網路商品搭配銷售之實證研究

沈浩宇 1  沈瑞祺 2,*  施博元 3  洪仕杰 4

1南榮科技大學企業管理系
2國立高雄餐旅大學通識教育中心
3國立虎尾科技大學財務金融系所
4國立雲林科技大學資訊管理系

摘 要

商品的價格是網路購物者購物前思考的一個重要因素。廠商常運用搭配銷售方式來吸引消費者。但是購買搭配銷售商品，消費者是否真能獲得成本上的節省？搭配銷售組中所包含的商品項數越多，消費者是否可以節省更多的成本？因此本研究以購物網站上搜集的商品價格資料做為研究樣本；並以單一個別商品價格資料為基礎，另外以含有搭配銷售的商品價格資料來做比較。研究結果發現：高達 93.91%的搭配銷售組，在成本上消費者並未獲得節省，另外搭配銷售組中所含的商品項數增加時，雖然研究結果未達顯著差異，但是消費者並沒有因購買更多搭配商品獲得更多的成本節省，購物網站業者若經營策略如此，值得消費者省思。

關鍵詞：搭配銷售，比價，網路購物，相關係數。

AN EMPIRICAL STUDY OF BUNDLED SALES IN ONLINE SHOPPING WEBSITES

William Hao-Yu Shen1  Jui-Chi Shen2,*  Po-Yuan Shih3  Shih-Chieh Hung4

1Department of business administration
Nan Jeon University of Science and Technology
Tainan City, Taiwan 73746, R.O.C.
2General Education Center
National Kaohsiung University of Hospitality and Tourism,
Kaohsiung City, Taiwan 81271, R.O.C.
3Department of Finance
National Formosa University
Yunlin County, Taiwan 632, R.O.C.
4Department of Information Management
National Yunlin University of Science and Technology
Yunlin County, Taiwan 64002, R.O.C.

Key Words: correlation coefficient, online shopping, price comparison, bundling sales.
ABSTRACT

Online consumers consider product price a vital factor in purchasing products, and vendors frequently use bundled sales to attract customers. However, whether consumers save money by purchasing bundled sale products, and whether consumers can expend less cost when multiple products are included in bundled sales, remains unclear. This study used product prices on online shopping websites as the research sample to compare individual unit prices of products with product prices that are related to bundled sales. The empirical results showed that 93.91% of bundled sale sets did not result in savings for consumers in Taiwan. Furthermore, consumers did not save more money when the number of products in the bundled sale sets increased. However, this result did not exhibit significant differences.

I. INTRODUCTION

Internet popularity has created an Internet product marketing and purchasing trend, and online marketing is an auxiliary tool of traditional marketing. The application of information technology (IT) and widespread Internet usage have enabled online shopper demands to become diversified and individualized; thus, traditional marketing methods are no longer effective for satisfying the needs of sellers and online shoppers. Before purchasing a product, typical online shoppers seek and compare information related to an item they wish to purchase. Consequently, a model of online direct marketing has become available on the Internet, facilitating the conservation of purchasing and marketing costs. Study results [1] have indicated that more than 80% of Internet users have purchased products online. Another study [2] showed that 94% of online consumers compared prices before committing to a purchase. These results demonstrated that product price is a crucial consideration for online shoppers. Recently, the economy in Taiwan has undergone a recession, causing vendors to adopt various sales promotion activities to attract consumers. During sales promotions, marketing operators frequently employ a product-combination method [3], which is a method that combines two or more products for purchase at one price, because combining various products or services enable consumers to conserve product-searching costs and provides consumers with price deals or discounts [4]. This sales method has received considerable interest among consumers. Online shoppers consider product price a vital factor in purchasing decisions; however, excessive product information and selection frequently generated the phenomenon of “information overload” [5]. Numerous studies have suggested using bundling sales that involve product combinations. Product bundling consists of “the practice of package selling”. This practice mostly studied by economists and marketing scholars, has significant implications for monopoly power, level of welfare and marketing strategies. In recent years, product bundling has gained in importance because, especially in the capital product industries, firms are moving towards the provision of integrated solutions that consist of services and products sold in a bundle and delivered as a unique solution [6]. The motivation of this paper is to shed further light on the implications for firm strategy of the practice of product bundling; this paper intends to analyse firm behaviour in offering product bundling. Nevertheless, whether consumers save on expenditures by purchasing bundling sale product remains uncertain. This study used empirical methods to investigate whether consumers can expend less cost by purchasing bundling sale products.

II. LITERATURE REVIEW

In Table 1, Taiwan had approximately 10.97 million regular Internet users by December 2011, yielding an Internet usage prevalence rate of 48%.

The Research, Development, and Evaluation Commission, Executive Yuan, published a 2011 Individual Household Digital Opportunity Survey [7]. Table 2 shows the survey results regarding IT usage for people aged more than 12 years. Tables 3 and 4 present trend comparisons of the survey results concerning IT usage for people more than 12 years of age in Taiwan. Overall, 77.4% of people over 12 years-old have used computers and 72.0% have used the Internet. By converting that percentage to the number of people, we estimated that
Table 1  Typical Internet users and Internet-use prevalence in Taiwan (2006-2011)

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population of typical Internet users (million)</td>
<td>9.76</td>
<td>10.03</td>
<td>10.46</td>
<td>10.67</td>
<td>10.79</td>
<td>10.97</td>
</tr>
<tr>
<td>Internet use prevalence (%)</td>
<td>43</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
</tr>
</tbody>
</table>

Source of data: Institute for Information Industry (FIND; March 2012)

Table 2  IT usages by people aged more than 12 years

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used a computer</td>
<td>77.4%</td>
<td>78.1%</td>
<td>76.7%</td>
</tr>
<tr>
<td>Used the Internet</td>
<td>72.0%</td>
<td>73.1%</td>
<td>70.8%</td>
</tr>
</tbody>
</table>

Table 3  Computer usage for people over 12 years in Taiwan (2004-2011)

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer usage rate (%)</td>
<td>68.2</td>
<td>66.8</td>
<td>70.1</td>
<td>71.0</td>
<td>73.4</td>
<td>72.6</td>
<td>75.6</td>
<td>77.4</td>
</tr>
</tbody>
</table>

Table 4  Internet use for people over age 12 in Taiwan (2004-2011)

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet usage rate (%)</td>
<td>61.1</td>
<td>62.7</td>
<td>64.4</td>
<td>65.6</td>
<td>68.5</td>
<td>67.6</td>
<td>70.9</td>
<td>72.0</td>
</tr>
</tbody>
</table>

14.78 million people in Taiwan aged over 12 years have used the Internet.

A trend comparison of the results presented in Tables 3 and 4 indicated that the rate of increase in Internet users and Internet usage prevalence in Taiwan gradually decelerated primarily because Internet usage became widespread and stable and the Internet market gradually matured [8].

A study showed that more than 80% of Internet users have purchased products online [1]. Online shopping enables consumers to purchase their preferred items easily without experiencing interference from salespeople, which affects consumer judgement. Thus, a substantial growth in online shopping is because of convenience and diverse selections [9]. Based on consumer opinion surveys, online shopping has become the mainstream of shopping. Overall, 96% of respondents had used computers or the Internet to purchase products [10]. Further analysis of why consumers used the computer and Internet shopping revealed that nearly 50% of respondents indicated low prices as the primary reason [11]. The newest 2012 Survey on Online Purchase Behaviour of Taiwanese Internet Users [12] indicated that more than 76% of Internet users have experience in searching for items online and actually purchasing through physical channels. Another survey result [2] for online consumer purchase behaviour showed that 94% of online consumers conduct price comparisons prior to purchasing.

In both domestic and international marketing industries, marketing strategies involving product combinations have become popular [13]. Numerous studies have indicated the benefits of bundling sale strategies and that these strategies improved sales revenue [14]. Bundling sales refer to sellers requiring buyers who wish to purchase a single product or service to simultaneously purchase another independent, separate product or service as a precondition for selling the original item or service. If buyers decline to purchase the additional items or services, the seller will refuse to sell the original item or service. In marketing, bundling sales are a product promotional method and is used to increase product sales (or services) by using a mix of primary products (or services), yielding an effect similar to that of a mother hen leading her chicks. This method improves the sales of the attached product and the overall sales performance, and ensures the introduction of the novel product into the market [15].

Bundling sales are a common sales method. From a legal perspective, bundling sales have limited effects on market competition. However, from an economic perspective, bundling sales do not necessary impede competition; instead, they can promote competition and effectively
control the quality of the attached products.

Adams and Yellen [16] divided bundling sales into three models based on their structural form:
1. Pure bundling: This strategy does not permit the sale of single individual product. Pure bundling refers to the sales of a combined product containing two or more items.
2. Component selling (non-pure bundling): This model is not entirely associated with bundling sales, which means that single products in a product combination can be sold as a set or as a single product.
3. Mixed bundling (a combination of pure bundling and non-bundling sales): This refers to two or more single products can be sold together in a combination or as single products. Currently, most product combinations on the market are based on the mixed-bundling model.

The various general bundling strategies that have been implemented by retailers [17] are listed below:
1. Deterministic bundling: Exactly one set of predetermined items is included in the bundle.
2. Non-deterministic bundling:
   i. Tie-in bundling: Buyers must purchase one primary product to qualify for receiving a discount on other products;
   ii. Add-on bundling: Buyers must purchase one primary product to receive a complimentary product;
   iii. Cross promotion: Buyers must purchase a product to qualify for earning a discount on other products; and
   iv. Total value discount: When the total purchase price exceeds a certain threshold, the purchase earns an additional discount.

III. METHODOLOGY

This study used empirical methods and single individual-product prices, which were obtained from several popular online shopping websites in Taiwan, and compared these single product prices to the product prices in bundling-oriented online shopping sites.

1. Samples

Online shopping sites offer a selection of additional optional products. Because online shoppers favour differing products, numerous product combinations are typically generated. This study used the product price data from primary online shopping sites in Taiwan as the study sample. Data were collected from websites based on website ranking reference information:
   i. The 500 largest websites in Taiwan: Weekly Digital Magazine has ceased publication; however, their information is vital to studies on website history and for preserving crucial information, providing references for website and e-commerce operators. References are provided for non-profit purposes and the copyright remains with Weekly Digital Magazine and the original author.
   ii. Top 100 Websites in Taiwan (Business Next, Volume 145): Business Next used the openly published website ranking data provided by the Alexa website in the United States, organizing 100 leading websites favoured by Taiwanese Internet users.
   iii. Top sites in Taiwan: Website ranking data for the 100 leading websites in Taiwan were obtained from the Alexa website.

Websites offering auction, purchasing, and selling service functions were selected from the 100 leading websites in Taiwan (www.alexa.com). The results showed that of the 100 leading websites, 20 were shopping or auction sites. Of the 20 websites that provide shopping or auction services, several online shopping sites connected to the same website. The repeated website data (of websites connecting to the same website) were removed and one website was used to as the source for data collection. After the repeated data were removed, 13 websites remained.

2. Pre-Processing and Data Processing Procedures

Because numerous products can be purchased online, this study collected information only on computer-related products. Product information relating to brand-name computers was used as the study basis. Various reports have indicated that online shoppers generally purchase computer-related products, including software, wireless accessories, printers, memory cards, and digital cameras. This study used and compared brand-name computer related product information on various online shopping sites to select the most favourable product information for consumers. Overall, 13 websites providing shopping or auction functions were selected from the 100 leading websites in Taiwan. Data collection lasted 10 days and empirical data entailing 230 bundling sales sets were collected from certain online shopping sites. The 230 bundling sales sets are composed of 106 single products. The lowest prices for these 106 single products were obtained from the 13 websites and used as the basis for comparing product prices. All the data was further described in the next section.
Table 5 Sample statistics

<table>
<thead>
<tr>
<th></th>
<th>Single products</th>
<th>Bundling sale sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>100</td>
<td>299</td>
</tr>
<tr>
<td>Max</td>
<td>36,900</td>
<td>43,380</td>
</tr>
<tr>
<td>M (Mean)</td>
<td>3,531.34</td>
<td>9,218.548</td>
</tr>
<tr>
<td>SD</td>
<td>5,107.92</td>
<td>6,256.01</td>
</tr>
<tr>
<td>N (number)</td>
<td>106</td>
<td>230</td>
</tr>
</tbody>
</table>

M: Mean, SD: Standard Deviation

Table 6 Data distribution of collected sample

<table>
<thead>
<tr>
<th>Products</th>
<th>Single products</th>
<th>Bundling sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer</td>
<td>26</td>
<td>45 sets</td>
</tr>
<tr>
<td>Memory</td>
<td>9</td>
<td>2 sets</td>
</tr>
<tr>
<td>Camera</td>
<td>31</td>
<td>127 sets</td>
</tr>
<tr>
<td>Wireless</td>
<td>35</td>
<td>43 sets</td>
</tr>
<tr>
<td>Software</td>
<td>5</td>
<td>13 sets</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td>230</td>
</tr>
</tbody>
</table>

Table 7 Data of bundling sales separated by the items numbers in each set

<table>
<thead>
<tr>
<th>All bundling sale sets</th>
<th>Sets containing 2 items</th>
<th>Sets containing 3 items</th>
<th>Sets containing 4 items</th>
<th>Sets containing 5 items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>230 sets</td>
<td>117 sets</td>
<td>75 sets</td>
<td>32 sets</td>
</tr>
</tbody>
</table>

IV. EMPIRICAL RESULTS AND ANALYSIS

This study used the SPSS 12.0 statistical software as the data analysis tool. Based on the study objectives, the subjects were product bundling sale sets obtained from online shopping sites. Descriptive statistical analysis and non-parametric statistics were used; these are described in the following paragraphs.

1. Descriptive Statistical Analysis

This study used descriptive statistics to analyse the product bundling sale data from online shopping sites. Data sample statistics are presented in Table 5 and the data distribution is shown in Table 6. Overall, there are 106 single products and 230 bundling sale sets in our study, the average price of single and bundling sale products are 3,531 and 9,218 respectively. Data distribution of collected sample in Table 6 contained Printer (26), Memory (9), Camera (31), Wireless (35), and Software (5). In addition, their bundling sale sets are also shown for comparison.

i. Using product numbers in each bundling sale set for analysis

The number of products in each bundling sale set was used to separate the 230 bundling sale set data. Bundling sale sets were divided into sets that contained two, three, four, and five product items, as shown in Table 7. For example, bundling sale sets that contained two product items was 117 sets, bundling sale sets that contained four product items was 32 sets and bundling sale sets that contained three product items was 75 sets etc.

The definition for cost-difference is the difference of composition of single products and bundle price; the relative definitions are as follow:

1. Bundle price: The price of bundling sales set on a certain online shopping site.
2. Lowest bundle price: The price of a bundling sale set containing the cheapest product.
3. Percentage of cost difference: (Bundle price - lowest bundle price)/bundle price.

The percentage of cost differences for the 230 bundling sale sets was individually calculated. If the percentage of cost differences was a positive value (more than 0.00%), then the bundle price is higher than the lowest bundle prices and the bundling sale set did not save consumers costs. After calculating and comparing the empirical data of the 230 sets of bundling sales, our results showed that 216 sets possessed a positive cost-difference percentage. Therefore, the results showed that 93.91% of the bundling sale sets not only did not exhibit cost savings for consumers but also increased costs.

The percentage of cost differences for each set of bundling sales (after the product numbers in each set were used to divide the data of the 230 bundling sale sets) following statistical analysis are presented in Table 8.

A comparison of the results shown in Table 8 indicated that when the number of products in the bundling sale set increased (using the number of products in each set to categorize the 230 bundling sale sets), the means of the cost-difference percentages for each set decreased. In addition, a comparison of the means after 5% of the observed values were eliminated from both extremes presented the same trend. Only bundling sale sets containing five product items did not exhibit a reduction.
Table 8  Cost differences (in %) for each set of bundling sales

<table>
<thead>
<tr>
<th>bundling sales</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>95% CI of the means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower bound</td>
</tr>
<tr>
<td>2 items</td>
<td>117</td>
<td>11.2</td>
<td>9.4</td>
<td>0</td>
<td>38.7</td>
<td>9.4</td>
</tr>
<tr>
<td>3 items</td>
<td>75</td>
<td>10.6</td>
<td>9.0</td>
<td>0</td>
<td>34.4</td>
<td>8.5</td>
</tr>
<tr>
<td>4 items</td>
<td>32</td>
<td>10.2</td>
<td>8.7</td>
<td>0</td>
<td>31.8</td>
<td>7.1</td>
</tr>
<tr>
<td>5 items</td>
<td>6</td>
<td>10.1</td>
<td>7.8</td>
<td>1.6</td>
<td>23.2</td>
<td>1.9</td>
</tr>
</tbody>
</table>

M: Mean, SD: Standard Deviation, N: number, CI: confidence interval

Table 9  Nonparametric tests and Mann-Whitney U Test Statistics

<table>
<thead>
<tr>
<th>Bundling sale set</th>
<th>N</th>
<th>Rank means</th>
<th>Rank sum</th>
<th>Asymptotic significance (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 items</td>
<td>117</td>
<td>98.58</td>
<td>11,533.50</td>
<td>.518</td>
</tr>
<tr>
<td>3 items</td>
<td>75</td>
<td>93.26</td>
<td>6,994.50</td>
<td>.520</td>
</tr>
<tr>
<td>4 items</td>
<td>32</td>
<td>76.19</td>
<td>8,914.00</td>
<td>.953</td>
</tr>
<tr>
<td>5 items</td>
<td>6</td>
<td>70.66</td>
<td>2,261.00</td>
<td>.520</td>
</tr>
<tr>
<td>3 items</td>
<td>75</td>
<td>55.19</td>
<td>4,139.50</td>
<td>.543</td>
</tr>
<tr>
<td>4 items</td>
<td>32</td>
<td>41.08</td>
<td>3,081.00</td>
<td>.914</td>
</tr>
<tr>
<td>5 items</td>
<td>6</td>
<td>40.00</td>
<td>240.00</td>
<td>.810</td>
</tr>
</tbody>
</table>

M: Mean, SD: Standard Deviation, N: number

2. Non-Parametric Statistics

The advantage of conducting non-parametric statistics is that this method can be used for analysing populations with uncertain distributions, populations with abnormal distributions that are difficult to normalise, or when sample numbers are insufficient. Evaluation involves using rank as the primary statistical quantity.

i. Two independent sample t tests (Mann-Whitney U test)

Two independent-sample t tests can be used to compare two sets of observed values for a variable. Instead of calculating average mean differences, the Mann-Whitney U test calculates the test statistical values (U) based on the rankings of the sample variable scores. To calculate the U value, the two samples were first combined, and then ranked according to the dependent variable scores. Samples exhibiting high variable scores also demonstrated high-ranking scores. The scores were arranged from highest to lowest and the ranks from each sample score were added. Finally, the rank sum differences in the two samples were compared. This testing method is based on the concept that if a difference does not occur between the score distributions of the two samples, the rank sums obtained after the two samples are mixed and arranged should be extremely similar. We posited the following hypotheses regarding the variables for the Mann-Whitney U test in this study:

\[ H_0: U_{d1} = U_{d2} \]  
\[ H_1: U_{d1} \neq U_{d2} \]  

The nonparametric test results presented in Table 9 indicated that at a significance level of \( \alpha = .05 \), the bundling sale sets containing two and three products had a \( p = .518 \) (greater than .05) and the bundling sale sets containing two and four products exhibited \( p = .520 \). The bundling sale sets possessing two and five products showed \( p = .953 \) and bundling sale sets of three and four items demonstrated \( p = .543 \). The bundling sale sets containing three and five items presented \( p = .914 \) and the bundling sale sets of four
Table 10 Nonparametric and Kruskal-Wallis test results

<table>
<thead>
<tr>
<th>Bundling sale sets</th>
<th>N</th>
<th>Rank means</th>
<th>Asymptotic significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost-difference Percentages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 items</td>
<td>117</td>
<td>118.81</td>
<td></td>
</tr>
<tr>
<td>3 items</td>
<td>75</td>
<td>113.53</td>
<td>.870</td>
</tr>
<tr>
<td>4 items</td>
<td>32</td>
<td>108.55</td>
<td></td>
</tr>
<tr>
<td>5 items</td>
<td>6</td>
<td>112.67</td>
<td></td>
</tr>
</tbody>
</table>

and five products showed \( p = .810 \). Therefore, none of the sets achieved statistical significance. The evidence supported \( H_0 \) but did not support \( H_1 \), thereby indicating that the bundling sale sets demonstrated no significant differences.

**ii. Multiple independent-samples \( t \) tests**

Multiple independent-samples \( t \) tests are used to compare two (or more) observed value sets for the variables.

The nonparametric results presented in Table 10 showed that at a significance level of \( \alpha = .05, p = .870 \); therefore, the results did not achieve statistical significance. The evidence did not show that the bundling sale sets of two, three, four, or five products did exhibit significant differences.

**3. Discussion and implications**

By using the number of products in each set to categorize the 230 bundling sale sets for analysis, the statistical results (Table 8) indicated that when the product number increased in the bundling sale set, the cost difference-percentage means for the sets declined. The non-parametric statistics test involved using ranking as the primary statistical quantity. In Section IV.2.i, the presented results did not demonstrate statistical significance and the evidence showed that no significant differences existed between the two variables. However, by examining the changes in the rank means of the two variables, the results showed that the rank means of the bundling sale sets decreased. In Section IV.2.ii, the exhibited test results indicated that the rank means also decreased. To summarize, the statistical values did not achieve statistical significance (\( p \)-values exceeded .05). The results indicated that the differences among the bundling sale sets containing two, three, four, and five products were not significant.

Past study show that the sequence of discrete events separated by several days or weeks plays on customers’ assessment of service bundles. If the relative importance of the sequence effect for discrete bundles is known, then a service designer and event scheduler can optimize and develop a better sequence of interactions for the customers, leading to higher satisfaction, loyalty, and repurchase [18, 19]. If online shopping website want to keep their customers’ loyalty and repurchase then it should not take advantage on price from customer. Global distribution systems and online travel agencies have been providing critical intermediation services for the air travel services industry. Their systems services have eroded the airlines’ revenue by encouraging consumers to do price comparison-based purchases though, which has caused the commoditization of air travel services [20]. Customers usually compare product price from one website to another, if bundle price did not give customer a profit then customer will never come back. Iftekhar and Tisdell [21] explored the relative merits of a simultaneous ascending auction design and an iterative combinatorial auction design for a hypothetical multiple region quota market. In a simultaneous auction, separate auctions run in parallel for individual species or regions. During intermediate rounds, fishers can adjust their bids in auction depending on their position in the other auction. In a combinatorial auction, a fisher can purchase a combination of quotas for different fish species or regions in the same auction. Being able to acquire bundles of species or regions allows fishers to take advantage of complementarities. Therefore, company should keep in mind that never takes advantage from customer. Lim [22] consider a robust optimization model of determining a joint optimal bundle of price and order quantity for a retailer in a two-stage supply chain under uncertainty of parameters in demand and purchase cost functions. Demand is modeled as a decreasing power function of product price, and unit purchase cost is modeled as a decreasing power function of order quantity and demand. Shopping website should control their bundle price in a model or function and let demand contained in the function. Maybe customers will feel more respect and keep their loyalty. After all, shopping website want
to make more profit from bundle sale and customer want to save more money from bundle sale. This is a tradeoff problem. How to achieve double win situation need further investigate.

V. CONCLUSIONS

The empirical results regarding the collected product bundling sale data showed that of the 230 bundling sale sets, 216 sets exhibited positive cost-difference percentages. Overall, 93.91% of bundling sale sets did not provide cost savings for consumers. Furthermore, when the product numbers in the bundling sale sets increased, the cost-difference percentages exhibited only slight variations. When the bundling sale sets contained multiple products, most of the bundling sale products did not provide cost savings and the cost differences were not significant. If consumers learned that the bundling sale sets containing multiple products did not represent cost savings or exhibit significance in additional cost savings, they would feel misled and might not wish to purchase products from online shopping sites again. For online shopping to be successful, consumers must be able to trust this novel purchasing method [23]. A website brand-image survey conducted on Taiwanese Internet users showed that various types of shopping websites possessed different customer bases, providing results that can be used by future researchers to investigate the relationship between diverse online shopping sites and varying customer bases.

REFERENCES

3. 林小芬, 「成組產品促銷策略與消費者購買意圖關係之研究」, 碩士論文, 實踐大學企業管理學系, 臺北 (1997)。
4. 江玉琪, 「個別產品購買意願、產品價格差異、消費者價格意識及風險接受程度對成組產品購買意願之影響—以行動電話為例」, 碩士論文, 國立成功大學交通管理學系, 臺北 (1999)。
5. 王德義, 「網路購物環境下的決策行為：互動式 Shopbot 對決策品質的影響」, 碩士論文, 國立交通大學經營管理研究所, 新竹 (2005)。
7. 行政院研究發展考核委員會, 「100年個人家戶數位機會調查報告」, 行政院研究發展考核委員會 (2011)。
8. 交通部統計處, 「臺灣地區民衆使用網路網路狀況調查摘要分析」, 交通部統計處 (2007)。
13. 王心怡, 「運用交談式遺傳演算法於最適組合產品設計之研究」, 碩士論文, 輔仁大學資訊管理學系, 新北市 (2005)。
14. 黃宮杉和范建得, 「事業垂直限制行為之公平法適用問題－以非價格垂直交易限制為核心」, 第五屆競爭政策與公平交易法學研究討論會論文集, 行政院公平交易委員會, 臺北, 第 331-439 頁 (1999)。
15. 鄭茜純, 「搭售行為之分析」, 碩士論文, 中原大學財經法律研究所, 桃園 (2003)。


Manuscript Received: Dec. 02, 2013
First Revision Received: Dec. 11, 2013
Second Revision Received: Jan. 20, 2014
and Accepted: Jan. 21, 2014