

An Experimental Study on the Buffering Mechanism of College Students' Entrepreneurial Failure from the Perspective of Customer Loyalty

Yuju Wu¹, Yongjun Kang², Yi Liu³, Wenquan Ling⁴, Weisheng Wu¹, Yunping Chi¹, Haijing Wu¹, Wanting Zhang¹, Jilin Li¹, Zhen Lei¹, Wenjie Liang¹

¹ South China Institute of Software Engineering, Guangzhou University, Guangzhou, Guangdong Province, China

² School of Entrepreneurship Education, Guangdong University of Finance & Economics, Guangzhou, Guangdong Province, China

³ Faculty of Social and Public Administration, Guangdong Baiyun University, Guangzhou, Guangdong Province, China

⁴ School of Management, Jinan University, Guangzhou, Guangdong Province, China

Keywords: Customer loyalty, Situational simulated method, College students, Mass entrepreneurship and innovation

Abstract: Since the “mass entrepreneurship and innovation” was put forward, the innovation and entrepreneurship activities of college students have gradually become the new focus of social development. However, problems such as insufficient practical experience also make college students encounter many difficulties in innovation and entrepreneurship. Especially under the attack of the epidemic this year, uncertain and unstable factors are increasing, the problem of entrepreneurial failure has attracted great attention from all sectors of society. The research results related to “mass entrepreneurship and innovation” mainly focus on the education model of “mass entrepreneurship and innovation” in colleges and universities and the cultivation of “mass entrepreneurship and innovation” ability of college students. There are few in-depth demonstrations from the perspective of customer loyalty of “mass entrepreneurship and innovation” products. Based on this, the project team focused on the customer loyalty of college students' mass entrepreneurship and innovation products, used experiments and questionnaires as the main research methods, and collected valid data from 505 college students online. The data analysis adopted descriptive statistics, correlation analysis, partial correlation analysis, crosstab analysis, correspondence analysis, independent sample T test, hierarchical regression analysis and other methods to gradually model, and obtain the following results: “perceived quality”, “perceived value”, and the mediating effects of “brand image” have all been tested, and the situational moderation effect is relatively obvious. In both scenarios, the brand image, perceived value, and perceived quality all had a positive impact on loyalty, but the coefficient changes before and after the situation changes. However, the influence of customer expectations on perceived quality shifted from positive to negative. The correct positioning of the brand image and the high experience of perceived value could well stabilize customer loyalty in risk situations. Finally, the project team put forward countermeasures based on the above conclusions on the three levels of the government, entrepreneurship and innovation teams and schools.

1. Introduction

With the advancement of “mass entrepreneurship and innovation”, the entrepreneurial ability of college students and the entrepreneurial ecology of the society have been continuously improved in recent years. However, most of the college students' social and work experience are obviously insufficient. Although they have thorough theoretical support, the difficulty of entrepreneurship is obvious, and the success rate is still hovering at a low level. This also reflects the great challenges faced by entrepreneurship education.

In the fierce market competition, customer loyalty has become a key factor affecting enterprise

development. Rust and Zahorik (1995) studied the relationship between perceived service quality and customer loyalty in the banking industry [1]; Crosby and Stephens (1987) investigated customer loyalty in the insurance and retail industries [2]; Anderson's empirical study found the impact of switching cost on customer loyalty in the medical service market (1982) [3]. Luo Ziming (1999) [4], Ji Jian (1999) [5], Zhou Meihua (2004) [6] respectively constructed different customer loyalty measurement indicators and models and conducted empirical research.

The success of entrepreneurial projects is also inseparable from the choices of consumers. Loyal customers are a strong support for the sustainable development of entrepreneurial teams. Existing literature research pays more attention to the cultivation of college students' "mass entrepreneurship and innovation" ability to ensure the sustainable development of entrepreneurial projects, but few explores the long-term development mechanism of "mass entrepreneurship and innovation" projects from the perspective of customer loyalty in the context of college innovation and entrepreneurship education. Based on this, the project team carried out an empirical study on the customer loyalty buffering mechanism of college students' "mass entrepreneurship and innovation" products, tested the function boundary of the traditional loyalty model, examined its applicability in the field of mass entrepreneurship and innovation, and helped the reform of mass entrepreneurship and innovation education.

2. Research Design

2.1 Model Assumption

On the basis of referring to other existing product loyalty models and combining the characteristics of mass entrepreneurship and innovation products, the project team constructed a mediating effect model with moderation and related assumptions. The model framework is shown in Figure 1. Under the current entrepreneurial boom, college students pay attention to entrepreneurial information, and institutions such as maker space and entrepreneurial incubation bases in schools are becoming more popular and better. Everyone has certain expectations for mass entrepreneurship and innovation products. As for whether the expectations can be successfully transformed into loyalty, it also depends on the perceived quality, perceived value, and brand image of the process of using and consuming the products. These three indicators constitute the mediating variables of the model. The operation status of entrepreneurial projects (positive or risky situations) restricts the effects of the aforementioned mediation model and becomes a moderating variable of it.

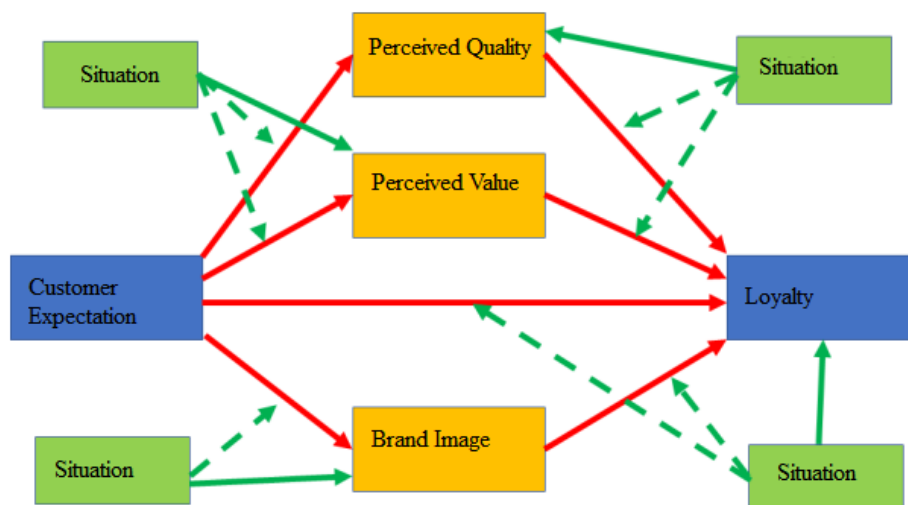


Fig.1 Model of the Loyalty Mechanism of Mass Entrepreneurship and Innovation Products

2.2 Experiment Design

The project team interviewed senior entrepreneurial mentors and an entrepreneurial team,

compiled a campus service entrepreneurial team case, and recorded two short entrepreneurial videos around the “positive situation” and the “risky situation”. The two short videos both lasted for one and a half minutes, and both described the operation status of the BCZ entrepreneurial team. They only showed obvious differences in the four main aspects of team finance, product technical advantages, media promotion, and customer evaluation. These four factors covered the core factors of Timmons entrepreneurial model. The project team conducted a small-scale pre-test, and the results showed that the video can induce different evaluations of the subjects. “Between group design” experimental method was used in the experiment. The subjects watched the video and had the priming effect, and then answered the questionnaire items to examine the fluctuations in consumer loyalty caused by the two types of operating conditions.

2.3 Questionnaire Design

Although the start-up video was divided into two different versions, the questionnaire used for the test after watching the video remained the same from the question to the options, which facilitated the comparison of effects. Here is the two parts of the questionnaire structure:

The first part is the experimental situation questions. There are a total of 28 questions in this part, covering the video priming effect question (1 question), product purchase intention (1 question), and the volume title scale questions corresponding to five variables: customer expectations (4 questions), perceived quality (4 questions), perceived value (5 channels), brand image (4 questions), loyalty (9 questions). The questions of the questionnaire are adapted from the questionnaire compiled by Zhang Yuanxiao (2016) [7] and Cha Jinxiang (2006) [8]. All options are based on Likert's 5-level score, from 1 to 5, with increasing degrees of conformity.

The second part is the basic situation questions about subjects. There are a total of 4 questions in this part, covering gender, grade, average monthly consumption, and major to distinguish demographic characteristics.

Table 1 Factor Composition After Rotation

Number	Principal component factor loading									
	Volume A(positive situation)					Volume B(risky situation)				
	Perceiv ed quality	Perceiv ed value	Brand image	Loyalt y	Customer expectatio ns	Customer expectatio ns	Loyalt y	Brand image	Perceiv ed value	Perceiv ed quality
Q1	0.708									0.694
Q2	0.831									0.858
Q3	0.839									0.848
Q4	0.848									0.857
Q5		0.790							0.790	
Q6		0.828							0.828	
Q7		0.850							0.850	
Q8		0.787							0.787	
Q9		0.669							0.669	
Q10			0.839					0.874		
Q11			0.813					0.833		
Q12			0.823					0.890		
Q13			0.755					0.793		
Q14				0.790			0.827			
Q15				0.788			0.813			
Q16				0.813			0.828			
Q17				0.794			0.810			
Q18				0.810			0.824			
Q19				0.670			0.470			
Q20				0.743			0.454			
Q21				0.759			0.788			
Q22				0.633			0.706			
Q23					0.889	0.913				
Q24					0.906	0.933				
Q25					0.919	0.916				

Q26					0.797	0.854				
Factor explained percentage	66.806 %	67.007 %	71.952 %	54.547 %	81.803%	77.309%	50.386 %	65.324 %	61.980 %	65.364 %
Cronbach's alpha	0.822	0.844	0.822	0.864	0.900	0.925	0.888	0.870	0.877	0.834

It can be seen from Table 1 that the load capacities of each question of the five variables in Volumes A and B are all above 0.5, and the Cronbach's coefficient α value is all greater than 0.7, indicating that the questionnaire has good reliability and validity.

2.4 Survey Implementation and Survey Samples

This survey selected college students located in Guangzhou City as the survey objects. Due to limited manpower and material resources and the impact of COVID-19 epidemic, the project team released questionnaires through WJX questionnaire platform, used a combination of convenient sampling and snowball sampling. At last, a total of 562 questionnaires were collected for a period of one month.

Except for filtering out the 12 data items that did not meet the shortest filling time, 45 subjects were excluded as invalid samples due to the priming effect and the opposite of the contextual attributes. The project team finally got 505 valid sample data. The questionnaire efficiency reached 89.9%. The project team conducted statistics on the basic information of 505 valid sample data. There were 243 boys and 262 girls; 115 freshmen, 283 sophomores, 85 juniors, 18 seniors, and 4 others. In terms of average monthly consumption, 32 people spend 500 yuan or less, 164 people spend 501-1000 yuan, 220 people spend 1001-1500 yuan, 64 people spend 1501-2000 yuan, and 25 people spend 2001 yuan or more. From the perspective of majors, 245 people major in the science and engineering category, 166 people major in the economics and management category and 94 people in other categories.

2.5 Statistical Methods

In this survey, SPSS 24.0 and Excel2010 were used for statistical analysis of the data obtained from the survey. The modeling involves five variables in the questions of the scale: customer expectations, perceived quality, perceived value, brand image, and loyalty. Considering that in this study, the entrepreneurial team's operating situation was used as the moderation variable, and the situational factors were transformed as the dummy variable, denoted by D (dummy). Entrepreneurial failure is the new normal, so "risky situations" have attracted more attention from scholars and entrepreneurs. Therefore, the project team assigned a value of 1 for the "risky situation" (that is, $D=1$) and a value of 0 for the "positive situation" (that is, $D=0$) to facilitate the comparison of the corresponding analysis results of the "risky situation" and the "positive situation". Before modeling, the differences in the mean values of the five variables and the correlation coefficients in the two situations were compared. These differences paved the way for the subsequent mediation model's accompanying moderating effects. Then, when modeling, the hierarchical regression analysis was used to test the establishment of the mediating effect according to the three-step regression method (Baron & Kenny, 1986 [9]; Wen Zhonglin, Hou Jietai, and Zhang Lei, 2005 [10]) on the basis of excluding control variables. On this basis, it was tested whether the interaction between the mediation path coefficient and the situation variable is significant. If it is significant, the mediation model with moderation is verified. Considering that the moderating effect needs to be tested on the basis of the establishment of the mediating effect, the R-squared value and significance of the interaction term may be difficult to reach the conventional significance level. With reference to the practice of existing experimental research papers, this section relaxes the significance standard of the interaction term to $P=0.1$, and calls $0.05 < P < 0.1$ as the marginal significance level.

3. Data Analysis Results

3.1 Test of “Customer Expectations-Perceived Value-Loyalty” Mediation Model with Moderation

By using the hierarchical regression analysis, two regression modeling were performed. The first regression model took perceived value as the dependent variable, and the analysis results are shown in Table 2.

Table 2 Linear Regression Coefficient of Customer Expectations and Perceived Value(R2=56%)

Model		Unstandardized coefficient		Standardized coefficient	t	Significance
		B	Standard error	Beta		
3	(constant)	1.024	0.178		5.761	0.000
	Purchase intention (control variable)	0.118	0.028	0.155	4.193	0.000
	Situation (moderating variable)	-0.455	0.259	-0.249	-1.760	0.079
	Customer expectations (independent variables)	0.622	0.040	0.613	15.594	0.000
	Situation × customer expectations (interaction item)	0.070	0.064	0.149	1.093	0.275

It can be seen from Table 2 that purchase intention and customer expectations have a significant positive impact on perceived value, while the impact of the interaction item “customer expectations × context” does not reach a significant level.

The second regression model took loyalty as the dependent variable, and the analysis results are shown in Table 3.

Table 3 Linear Regression Coefficient of Customer Expectations, Perceived Value and Loyalty(R2=51.1%)

Model		Unstandardized coefficient		Standardized coefficient	t	Significance
		B	Standard error	Beta		
4	(constant)	1.385	0.145		9.544	0.000
	Purchase intention (control variable)	0.166	0.022	0.301	7.568	0.000
	Situation (moderating variable)	-0.248	0.210	-0.187	-1.184	0.237
	Customer expectations (independent variables)	0.144	0.041	0.196	3.523	0.000
	Perceived value (mediating variable)	0.210	0.043	0.289	4.901	0.000
	Situation × customer expectations (interaction item)	-0.109	0.070	-0.318	-1.558	0.120
	Situation × perceived value (interaction item)	0.156	0.070	0.422	2.224	0.027

It can be seen from Table 3 that purchase intention, customer expectations, and perceived value positively affect loyalty significantly. The interaction item “perceived value × situation” significantly affects loyalty.

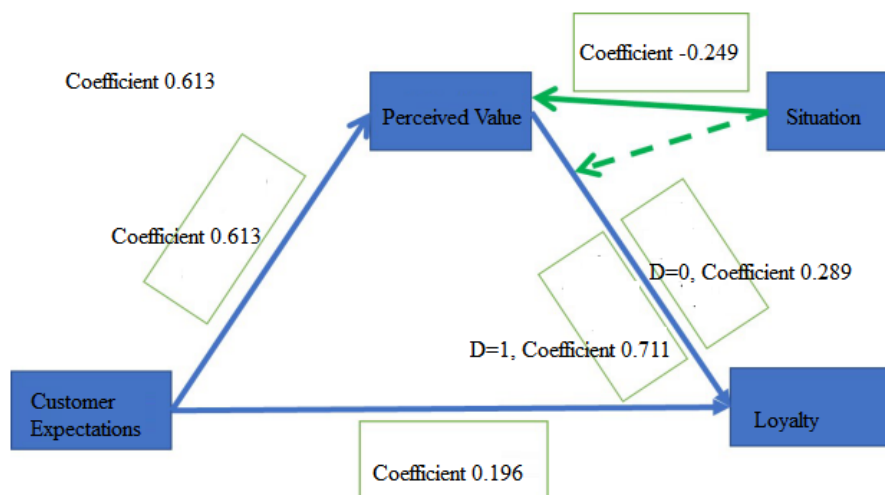


Fig.2 Path Coefficient of Customer Expectations, Perceived Value and Loyalty in Different Situations

It can be seen from Figure 2 that no matter in a positive situation or a risky situation, the impact of customer expectations on perceived value and loyalty has always been positive. When a risk occurs, the perceived value positively affects the loyalty, and the coefficient is higher than that in a positive situation. Therefore, the high experience of the perceived value can well stabilize the customer's loyalty in a risky situation.

3.2 Summary of Test Results of Mediation Model with Moderation

Similarly, two mediation models with moderation of “customer expectations-perceived quality-loyalty” and “customer expectations-brand image-loyalty” were tested. The summary test results are shown in Figure 3 and Table 4.

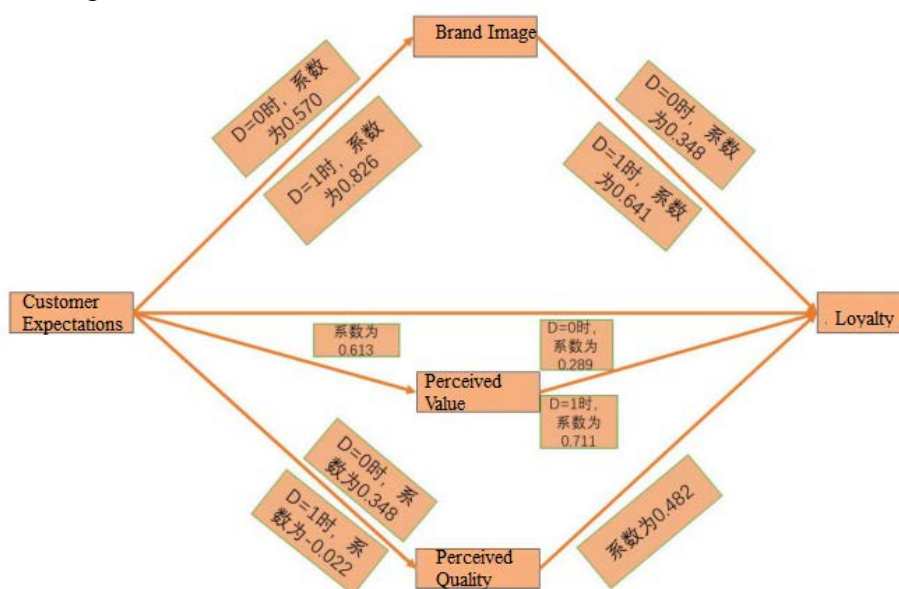


Fig.3 Path Coefficient of Mediation Models with Moderation in Different Situations (Except for Direct Effect)

Table 4 List of Test Results of the Mediation Model with Moderation

Mediating variable	Situation	Mediating type	Mediating effect	Moderating effect
Perceived quality	Positive situation	Partial mediation	47.69%	√
	Risky situation	Partial mediation	5.51%	
Perceived value	brand image	Partial mediation	47.48%	√

	Risky situation	Partial mediation	68.98%	
Brand image	Positive situation	Partial mediation	53.13%	√
	Risky situation	Partial mediation	75.16%	

4. Conclusion and Countermeasures

4.1 Conclusion

The mediating effect of “perceived quality”, “perceived value” and “brand image” have all passed the test. They are all partial mediating effect. The moderating effect of situation is relatively obvious. In both situations, the brand image, perceived value, and perceived quality all have a positive impact on loyalty, but the coefficient changes before and after the situation changes. The influence of customer expectations on perceived quality has shifted from positive to negative. When the risky situation comes, the correlation between the consumer's customer expectations and product quality will weaken, the expectation of the value of the initial contact with mass entrepreneurship and innovation products will be low, and the expectation of the brand image at the first contact will be low as well. However, the stronger the correlation of expectation value and brand image, the stronger the correlation between the brand image position and loyalty, and the closer the relationship between perceived value and loyalty. Therefore, the correct positioning of the brand image and the high experience of perceived value can help make customer loyalty stable in risky situations.

4.2 Countermeasures

4.2.1 Government

It is necessary for governments to provide product certification to mass entrepreneurship and innovation products, establish integrity files for mass entrepreneurship and innovation, and regulate the operation of the market of mass entrepreneurship and innovation.

Governments should strengthen supervision during and after the event, punish illegal acts in accordance with the law, protect intellectual property rights, plan and guide the layout of patents, and establish a market environment of honest operation and fair competition. Governments can create a secondary mass entrepreneurship and innovation committee in the original industry association to guide the market to move forward healthily in the direction of integrity and order. At the same time, governments can provide special certification channels to mass entrepreneurship and innovation teams. Enterprises or teams that meet the standards can be put into the warehouse, and their products can be endorsed by the governments, which will greatly increase consumer confidence.

4.2.2 Mass Entrepreneurship and Innovation Team

(1) Improving product quality, building brand reputation, and at the same time doing a good job in correcting brand image positioning and reaching high experience of perceived value, so as to stabilize customer loyalty.

Product quality determines whether consumers will buy and recommend purchases again. At the same time, the appearance design must meet the aesthetic requirements of college students, and the packaging quality should be good. Only by ensuring the quality of the product from all aspects can it accumulate reputation, increase popularity, and cultivate and stabilize customer loyalty.

(2) Adopting campus agency or franchise models to allow college consumers to develop a sense of fault tolerance for mass entrepreneurship and innovation in the experience of multiple roles.

Mass entrepreneurship and innovation teams can promote their own entrepreneurial story while promoting their products, so as to attract more customers to learn about them. In addition, the campus agents or franchise model can be selected for promotion, so that more like-minded college students can join in, and at the same time can increase the popularity of the teams and the products.

4.2.3 School

(1) Establishing a “media integration” publicity system for mass entrepreneurship and innovation products.

The early-stage publicity of mass entrepreneurship and innovation products should appropriately carry out some offline promotion and “old with new” activities. New customers in the college student consumer group are often affected by the verbal promotion of old customers. Mass entrepreneurship and innovation teams should appropriately adopt some recommendation mechanisms and make full use of the old customers to promote and attract more new customers. Meanwhile, the teams can invite college students to act as experiencers who need to regularly publish experience logs of their products on various new media, set up popular product rings, and refresh the ranking in real time. They also can regularly collect materials such as stories about mass entrepreneurship and innovation consumption, and show how the products are embedded in students' daily life in various forms such as graphics and text. In addition, schools can set up training bases for online sellers to train product fans to carry out live webcasts and sell the products. Schools can also cultivate some regular supervisors who can spot-check mass entrepreneurship and innovation products or services in the form of “secret guests”, and regularly organize product experience and communication seminars at fixed period. This can help find problems and prevent them before they happen [11].

(2) Designing a customer relationship management platform, collecting and analyze customer big data, feeding back entrepreneurial education from the client-side, and improving the entrepreneurial management model.

Schools can design customer relationship management platforms to accurately collect and analyze customer data, grasp the demand trends of the dynamic market, so as to handle the changing trend of customer loyalty. Schools are duty-bound to become the “angel customers” of mass entrepreneurship and innovation teams. Schools can be used as purchasers to purchase the products for office equipment, reward gifts or staff's benefits. In this way, schools can experience the role of B-side customers and describe the path of customer relationship development. Schools can also give a certain number of subsidies to entrepreneurial teams in the name of platforms, allowing the teams to attract college-student consumers in a way of giving up part of the benefit, or allowing consumers to get coupons or have discount when spending enough, so as to cultivate their consumption habits. They can even start entrepreneurial management elective courses, exporting the data of the above platforms in the form of training, carrying out user profile analysis and public relations plan designs, which can make students practice in a real business environment, improve the school-based innovation and entrepreneurship education guidance system, and provide corresponding guidance for student teams.

5. Acknowledgment

1). Key scientific research platform and scientific research project of regular institutions of higher learning in Guangdong Province in 2018-Entrepreneurship Failure: Evade or Face It? --The Construction of the Management System for the Failure of “Mass Entrepreneurship and Innovation” Among Students in Private Higher Learning Institutions (Project Number:2018WTSCX239)

2). The higher education research project of China Private Education Association in 2019-Research on the “Dual System” Education Model of the Integration of Industry and Education in Private Higher Learning Institutions

3). The 2019 “Climbing Plan” Guangdong university student science and technology innovation cultivation special fund project-An Exploratory Research on the Management of Undergraduate Entrepreneurship Failure Against the Background of “Mass Entrepreneurship and Innovation”-Based on the Behavior Investigation and Analysis of Entrepreneurship Failure (Project Number: pdjh2019b0677);

4). 2020 National College Student Innovation and Entrepreneurship Training Project- Industrial Interconnection Smart Door Factory (Project Number: 202012618005x);

5). 2020 national college student innovation and entrepreneurship training project- Research on the Cultivation Path of Customer Loyalty of College Students’ “Mass Entrepreneurship and

Innovation” Products (Project Number: S202012618008);

6). 2020 student innovation and entrepreneurship training project of South China Institute of Software Engineering.GU- Slowness Creates Quality or Deterioration? Investigation on the Status Quo of “Slow Employment” of College Students and Analysis of Coping Strategies (Project Number: DCXM2019052)

7). The 2019 Education and teaching research project- Research on the Entrepreneurship Guidance and Service System of Colleges and Universities in the New Era (Project Number: ky201930).

References

- [1] Roland T. Rust, Anthony J. Zahorik, Timothy L. Keiningham. Return on quality: Making service quality financially accountable. *Journal of Marketing*, 59, pp.58-70, 1995.
- [2] Lawrence Crosby, Nancy Stephens. Effects of relationship marketing on satisfaction, retention and prices in the life insurance industry. *Journal of Marketing Research*, 24, pp. 404-411, 1987.
- [3] Alan R. Andreasen. Customer Satisfaction in Loose Monopolies: The Case of medical care. *Journal of Public Policy and Marketing*, 02, pp.122-135, 1982.
- [4] Ziming Luo. The composition and measurements of consumer brand loyalty [J]. *Journal of Beijing Technology and Business University*,02, pp.03-05,1999.
- [5] Jian Ji, Xiaoping Chen. Brand loyalty behavior-emotional model [J]. *Foreign Economies and Management*,01, pp.03-05,1999.
- [6] Meihua Zhou. Researches on Measuring of customer faithful degrees [J]. *Science & Technology Review*,12, pp.48-52,2004.
- [7] Yuanxiao Zhang. Research on strategies for improving customer satisfaction of regional e-commerce platforms [D]. *Shanghai University of Engineering Science*,2016.
- [8] Jinxiang Zha. Research on the relationship between customer value and customer loyalty in B2C E-commerce [D]. *Zhejiang University*,2006.
- [9] Reuben M. Baron, David A. Kenny. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), PP.1173-1182, 1986.
- [10] Zhonglin Wen, Lei Zhang, Jietai Hou. Moderating variable with mediation and mediating variable with moderation [J]. *Acta Psychologica Sinica*,03, pp.448-452, 2006.
- [11] Jiaying Ning, Yunping Chi. Innovation and entrepreneurship foundation [M]. *South China University of Technology Press*,2018, pp.34-36.