

Study on the Strategies of the E-commerce Implementation in Binchuan Grape Industry of China—Based on SWOT Quantitative Analysis Method

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Abstract: This study takes Binchuan County grape industry as the research point, on the basis of SWOT analysis in e-commerce grape industry resources in Binchuan County, combined with AHP quantitative analysis method, used Delphi method gives the factors weights and scores from the experts. And used the four-dimensional strategic center coordinates location of gravity, determine the strategy orientation angle. Come to conclusion that the strategies of implementation e-commerce of grape industry in Binchuan County should be opportunity type, and then put forward strategic suggestions.

Key words: Strategies; E-commerce; Binchuan County; SWOT quantitative analysis;

1 Introduction

Binchuan County is located in Yunnan province; it belongs to Jiangnan area hot valley that is one of China's famous grape producing areas. By the end of 2013, Binchuan County grape planting area reached 3,946 acres, production reached 359,500 tons, the total output value reached 27.68 billion Yuan ^[1]. In recent years, it had been occupying the national grape market gradually, preliminary showing the pattern of regional development. But the business model mainly focus on off-line transactions, the application of e-commerce is rarely. With the development in the fresh agricultural

products e-commerce in China, e-commerce is a significant trend, it is also necessary to this industry. The purpose of this study is to explore the feasible development strategy of e-commerce application in this industry through the analysis of current situation. This study intends to take the basic idea of SWOT quantitative analysis method. Using the AHP (Analytic Hierarchy Process) give the weight to the strengths factors, weaknesses factors, opportunities factors and threats factors of industry ^[2]. Meanwhile, I using the Delphi method score on its performance in concrete competitive environment. Strategic location will be found in the strategic diagram through the geometric center of gravity method point with eventually score results. Finally, strategic position angle will be calculated according to the corresponding strategic orientation, thereupon then, confirm the strategic choice of the industry.

2 SWOT quantitative analysis in the E-commerce Implementation in Binchuan Grape Industry

2.1 Define the strategic key factors

Through the interviewed with the relevant experts respectively, the results are sorted. Determined the strategic Influence factors of the E-commerce implementation in Binchuan grape industry is in Table.1.

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Table.1 key factors in strategy

Project	Influence Factors
Strengthens (S)	S1: high quality
	S2: scale advantages
	S3: ripeness advantages
	S4: Geographic and climatic advantages
Weaknesses (W)	W1: Low levels of brand awareness
	W2: Improper implementation of industry standard
	W3: dearth of personnel in e-commerce
Opportunities (O)	O1: increasing the consumption level
	O2: appropriate logistic environment
	O3: increasing e-commerce of agriculture products
	O4: government support
	O5: increasing perfection in network infrastructure
Threats (T)	T1: low consumer awareness
	T2: pressure from competitors
	T3: high cost in logistics

2.2 Using AHP method and Delphi method gave the weights for the factors

The AHP method^[3] is a excellent method adapted for non structural decision problem modeling proposed by American operations research scientist T.L.Satty in twentieth Century 70’s. It is a model for the analysis of qualitative and quantitative combination. First, using the Delphi method, after three rounds of consultation, expectation of expert group tends to be converged. and then according to opinions of experts, we can get Table.2 the Strengths of group judgment matrix, Table 3 the Weaknesses of group judgment matrix, Table.4 the Opportunities of group judgment matrix and Table.5 the Threats of group judgment matrix whit AHP method. (Evaluation standards as Table.6)

Tab.2 the Strengths of group judgment matrix

S	S1	S2	S3	S4	Weight	CR
S1	1	3	6	8	0.577	Latent Root =4.105 CI=0.035 CR=0.036 RI=0.96
S2	1/3	1	3	6	0.263	
S3	1/6	1/3	1	3	0.11	
S4	1/8	1/6	1/3	1	0.05	

Table.3 the Weaknesses of group judgment matrix

W	W1	W2	W3	Weight	CR
W	1	5	7	0.697	Latent Root =3.189 CI=0.094 RI=0.58 CR=0.163
W2	1/5	1	5	0.232	
W3	1/7	1/5	1	0.072	

Table.4 the Opportunities of group judgment matrix

O	O1	O2	O3	O4	O5	Weight	CR
O1	1	3	5	7	8	0.513	latent root = 5.137 CI=0.034 RI=1.12 CR=0.031
O2	1/3	1	2	4	7	0.24	
O3	1/5	1/2	1	3	4	0.141	
O4	1/7	1/4	1/3	1	2	0.065	
O5	1/8	1/7	1/4	1/2	1	0.041	

Table.5 the Threats of group judgment matrix

T	T1	T2	T3	Weight	CR
T1	1	5	6	0.723	latent root = 3.029 CI=0.015 RI=0.58 CR=0.025
T2	1/5	1	2	0.174	
T3	1/6	1/2	1	0.103	

Table.6 judgment matrix scaling and meanings

Scaling	Meanings
1	when comparing two factors, they are equally important
3	when comparing two factors, first factor is a little important
5	when comparing two factors, first factor is obviously important.
7	when comparing two factors, first factor is strongly important
9	when comparing two factors, first factor is extremely important
2, 4, 6, 8	median that the above adjacent scaling
Reciprocal	if a_{ji} is the Comparison factor i&j,the Comparison factor j&i,we call it $a_{ji} = 1/a_{ij}$

After defined the influence weights of factors in SWOT matrix with AHP method, the performance of every factor is evaluated also by experts, which can be seen in the table.1. So the final scores of Strengths, Weaknesses, Opportunities and Threats

are determined as Table.7. (Evaluation standards as Table.8)

Table.7 the weight score of the SWOT factors

SWOT	CR	Factors	Weights	Evaluation Scores	Weighted Scores	Sum of Scores
Strengths	0.026	S1	0.577	4	2.307	3.789
		S2	0.263	4	1.051	
		S3	0.11	3	0.33	
		S4	0.05	2	0.101	
Weaknesses	0.003	W1	0.697	4	2.786	3.625
		W2	0.232	3	0.695	
		W3	0.072	2	0.144	
Opportunities	0.023	O1	0.513	5	2.566	4.225
		O2	0.24	4	0.959	
		O3	0.141	3	0.423	
		O4	0.065	3	0.195	
		O5	0.041	2	0.082	
Threats	0.121	T1	0.723	4	2.89	3.723
		T2	0.174	3	0.522	
		T3	0.103	3	0.31	

Table. 8 standards about expert evaluation scores

Extremely Obvious	Relatively Obvious	Obvious	Less Obvious	Little Obvious
5	4	3	2	1

2.3 Strategic location figure of the E-commerce implementation

According to The final score of factors in table.7, find the strategic positioning of E-commerce implementation in Binchuan grape industry with the method of geometric gravity center in the SWOT coordinate system. First, find the Coordinates with the

Table. 9 the strategic orientation and strategic corresponding choice ^[3]

Development Strategy		Endeavour Strategy		Conservative Strategy		Struggle Strategy	
α	Type	α	Type	α	Type	α	Type
$[0, \pi/4]$	Strength	$[\pi/2, 3\pi/4]$	Aggressive	$[\pi, 5\pi/4]$	Retreating	$[3\pi/2, 7\pi/4]$	Adjustment
$[\pi/4, \pi/2]$	Opportunity	$[3\pi/4, \pi]$	Adjustment	$[5\pi/4, 3\pi/2]$	Avoidant	$7\pi/4, 2\pi$	Aggressive

The SWOT four factor point of the E-commerce implementation in Binchuan grape industry respectively as that $S'(3.789, 0)$, $O'(0, 4.225)$, $W'(-3.625, 0)$, $T'(0, -3.723)$, According to the strategic location coordinates formula as follows:

$$\rho(x,y) = (\sum x_i/4, \sum y_i/4) = (0.164, 0.503)$$

According to the calculation formula of strategic orientation angle as follows:

$$\alpha = \arctg(Y/X) = 71.884^\circ, \pi/4 \leq \alpha \leq \pi/2$$

calculation results, they are S' , W' , O' and T' ; second, Get strategic quadrilateral with Connecting these four points in turn. The quadrilateral represents a strategic position of E-commerce implementation in Binchuan grape industry as Figure.1.

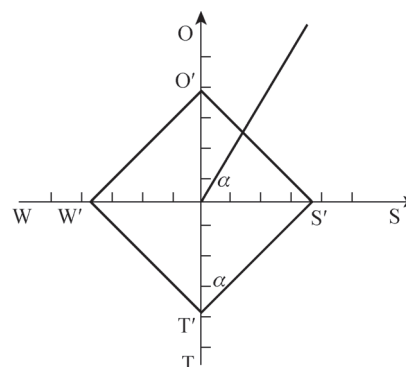


Figure.1 the SWOT Strategic location map of E-commerce implementation in Binchuan grape industry

Strategic location figure is the results that effect by the four strategic, is an important basis for the strategic decision. In the coordinate system, the strategic location is determined by the center of gravity of the quadrilateral. strategic location coordinates formula as follows:

$$\rho(x,y) = (\sum x_i/4, \sum y_i/4) \quad (1)$$

Meanwhile, in order to observation coordinate regional location conveniently, drawing into the strategic orientation angle, the calculation formula is as follows

$$\alpha = \arctg(Y/X), 0 \leq \alpha \leq 2\pi \quad (2)$$

In this way, we can determine the strategic location of the industry according to the strategic orientation angle. In SWOT analysis, it can be divided into eight different strategic type based on the angular range as follows table.9.

So, the strategic location is in the first quadrant and it is the opportunity type.

3 Strategies

3.1 Integration of resources, strengthen propaganda

Under the guidance of government, integration of local resources in Binchuan County, and combined with the surrounding counties and cities of grape resources.

Regional industrial organization is established in large range. Propaganda form a unified brand, it can solve the problems that existing brand of grape can not reflect the characteristics of Binchuan and weak competitiveness. In addition, to take hold grape tourism and Culture Festival, actively participate in various agricultural products fair at the same time. Combined with various forms of network marketing, improve the visibility of Binchuan grapes and raise awareness of consumer.

3.2 Strengthen quality management, conformity the industry standard

To further improve the Binchuan rules for the production technology of grape and the management system of the grape production standards. Implementation the archives management in the entire process of production, it can achieve the grape products quality traceability. Conformity the industry standard, provide clear and detailed information of products to the consumers, for example, fruit size, sweetness, acidity etc. consumers has a more intuitive understanding for the quality of grape in Binchuan through the Internet with unity the accuracy, credibility and accordance information of the product. It can enhance the credibility of Binchuan grape quality.

3.3 Strengthen cooperation, reduce the operation cost

Binchuan grape industry can collaborate with the existing large-scale e-commerce platform, that not only can obtain the electronic commerce technology support, and can use its leverage to increase the propaganda, extensive cooperation through the realization of on line and off line, specialized division of work, formation the O2O mode between the grape industry and e-commerce platform, and the pre-sale mode was introduced in the early development of grape e-commerce. This can reduce the development cost of electronic commerce, but also can reduce logistics costs, improve the competitiveness of Binchuan grape.

4 References

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