

# The Investigation of Online Marketing Strategy: A Case Study of eBay

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**Abstract:** -Making a profit from e-commerce is becoming mature after A.D. 2000. Online auction is one of successful business model on e-commerce. For example, eBay’s trading volume is close to 4.552 billion dollars, and net profit is 1.082 billion dollars in 2005. This booming market reminds academics to do further research in this area. This research investigates the marketing strategies of online auction with 4P strategies and competitive strategy. The purpose of this study is to increase successful rate and raise final bid for online auction with effective marketing strategy. This study summarizes marketing plans from eBay, and to evaluate these plans by using inferential statistics, and conduct data analysis with description statistics. From the results of data analysis, we suggest sellers to focus on cost leadership strategy. To start with a lower price, it will attract more buyers, and increase final bid on auction. Besides, we suggest sellers to clearly describe the reasons of selling on web. Moreover, this study applies Pearson’s correlation, and multiple regression to construct a forecast model of successful rate

**Key-Words:** - Online Auction, Marketing Strategy, eBay, Inferential Statistics

## 1 Introduction

The most important factor that most researchers are interested is the bargaining price of product (Lucking-Reiley 2000). In fact, price is an important factor, but not the only one which could affect the success of online auction. This study attempts to summarize customer data for finding the successful strategies of bidders, which can increase the possibility of completing a successful bid. We propose two steps to complete such a mission. The first step is to use inferential statistics to test hypotheses by four Ps (price, product, place and promotion). Second, we try to construct a regression forecast model of successful rate.

## 2 Data Mining

On internet, many companies face a painful problem that loses their most profitable customers daily. Many previous researches began to use data mining as a tool to find out the hidden problems of missing customer loyalty (Yen 2006; Wang 2006). The technology of data mining is defined as a sophisticated data search capability that uses statistical or intelligent algorithms to discover patterns and correlations in data (Rygielski, 2002; Hui 2000).

Several studies use data mining to segment customers in bank, insurance, telecommunication industry, retailer, hospital (Hsieh 2004; Verhoef 2001; Hwang

2004; Ozturk 2006 ;Berman 2002 ;Hui 2000). The applications of data mining include discovery clusters, discovering associations, discovering sequential patterns, predicting a classification, predicting customer values and similar time sequences (Chou 2001). The popular methods for data mining are neural network, tree induction and statistics (see Fig. 1).

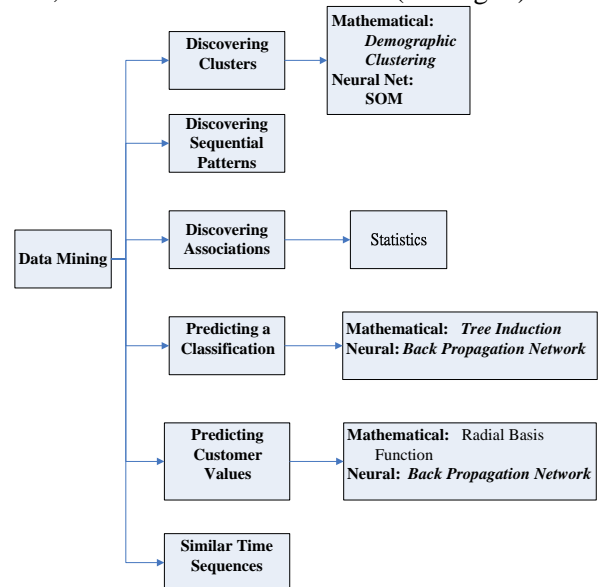


Fig. 1 the Methods and Applications for Data Mining by IBM (Chou 2001)

### 3 System Framework

This study collects information from Taiwan’s eBay web site by a developed spider program (Chan 2007). All of the retrieved customer data is stored in a database. The following step is to summarize and test customer data by statistics. The data are used to find the patterns of customer purchasing. From the purchasing patterns, this investigation tries to find the better selling strategy for bidders. The system framework is shown in Fig. 2. Then we try to construct a forecasting model to predict the successful rate of deals on online auction.

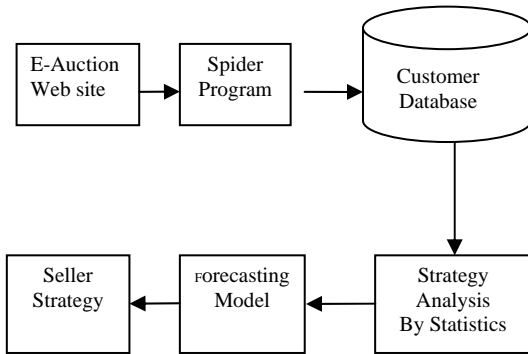


Fig. 2 The Framework of Seller Strategy Formation

### 4 Customer Profile Model for Price Forecast

To complete the task of price prediction, this study use a customer profile model to describe the relationship between customer data and price forecast. A database model used to describe the characteristics of the customer is called customer profile (Shaw, 2001). Customer profile is one of the most important knowledge, which can be used to describe the characteristics of the customer during online auction processes. Analyzing customer profile can help sellers or buyers to understand each other and make a right decision for conducting a better deal on online auction market.

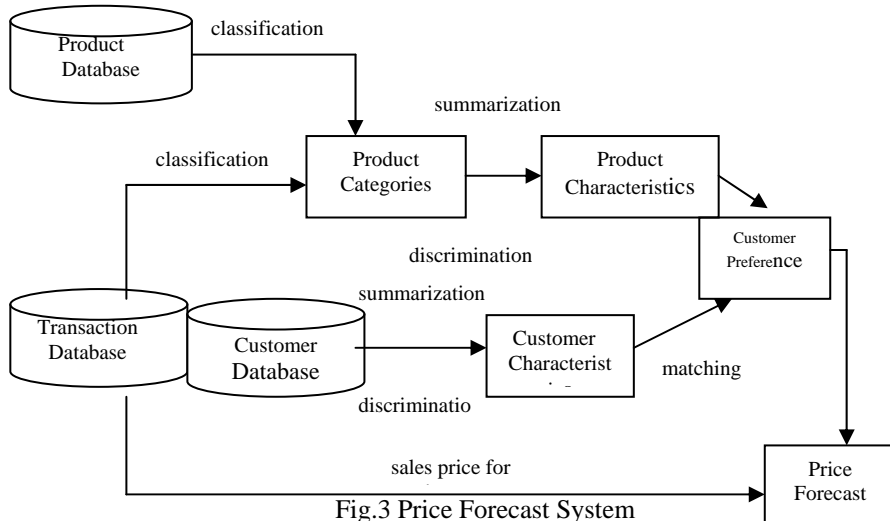


Fig.3 Price Forecast System

A customer profile contains three major databases, which include product database, transaction database and customer database (See Fig. 3). Based on product database and transaction database, the categories of products can be identified and then implementing the jobs of summarization and discrimination can find product characteristics. Mining the customer data can generate customer characteristics. Customer preference is found by matching product characteristics and customer characteristics. Based on customer preference, initial price will be suggested to fit auction market customer need. The right price will help seller to setup reasonable initial price.

### 5 Marketing Strategy

This study uses 4Ps (Product, Price, Place and Promotion) marketing strategies to analyze the behaviors of sellers. In the product item, each product has a picture or clear description related to the sold product. The information related to price includes starting bid, bidder credit and payment methods (e.g. credit card or check). The key information about place is how to deliver the products (e.g. Post office). The common promotion on eBay is to provide a gift. The detail of marketing strategy is listed in table 1.

The purpose of this study is to find the best strategies for sellers. We had made three hypotheses to test marketing strategy:

- H1: Is the cost leading strategy effective for selling electronic products on eBay?
- H2: Is the differentiating strategy effective for selling electronic products on eBay?
- H3: Does culture affect the selling strategy between Taiwan and U.S.A.?

Table 1 Marketing Strategy for Online Auction

Product	Price
E-Store High Credit Excellent Discretion Clear Selling Reason	One Cent Start Lowest Price Daily
Place	Promotion
Free Delivery Buy it Now	Gift Excellent Web Design

Z and F test of statistics are used to test three above hypotheses. The equations are shown as follows:

$$Z = \frac{\bar{p} - p}{\sqrt{\frac{p(1-p)}{n}}} > Z_{1-\alpha} \quad (1)$$

$$F = \frac{x(1-p)}{(n-x+1)p} > F_{(1-\alpha;v_1,v_2)} \quad (2)$$

Where  $v_1 = 2(n-x+1)$ ,  $v_2 = 2x$

To predict the success rate of online auction, this study use a regression model as follows:

$$Y = \beta_0 + \beta_1 X_1 + \dots + \beta_{k-1} X_{k-1} + \varepsilon \quad (3)$$

### 6 Empirical Study

To understand the dynamic of online users' behavior, this study uses a spider to collect information from eBay. The major tasks to find customers involve data collection, data analysis and strategy formation.

The study spent one month to collect 600 samples of iPod from eBay Since 2006 March. The low level products of iPod consist of iPod shuffle 512MB and iPod shuffle 1GB. The middle level ones includes iPod nano 1GB, iPod nano 2GB and iPod nano 4GB. The high performance models are iPod 30GB and iPod 60GB. All of the prices of iPods are listed in Table 2.

Table 2 iPod Price List

Level	Model	Taiwan	U.S.A.
Low	iPod shuffle 512MB	NT\$ 2,500	US\$ 69
	iPod shuffle 1GB	NT\$ 3,600	US\$ 99
Middle	iPod nano 1GB	NT\$ 5,300	US\$ 149
	iPod nano 2GB	NT\$ 6,900	US\$ 199
	iPod nano 4GB	NT\$ 8,600	US\$ 249
High	iPod 30GB	NT\$ 10,900	US\$ 299
	iPod 60GB	NT\$ 14,500	US\$ 399

Source: Apple Corporation

We use Z and F test to ten items of 4Ps marketing strategy. The result show that only lowest price, Clear Selling Reason and one cent start are the significant factors for making a successful deal. From the data of Taiwan eBay, we found customer only care about cost instead of other factors. On the other side, many Americans care about some other functions, such as "Buy it Now" and gift. The results of F and

Z test are shown in table 4 and 5. From the outcome of this experiment, we found that culture really affects consumer behavior of online auction. To construct a prediction model for success rate, this study use a regression model to predict successful rate of online auction as follows:

$$Y = 0.588 - 0.516X_1 - 0.037X_2 + 0.0105X_3 \quad (4)$$

Where Y: Success rate ( $0 \leq Y \leq 1$ )

X1: Cost effeteness (Start Bid /Listed Price)

X2: Excellent Description

X3: Clear Selling Reason

Table 3 The Results of Z Test from Taiwan eBay

No.	Marketing Action	Z Value	Effect
2	Lowest Price	3.168035	***
3	E-Store	-0.75815	
4	High Credit	-3.1411	
5	Free Delivery	0.25378	
7	Buy it Now	-0.91376	
8	Excellent Discretion	-1.76006	
9	Clear Selling Reason	1.435175	*
10	Excellent Web Design	-1.56246	

Note: \* means 90%, \*\* means 95% , \*\*\* means 99% Confidence Value

Table 4 The Results of F Test from Taiwan eBay

No.	Marketing Action	F Value	Effect
1	One Cent Start	29.15434	***
6	Gift	0.694151	

Note: \*\*\* present 99% Confidence Value

Table 5 The Results of Z Test from American eBay

No.	Marketing Action	Z	Effect
1	One Cent Start	-2.48579	
2	Lowest Price	-2.95706	
3	e-Store	0.536784	
4	High Credit	0.698024	
7	Buy it Now	1.670699	**
8	Excellent Discretion	-0.56576	
10	Excellent Web Design	0.525292	

Note: \* means 90% \*\* means 95% \*\*\* means 99% Confidence Value

Table 6 The Results of F Test from American eBay

No.	Marketing Action	F	Effect
5	Free Delivery	1.971641	
6	Gift	2.711006	**
9	Clear Selling Reason	0.481957	

Note: \* means 90% \*\* means 95% \*\*\* means 99% Confidence Value

Table 7 the Outcomes of Hypothesis Test

No.	Hypothesis	Outcomes
H1	Is the cost leading strategy effective for selling electronic products on eBay ?	True
H2	Is the differentiating strategy effective for selling electronic products on eBay ?	False
H3	Does the culture affect the selling strategy between Taiwan and U.S.A.?	True

Table 8 Pearson Test

Input Item	Pearson Value	Effect
e-Store	-0.082	
Free Delivery	0.017	
Gift	-0.017	
Buy it Now	-0.064	
Excellent Description	-0.124	*
Clear Selling Reason	0.118	*
Discount Program	-0.094	
High Credit	-0.111	
Starting Bid	-0.322	**

Note: \*\*0.01 \*0.05

## 7. Conclusion

Internet has become a new channel of doing a business. Online auction provides a excellent place to purchase a used or new product for a lot of young people. To investigate the successful factor of online auction, this study chooses iPod as the studied product. We use Z and F test to find the successful factor. Several interesting findings are:

- Cost is the key factor that affects success of deals, so using a lower start bid can attract more bidders to join the
- Providing a clear description of sold products can increase the successful rate.

- Culture really affects the behavior of customer purchase. Different country or area can use different marketing strategy on the online market.

The limitation of this study includes:

- Since iPod is a new electronic product, the conclusion made by this study maybe fit for short life cycle products.
- This study only uses the limited information which can be found in the web homepages. The other information, e.g. log file may reveal more other knowledge.

## Acknowledgment

The authors would like to thank the National Science Council of the Republic of China, Taiwan for financially supporting this research under Contract No. NSC95-2221-E-324-032

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