searched Information
D2	Using favorites	Adding products in the favorites, Viewing favorites	
E1	Using help	Viewing operation guidance, viewing introduction of services	Administration & Learning
E2	Administrating account	Logging in, changing or viewing account information, changing security settings	

Table 2.   Activities of online window shopping consumers & the relationship between activities and stages of consumer information processing model

According to the data, 42 possible activities of online window shopping are recorded; however, some of them can be grouped together, and 16 activities can be generalized. The 16 general activities and

the corresponding examples of activities recorded in focus group and on-site observation are listed in Table 2. Further, the 16 possible activities can be mapped to the six stages of the online window shopping consumer information processing model, which is also shown in Table 2. These activities are used to develop the typology of online window shopping consumers. Although consumers can express their post-visit evaluation through the social tools, the main purpose of social tools is to help users identify their information problem through social interactions, so Post-Visit Evaluation is not examined further to contain any activity.

3.3   Typology of online window shopping consumers

As a result of literature review, focus group, and online observations, four types of online window shopping consumers are identified. The behaviors of the four types are distinctive. The 16 general activities identified above can be used to describe and examine the specific behaviors of these types. Details are clarified below.

3.3.1   *Promotion finders*

Many consumers visit online markets without a specific purchase goal. By clicking the banner advertisements or the promotional offers they can identify their potential needs or find their purchase needs (Marchionini 1989; Kau et al. 2003; Ganesh et al. 2010). Further, online markets can offer the capability to deliver specific information tailored to the specific needs of consumers (Hoffman & Novak 1996), so the personalized recommendations can be another way for the consumers to recognize their potential needs. Thus the consumers who prefer to click the promotional pages (A4) can be named as promotion finders.

3.3.2   *Social & hedonic experience seekers*

News and pictures of products can keep consumers up to date with the industry status and new trends. Viewing such media can sometimes bring pleasant experience. Thus consumers may use the news and picture related functions to seek hedonic experience (Moe 2003; Swinyard & Smith 2003). In the social commerce context, consumers can resort to social tools to share their experience for social or hedonic purpose (Marsden 2009). Thus, social & hedonic experience seekers are characterized by focusing on social tools (A2), news and pictures of products (A3). In addition, the above pages also help the consumers identify their potential needs to some extent (thus help promotion finders).

3.3.3   *Information gatherers*

Online markets offer a platform where consumers are able to search, access and compare information much more easily and at deeper levels than within the bricks-and-mortar retailers (Alba et al. 1997; Lynch & Ariely 2000). Therefore, some people go window shopping just for gathering information about specific products, brands or stores (Kau et al. 2003; Brengman et al. 2005). The information they acquire may help them make more optimal choices in the future (Moe 2003). In some cases, the information gatherers are sellers themselves, and they collect information for more utilitarian purposes such as increasing product or marketplace expertise (Moe 2003). Information gatherer focuses on the 2nd and 3rd stages of the consumer information processing model. Various methods are available for information gathering, such as viewing details of products and stores (C1/C2), communicating with sellers (C3), using search engines (B2/B3), paging through catalogs (B1), or finding products in a specific store (B4/B5). Consumers can choose one of these methods or use a combination of them.

3.3.4   *Learners & novices*

Some of the consumers spend more time processing informational and administrational pages in online markets. This may be because some consumers are not familiar with the operations in online markets, some may consider online viewing or purchasing a difficult task (Brengman et al. 2005), These consumers may be the novices of online shopping relying more on the help information or account management to learn how to operate the shopping cart, the security settings or the payment

account. There are also some consumers may just want to learn more on various aspects of online stores. This kind of consumers who focus on the help or account pages (E1/E2) is learners & novices.

4 TYPOLOGY VALIDATION

Clickstream data is used to analyze the behaviors of the above four categories, thus validate and refine the typology. Clickstream is a generic term to describe visitors' navigation paths through one or more websites. It can be derived from Web server log files and can include a series of information, such as consumer ID, timestamp, IP address, URL, number of transferred bytes and, sometimes, cookie data. Analysis of clickstreams can show how a website is navigated by visitors (Lee et al. 2001). In this paper, we first use cluster analysis to examine the clicksteam dataset, and then identify consumer behaviors based on the results of cluster analysis and the supplementary session analysis.

4.1 Consumer Data Summary

The clickstream data we analyzed was provided by an e-commerce company in China. This company owns one of the world's largest electronic marketplaces, with over 370 million registered consumers at the end of 2010. The transactions on this marketplace can be either B2C or C2C. More importantly, this marketplace now has integrated products sharing systems, social networks, forums and instant messaging tools into their markets, which gradually becoming a social commerce environment. It also has a platform offering news of products or pictures of products.

The clickstream data contains the activities in the online marketplace from a specific set of consumers from November, 2010 to January, 2011. The set of consumers did not purchase anything successfully after their registration, but they kept on visiting the electronic marketplace during the three-month period when the logs were taken. Thus they can be considered online window shopping consumers.

The clickstream data were first filtered by removing noise data. The noise data includes data from the employees of this e-commerce company and the users in the black list (list of users who are prohibited from trading). The main activities of employees are using instant messaging tools to communicate with each other or with the sellers and buyers to address the problems occurred in daily transaction. In the original clickstream dataset, the consumers in black list were not deleted. The behaviors of users in black list were various, such as logging in repeatedly, refreshing the account repeatedly or posting comments in forum repeatedly. After the clearance, there are 492,665 data records from 2,111 distinctive online window shopping consumers.

4.2 Data Analysis Methods

4.2.1 Cluster Analysis

K-means algorithm was performed to cluster the 2,111 consumers. K-means clustering (MacQueen 1967) is a method commonly used to automatically partition a dataset into k groups. SPSS Clementine Client 11.1 was chosen to perform the k-means algorithm. These clickstream data records the user ID, user name, the URL they click and the timestamp. Before running K-means, we first labeled every record with the Id of the 16 activities in Table 2 according to the URL the consumers requested, since URL always contains information related to the contents of web pages which indicates the possible activities of consumers. For example, a record is labeled *A2 (using social tools)* when the URL includes the string *forum*, since it means the consumer click the page of forum in the website. Then we calculated the percentage of each activity in the total pages each consumer viewed as 16 attributes of each user. Since K-means algorithm starts by selecting k initial cluster centers firstly and assigning each instance a closest center, we examined several cluster solutions with varying numbers of initial cluster centers. We started with a two-cluster solution and increased the number of clusters until the condition was met in that the added cluster was virtually identical to one of the existing clusters. The final cluster solution contains six clusters of consumer types. Details are discussed in Section 4.3.

4.2.2   Session Analysis

We further analyzed the behaviors of the six-cluster consumers based on visiting sessions. A series of web pages requested by a visitor in a single visit is defined as a session. Clickstream data could be viewed as a collection of sessions on the site (Lee et al. 2001). Before the session analysis, sessions need to be identified. Timeout, the time between two adjacent activities (He & Goker 2000), is commonly used to divide the page accesses of each consumer into individual sessions. He and Goker (2000) conducted a series of experiments on the basis of two sets of Web logs to identify sessions. They concluded that a time range of 10 to 15 minutes was an optimal session interval. Therefore, we chose 15 minutes as the session interval and separated the clickstream data into a collection of sessions. Using the data with session information, we further calculated each cluster's average number of page views per session and average page duration - how long a page is viewed, and compared them among the consumers of six clusters.

4.3   Data Analysis Results

The six clusters are presented in Table 3. Each cluster has distinctive behaviors that are summarized in Table 4. The behaviors in Cluster 1, Cluster 2 and Cluster 6 are consistent with the three of the four proposed types: Promotion finders, Social & hedonic experience seekers and Learners & Novices. The behaviors in Cluster 3, Cluster 4 and Cluster 5 seem all within the 2nd and 3rd stages of the model in Figure 1. So these three clusters can be considered three subclasses of information gatherers. Based on the behaviors of these three clusters, we name them as search-focused, catalog-focused and store-focused information gatherers, respectively.

	Cluster 1	Cluster 2	Information gatherers			Cluster 6
	Promotion finders	Social & hedonic experience seekers	Cluster 3 Search-focused	Cluster 4 Catalog-focused	Cluster 5 Store-focused	Learners & Novices
N	103	256	852	238	171	491
A1	2.6%	1.7%	4.8%	6.2%	2.6%	5.7%
A2	2.4%	**37.7%**	3.0%	2.0%	2.1%	5.2%
A3	0.6%	**28.3%**	1.6%	1.4%	1.5%	0.4%
A4	**59.8%**	3.5%	4.8%	4.8%	4.3%	1.7%
B1	2.1%	1.4%	3.6%	**33.5%**	2.8%	1.0%
B2	4.6%	2.8%	**18.9%**	**11.9%**	6.5%	2.1%
B3	0.1%	0.2%	0.8%	0.2%	**1.2%**	0.2%
B4	4.0%	2.3%	4.5%	2.6%	**8.8%**	1.8%
B5	1.5%	1.8%	4.2%	3.1%	**30.1%**	0.8%
C1	8.8%	4.4%	**26.8%**	**19.1%**	**24.1%**	5.3%
C2	0.2%	0.2%	0.6%	0.1%	0.7%	1.2%
C3	0.0%	**2.4%**	1.7%	0.7%	1.8%	0.3%
D1	0.8%	0.3%	4.2%	1.6%	1.9%	**4.9%**
D2	0.2%	0.4%	**1.9%**	0.8%	0.9%	0.9%
E1	1.2%	1.5%	2.8%	1.1%	0.7%	**4.3%**
E2	1.8%	8.1%	10.1%	6.3%	5.0%	**61.4%**

Table 3.   The six clusters of consumer types (N is the number of consumers)

We further calculated average number of page views per session and average page duration. As shown in Table 5, Cluster 1 has the smallest number of page views but the longest page duration, while Cluster 2 has the shortest page duration.

			Characteristic behaviors
Cluster 1	Promotion finders		Clicking recommendations, advertisements and sales promotions
Cluster 2	Social & hedonic experiences seekers		Using social tools / Reading news of products and looking at pictures of products / Communicating through instant messaging tools
Information gatherers	Cluster 3	Search-focused	Searching products in the whole platform / Viewing details of products / Using favorites
	Cluster 4	Catalog-focused	Using catalog / Searching products in the whole platform / Viewing details of products /
	Cluster 5	Store-focused	Searching stores in the whole platform / Visiting home page of specific stores / Searching products in specific stores / Viewing details of products /
Cluster 6	Learners & Novices		Using help / Administrating account / Trying to buy

Table 4.   Characteristic behaviors of the six clusters

			Average number of page views	Average page duration
Cluster 1	Promotion finders		3.85	0:01:08
Cluster 2	Social & hedonic experience seekers		17.73	0:00:32
Information gatherers	Cluster 3	Search-focused	13.30	0:00:54
	Cluster 4	Catalog-focused	17.86	0:00:51
	Cluster 5	Store-focused	19.97	0:00:42
Cluster 6	Learners & novices		11.63	0:00:45

Table 5.   Average number of page views /Average page duration of six clusters

Based on these results, we further analyzed the behaviors of the online window shopping consumers. All of the six clusters have their own distinctive characters, as described below:

4.3.1   Cluster 1: Promotion finders

Almost 60% of activities of Cluster 1 are about clicking recommendations, advertisements and sales promotions (A4), and only 9% are about viewing details of products (C1). The smallest number of page views (3.85) and the longest page duration (1 minute and 8 seconds) mean that promotion finders spend time on searching promotional products amongst product lists, advertisements, and sales promotions to seek for what they are interested in; however, after a limited number of clicks, they stop checking the detail of products. So although recommendations and advertisements can be the main source for consumers to identify their potential needs in principle, it may not be easy for consumers to find their requirements through the sales promotion during their actual visits.

4.3.2   Cluster 2: Social & hedonic experience seekers

Social & hedonic experience seekers pays little attending to viewing product details (C1), which only makes up 4.4% of the total activities. Instead, they spend most of time on using social tools (A2), reading news of products and looking at pictures of products (A3), at 37.7% and 28.3% respectively. These consumers seem to enjoy social and hedonic experiences and they may not always check products' details. The average page duration is the shortest among the six clusters, since they may view pages through the pictures of products quickly to find interesting pages.

Although instant messaging tools provided by e-commerce sites are designed to facilitate the communication between the buyers and the sellers originally, now they are more widely used in the social commerce environment. As shown in the statistics, 2.4% of the behaviors of the consumers seeking hedonic behaviors are communicating through instant messaging tools (C3), the highest among the six clusters, indicating that these consumers may use instant messaging tools to talk with their friends in the social media of the online marketplace, instead of talking with sellers.

4.3.3 Cluster 3: Information gatherers (Search-focused)

The first subclass of information gatherers is search-focused. When gathering information related to products or markets, they tend to use search engines. As in Table 3, 18.9% of their activities are searching products in the whole platform (B2) and 26.8% are viewing details of products (C1). The high level of viewing details of products exhibits that they not only search information, but also make some comparisons between the detailed information of products. Furthermore, these consumers devote 1.9% of their effort on using favorites (D2) to facilitate their future view and comparison, which is also the highest among the six clusters.

4.3.4 Cluster 4: Information gatherers (Catalog-focused)

The catalog-focused information gatherers exhibit much more focused behavior on using catalogs (B1), accounting for 33.5% of all activities. Different from search-focused consumers who rarely using catalogs, the consumers in Cluster 4 are not only focus on catalogs, they also use search engines (B2) to acquire information (11.9% of activities). The percentage of viewing details of products (C1) is 19.1%, lower than that of search-focused consumers, for the reason that using catalogs is more stimulus-driven than planned. The catalog-focused consumers may be more exploratory than the search-focused ones (Janiszewski 1998), and tend to spend more time on paging through catalogs to identify items they might be interested in. Thus the look-to-click (product impressions to be converted to clickthroughs) rate (Lee et al. 2001) of the catalog-focused consumer is lower than that of search-focused consumers.

4.3.5 Cluster 5: Information gatherers (Store-focused)

The third subclass of information gatherers is a specific class that only occurs in C2C environments, which is called store-focused. In C2C environments, online markets are composed of various stores opened by individual sellers, and consumers can choose a specific store first and find products in it. According to the results of cluster analysis, this cluster's percentages of searching stores in the whole platform (B3), visiting home page of specific stores (B4) and searching products in specific stores (B5) are all the highest amongst the six clusters, at 1.2%, 8.8%, 30.1% respectively. These statistics indicate the activities of the consumers in that: firstly they search stores in the online market platform, then they arrive at the home page of the store, then they further search products sold by that store. Their distinctive behaviors imply that the store-focused consumers may be more likely to be attracted by a specific brand, or the credit and the word-of-mouth of a specific store in the online marketplace.

4.3.6 Cluster 6: Learners & Novices

The majority of the activities of this cluster are about using supporting functions, including administrating account (E2) and help (E1), at 61.4% and 4.3% separately. Some of these consumers are novices of online commerce environments, and some of them manage their accounts to prepare for future activities. Also noticeable is the percentage of the activity for trying to buy, 4.9%, highest in the six clusters, which means they may have tried to add products to shopping carts or encountered problems when paying the transactions. These purchase-related behaviors also make consumers to administrate account and resort to help, increasing the percent of administrating account (E2) and using help (E1).

5 TYPOLOGY REFINEMENT AND DISCUSSION

The clusters we identified with the empirical data are largely consistent with the proposed types in Section 3, while the Information Gatherers are further divided into three sub-types. All types have distinctive behaviors that differentiate them from other types.

5.1   Typology Refinement

The relationship between the typology and the stages can be illustrated in Figure 2, where the types of consumers can be roughly mapped to different stages of the online window shopping consumer information processing model. Both promotion finders and social & hedonic experience seekers are mapped to the Problem Recognition stage. Information gatherers, however, spend a large amount of time on the 2nd and 3rd stages of the information processing model, while learners & novices focus primarily on Administration & Learning. The Decision to Keep Searched Information and Post-Visit Evaluation stages are not mapped to any types based on this set of empirical data and analysis. But it would be interesting to further explore the types that mat to Decision to Keep Searched Information and Post-Visit Evaluation because these two stages are closer to getting to actual purchases.

For online window shopping consumers, instead of being driven by directed-buying goals, the motivation of these consumers may be primarily exploratory. Promotion finders and social & hedonic experience seekers focus on the first stage of online window shopping consumer information processing model, and these two types tend to be more stimulus-driven which may result in impulsive buying (Moe 2003; Janiszewsk 1998). Information gatherers can be further divided into three subclasses, which reflect the different operational preferences. Among the three subclasses, the catalog-focused consumers are the more exploratory (Janiszewski 1998) than the other two counterparts. The store-focused consumers, however, may be the most focused, since they firstly constrain their searching range within a given store which primarily sells products of specific brand or specific kind. For the learners & novices, their possibility of purchase is varying, and it will take more efforts to make the novices of online shopping to trust the online markets and be capable of buying online (Brengman et al. 2005).
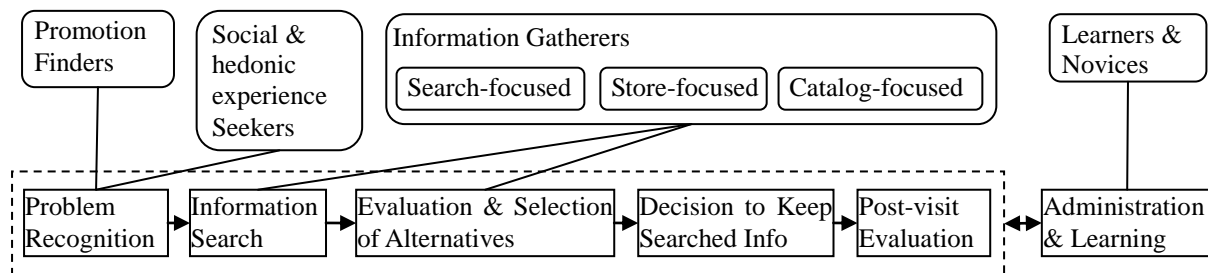

Figure 2.   The relationship between the typology and the stages of online window shopping consumer information processing model

5.2   Theoretical implications

It is notable that a large number of consumers do online window shopping in the online markets (Moe 2003). With the fast development of social commerce, the number of online window shopping consumer users may continue to grow, since more consumers may visit the online market for social or hedonic purposes (Wang & Zhang, forthcoming). Given the significant number of online window shopping consumers, it is important for both the scholars and the marketers to understand the particular behaviors of this specific group. There is a paucity of research examining typologies of consumers doing online window shopping. This research contributes to the knowledge in the area of e-commerce and social commerce by: 1) building an online window shopping consumer information processing model based on the original Consumer Information Processing Model; 2) developing and validating a typology of online window shopping consumers.

More specifically, the original Consumer Information Processing Model is extended to consider the supplementary functions and accordingly new stages in online environments to yield an online window shopping consumer information processing model. One noticeable new stage is the administration & learning, which is not important in the offline context. The post-visit evaluation stage has not been well attended by both scholars and marketers; yet, this stage is one of the hallmarks of social commerce and can determine whether consumers are willing to visit the websites again and whether others may visit due to their viewing the previous consumers' comments. In the social

commerce context, consumers can complain about their negative experience through the social media which may also influence others' attitude towards the online markets. So it is important for the scholars and marketer to monitor the post-visit evaluation and explore proper methods to continuously improve user experience. Further, although the online window shopping consumers would have no evidence of purchasing, they may keep the searched product information somewhere for hedonic use or other future uses. Thus Decision Implementation is replaced by Decision to Keep Searched Information. Based on the online window shopping consumer information processing model, this study developed a typology in the social commerce context, which provides us a basis for understanding and differentiating the online window shopping consumers.

5.3   Managerial implications

From a managerial perspective, the typology depicts distinct segments of online window shopping consumers, thereby enabling marketers and businesses to effectively tailor their marketing strategies to different consumer types.

Although promotion finders are willing to click recommendations, advertisements and sales promotions, they do not seem to stay on long for doing so. Thus more personalized recommendations or discount information based on their preference and profiles may be pushed to them, increasing the potential look-to-click rate. In addition, the preferences of their friends can serve as references for generating personalized recommendations in the social commerce context.

As for the social & hedonic experience seekers who enjoy reading the news of products, some links may be added in the news allowing them to examine further and potentially buy directly from within news page. Those consumers focusing on social media may like to shop and chat together with their friends, while group purchase or group browsing systems can be developed to meet such requirements. In addition to the functional utilities, social commerce also has emotional value – enhancing the online experience of consumers (Marsden 2009). Thus some interactive design should be included to make their journey in online markets more engaging.

Given that information gatherers are interested in rich information of prices, products, brands and stores, it is possible for the website designers to provide user-friendly interfaces for them to find what they need more effectively and efficiently, which may lead to possible future purchase (Bevan et al. 2002). For example, the price change of certain products could be shown in a curve graph and if the price of the products in their favorites changes, a notification may be sent to these consumers. In the social commerce environment, online marketplaces should not only be a place for the consumers to gather information but also be a platform to share and discuss information. Through the sharing and discussion, consumers can enhance their confidence about the information they acquired and may form or enhance their purchase intention.

The supporting functions are important for the learners & novices and good impressions made by the help and administration functions can increase consumer trust to the online markets (Brian et al. 2003), which may lead to future visits and potential purchases (Jarvenpaa et al. 1999; Kim et al. 2009). Some interactive help information could be added to websites to make a positive image for consumers, for example, using "balloons" to display messages. In the social commerce environment, some social functions could be utilized to support novices: the marketers can provide a platform where the expert consumers of online environments could share their experience with novices and guide the novices to complete their first orders.

6   CONCLUSION

A typology of online window shopping consumers is proposed and empirically validated. One limitation is that this study mainly focuses on consumers online activities as captured by logs. Future research can be extended to examine the contents of pages consumers visited to gain more insight on the behavior nature of online window shopping consumers. Such effort may also provide evidence to further understand the post-visit evaluation and decision to keep searched information stages. Further, longitudinal study can be conducted to shed some light on whether the online window shoppers be

turned into online purchasers, and what factors promotes their purchase. Nevertheless, as a first study, the report work here attempts to shed some light on behaviors of consumers who keep on visiting but never purchase in the social commerce context. The typology allows us to differentiate the online window shopping consumers effectively and offer guidelines for marketers and businesses on designing targeted marketing strategies for such consumers.

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