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Consumers' Decision: Fashion Omni-channel Retailing

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Abstract. *We examined the consumers' preference and decision-making on the omni-channel retailing solutions. Factors influencing consumers' buying decision were teased out based on the 4Cs model, which were modified by 21 industry experts and 12 important factors were concluded. Mouselab was used for collecting the data of consumers' decision making on brick-and-mortar stores, online stores and omni-channel retailing solutions and the effects of the important factors on the decision-making were studied. Compared with the other two retailing channels, omni-channel retailing owns consumers with remarkable characteristics: they put more emphasis on store atmosphere and the energy spending on selecting, paying and delivering; it is significantly associated between the depth of information search and the information search patterns; weighted additive rule (WADD) and random choice (RAND) are two main decision strategies they used but no significant correlation between the strategy types and the information search patterns.*
Keywords: Fashion, Omni-channel retailing, 4Cs, Mouselab, Decision making strategies.

1. **Introduction.** Marketing channels that customers use to interact with firms have proliferated [1]. With the development and popularity of the Internet, technology affects every aspect of retailing from operating strategy to consumer behavior [2]. Customers prefer a variety of channel options when they undertake the process of purchasing goods and services [3], [4]. 44.7% of retailers use three channels, including brick-and-mortar, Internet, and catalog, and 50.5% of them use at least two channels in their sales efforts [5]. Another survey reports that 65% of US online shoppers have searched for product information through the Internet channel and then purchased in a brick-and-mortar store [6]. This study focuses on apparel retailers. Even though apparel was once considered the least likely product to be sold online given that consumers cannot physically evaluate fit and feel, surprisingly it has become a fast-growing segment of e-commerce. In the fashion industry, as driven by the consumer needs [7], [8], the advances of production and information technology [9], and the increasingly competitive market situation [10], [11], making omni-channel retailing become a popular strategy in the fashion industry at the beginning of the 21^{th} century. Some popular fashion brands tried omni-channel retailing in many different ways. One good example was O2O (online to offline) event organized by UNIQLO. They guided customers to the brick-and-mortar stores after shopping online. Customers not only saved the costs from freight but also received fun experiences during

the visit of the brick-and-mortar stores. Meanwhile, the brick-and-mortar stores received extra revenues from the joint sales of the online customers. Investigations showed that more than 80% of the customers enjoyed this event. Fashion retailing industry has a strong sense of change, but still in exploring the mature and systematic strategy. Fashion brands are trying different omni-channel retailing solutions based on their own condition, but the whole industry is still in groping stage and none recognized case is existed. Consumers' omni-channel shopping behavior, which is common nowadays, was scarce. The recognition of the consumers' omni-channels choosing processes will provide references for fashion brands to design their marketing strategies. Therefore, we studied the behaviors of the consumers choosing processes in various retailing channels to analyze if there is any difference between the omni-channel and others. Understanding consumers' judgment and decision-making (JDM) is important for implementing suitable marketing strategies. It is becoming clear that consumers decision-making cannot be understood simply by studying the final decisions. The perceptual, emotional, and cognitive processes ultimately leading to the decisions must also be studied if we want to gain an adequate understanding of consumers' decision-making processes [12]. One complementary way is to analyze consumers' decision-making process data. Thus, we focused on the JDM process data and provided the analyses. There are two important search variables in the study of the JDM process: the direction of information search and the depth of information search [13]. There is a correlation between these two variables while consumers are choosing the fashion brick-and-mortar stores [14]. We studied if there is also a significant correlation between these two variables while consumers are choosing the omni-channel solutions. There are decision strategies such as TTB, EQW, WADD and RAND [15]. The strategy used by the consumer can be barely identified by the complicated JDM process data. In order to be applicable and realistic for the enterprise, we studied whether the strategies can be identified by the direction/depth of information search. The Marketing Theory of 4Cs is an important theoretical basis of the consumer behavior research and guided by the consumer needs. Based on this theory, we built the influence factors of omni-channel retailing on consumers decision-making. These are the indicators of the JDM process analyses. In order to obtain the process dataa popular process tracing method is Mouselab [16], a computerized version of the information board [17]. In a typical Mouselab-based study, subjects have the opportunity to acquire information about the choice alternatives by using the computer mouse to click on, or move a pointer over, the cells of an attributes-by-alternatives matrix [18]. Mouselab provides data concerning the information acquisition phase, such as which cells are looked up, in which order, and how much time was spent looking at each cell. Besides being relatively easy to use for experimenters, this method is also quite convenient for subjects because they are confronted with a relatively well-structured decision situation in which all the available information is clearly arranged. This experiment method avoids the affects from others except the observation variables. Thus, we used Mouselab to collect the process data of the decision making from the omni-channel solutions. Subjects made decisions basing on the different performances of each influence factor.

The rest of this paper is organized as follows. The related literature are given concisely in Section 2. Section 3 sorts out the influence factors. Section 4 presents the Mouselab experiment and the data analyses. Section 5 summarizes the results and points out future research directions.

2. **Literature review.**

The related information about the consumers' decision on fashion omni-channel retailing is provided in this section. The properties of the omni-channel

retailing are described in Sec. 2.1. The fundamental concepts and experiment tools of the decision-making process are introduced in Sec. 2.2.

2.1. **Omni-channel retailing.** Channel choice has become an important topic for managers and economists due to its important role in the performance or profitability of brands [19]. The introduction of the Internet as a new type of non-store retail channel expanded the horizon of the retailing environment in the late 1990s. A large amount of retailers leaded by brick-and-mortar stores built online stores and increasingly embraced the concept of multi-channel retailing (retailing via both offline and online operations) [20]. Multi-channel is using multiple channels to sell or connect, but each channel retains its identity. It is a very important addition to traditional ways of promoting product information and attracting non-store-based transactions by adopting multi-channel retail strategies. In a multi-channel retail context, choosing a more efficient retail channel for shopping might be the greatest interest of the consumers [21]. Multichannel retailers usually generate greater revenues than single channel retail operators [22]. Researchers noted that multi-channel retailers need more information on their target market profiles and shopping behaviors, which will significantly impact their business performance [23], [24].

Nowadays, the data real-time transmission and high efficiency running made cross-channel retailing implemented. Cross-channel refers to using several different channels to complete a purchase [25]. Consumers can move easily among different channels. They engage in cross-channel free-riding when they use one retailer's channel to obtain information or evaluate products and then switch to another retailer's channel to complete the purchase [26]. Several reports have shown the significance of consumers' cross-channel shopping behavior in influencing the sales of click-and-mortar retailers [26].

There is now a move towards omni-channel retailing, which aims to integrate the different ways of interacting with the retailer, maintain a high level of customer satisfaction across channels and allow the consumer to switch easily from one channel to another [27]. The term omni-channel as applied to retailing is still relatively new within academic research [27]. Based upon the literature examined, omni-channel retailing may be defined as an advanced and integrated cross channel customer experience [28], which is using all channels as though they were variations of each other. There's no difference between goods, pricing and other aspects between online and offline experiences. Moreover, omni-channel retailing denotes an ubiquitous shopping experience for consumers whereby multiple channels and devices will be used [29]. Retailers have recognized that operating various formats of retail channels allows them to embrace a broader range of customers [30] as well as to build more interactive consumer relationships through offering information, products and customer supports via two or more corresponding channels [24]. Based on the development of the information technology and the application of big data business, flexible switch and communication of originally isolated retail channels were realized. Omni-channel retailing can be seen as the upgrade of the cross-channel. We mainly study the traditional apparel enterprises, most of which had only brick-and-mortar stores initially and started online business adapting to the market changing caused by the popularity of the Internet, and then constructed the communication and mutual assistance between these two retail channels to build the omni-channel mode to stimulate the sales performance

2.2. **Decision-making process.** Theories of JDM can be classified into two general types: formal, or as-if, models, which specify relationships between input task and context parameters and output JDM behavior; and process models, which in addition seek to model explanatory psychological mechanisms underlying such input-output relationships [31]. The main insufficiency of formal models are studying the JDM just by the

relationship between input and output but ignoring the process data between stimulus presentation and final decision. But process data should be equally important, because they are richer than input-output data and can provide important evidence of explanatory mechanisms [32], [33]. Svenson concluded that it is "gradually becoming clear that human decision-making cannot be understood simply by studying final decisions" [34] and, similarly, Payne, Braunstein, and Carroll argued that the "input-output analyses that have been used in most decision research are not fully adequate to develop and test process models of decision behavior" [35].

As a response to the objections against formal modeling [36], Payne and others developed the process tracing approach by adapting methods from research on human problem solving [17], [37]. To achieve this, the subjects' information search and integration is closely observed while they work on the decision task [18]. Process tracing methods record and analyze parameters of information search before judgments or decisions and aim to infer decision strategies from the amount, distribution and order of information search [15]. The development of research on process models until now has produced several kinds of process tracking methods and tools. For instance, information boards [16], [17] are often used in which information is provided behind hidden information cards, which are opened on request or by mouse-click [38], [39]. Other frequently used methods within this paradigm are verbal protocols [40], the recording of eye movements [41], [42], [43], and the method of Active Information Search (AIS) [44]. These process tracing methodologies have different strengths and weaknesses [18].

Payne pioneered the development of information boards technique (actually in combination with thinking aloud) which provides data concerning the content, amount, and sequence of the information acquired [17]. Subjects search for information, for instance, by opening envelopes that contain cards with text on them (information boards), or open cells on a matrix displayed on a computer screen. Well known tools in this category are the Mouselab system [16], [45], and MouselabWeb [46].

2.2.1. *Mouselab search variables.* Search variables are concluded from the experimental process data and the test results can be used for analysis. Main search variables including the total time spent (total time start from the experiment interface display until the decision made), the total open box time (OBT, total time of mouse clicks on the information unites or information boxes), acquisitions (total number of clicks on the information units), OBT/acquisitions (time spent per click on the information unit), the total number of new boxes opened, the depth of information search (DS, opened information unites divided by total information unites) and the direction of information search. Direction of information search. There are four types of mouse movements between boxes in a Mouselab experiment. ① Pressing the same box repeatedly. ② Movement between the attributes of the same option. ③ Movement between the options of the same attribute. ④ Changing both the option and the attribute. The first and the fourth types are relatively rare, the second and the third types are commonly used in data analysis [13]. Based on the statistical data of the movement types, researchers developed several indicators for determining the information search patterns in the decision-making process. Payne Index (PI) is one of the most basic and easily understood indicators. PI distinguishes two different search patterns according to the number of the second and the third converting types [17], which indicates whether the information search tends to proceed within or across attributes (alternative-wise vs. attribute-wise). An alternative-wise search pattern is associated with compensatory strategies whereas attribute-wise search is indicative of non-compensatory strategies [18]. PI is calculated by the number of the second movement type (q_{2th}) and number of the third movement type (q_{3th}).

$$PI = \frac{(q_{2th} - q_{3th})}{(q_{2th} + q_{3th})} \tag{1}$$

PI lies between [-1, 1]. A positive score of PI represents an alternative-based (compensatory) search whereas a negative score of PI represents an attribute-based (non-compensatory) search [18].

PI based on the mouse movement describes how the subjects searching the information while DS describes how many information that the subjects acquired. There is a correlation between these two variables while consumers are choosing the fashion brick-and-mortar stores [14]. Thus, we suggest that there is also a significant correlation between these two variables, while consumers choosing the omni-channel solutions, and we offer the following hypotheses:

H1a: When judging the omni-channel retailing solutions, the alternative-based consumers acquire **more** information and the attribute-based ones acquire **less**.

H1b: When judging the omni-channel retailing solutions, the alternative-based consumers acquire **less** information and the attribute-based ones acquire **more**.

2.2.2. *Decision strategies.* Mouselab allows differentiating between decision strategies because some of them differ in their predictions concerning information search. A simple take-the-best strategy (TTB), for example, assumes that persons first look up the predictions of the most predictive (valid) cue for all options [47], [48]. The option with the best cue value is selected. If options are tied, the second most valid cue is considered, and so on [15]. TTB describes non-compensatory one-reason decision strategies that search cues in the order given by cue validities. TTB is usually used in the decision-making tasks with fewer variables and limited influence. Omni-channel retailing solutions judgment related to several factors and TTB is not applicable.

In contrast, according to an equal weight strategy (EQW) [38], individuals look up all cue information for the first option and sum them up. Then they do the same for the second option and so on and select the option with the highest sum of cue values. EQW describes equal weight strategies in which cue validates are ignored and the option with more positive cue values is selected [49]. Hence, EQW is an ideal example of a compensatory strategy. In the process of judging the fashion omni-channel retailing solutions, consumers would be affected by multiple factors and the decision-making environment is not suitable for mathematical calculations, therefore individuals can't use EQW when making decisions.

A strategy in which all the validates of all cue values are considered would be much more complicated. A weighted additive rule (WADD) is said to be applied if the output of a decision (the choice) accords to the choice predictions derived from a linear aggregation of all the given pieces of information available [49], in which cue values are multiplied by the validates of the respective cues and summed up. The option with the highest weighted sum (total evidence) is chosen. WADD provides another ideal example of a compensatory strategy. Consumers have preferences for different fashion retail channels which indicate the influence of channels factors on different consumers will be different. Also, it can be concluded that WADD would be an important decision strategy when fashion consumers are judging the omni-channel retailing. Lots of researches, and many subjects' performances could be classed by no systematic decision strategies. These subjects were therefore classified as using a random choice strategy (RAND) [49].

The strategy used by the consumer can be identity's process data in daily operations. If there is different for the *DS/PI* from the various decision strategies users, retailers could

identify the type of the strategy used according to the DS/PI of the consumer and provide personalized marketing activities. According to the realistic retailing environment, consumers are usually stimulated by several influence factors at the first time and the appearance of each factor are not measured by specific scores. It is difficult for consumers to complete the decision tasks in such conditions by using TTB or EQW. So we could infer that consumers would be more likely to use WADD and RAND when judging the fashion omni-channel retailing solutions. Hence, we offer the hypotheses about the correlation between the WADD/RAND and DS/PI:
H2a: When judging the omni-channel retailing solutions, WADD users and RAND users have significant difference in *DS*.
H2b: When judging the omni-channel retailing solutions, WADD users and RAND users have significant difference in *PI*.

3. **Influence factors.** The indicators for JDM process analyses have to be built. In the experiment, the process data would be collected according to each influence factor.

3.1. **Marketing Theory of 4Cs.** The Marketing Theory of 4Cs is guided by the demands of consumers [50]which reset the four basic elements of the marketing mix : *Consumer*, *Cost to the customer,Convenience* and *Communication*. Firstly, 4Cs address that enterprises should put the pursuit of customers' satisfaction. Secondly, the efforts to reduce the purchase cost of the customer. Also a fully notice in the process of the buying convenience. Finally, it should carry out effective marketing communications toward the consumers. We applied 4Cs as the concept and standard to study the factors of omni-channel retailing which influence the consumers' buying decisions.
Consumer, how do we fulfill the individual needs? *Hierarchy of needs* is a widely accepted theory put forward by Doctor Abraham Maslow, which showed human needs motivation based on the hierarchy concept. Doctor Abraham Maslow divided demands into five levels, and falls into two categories - physiological and psychological. With the ascending importance, the physiological needs, the security needs, the belonging and love needs, the esteem needs, the self-actualization needs [51]. *Cost to the customer*,the process of purchasing is not just spending but also a contribution. In addition to spend money, consumers also contributing the emotional elements, time, as well as the energy spend while shopping. These dimensions constitute the purchase cost of customers [52]. *Convenience*, a success retail channel does not just provide consumers with an comfortable and convenient shopping environment, but also an excellent after-sales services. *Communication*, the communication between the retailers and the customers in omni-channel retailing should include the linguistic communication and the information exchange from the channel itself. Based on 4Cs, we elaborated the omni-channel retailing factors which influencing the consumers' decision-making (see Table 1).

3.2. **Interview.** In order to pinpoint the emphasis of the experiment and improve the application value of the research results, it is necessary to understand how the experienced practitioners in the fashion retail industry consider the important degree of each factor in Table 1.

3.2.1. *Method.* We interviewed 21 fashion industry practitioners and academic researchers, every one of them has more than 3 years of working experience in the related industries (see Table 2). During the interviews, they had two tasks: ① state the importance of all 33 factors in Table 1 by answering the rang from 1 "the least important" to 5 "the most important"; ②confirm or correct the factor structure in Table 1 according to the design of this study.

TABLE 1. Influence factors of the omni-channel retailing on consumers' decision-making

Dimension	Factors
A Consumer	
A_1 Physiological needs	A_{11} Product category
A_2 Security needs	A_{21} Physical security
	A_{22} Cash safety
	A_{23} Products satisfaction (size, quality, package, etc.)
A_3 Belonging and love needs	A_{31} Social
	A_{32} Contact frequency
	C_{33} Brand community
A_4 Esteem needs	A_{41} Staff attitude
	A_{42} Psychological satisfaction (success, glory, riches, etc.)
	A_{43} Personal privacy protection
A_5 Self-actualization needs	A_{51} Benefit others
	A_{52} Own value reflection
	A_{53}Self-realization
B Cost to the customer	
B_1 Cost	B_{11} Commodity price
	B_{12} Transportation costs
B_2 Emotion	B_{21} Product preferences
	B_{22} Shopping experience satisfaction
B_3 Time	B_{31} Travel time
	B_{32} Time for products selection
	B_{33} Time for prices determine
	B_{34} Time for paying and delivery
B_4 Energy spent	B_{41} Locating the store
	B_{42} Selecting the products
	B_{43} Paying and delivering
C Convenience	
C_1 Purchasing	C_{11} Operating time
	C_{12} Location
	C_{13} Products information
C_2 After-sales service	C_{21} After-sales service (refunding, changing, repairing, etc.)
D Communication	
D_1 Language	D_{11} Professional salesmen
	D_{12} Customer communication platform
D_2	D_{21} Product display (appearance, characteristics, labels, etc.)
	D_{22} Store atmosphere
	D_{23} Brand public relations and marketing

Source: The factor structure was collected basing on the Marketing Theory of 4Cs.

TABLE 2. Characteristics of the interviewees

Item	Frequency	%
Occupation		
Directors in the retail division of fashion brands	7	33.3
Fashion industry analysts and consultants	6	28.6
Researchers in fashion institutions	8	38.1
Industry experience		
3-10 years	8	38.1
>10 years	16	61.9
Gender		
Male	10	47.6
Female	11	52.4

Source: Records from the interview.

3.2.2. *Results.* The means of the factors' importance from interview are between 2.90 to 4.52 (see Table 3). We picked those had mean larger than 4.0 representing the most important influence factors. Interviewees had a significant disagreement on the importance of "C_{21} After-sales service" (SD=1.091>1). However, this factor was the only one affiliated to Convenience and we suggested reserving it.

According to the design of this study, interviewees argued the factor structure in Table 1 and provided comments: ① this study focused on the retailing channels but not products, therefore "B_{11} Commodity price" and "B_{21} Product preferences" should not be put emphasis; ② in *Cost to the customer*, there was a certain correspondence between "B_3 Time " and "B_4 Energy spent", such as "B_{31} Time for arrival and departure" and "B_{41} Difficulty for locating the store", "B_{32} Time for products selection" and "B_{42} Selecting the products", "B_{34} Time for paying and delivery" and "B_{43}Difficulty for paying and delivery", because the lack of the corresponding influence factor of "B_{33} Time for prices determine", the factor "B_{44} Prices determine" should be added. Hence, 12 important factors of fashion omni-channel retailing with great influence on consumers were concluded (see Table 4).

3.2.3. *Discussion.* In the four dimensions of the 4Cs, fashion industry practitioners and academic researchers pointed out *Consumer* is the most important. Apparel products are daily consumables and meeting consumers' demands plays an important role in fashion retailing. *Communication* is second to *Consumer*. Consumers have high demands for the customized apparel products. It is crucial for consumers to have full ranges of product information through various forms of communication during the buying process. *Cost to the customer* has less influence than *Consumer* and *Communication*. China's consumers are willing to spend more time and energy to get the products they satisfied and they want to enjoy it during the purchase. *Convenience*, only "C_{21} After-sales service" is the important factor while "C_{11} Operating time" and "C_{12} Trading location" has not caught the attention. It indicates that some advantages of the online retail channels, such as opening 24 hours a day and trading can be completed on PC or mobile terminals, do not have significant impacts on consumers' purchasing decisions.

Table 3. Means of the important factors

Factors	**Min**	**Max**	***M***	***SD***
B_{11} Commodity price	3	5	4.52	.680
A_{23} Products satisfaction	3	5	4.52	.602
D_{21} Product display	3	5	4.43	.598
A_{43} Personal privacy protection	3	5	4.33	.658
B_{22} Shopping experience satisfaction	3	5	4.33	.577
A_{41} Staff attitude	2	5	4.33	.796
D_{22} Store atmosphere	3	5	4.29	.644
A_{22} Cash safety	2	5	4.29	.956
A_{11} Product category	3	5	4.29	.845
B_{42} Selecting the products	3	5	4.19	.750
D_{11} Professional salesmen	2	5	4.19	.750
C_{21} After-sales service	1	5	4.10	1.091
B_{21} Product preferences	2	5	4.10	.700
A_{52} Own value reflection	3	5	3.81	.602
B_{43} Paying and delivering	2	5	3.81	.814
B_{41} Locating the store	2	5	3.76	.768
A_{31} Social	1	5	3.76	.995
C_{12} Location	1	5	3.71	1.007
D_{12} Customer communication platform	2	5	3.71	.717
D_{23} Brand public relations and marketing	2	5	3.67	.966
C_{13} Products information	2	5	3.62	.740
C_{11} Operating time	1	5	3.62	1.024
B_{31} Travel time	1	5	3.52	1.078
A_{21} Physical security	1	5	3.48	1.250
B_{34} Time for paying and delivery	2	5	3.48	1.030
A_{42} Psychological satisfaction	1	5	3.48	.928
B_{32} Time for products selection	1	5	3.43	1.028
C_{33} Brand community	1	4	3.24	.995
B_{12} Transportation costs	1	4	3.19	.814
A_{32} Contact frequency	1	4	3.10	.831
A_{53} Self-realization	1	4	3.10	.889
A_{51} Benefit others	1	4	3.00	1.000
B_{33} Time for prices determine	1	4	2.90	.889

Source: Evaluations from the interviewees.
Note: Influence factors with mean larger than 4.0 were reserved as the important factors.

4. **Experiment.** Chinese consumers of lady casuals were selected as the subjects. In order to verify the influence of the 12 important factors concluded in the interview, Mouselab was used to carry out the experiment and study the consumers' purchasing decision strategies.

4.1. **Method.** In accordance with the trail order, subjects were divided into three groups and accepted the experiments respectively, the backgrounds of which were set as the shopping environments in the brick-and-mortar stores, online stores and omni-channel retailing solutions in the Mouselab software. For example, the first subject was invited to accept the brick-and-mortar stores experiment, the second one was invited to the online

TABLE 4. Twelve important factors of fashion omni-channel retailing

Order	***A Consumer***	***B Cost to the customer***	***C Convenience***	***D Communication***
1	A_{23} Products satisfaction			
2				D_{21} Product display
3	A_{43} Personal privacy protection			
4		B_{22} Shopping experience satisfaction		
5	A_{41} Staff attitude			
6				D_{22} Store atmosphere
7	A_{22} Cash safety			
8	A_{11} Product category			
9		B_{42} Selecting the products		
10				D_{11} Professional salesmen
11			C_{21} After-sales service	
12		B_{44} Prices determine		

Source: The influence order is counted by the clicking amount of every single factor in each experiment group. Note: The more clicking a factor received, the higher order it got.

TABLE 5. Characteristics of the effective test samples

Item	Frequency	%
Age		
18-20	12	4.0%
21-25	240	80.8%
26-30	45	15.2%
Education		
Undergraduate	138	46.5%
Master	114	38.4%
Ph.D.	45	15.1%

Source: Records from the experiment.

Table 6. Results of search variables

Search var.	**Entire-sample**		**Brick-and-mortar stores**		**Online stores**		**Omni-channel retailing**	
	Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***	***Mean***	***SD***
The total time spent/s	138.23	72.42	132.73	75.61	137.81	71.11	144.22	72.03
OBT/s	37.61	27.83	35.21	28.13	37.25	27.54	40.41	27.10
Acquisitions	64.04	38.85	59.93	36.47	63.42	37.14	68.81	38.97
OBT/acqs./s	0.61	0.29	0.60	0.29	0.61	0.27	0.61	0.28
The total number of new boxes opened	37.16	14.11	36.12	14.11	37.52	13.45	37.83	13.61
DS	0.62	0.24	0.60	0.24	0.63	0.24	0.63	0.23
PI	0.13	0.41	0.12	0.41	0.13	0.41	0.15	0.39

Source: Results were calculated from the data of the experiment released by the Mouselab software.

stores experiment, the third one was invited to the omni-channel retailing experiment while the fourth one was invited to the brick-and-mortar stores experiment, etc. The interface of each experiment provided 5 options for purchasing the lady casuals for the subjects to choose from. Each option was applied 12 important factors with score assigned and subjects had to select the favorite one. We collected 102, 102 and 101 test samples from these three experiment groups.

In the brick-and-mortar stores experiment, the staff described the simulated shopping environment to the subject before opening the Mouselab interface: "Now you are planning to buy some casuals and have 5 brick-and-mortar stores from the same brand to choose from. Products' category and price are totally the same in these 5 stores but other aspects are different. The boxes in the experimental interface contain the description of the difference. You can read any data in the boxes and choose the most want to store ultimately".

In the online stores experiment, the staff described the simulated shopping environment to the subject before opening the Mouselab interface: "Now you are planning to buy some casuals and have 5 online stores from the same brand to choose from. Products' category and price are totally the same in these 5 stores but other aspects are different. The boxes in the experimental interface contain the description of the difference. You can read any data in the boxes and choose the favorite store ultimately".

In the omni-channel solutions experiment, before opening the Mouselab interface, the staff introduced the definition of the omni-channel retailing, quoting the definition of omni-channel retailing in "2.1. Omni-channel retailing": "An advanced and integrated cross channel customer experience, which is using all channels as though they were variations of each other". Then he described the simulated shopping environment to the subject: "Now you are planning to buy some casuals and have 5 omni-channel solutions from the same brand to choose from. Products' category and price are totally the same in these 5 solutions but other aspects are different. The boxes in the experimental interface contain the description of the difference. You can read any data in the boxes and choose the favorite solution ultimately."

TABLE 7. The influence order of the important factors based on the clicking

	Entire sample	**Brick-and-mortar stores**	**Online stores**	**Omni-channel retailing**
A_{23} Products satisfaction	1	1	2	1
A_{22} Cash safety	2	2	1	2
B_{22} Shopping experience satisfaction	3	4	5	3
A_{11} Product category	4	6	6	4
A_{43} Personal privacy protection	5	3	3	10
C_{21} After-sales service	6	5	4	8
A_{41} Staff attitude	7	7	7	11
D_{22} Store atmosphere	8	9	12	5
B_{44} Prices determine	9	11	10	6
D_{21} Product display	10	10	9	9
D_{11} Professional salesmen	11	8	8	12
B_{42} Selecting the products	12	12	11	7

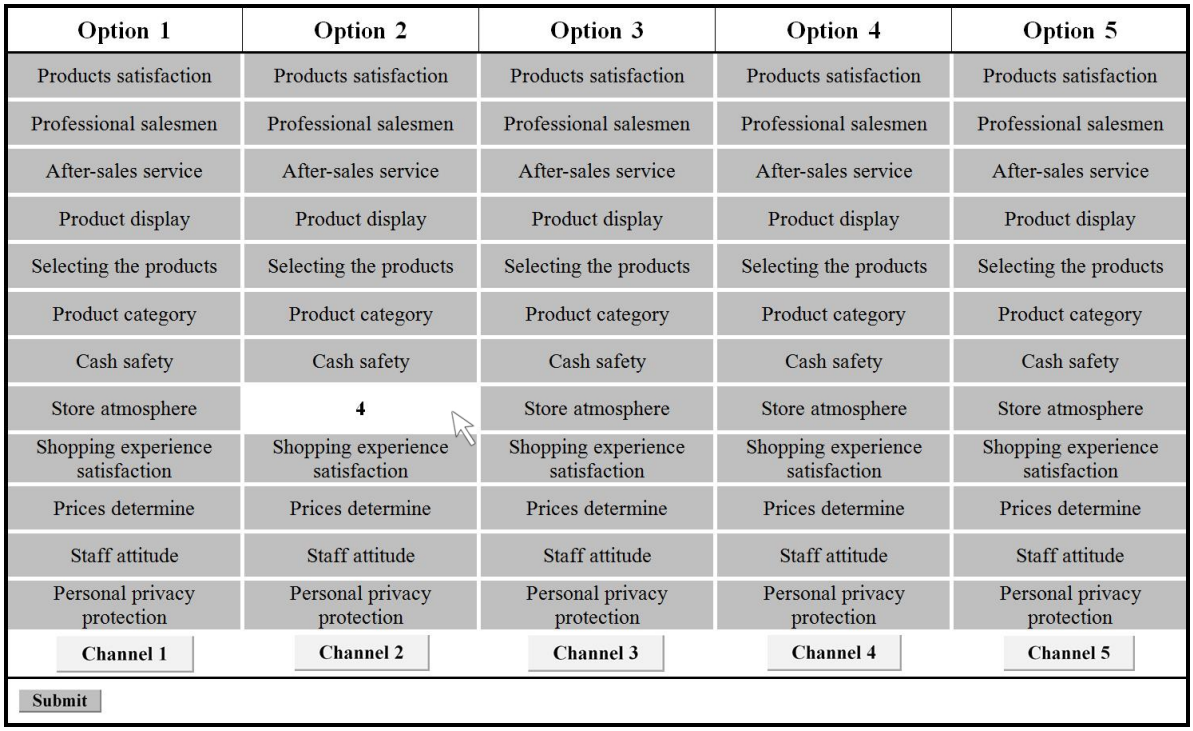
Source: The influence order is counted by the clicking amount of every single factor in each experiment group.
Note: The more clicking a factor received, the higher order it got.

Two interfaces populated in proper order: "Introduction" and "Operation". There was a demonstration from the "Introduction". It explained the meanings of the boxes and the operation method of Mouselab. After the demonstration, subject entered the "Operation" interface and had the access to the boxes. Figure 1 was the screen-shot of the "Operation" interface. Subject had to make up her decision and click at the appropriate button at the bottom of the screen for the alternative she had chosen. The experiment ended when the button "Submit" was clicked.

From the "Operation" interface, columns represented 5 options and rows represented 12 important factors. Each box represented the important factor toward the corresponding option. With the mouse click on it, subjects could see a score, which disappeared as the mouse moved away. The score ranged from 1 to 5 which 5 represented the best performance and 1 was the least. Each column there were three 5-boxes, two 4-boxes, two 3-boxes, two 2-boxes, three 1-boxes and total scores of each retailing solution was 36. Each factor had different performances, ensuring retailing solutions' performances on each factor were different.

Factors were randomly listed vertically per subject for avoiding the possible influence on

FIGURE 1. "Operation" interface



Source: The screenshot of "Operation" interface in the Mouselab experiment.
Note: The first line indicated 5 options. Dark gray boxes displayed influence factors. Subject clicked the button in the last line corresponding to the option she chose and clicked the button at the lower left corner to submit her judging result.

the subjects' reading and analyzing caused by the presentation order. But the scores of the each factor unchanged horizontally.

4.2. **Results.** Three subjects in the brick-and-mortar stores group, 2 in the online stores group and 3 in the omni-channel retailing groups finished the experiment without making any final decision, which were regarded as invalid samples. 99, 100 and 98 subjects were reserved as effective samples in the experiment groups. All the subjects were younger than 30, which conformed to the experimental design (see Table 5).

4.2.1. *Variables analysis.* Variables are shown in Table 6. DS of the entire sample (M=0.62, SD=0.24) indicates that many subjects experienced relatively complicated decision tasks because they searched most of the boxes. PI (M=0.13, SD=0.41) shows the entire sample tended to the alternative-based (compensatory) search pattern.

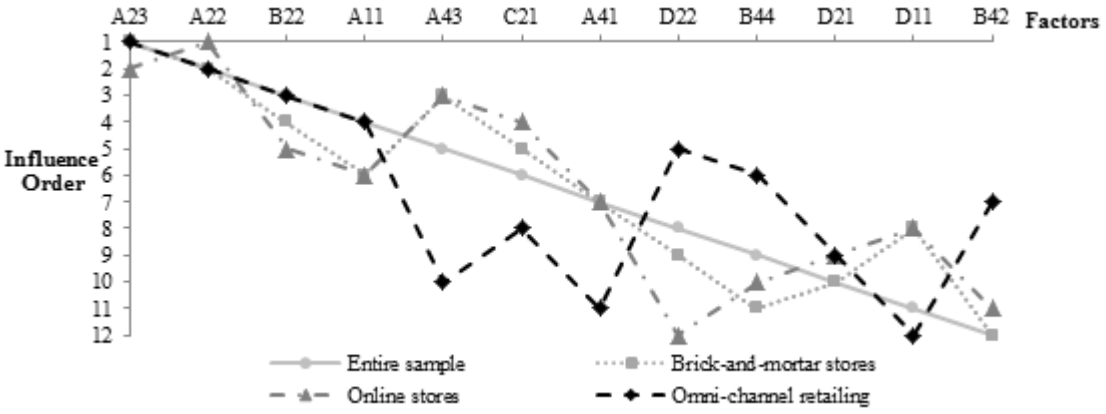
4.2.2. *Influence of the 12 important factors.* The more important an attribute was rated on average, the more often it was accessed by the subjects [18]. Therefore, we sorted the important factors based on the number of the subjects' clicking (see Table 7).

4.2.3. *H1 verification.* The results of correlation analysis tell that there was a significant positive correlation between DS and PI for the entire sample (r=0.443, p <0.05), especially for the subjects in the omni-channel group (r=0.535, p<0.05), which supports H1a. When making decision on the retailing solutions, the subjects who read information deep tended to select information based on the options and spent more decision time, while who read superficially tended to select information based on the factors and spent less time.

4.2.4. *Decision strategies classification and H2 verification.* In the entire sample129 subjects used WADD (43.43%) but just 4 used TTB (1.35%), remaining 164 belonged to RAND (55.22%). No subject used EQW. The results of ANOVA and t-test both show that there was no significant difference in DS between WADD users and RAND users. (F=.551, *Sig.*=.534>0.05, t=.670>0.05), and there was also no significant difference in PI between WADD users and RAND users (F=.412, *Sig.*=.677>0.05, t=.598>0.05). Observed the data of the omni-channel group and we found 49 subjects used WADD (50%) but just 2 used TTB (2.04%), remaining 47 belonged to RAND (48%). The results of ANOVA and t-test both show that there was no significant difference in DS between WADD users and RAND users (F=.584, *Sig.*=.446>0.05, t=.580>0.05) and H2a was not supported. There was also no significant difference in PI between WADD users and RAND users (F=.389, *Sig.*=.534>0.05, t=.438>0.05) and H2b was not supported.

4.3. **Discussion.** The subjects in the omni-channel group spent longer experiment time (M=144.22, SD=72.03), saw more boxes (M=37.83, SD=13.61) and had more acquisitions (M=68.81, SD=38.97), showing that they need more information and time to make the final decision. They also had higher PI (M=0.15, SD=0.39), indicating that they focused more on the comprehensive consideration of the independent plan than the subjects in other groups. Each factor's influence had significant differences among the groups (see Figure 2). The most influential four factors were same for both the omni-channel group and the entire sample. They were "A_{23} Products satisfaction", "A_{22} Cash safety", "B_{22} Shopping experience satisfaction" and A_{11} Product category. But the subjects in the omni-channel group paid more attention on D_{22} Store atmosphere, B_{44} Prices determine and B_{42} Selecting the products than other subjects, which means when shopping in a flexible environment instead of other traditional retailing channels, consumers prefer better atmosphere and would have concern over the comparative efficiency of price and products.

FIGURE 2. Comparison of the factors' influence among different experiment groups



Source: The influence orders of each experiment group source from Table 6.
Note: The names of the factors see Table 3.

Decision strategies used by the entire subjects were mainly WADD (43.43%), indicating that consumers really had psychology preferences on the various factors. TTB, a simple and rapid decision-making strategy, was rarely used (1.35%), proofing that decision-making for retailing channels for the apparel purchasing was a complicated process. As the total score of the factors for each alternative is 36. According to the experimental design, subjects couldn't make decision based on EQW in this experiment. Therefore no one

using EQW is reasonable. RAND was widely used (55.22%), indicating that apparel consumers' decision strategies were complicated and still not able to be classified completely by the existing strategy types. The strategy using of the subjects in the omni-channel group had no big difference with the entire sample, but more subjects used WADD (50%). When judging the flexible retailing channels, they used more logical thinking.

5. **General discussion and conclusions.** As a novel retailing solution, omni-channel retailing would leave consumers impressions as changeful, stability lacking and complicated to compare products' information. So, consumers pay more attention to the store atmosphere, and the convenience of price and products comparing, when choosing the omni-channel solution. Based on the H1 and its verification, we obtained a more positive correlation between DS and search pattern in the omni-channel experiment group than in other groups. It is speculated that when choosing an omni-channel retailing solution, if the consumer had sufficient time to make decisions, s/he would tend to conduct a detail information search in a specific solution. In contrast, if the consumer with limited of time during the decision-making of the purchase, s/he would focus on a particular factor and check across the different solutions. Almost half of the subjects used WADD decision strategy indicates that during the process of choosing the apparel retail channels, consumers indeed have preferences on the factors which eventually influence the decision they made. Pinpoint the consumers' preferences on the factors, brands could strengthen the performance of the important factors and guiding consumers buying behavior could be achieved. The verification of H2 shows that subjects using various strategies have no significant difference in DS and search pattern. Therefore, the feasibility study of determining the consumer type based on the performance of these two parameters could not been verified. Here are some managerial implications for the brands willing to build the omni-channel retailing strategy with many years of experience in tradition retail: (1) make full use of the experience in the brick-and-mortar stores and online stores to create a comfortable shopping environment for the consumers; (2) make information more transparent to let the consumers understand the products intuitively and compare them easily; (3) in daily sales activities, brands should focus on the propaganda of their solutions integrally and independently, which allows the consumers to have the complete knowledge of the solutions and better impression of the brand; (4) in the short-term promotional activities, brands should emphasize the uniqueness between their solutions and others' to help consumers quickly determine the most suitable purchase processes they need. This study still has some limitations, such as the results have not been verified by the real retailing environment. Further to study, researchers could choose a fashion brand and obtain the consumers' JDM processes data from its different retailing channels for analyses as the verification and complement of this study. Based on the research achievements, many contents worthy of further study, such as: (1) the effects of the omni-channel retailing's changes in the influence factors on consumers decision-making; (2) further developments of the consumers decision-making strategy types will be valuable to acknowledging more details about consumers decision-making processes.

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