

The Item-Based Fashion Matching Experience in Online Platform Service Design: A Case Study from Chinese Customers

Hao Tan¹, Wei Li²(✉), Zhengyu Tan², Shijing Fang², and Shihui Xu²

¹ State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body, Hunan University, Changsha, China
htan@hnu.edu.cn

² School of Design, Hunan University, Changsha, China
{liweil2014, sj_fang, xushihui}@hnu.edu.cn

Abstract. In online fashion retail platform, the customer service has played an essential role during the shopping process. In this study we focus on the service design of fashion matching experience in online shopping platform in different service scenarios, which has become one of the key issues of the fashion matching service. Based on the previous research on the matching service during the shopping process, we took the Chinese consumer as an example and focused our research on the fashion matching when the customers make purchase decision. In this paper, a new matching platform was designed based on fashion items and adopted the methods of verbal report and Likert scale to analysis the customer's shopping experience. The experiments results indicate that with the item-based matching platform, the experience of customer online shopping is promoted to some extent, and customers can enjoy the entertainment and practicality of the interactive matching service. Moreover, this item-based service can be used by designers to provide matching references.

Keywords: Matching experience · Online shopping · Fashion retail

1 Introduction

In fashion retail industry, companies are expected to enhance customer shopping experience (CSE) to survive and thrive in competitive sales market. CSE means the customer's interaction with a retail company during the whole shopping process, there are three components in CES: pre-sales, in-store and after-sales (Bikshorn 2011). Moreover, the shopping experience largely have affects on customer's purchase decisions which is particularly crucial to sales profit (Kent 2007). In today's fashion retailing business, the application of internet has extended its business range for more customers by online shopping website and the influence of online product reviews has played an important role in customer's shopping experience.

According to researchers' investigations, the online product reviews has regarded as an electronic equivalent of Word-of-mouth (WOM) which have influenced sales and treated as a valuable asset to retailing companies (Chevalier 2006; Dellarocas 2007;

Duan et al. 2008). Moreover, study by PowerReviews has found that 59% customers admit that their purchase behaviors are strong influenced by products reviews.

In the past period, the fashion designers designed an amount of fashion products then considered how to matching those items together and present those matched fashion products to the customers. The process of fashion matching was based on the designers' professional skills and experience.

Nowadays, in the fashion retailing business, especially on online shopping platform, some items are matched only after the fashion products have been designed and produced, then the retailers provide those matching fashion products to customers through the salesmen. In this process, the matching fashion products are provided by the salesmen based on the designer's idea without professional skills to evaluate the matched work, hence, this process may lead a result which is the salesmen may not provide the most attractive matched fashion products to the customers. On the other hand, the customers can not find the matched fashion products through thousands of items in an online store and their mindset of fashion shopping is based on the item which means the customers will choose one item and then take a long time to choose other items to matching those items together. All these patterns will lead the online fashion shopping process turns more complicated and the customers under this scenario may over purchase because they can not match the items by professional and rational way. In 2004, Kobayashi use a method to matching the fashion items based on colors. In this study, an item-based fashion matching platform was designed for giving customers matching service in the product reviews, which customers can choose color clues to receive the professional references (Fig. 1).



Fig. 1. The interface of item-based fashion matching service through color clues (Color figure online)

To improve online fashion customer service quality, it is important to make customers feel satisfied with the shopping process. Based on common format in Chinese e-commerce platform, the fashion products reviews are based on the advertising picture which shows the item itself. Since the format of online products reviews play an

important and necessary role in influencing the customers' purchase decision like a 'sales assistants' (Chen 2008). Meanwhile, customer have to matching the item they purchased with other items by themselves. In this process, customers purchase the items and have to do the matching work without any professional knowledge or guidance. For the usual online shopping process, customers search one item at first, then receive the item information, after they read or watch the specific products reviews they will make a measurement about the product, then make the decision and purchase. For matching the product they brought, customers will repeat the process to purchase the second one, the third one which make the process so complicate and the customer have to do the matching work by themselves all the time. With the designed platform provided in this paper, there are two processes of online shopping (Fig. 2), one is the traditional process which the customers need to repeat the purchase for single item over and over again to finish purchase a suit of fashion apparel. In the second process, customers can use the item-based matching service to find other items and purchase for only once.

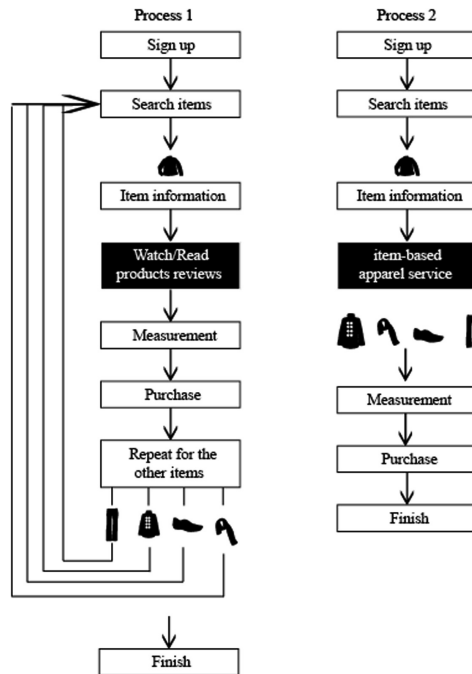


Fig. 2. The different shopping process

With this new matching service, customers may receive professional matching references while in the process of online shopping, moreover, they could finish the whole shopping process with high efficiency. For confirm the new item-based matching service will truly benefit for users, we have done some experiments.

2 Experiment

2.1 Participants

In this research, 100 participants were involved in the experiment which were all familiar with online shopping. The participants consisted of 46 males and 54 females which age ranged from 20 to 48 and they spent various lengths of time on online shopping ($M = 30.19$, $SD = 8.25$).

2.2 Experimental Arrangement

The whole research is divided into two experiments. In the first experiment, users were divided into two groups and invited to select products according to the given fashion item from two different shopping platforms. And users needed to score the experimental process. In the second experiment, two sets of clothing that users chose from two platforms were printed to the same size and users were invited to score and evaluate the two sets of clothing they chose.

2.3 Experiments

Experiment 1

In Experiment 1, users were randomly divided into two groups (Group A and Group B), each group with 50 users. There were two sets of experimental materials. The first platform simulated shopping process of the current China's largest online shopping site "Taobao" which user hunted for goods by type keywords and search results. The second platform created page jump mode based on color clues of professional matching cases. In order to rule out the impact of user experience of different operation sequence, users in the group A experienced platform 1 firstly, and then platform 2 at meanwhile group B did the same procedure in the contrary order. All collocations were asked to finished as quickly as possible, and each user needed to choose a set of clothing which would fit a given single product (a white shirt). In order to control the impact of the different types of items on the experimental results, users were proposed to buy an outer wear, a pair of pants, a pair of shoes and a handbag as the target. Throughout the process of clothing choice, the feedback from users were collected as an oral report. At the end of the stage, we invited users to score the complete purchase process on a 5-point Likert scale ranging from 1 (very poorly) to 5 (very well) to evaluate the convenience of the platform. And the shopping time user spent on the experiment was also recorded to compare the convenience of the two platforms.

Experiment 2

In the second phase of the experiment, two sets of clothing that users chose from two platforms were printed to a picture of the same size. Then users were invited to score and evaluate the two choices from the picture to output an oral report as shown in Figs. 1 and 2. Users scored the pictures on a 5-point Likert scale ranging from 1 (very poorly) to 5 (very well) to evaluate the satisfaction of the consequences from two different platforms (Figs. 3 and 4).



Fig. 3. Picture of consequence from different platforms (male)



Fig. 4. Picture of consequence from different platforms (female)

Process Methods and Measurements of Oral Report

Direct extraction method: adjectives and adverbs of degree that appeared explicitly in oral reports were extracted to judge users' attitude toward the platform (Table 1).

Situational Extraction

Sometimes users did not express any explicit adverbs or adjectives. The way judging the users' attitude in this case is to review their oral reports and summarize their attitudes through colloquial descriptions (including exclamatory and interrogative sentences) and intonation in the context. Then users' attitudes and feelings were judged

Table 1. Direct extraction

Participants' words	Extracted adjectives	Adverbs degree	Level
This is so convenient for matching	convenient	so	High level
I think the whole progress is very fast	fast	very	High level
This way is too complex to me	complex	too	Extreme
It is more faster than before	fast	more	Medium grade
Matching in this way is pretty helpful for me	helpful	pretty	High level
Those clothes are really fit me	suitable	really	High level

by taking the physical scene, the language environment and the tone of the users into consideration. The input information was transformed into an expressive form of adjective and adverbs (Table 2).

Table 2. Situational extraction

Participants exact words	Extracted adjectives	The adverbs of degree	Level
How dose it know my style? It is amazing!	suitable	extremely	Extreme
Ah? I have finished the progress?	fast	very	High level
What should I do?	confuse	a little	Lower

Verbal Language Environment Extraction

Another way to judge users' attitude in the case that the statement did not appear any obvious adverbs or adjectives was through the analysis of users' hypothesis, comparisons, suggestions and expectations with the present environment and the current target attitudes or feelings, and translated it into adjective-dominated declarations (Table 3).

Table 3. Verbal language environment extractions

Participants exact words	Extracted adjectives	The adverbs of degree	Level
If there is a platform in real life, I may choose to use it.	useful	incomparable	High level
My husband must love this platform!	suitable	extremely	Extreme
Is there any other choice?	deficient	slightly	Lower
I will waste a lot of time to pick-up without those suggestions	helpful	very	High level

Incidence-Description Extraction

The fourth way we could judge participants' attitude without any obvious adverbs or adjectives was through participants' descriptions of the test process. We considered the movement and mental activity of users to judge the users' attitudes or feelings. Following analysis, the data was also translated into adjective-dominated declarations (Table 4).

Table 4. Incidence-description extraction

Participants exact words	Extracted adjectives	The adverbs of degree	Level
I don't have any special feeling about it.	insentience	slightly	Lower
I didn't spend much time to matching on this platform	convenient	pretty	High level

Classification of Adjectives

The adjectives and adverbs from users' oral report were coded by Ma Shi When Tong. Firstly, adjectives were classified according to the positive or negative meanings. If an adjective expressed a comparatively cheerful position, such as "convenient" or "useful", it was coded as positive (+). If an adjective expressed a comparatively unfavorable position, such as "deficient" or "confuse", it was coded as negative (-). In our experiments, adjectives were picked out and were divided into two parts (positive and negative) by taking the physical scene, the language environment and the tone of the users into consideration.

Classification of Adverbs

Adverbs were coded in a different way. Because our users are from China, so the oral reports were recorded in Chinese, and for the sake of accuracy, analyzed in Chinese, the processing of adverbs made reference to the local grammar. According to the XinHua Dictionary, adverbs of degree can be divided into four categories: extreme, high level, medium grade, and lower. According to these categories, adverbs extracted from the oral report were arranged on a Likert scale with nine levels. If these adverbs modified positive adjectives then adverbs were assigned 4, 3, 2, and 1 points, respectively. On the contrary, these adverbs modified negative adjectives then adverbs were assigned -4, -3, -2, and -1 points, respectively. Neutral adverbs were assigned 0 points (Table 5).

Table 5. Research degree adverbs of degree

Level of gradable adverb	Level of gradable adverb in paper
Extreme	too, extremely
High level	also, very, quite, pretty, especially, utterly, fully, so, fairly, such, particularly, really incomparable
Medium grade	relatively, even more, still more
Lower	slightly, a little

2.4 Experiments Results

Experiment 1

Experiment 1 tested the difference of the convenience level of users' experience of Platform 1 (Platform 1 simulating the current China's largest online shopping site "Taobao" shopping process, and entering keywords is the main search method) and Platform 2 (The platform2 created page jump mode based on color clues according to professional matching cases). Figure 5 shows the shopping time on two platforms. Obviously, users spend more time to pick out what they like on platform 1, the average time is 29.1 min (Min = 10 min, Max = 48 min). When users shopping on platform 2, the average shopping time is 19.61 min (Min = 8 min, Max = 32 min).

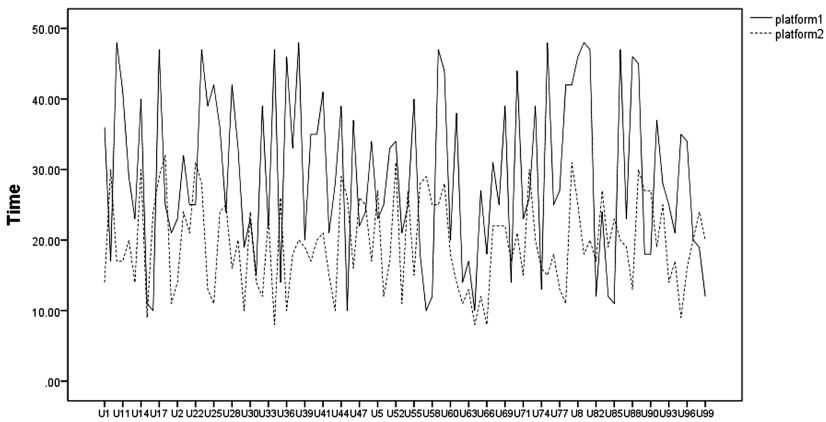


Fig. 5. Shopping time

Of all the 100 participants, by using platform2, 74 users spend less time while only 25 users spend more time and 1 user spend equal time on online shopping. The maximum of time consuming on platform 2 preceding platform 1 is 39 min while the time range is 19 min on platform 1 preceding platform 2. For a more detail statistic of time range on platform 2 preceding platform 1, there are 27 users in 1-10 min, 21 users in 11-20 min and 26 in 21-40, while the percentage form of time ranges can be represented as 36.49%, 28.38% and 35.13% respectively. As for platform 1 preceding platform 2, there are 19 users in 1-10 min, 6 users in 11-20 min and 0 in 21-40 and also the percentage form of time ranges can be represented as 76%, 24% and 0% respectively.

Of all the 100 participants, by using platform2, 74 users spend less time while only 25 users spend more time and 1 user spend equal time on online shopping. The maximum of time consuming on platform 2 preceding platform 1 is 39 min while the time range is 19 min on platform 1 preceding platform 2. For a more detail statistic of time range on platform 2 preceding platform 1, there are 27 users in 1-10 min, 21 users in 11-20 min and 26 in 21-40, while the percentage form of time ranges can be represented as 36.49%, 28.38% and 35.13% respectively. As for platform 1 preceding

platform 2, there are 19 users in 1–10 min, 6 users in 11–20 min and 0 in 21–40 and also the percentage form of time ranges can be represented as 76%, 24% and 0% respectively.

The Fig. 6 shows the oral report scores (user experience on convenience level) when users shopping with two different platforms. The score of platform 2 was higher than platform 1. When users shopping on the platform 1, The average oral report score of platform is 0.26. When users shopping on the platform 2, the average oral report score is 1.43.

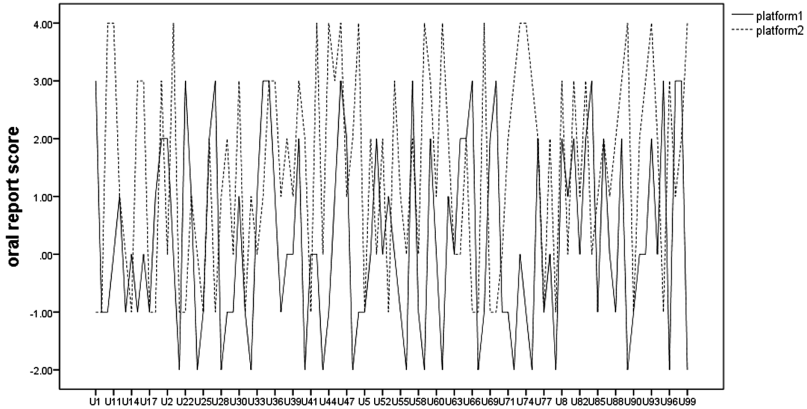


Fig. 6. oral report scores (user experience on convenience level)

When users use the 5-point Likert scale for convenience level, the score of platform 2 was higher than platform 1 (Fig. 7), the average score is 3.92. When users shopping on the platform 1, the average score is 3.17.

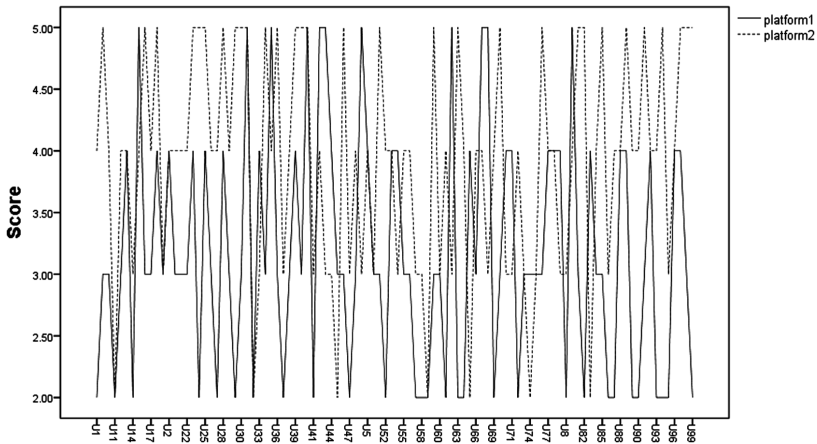


Fig. 7. scores of convenience level

Experiment 2

The experiment 2 tested the difference of users' experience of Item-based Fashion Matching between the Platform 1 and Platform 2. The Fig. 8 shows the oral report scores (users' experience of Item-based Fashion Matching) when users shopping with two different platforms. The score of platform 2 was higher than platform 1. When users shopping on the platform 1, The average oral report score of platform is 0.6. When users shopping on the platform 2, the average oral report score is 0.61.

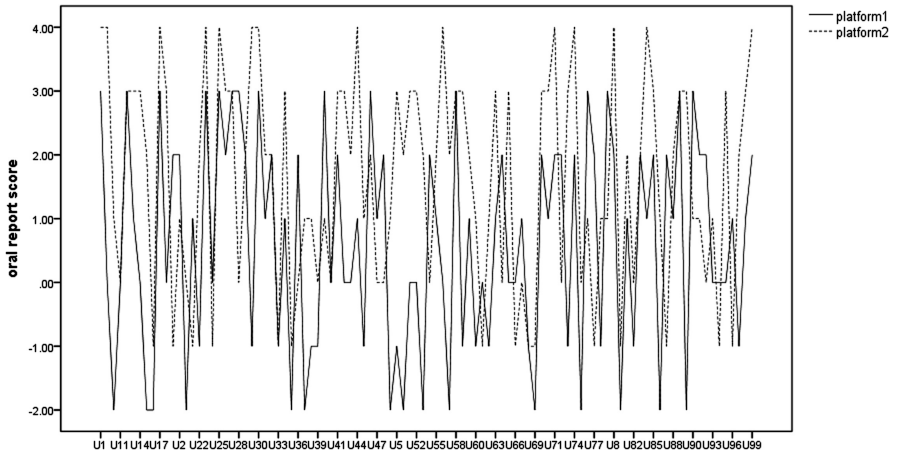


Fig. 8. oral report scores (users' experience of Item-based Fashion Matching)

When users use the 5-point Likert scale for experience of Item-based Fashion Matching, the score of platform 2 was higher than platform 1 (Fig. 9), the average score is 3.72. When users shopping on the platform 1, the average score is 2.99.

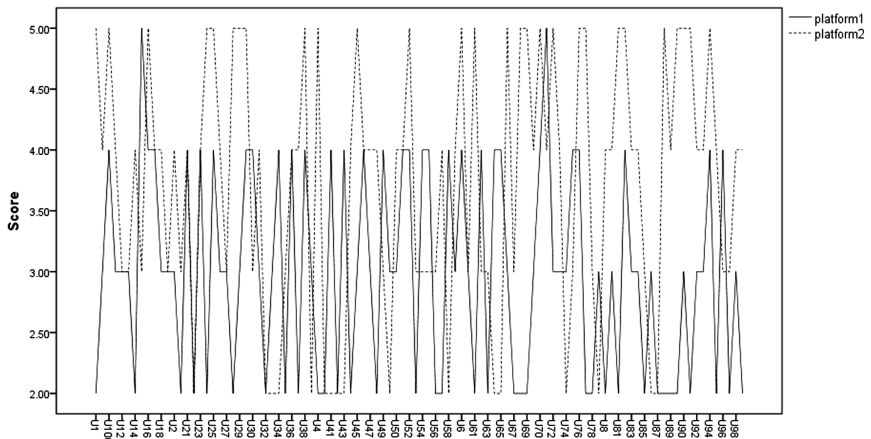


Fig. 9. scores of Item-based Fashion Matching

Experiment 1 shows platform 2 increase user convenience to what extent. Shopping time result states that there are 74% users who considers platform 2 saves their time. For subjective judgment, there are 78% and 81% users who considers platform 2 is more or equally convenient contrast to platform 1 in oral report test and convenience level test respectively. The ones who gives platform 1 a better score are all very familiar with platform 1 and maybe using platform 2 just changes their online shopping habit. So if they get more familiar with platform2, they may change their mind. Experiment 2 shows our item-based fashion matching system does play a positive role in matching clothing. 79% (Item-based Fashion Matching scores test) and 75% (oral scores test) users think platform 1 is better than matching clothing by themselves. And also, almost all of the users who thinks matching clothing by themselves is better are good at online shopping and clothing matching. To sum up, platform 2 could help novices do a better online clothing shopping.

3 Conclusion

As the service received by customer affects the decision of online clothes shopping choice greatly, online service gains a huge importance. On Chinese online shopping platform, various kinds of sell service patterns are explored to promote the experience quality. In this paper, a mode of customer shopping service experience based on online clothes shopping is proposed and a suits matching recommendation service system which recommend suits matching patterns to customers is designed. In this system, a database of customer shopping records is established which together with the clothes purchased at present are leveraged to recommend customers how to comprise suits. On using the system, not only can the customers experience the suits matching service, but also the excessive consumption is alleviated effectively. By using this system, the experience of customer online shopping is promoted to some extent, and customers can enjoy the entertainment and practicality of the interactive suits matching service. Furthermore, merchants can use the suits recommendation service system to integrate clothes resources and push more customer-need and customer-like clothes. For a wide perspective, the system can be applied to other personalized clothes matching platform and related social contact platform.

4 Future Work

Experimental study in this article is limited to the Chinese online shopping platform, so there are still several problems need to be solved. Firstly, only Chinese online shopping customer and mainstream online shopping platform are considered in our experiment. There should be many other platforms, customers to be included. Secondly, accessories are not involved in the clothes matching experiment which would lower the clothes matching entirety effect. Furthermore, there are numerous works need to do to help us explore more details about the user experience on e-commerce platform.

- build suits matching management system to enforce the relationships of online shopping industry.
- consider more clothing factors including scenes, usage and any other customization service.
- Design and compare different interaction ways to abstract customers in the website from different angles, like product introduce, selling strategy then measure its validity.

Acknowledgments. We would like to express our gratitude to Chunshan Deng who helped us during the experiment with his professional skill. The research was supported by National Key Technologies R&D Program of China (2015BAH22F01/2015BAH22F02), National Natural Science Foundation of China (61402159/60903090), Hunan Provincial Social Science Foundation of China (2010YBA054), the State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body Funded Projects.

References

- Bikshorn, M.: From customer service to customer experience enhancement, Customer Experience Reporting (2011). <http://www.serviceexcellencegroup.com>
- Kent, T.: Creative space: design and the retail environment. *Int. J. Retail Distrib. Manag.* **35**, 734–745 (2007)
- Chevalier, J.A., Mayzlin, D.: The effect of word of mouth on sales: online book reviews. *J. Mark. Res.* **43**(3), 345–354 (2006)
- Dellarocas, C., Zhang, X.M., Awad, N.F.: Exploring the value of online product reviews in forecasting sales: the case of motion pictures. *J. Interact. Mark.* **21**(4), 23–45 (2007)
- Duan, W., Gu, B., Whinston, A.B.: The dynamics of online word-of-mouth and product sales — an empirical investigation of the movie industry. *J. Retail.* **84**(2), 233–242 (2008)
- Forman, C., Ghose, A., Wiesenfeld, B.: Examining the relationship between reviews and sales: the role of reviewer identity disclosure in electronic markets. *Inf. Syst. Res.* **19**(3), 291–313 (2008)
- Gu, B., Park, J., Konana, P.: Research note—the impact of external word-of-mouth sources on retailer sales of high-involvement products. *Inf. Syst. Res.* **23**(1), 182–196 (2012)
- Hu, N., Sian, K.N., Reddy, S.K.: Ratings lead you to the product, reviews help you clinch it? The mediating role of online review sentiments on product sales. *Decis. Support Syst.* **67**, 78–89 (2013)
- Ye, Q., Law, R., Gu, B.: The impact of online user reviews on hotel room sales. *Int. J. Hosp. Manag.* **28**(1), 180–182 (2009)
- Zhu, F., Zhang, X.Q.: Impact of online consumer reviews on sales: the moderating role of product and consumer characteristics. *J. Mark.* **74**(2), 133–148 (2010)
- PowerReviews: The 2011 Social Shopping Study. http://www.powerreviews.com/assets/download/Social_Shopping_2011_Brief1.pdf2011
- Chen, Y.B., Xie, J.H.: Online consumer review: word-of-mouth as a news element of marketing communication mix. *Manag. Sci.* **54**(3), 477–491 (2008)
- Kobayashi, M.: Studies on the color panning of clothing – existence of the “ideal skin color” and the effect of the clothing color. *J. Jpn. Res. Assoc. Text. End Uses* **45**(3), 56–63 (2004)
- Ma, J., Shi, M., Tong, W.: Business Press, Shanghai (2010)
- Likert, R.: A technique for the measurement of attitudes. *Arch. Psychol.* **22**(140), 1–55 (1932)
- Xinhua Dictionary Compilation agency. Xinhua Dictionary. The Commercial Press (2004)