

## RESEARCH ARTICLE

# The precision marketing of B2C e-commerce in China based on computer

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## ABSTRACT

With depth development of business activities in the network, the marketing activities are also emerging. In recent years, precision marketing has become a common tendency of more and more e-commerce enterprises. However, the current research focus on a specific area, with lack of comprehensive research. In view of this phenomenon, the research makes precision marketing in electronic commerce as a whole object of study, provides the theory and practice for precision marketing in electronic commerce area. This research main including literature review and research analysis two parts. Literature review works primarily introduce the theory of electronic commerce, the research and development of precision marketing and theory conducive to precision marketing. The research further makes the empirical study on precision marketing for JD. The research introduces the precision marketing measurement of JD in product, technology, marketing strategies, customer relationship management and logistics and other aspects. In addition, a survey is designed to determine the consumer purchase willingness impact factors, the research further conducts a quantitative analysis of precision marketing influence on the consumer purchase willingness, the analysis result is used to determine the key factors of precision marketing. Based on the quantitative analysis and qualitative analysis, the research provide the marketing strategy for e-commerce enterprise. Finally, the research concludes the common precision marketing strategy in China, pointing out the limitation and future research direction of the research.

**Keywords:** B2C companies; e-commerce; precision marketing; insert

## 1. Introduction

The global economy has a variety of new trends in the 21st century, the most obvious characteristic is the information network and economic integration. At the end of December 2013, the number of Chinese Internet users reached 618 million, the annual total increased 5358 million new users. Internet penetration rate was 45.8%, which has an increase of 3.7 percentage points compared with the end of 2012, the growth rate of

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overall netizens remained slowing trend<sup>[1]</sup>.

With the rapid development of the global economy and the rapid development of computer information technology, the network popularization degree is higher, electronic commerce has increasingly become the main players in the market of business activities. A large numbers of internet users appear promoted the development of the network economy and e-commerce. As technology advanced, companies can use the Internet directly do marketing activities, so that there are a new form of enterprise be created such as ebay, Amazon, JD this B2C companies, and their mode of operation greatly enriched the marketing theory, and provides a new marketing way. It has a more important role in the enterprise market positioning, marketing strategy formulation and product extension, late follow-up service, and consumer expectation. This is bound to cause a big change in the traditional marketing mode, the change in the business market environment, with the combination of computer information technology and marketing ideas, precision marketing comes into being.

World marketing guru Philip Kotler (2006)<sup>[2]</sup> pointed out a new trend of marketing communications in 2005- precision marketing, this new concept has been quickly recognized by all walks of life. Since 2004, with the improvement and standard credit management system of online trading system, China's B2C e-commerce site are entered a rapid development period, which are an huge challenge for the traditional marketing concepts, methods, precision marketing has become the focus of attention based on network.

Reviewing relevant research on the precision marketing and e-commerce, the theories are comprehensive. However, most only focus on advertising precision marketing or customer relationship management in the telecommunications, books, and other areas for marketing research industry. In addition, the combination of the two theory still needs to further explore. Until to now, there is no detailed theory on precision marketing definition. As a whole, the precision marketing is a series of marking framework with precision positioning of the consumer groups, determining the marketing plan, and all other marketing activities relying on modern information technology. The research conducts a comprehensive analysis of precision marketing in e-commerce industry and provides the precision marketing application framework for e-commerce enterprise.

## **2. Literature review**

### **2.1. The theory of electronic commerce**

#### **2.1.1. The concept of electronic commerce**

Global Information Infrastructure Commission (GIIC) Electronic Commerce Working Committee believes that, e-commerce is a means of electronic communications in economic activity, people can from this ways to purchase goods and services<sup>[3]</sup>;

When IBM talked about e-commerce, it stressed: e-commerce is the commercial application of the network environment, which combined with the buyer, the seller, vendors and their partners in the Intranet and internet;

HP company related to the definition of e-commerce: e-commerce is by electronic means to complete the commercial trade, e-commerce allows us to using electronic transactions as means to complete exchange of goods and services, is the link between the merchant and the customer;

Overall, electronic commerce is a commercial trade by electronic means, its a electronic link between seller and buyer.

### **2.1.2. The theoretical context of e-commerce and the development of e-commerce**

Paul Timmers (1998)<sup>[4]</sup> use Michael E. Porter's value chain theory, to deconstruction and reconstruction of all factors involved in electronic commerce, and consideration of the value chain and value chain interactions between the integration of e-commerce model. Then put e-commerce mode divided into electronics stores, e-procurement, electronic mall, electronic auctions, virtual communities, collaboration platform, third-party market, value chain integrator, value chain service provider, information intermediaries, credit and other services, total has 11 categories, and from the degree of innovation and functionality integration of these two dimensions to do classification for eleven kinds of modes<sup>[5]</sup>. System analysis method used by Timmers had obtained widely recognized by researchers later, and based method of the value chain to do the business model classification, also provides a general idea for business model. But the framework excluded market factors, therefore it can not reveal the interior of the business model.

Weill and Vitale (2001)<sup>[6]</sup> put market factors on the basis of the definition of Timmers, the commercial motivation from the general to the specific divided into different levels of analysis, identify main factors on the each specific level, put the existing e-commerce business broken down into eight basic models of e-commerce atom model (Atomic E-business Models), namely direct to customers, full-service providers, whole enterprises, brokerage, infrastructure sharing, virtual communities, network value integrators and content providers.

Each mode's strategic objectives and value proposition, revenue sources, critical success factors and core competencies were systematically analyzed. Implementation for company could according to their own circumstances, to adjust the original business model, to integrate the physical business and Internet business, in order to respond to environmental change, which has an important guiding.

Efeaim Turban (2003)<sup>[7]</sup> in the "E-Commerce Management Perspective" talk about at the background of globalization, company should firmly grasp the electronic commerce (EC), integrating the global e-commerce and the latest innovations field, especially in supply chain management systems.

### **2.1.3. E-commerce development status in China**

B2C e-commerce is first generated mode of e-commerce in China, which is the commercial form carried out between businesses and consumers via the internet and main oriented by the customer-facing retail business in the enterprise. Since e-commerce entering China more than a decade, made a breakthrough of development in the practice of marketing theory, construction of marketing system, applications and other marketing

methods, the company's marketing costs continue to decline. Market research firm Analysis International released a market report shows that in 2012 the national network of B2C retail transactions reached 479.26 billion yuan. China's online shopping users reach 302 million people in 2013, the utilization rate reached at 48.9%, compared with 2012 growth of 6.0 percent<sup>[8]</sup>.

B2C E-commerce Marketing According to the development situation of China's B2C e-commerce, combining the Daniel Amor (2002)<sup>[9]</sup> reveals the benefits and challenges in the book "Internet future strategies: how pervasive computing will change the world," to analyze the presence problems of the marketing, mainly in the following aspects:

(1) Market positioning is not precise enough

Positioning in the market, B2C e-commerce presence of product positioning and target customers positioning are not precise enough two issues.

Product lack of positioning is that many companies effort to put B2C website build into a comprehensive store that include kinds of goods and quantity products, namely tend to comprehensive B2C development. But it did not find the core profit point and had a core business, resulting in poor returns; target customers positioning not well that although there are high traffic on B2C website, but realized turnover is small, that enterprises have failed to grasp customer needs, to take hold of the customer psychology.

(2) Use improperly network marketing tool lead to poor marketing results

B2C e-commerce companies will use a variety of marketing tools engaged with marketing, such as: e-mail, online advertising, mobile interaction. If the marketing tools be used improperly, it can not achieve promotion and enhance brand image purposes.

For example, currently the type of network divided into network advertising banner, text link ads, pop-up ads, keyword advertising. Since the invest of online advertising of business mainly by means of B2C third-party trading platform, in order to make consumers to understand the products and services in a short time, companies will choose some of the famous third-party website to operate, and companies even choose all famous site to advertise, in order to achieve fast promotional purpose. However, business often just concerned about such a platform CTR, visibility, etc. when choosing this type of platform, does not take into account the characteristics of such a network platform itself, such as the platform itself customer if the corporate target customer, such trading platform is suitable for running the enterprise advertising, so if enterprises to develop advertising and marketing with the above-described manner not only to bear the high cost of advertising also to face the poor sales results ending.

(3) Customer relationships maintenance inadequate

With the rapid development of communications technology and Internet technology, the world economy into a globalization electronic era, the traditional product-centric marketing strategy is gradually being instead of customer-centric, to serve as the target of marketing strategy, However, many B2C e-commerce businesses

and website efforts to maintain customer relationships is not enough to achieve customer retention and maximize the value of customers, their customer relationship maintenance confined to maintain the surface of relationships. B2C e-commerce needs to build customer relationship management system, the only way to significantly improve customer satisfaction, effectively reduce marketing costs, to retain customers and expand marketing.

#### (4) Customer service system is not perfect

Essentially, the rapid development of B2C e-commerce to provide high-quality network shopping and improve customer service content, but customer service system is still not perfect at this stage, there are many problems, such as payment not human, delivery service is not good, after-sales service does not fulfill its commitments, etc., which are all important reasons lead to consumers do not choose B2C e-commerce.

By analyzing the status of B2C e-commerce and marketing problems, combining the theoretical of precision marketing and actual operation, it can be seen the precision marketing suitable for the B2C e-commerce development, combine precision marketing and B2C e-commerce will effectively to solve many B2C e-commerce marketing issues.

## **2.2. The research and development of precision marketing**

### **2.2.1. The theoretical research development and situation of precision marketing**

Former scholars did precision marketing research focuses on the following points: precise marketing connotation, 4R rule, advantage, content, trends and so on.

Who is called “the father of modern marketing management,” the Philip Kotler (2005)<sup>[10]</sup> announced a new trend of marketing on its world tour speech forum - Precision Marketing, and he statement: “Specifically, Companies need more precise, measurable and high return on investment of marketing communication, marketing communication plan needs to pay more attention to results and actions.” Meanwhile Philip Kotler (2006)<sup>[11]</sup> in his book “Principles of Marketing” for the first time to put forward "precision marketing" theory. He believe that for marketing, it is important to do personalized communicate at the right time, face right people to do right things. Kotler’s theory provide the direction of precision marketing for this research. For example: personalized communicate need to study customer relationship management, right time have to look for support for technology, right people should to do a good positioning, and right things include have a good logistic, so that customer have a good experience. So the research will be spread from this aspects.

Paul.W.Farris and Neil T. Bendle et al. (2006)<sup>[12]</sup> in “Marketing Metrics: 50 + Metrics Every Executive Should Master” dedicated to solve problem of the scientific quantitative marketing activities research, to help precision marketing activities to achieve good results. Quantitative marketing indicators to provides guidelines, methods and precautions for managers effectively use information to do scientific decision in practice. In this research, it indicate writer to do adaptable suggest for precision marketing strategy.

Xu, J (2006)<sup>[13]</sup> added precision marketing point on the basis of Philip Kotler’s precision marketing theory:

“precision marketing is focus on customer, using a variety of available ways, at the right time, to make right price, through the appropriate place, to provide the right product for right customers.” And pointed out several new spread model of precision marketing, advocate to study audience behavior, lifestyle, in order to understand the needs of users, and ultimately passed to the audience the most accurate advertisements. This is a important theory come from Chinese scholar, in addition to use 4R theory to analysis in case study, several new spread model also open a new way to find new marketing tools in the precision marketing strategy of this research. Liu, Z (2007)<sup>[14]</sup> in the book “Methods of Precision Marketing,” also owned the precision marketing approach based by database marketing methods, Internet-based approach, borrow others channel approach. This three aspects can be used by analysis of case study in this research.

Jiang, H (2008)<sup>[15]</sup> use a fine marketing to describe precision marketing, he believes the so-called fine management is relative of extensive management, face to meticulous management, which means one to one marketing based on customer segmentation strategy, that is, the enterprises selected one of the most valuable customers, understand the individual needs, provide personalized channel, personalized marketing tool. So personalized customer service will be consider in the precision marketing strategy of this research.

### **2.2.2. Theoretical basis of precision marketing**

The theory of precision marketing is solid, so it has very practical significance. The main theoretical basis has the following aspects.

The first one is Philip Kotler's “customer delivered value” theory. Due to the common affordable consumer information, consumers hope that goods can transfer more value, precision marketing is “one to one” marketing model, it timely and accurately transfers different product information to consumers, greatly reducing the consumer's time and effort, thus reducing the consumer's transaction cost and transaction time. With the premise of ensuring enterprise profit, it can greatly increase the turnover of enterprises, achieving a better promotion effect.

Market segmentation theory. According to the market segmentation theory, consumers can be divided into different groups, precision marketing aims at positioning different consumer groups, and publishing product information for their own needs, so that it achieves timely and efficient communication between the main bodies of the market. It not only improves the marketing effect and customer loyalty, but also greatly reduces the cost of the enterprise. There are many classification criteria including geographical characteristics, behavioral characteristics, demographic characteristics. In the division of consumer groups, enterprises should consider information docking between products and consumer demand, with a reasonable division of the market and successful implementation of the marketing<sup>[16]</sup>.

From the 4P theory to 4C theory. American Marketing Professor McCarthy in “Basic Marketing” (1960)<sup>[17]</sup> has proposed product, price, place, promotion 4 large marketing strategy in 1960, he believes a successful and complete marketing activities means to have the right product, right price, right place and right appropriate communication and promotions, put the appropriate products and services to specific market. 4P

theory is the basis of marketing strategy.

On the basis of the theory of 4P, Professor Lauterbon, Robert. F.(1990)<sup>[18]</sup> in his article “4P Retirement 4C debut” proposes a customer-centric of a new marketing model, the 4C theory contains four elements: Customer, cost, convenience, communication. The core of 4C theory emphasizes the buyer’s initiative and purchase convenience in marketing activities. 4C theory requires buyers and sellers have instant communication environment, marketing activities tend to consumer-oriented, low cost, purchase convenient and full communication, precision marketing is the practical application of 4C theory. Specifically:

- Products and services rely on customer-centric (customer)
- Pricing according to customer acceptable (cost)
- The product distribution is oriented to facilitate customer (convenience)
- Oppressive promotion steering to strengthen the communication and contact with customers (communication)

In traditional marketing methods, business-oriented promotional accounted for the largest proportion, which by taking some form of means to do oppressive promotion for customers, while completing the customer loyalty cultivation in the marketing process. In the oppression of promotions, corporate imposed its philosophy and marketing idea on customers, this passive receiving information way is not conducive to achieve full communication and information exchange between businesses and their customers. However, precision marketing for companies to create an interactive exchange of information and communication means and channels with customers, so that enterprises can fully understand the customer’s own circumstances and customer needs, its easier access to get customer recognition and customers resonance in the implementation of precision marketing.

In order to make the B2C e-commerce marketing channel integration more suitable for the behavior of online consumers in today’s society, the idea of traditional channels integration need to combine some marketing ideas which close to network technology, therefore, it need to add some new theory to form a perfect precision marketing channel integration system.

Six Degrees of Separation. The B2C e-commerce marketing channel integration is more suitable for the behavior of online consumers in today’s society, the idea of traditional channels integration need to combine some marketing ideas which close to network technology, therefore, it need to add some Six Degrees of Separation theory to form a perfect precision marketing channel integration system. Harvard University psychology professor Stanley Milgram conducted a chain experiment in 1967, try to prove that just average six people can contact any two strangers Americans, which proposed the theory of six degrees of separation, namely Six Degrees of Separation theory. What is called Six Degrees of Separation, simply, any two people to establish contact, up need to six people (not including the two men included) in this society, regardless of whether the two men know each other, anywhere you live on the planet, only a maximum of six degrees of

separation between them. Over the years, Milgram's theory was being too negative (DeVita-Raebu 2008)<sup>[19]</sup>, also has been shown to play a role. Leskovec and Horvitz (2008)<sup>[20]</sup> by carrying out research on the Microsoft. NET Messenger service users, found that the contact between uniformity relationship was the 6.6 people. As Adams (2007: 11)<sup>[21]</sup> proposed, actually there has six people in you and your most reliable business partner. The only difference is that in the case of opportunity not to be ignored, the required time to reach “Six Degrees of Separation” has become shorter. Six Degrees of Separation, explains the community prevalence of “weak ties”, it plays a very powerful role. If a lot of people is looking for a job, find a friend or other communications with the outside world will feel the effects of this weak link, and also people will become very “close” by the weak ties <sup>[22,23]</sup>.

Six Degrees of Separation is to play its powerful features through social network platform. Once “Six Degrees of Separation” theory only exists as a theory, but as the generation of social networking media, namely the function can reflect and promote the formation of the real development of social relations, so that everything becomes a reality <sup>[24]</sup>. Ties between people from living under the line onto the line platform, so that bond was growth and strengthened suddenly. Also, because of the openness of this platform without the constraints of time and place, so the costs of generate and strengthen “Ties” communication reduced, making it more diversity<sup>[25]</sup>.

Application of Six Degrees of Separation for social media by type of “friends of friends” to expand relationship, it can be established a wide network of social relations in a short time <sup>[26]</sup>, it allows individuals from the different place on the network becomes shorter, and almost establishment of a social relationship between everyone. Ugander et al. (2011)<sup>[27]</sup> through research of Facebook, and found that “Six Degrees of Separation” has reached a global mode on Facebook. In addition, such a wide range of social networks largely affected the behavior of network users. Tran et al. (2011)<sup>[28]</sup> through the study of music sites Herzio.com found the friend has a large role in influencing the choice of the individual. Compared with the different social distance and different group, preference increasing with the intimacy concentration, that is, the shorter of the social distance, the more likely it power-sharing behavior. Tuomela (2010)<sup>[29]</sup> observed five groups that have different preference of relationship, after study, he found that people pay high attention to relationship who show a positive attitude of share information and experience, and it can form more trust<sup>60</sup>. People buying behavior has relate to others shared information of shopping experience, join the network of relationships good for people to get the information value, and people initial join often depends on their friends.

### **2.2.3. Implementation method of precision marketing**

Precision marketing transmission mode is similar to marketing communications way: Also by DM (Mail marketing), EDM (email marketing), straight back advertising, telephone, text messaging, and common Internet marketing—SEM (search engine marketing), SEO (search engine optimization), social marketing, etc., but these marketing activities based on has a full investigation and analysis for customer and market, with clear control of all aspects of sales, to achieve low-cost expansion<sup>[30]</sup>.



Precision Marketing subverts the traditional framework of organizational structure and marketing channel restrictions, it must have a comprehensive and reliable logistics and payment systems, fast and convenient distribution system and reliable settlement system are two main factors of precision marketing, other is a personalized customer communication channels: call centre, which is platforms established through internet and telephone in order to achieve one to one communication with customers: its main function is to process customer orders, answer customer questions, through customer care to maintain customer relationships. According to survey of consumer, it illustrate that the most important reason for suppression of online shopping are unpleasant shopping experience, lack of social interaction and lack of one to one consultation with the customer service<sup>[31]</sup>. By precision marketing way to achieve to improve the user's shopping experience, increasing the sense of participation of customers and realize the effect of one to one customer service.

Traditional marketing focus on market share, but precision marketing concern about customer value and proliferation. Precision marketing operational core is CRM, namely customer relationship management. CRM concept by the Gartner consulting services (Gartner Group) the company proposed on the basis of ERP (enterprise resource planning) Systems for customers as early as 1999, namely the enterprise to maintain customer continue to buy goods to adjust communication with customers, to achieve the most appropriate marketing concept. CRM integrated client, company, employees and other resources, resources be allocated and restructured effectively, its convenience to use the resource and knowledge in entire customer relationship life cycle; simplify and optimize various business processes, so that companies and employees able to focus on improving customer relations, improve the performance of the core business in sales, service, marketing activities, improve staff capabilities of rapid response to customer and give feedback; also bring convenience to customers, customers can quickly obtain personalized products, programs and services according to their demand<sup>[32]</sup>.

Through the accurate analysis and summary of above e-commerce, marketing, we can see many scholars do the theoretical studies of e-commerce, precision marketing. Therefore, focus on research case study of JD Mall and Amazon China this two main B2C e-commerce precision marketing, form analyze their personalized and precise features, for enterprises to achieve more precise, more measurable and high investment return on marketing performance, has some theoretical and practical significance.

Based on the theory proposed by the researchers, the precision marketing has the following characteristics. Firstly, the precision marketing makes the customer groups positioning clear. The first prerequisite of precision marketing should be accurate positioning of products and audience. The market segmentation is the theoretical basis, precision marketing is completed with accurately collecting consumer related information. If the customer groups positioning is more scientific and accurate, it is better to use different strategies for different product promotion, there is more effective communication with customers, being easy to customer master their needs and market information. Secondly, the precision marketing focuses more on process and the results. "Accuracy" is a dynamic concept involved in the whole process of marketing, the concept of precision must be from the marketing plan to the end of marketing activities. Due to the more scientific and precise positioning

of customer groups, the implementation of different potential marketing program is bound to cost more human and material resources, so the controllable marketing process can ensure the implementation of precision marketing scheme<sup>[33]</sup>. It pays more attention to the input-output ratio, if the benefit of precision marketing does not have obvious advantages compared with traditional marketing pattern, the enterprise is not apt to this new marketing mode. Thirdly, precision marketing relies more on modern information technology. The development of network information technology has led to the popularity of e-commerce, more people, especially in the youth group, choose the various consumer electronic commerce model. Due to the unique characteristics, the precision marketing should rely on modern information technology means to achieve accurate analysis of public income group, release different products or services of the latest information more quickly in accordance with the demographic characteristics of customer groups, the propensity to consume, economic strength and other factors, so as to ensure the long-term healthy development of enterprises. Fourth, precision marketing is the inevitable choice of enterprise with low cost expansion. The enterprises are the main body of the market, which seek for low cost and high return. Compared with the traditional marketing, precision marketing has clear market positioning, different marketing means, corresponding marketing strategies for different groups, apparently showing better promotion mode than that of the traditional marketing mode, which greatly reduces the cost of product promotion, and improve the product propaganda, while saving consumer's time on distinguishing with advertising information. Whether for business or consumer, precision marketing is a very good choose.

### **2.3. Shortage of the existing theory**

Precision marketing for e-commerce is an important marketing strategy, which can quickly and accurately position and lock customer groups, enable enterprises to achieve the desired effect of marketing. But the application of precision marketing in practice still has great limitations. There is no systematic theory support for the marketing plan in e-commerce area. At the same time, the research on the practical use of precision marketing mode for electronic commerce is not enough. The research tries to provide theoretical thinking and practical application of precision marketing in e-commerce enterprise. Based on a comprehensive view of the overall situation, the research completes the rational analysis of precision marketing, hope to give a certain reference significance on the research and practice of precision marketing in e-commerce industry.

## **3. Research approach**

### **3.1. Data collection methods**

Data collection lays a basis for the research. To collect data, both quantitative data collect methods and qualitative research method are adopted. A questionnaire survey is adopted in this research. The questionnaire survey is feasible and can be made to exactly match the research objectives<sup>[34]</sup>. In the existing reports and researches, it is difficult to collect secondary data which narrowly focuses on influential factors of costumer behavior on the product selection. Hence, the primary data collected for the quantitative analysis is survey. Since this research aims to measure the influential factors of costumer behavior, a large number of data should

be collected. Hence, the questionnaire survey can do a lot of help. The structured questionnaire survey is adopted in this research. It means that respondents in the questionnaire survey are provided with a limited number of options so that they can stick to the information which is needed in this research<sup>[35]</sup>. The disadvantage is that some unforeseen information may be neglected and dropped. To solve this problem, literature review is made and the existing researches are taken as references to identify the possible influential factors of customer behavior performance with avoiding drop of important information.

The questionnaire survey takes stratified random sample<sup>[36]</sup>. Considering feasibility and time consumption, 130 respondents are selected. In the sample, questionnaires are randomly issued to respondents for collect their opinions about daily necessity product consideration factor. In doing a research, the scale of data sample largely influences findings and research quality<sup>[37]</sup>. A large data sample is likely to reduce bias. However, to collect a large data sample, it consumes too much money and time. In this research, 130 questionnaires form an acceptable data sample. In designing the questionnaire survey, the centesimal system is used. Each item can be evaluated with score from 0 to 100 based on the satisfied extent. The SPSS software will automatically calculate related results. Then, it is necessary to validate the result through training data test. After a certain period of observation, the model is adjusted to the correct value<sup>[38]</sup>. In this dissertation, using questionnaire to collect data to reflect purchase willing in precision marketing.

Except for quantitative data collection, this research also adopts qualitative data collection, the data are mainly secondary data, which comes from books, journals, articles, company websites and other website. The research will review the literature related with the precision marketing, JD's strategy on precision marketing, the comment of JD's strategy. Also, the website is another important data source. The company website will show its product, and annual report reflect the sales, etc. These data are the important secondary data used to analyze the precision marketing of JD.

### **3.2. Reliability**

The science and validity of the questionnaire is the base for analysis. Generally, the reliability analysis is used to evaluate whether a questionnaire survey is reliable. Reliability is the credibility of the questionnaire, it shows the consistency, reproduction and stability of the test results.

Generally it is divided into two types of reliability. Internal reliability focuses on the same set of questions whether measurement of the problem is the same concept. If the degree of consistency is high, project evaluation is more significant, the credibility of the evaluation results will be strong.

External reliability refers to the implementation of the same batch of repeated survey respondents in different time. If the evaluation result is consistent with the previous one, it proves that the concept and content of the project is clear, so the evaluation of the results are credible.

The reliability analysis methods vary, including alpha reliability and split half reliability. At present, the most commonly used is the Alpha reliability coefficient method, and it mainly considers the inner scale reliability.

The reliability coefficient should be between 0 and 1. The reliability coefficients are more than 0.9, reliability is very good. If reliability coefficient is between 0.8 ~ 0.9, indicating acceptable reliability. And reliability coefficient is between 0.7 to 0.8, there are the problems need to be revised; reliability coefficient is below 0.7, indicating the amount of table issues need to be abandoned.

The regression model should be tested to check the validation. The regression model includes the following several test. Theoretical significance test. Theoretical significance test mainly involves the symbol value and interval estimation of parameters. If it is not consistent with the substantial scientific theory and people's experience, the model cannot well explain the reality of the phenomenon. First level inspection. It is the statistical test. It adopts the statistical sampling theory to test the reliability of the regression equation, the concrete can be divided into the fitting degree evaluation and test of significance.

## **4. Analysis of precision marketing on purchase willingness**

### **4.1. Variable and questionnaire design**

From the literature review of precision marketing in second chapter, it is obvious that the precision marketing has a rich theoretical and application foundation, the scholars in recent years have begun to study the precision marketing from the multiple perspectives. However, there is still a lack of study on the precision marketing affecting consumer purchase willingness. The research makes the previous research as the basis and provides the analysis of how precision marketing affecting consumer purchase willingness, which is the foundation for the making the precision marketing for e-commerce enterprise.

Due to the development of modern information technology, it can achieve a higher coincidence degree between advertising information of target audience and network media user groups. Jeff&Gresh (2008)<sup>[39]</sup> presented that the effect of precision marketing on consumers is divided into two levels. The first one is that the formulation of the advertisement information in the form and content should be according to the attributes of the target user groups, meeting the target user's requirement and habits. The second one is to participate in the interaction for the target audience. As for the impact on consumer behavior, precision marketing takes huge advantage compared with traditional advertising. Therefore, this study is to determine the effect of precision marketing on consumer purchase through examining the impact factors from these two aspects, as far as possible to select all the important factors.

The factors selected and determined take the following two steps: the relevant literatures are reviewed, and the basic important factors for precision marketing are determined, including Practicability, Price, Vitality, Customer evaluation, Brand image, Interactiveness, Convenience and Accuracy. Then, an open interview with 10 Management MSc is done to collect the feedback of these factors, determining the final factors.

The research makes the mobile phone consumers in JD as the research object, and carry out the empirical analysis. Before the design of the questionnaire, the literature research, combining with the results of previous studies, is proceeded to analyze the specific situation, provide the measurement scale, and complete the initial questionnaire design. To make the questionnaire more precise and perfect, the business management

professional are invited to review and revise the design of the questionnaire, who put forward the opinions and suggestions of the questionnaire design. Through several revise according to the feedback, it forms a final questionnaire. The questionnaire using Likert 100 scale.

## 4.2. Data collection

According to the purpose of this paper and the characteristics of questionnaire, the survey method adopts online questionnaire survey. A questionnaire website is designed and released in the website, and the respondent can complete it in a web page. As the survey target is the mobile phone costumer in JD, the author would firstly build a social relation with the costumers in JD, and then sending them questionnaire with the social media. Also, the questionnaire will contain a link of JD, which present the smart phone product. The respondent can complete and submit the questionnaire online. The questionnaire investigation time is from December 22, 2018 to December 22, 2019. The survey is distributed in 130 copies, it collects 107 copies, with 98 valid questionnaires. The recovery rate is 82.3% and the effective rate is 91.6%.

## 4.3. Analysis method

The research e will analyze the survey data using regression analysis in SPSS. Regression Analysis is a method to analyze the relationship between several predictive variables and an effective variable. Although the regression analysis can not find the functional relationship between the independent variable and the dependent variable, it can find out the mathematical expression between the independent variable and the dependent variable, which is beneficial to further analyze and discuss the relationship between the dependent variable and the independent variable.

## 4.4. Analysis results

The research selects the smart phone sale in JD as the research object. **Table 1** shows the statistical results. **Table 2** shows the regression result.

**Table 1.** Descriptive statistical analysis.

	N	Range	Mini	Max	Mean	S/D	Variance
Willingness	98	85	12	97	49.25	22.30	497.41
Practicability	98	52	15	67	38.97	19.37	375.27
Price	98	74	17	91	49.36	25.40	645.19
Vitality	98	43	34	77	49.61	12.27	150.65
Customer evaluation	98	73	19	92	58.52	19.10	364.85
Brand image	98	49	49	98	66.78	16.72	279.40
Interactiveness	98	55	28	83	59.57	11.70	136.77
Convenience	98	33	42	75	60.89	6.61	43.70
Accuracy	98	94	4	98	42.51	23.10	533.62

The regression model in the beta value represents the variables of the standard regression coefficient. From the above analysis results, it is obvious that the significant level of each factors are different. Practicability, brand image and consumer evaluation are the most significant impact factors. As for the impact extent, the importance of factors are practicability, branding image, convenience, price, accuracy, convenience, interactiveness, and vitality.

Practicability can reflect the function of the products, to a certain extent showing the character of the product. If the product is consistent with the demand of the target audience, the consumers will have a strong willingness to purchase it. Each target audience has its common characteristics, it is certainly able to find a way to resonate in this part of the group with the accurate positioning of the target audience.

Also customer evaluation is also significant. With the development of the network, consumers have more information channel, the consumer psychology is affected by consumer evaluation, the influence of other people will become more and more obvious.

Convenience and vitality features as important characteristics of precision marketing do not show strong effect on the consumer willingness. It is possible that convenience and vitality are the basic factors for the e-commerce enterprise, there is no significant difference between traditional marketing and precision marketing.

#### 4.5. Model validity and error

##### (1) Residuals

According to the residuals output from SPSS, the residuals is as **Figure 1**.

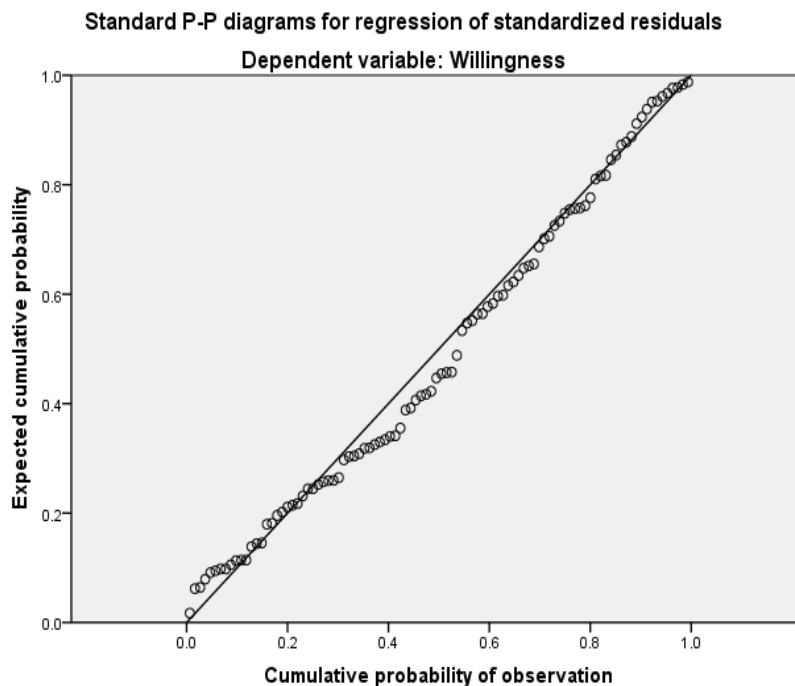
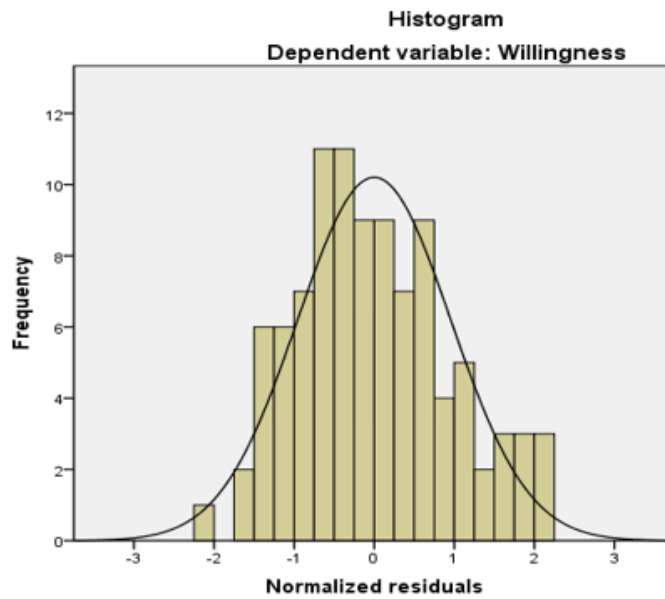


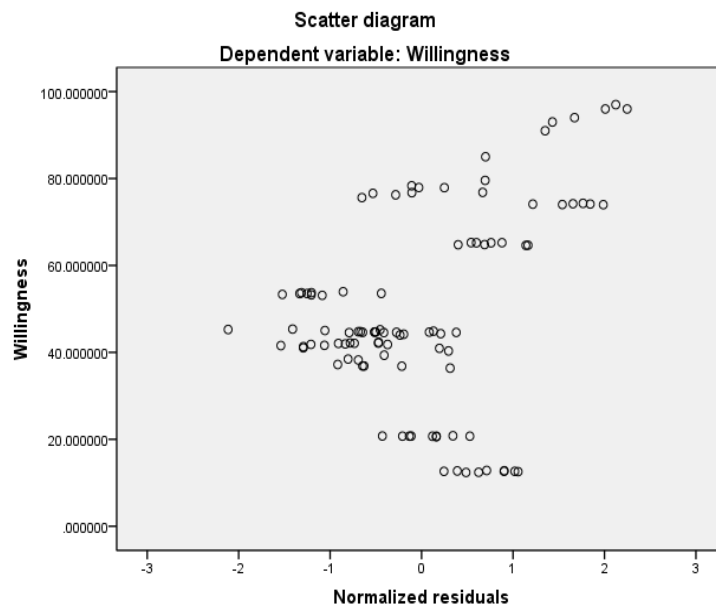
Figure 1. Residuals.

The expected cumulative probability is a straight line, the normality assumption is validated.



**Figure 2.** Histogram.

The histogram shows that the normalized residuals obey the normal distribution, the model can explain the relation between dependent variable and independent variables well.



**Figure 3.** Scatter.

The scatter plot can not only shows the relation between the variables, but also can reflect the degree of the relationship among the variables. The scatter plot is linear, which indicates there is a close relation between the willingness and the independent variable.

(2) Coefficient of multiple determination

Adjusted Square R indicates the total variation of the regression interpretation, and the total variation of the regression equation is explained by the R Square. As can be seen from the table, the adjustment of the final model is 0.871, indicating that these variables can explain the overall variation of the 87.1%. The explanation effect is very good.

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

## 5. Conclusion

This research provides the theory of e-commerce, precision marketing and modern marketing, which lays a theoretical basis for the study. To integrate the two category theories, a case study analysis to identify JD’s precision marketing applications are explored. The research introduces the precision marketing measurement of JD in product, technology, marketing strategies, customer relationship management and logistics and other aspects. In addition, the research further conducts a quantitative analysis of precision marketing influence on the consumer purchase willingness, the analysis result is used to determine the key factors of precision marketing and provide suggestion for the precision marketing. Based on the quantitative analysis and case study result, the research provides the precision marketing framework for the e-commerce enterprise, which has practical significance for the enterprise.

Although this research has done a lot of work and achieved some research results, it still exists the following deficiencies:

(1) The design of the marketing scale is not comprehensive enough. Precision marketing is a relatively new theory, the impact of consumer behavior research is at the exploratory stage, with the network technology, the means of precision marketing is constantly enriched, the considered factors in the design are not enough.

(2) The number of samples is limited. Because of the limitation of the researcher's resources, it is not possible to do a large sample of research, which may make some research results not fully reflect the real situation.

(3) The limitations of the survey. Because of the limitation of resources, this study only takes smart phone product survey as the research object, the research results may reflect the characteristics of the industry's precision marketing, the research results may not be good for the application of all industries. Also, the case study only takes JD as the example, which may has its special character.

According to the results of this research, the future research can be considered from the following aspects:



(1) The application of precision marketing has done a lot of research, but the author found that different enterprise in the precision marketing tool selection and implementation are different. The analysis of the characteristics of different enterprise to determine the precision marketing activities have a certain practical significance.

(2) The research of the precision marketing influence on consumer behavior will become a hot topic. It is necessary to study the dimensions of the precision marketing and develop a targeted research scale according to the characteristics of different enterprise.

(3) From the current definition and research results, the current precision marketing is almost all marketing communications and advertising delivery, precise marketing of this research will also be limited to this, in the future the scale can be expanded.

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## Conflicts of interest

The authors do not have any conflicts of interest.

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