



## Market Promotion of Paid Socket: A Feasibility Analysis

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This study analyzed an innovation product i.e. paid socket, not on the market yet, and aimed at the feasibility analysis of paid socket market. We used survey method to investigate the end users. Firstly, in view of the "public", we surveyed people about what factors affecting the consumers' willingness to use this socket. The Second part was to understand merchants' ideas about the socket by in-depth interviews. Through SEM analysis, we found that safety and environmental friendliness are two important factors for the users to use the socket, and through in-depth interviews, we found the "installation convenience" and "marketing activities" are most considered by the stores. The implication of the results show that business opportunities behind the paid socket are large, whether in public area or stores , and the viewpoints of using the paid socket were different. Enhanced design and development of the socket could solve the two sides' problems and meet needs of the public and merchants by recovering the cost and expending marketing spots. Consumers didn't have to spend a lot of money to enjoy convenience, fairness and justice caused by paid sockets.

*Keywords:* Paid Socket, market promotion, feasibility, competitive strategy, SEM

*JEL:* M31, O14

Paid socket is namely improving existing socket that adds a radio frequency identification mechanism for reading payment cards (Yeh, 2013). Paid socket can be directly installed in a convenience stores' socket, and people can scan it with easy cards, financial cards or invoice barcode/QR code to pay the charge, therefore people do not have to worry about mobile phones or computers running out power, meanwhile, the store is also not afraid to be filled " overload electricity" .

Currently paid socket is not on the market yet, the business opportunities of the paid socket are

large, and therefore, it is necessary to develop an appropriate and competitive socket for consumers and the market. The main purpose of this study is to explore the willingness and behavior of consumers to use paid socket and to improve this product.

With the technological advancements, introduction of new functions in network terminal devices is increasing due to their high demand. Therefore, the need for recharging outdoors or in public areas is emerging. In order to solve the different problems of recharging outdoors, the innovative paid socket presents a new, eco-friendly and fair concept. Consumers don't have to spend a lot of money to enjoy convenience

recharging service and the anxiety of finding a charge is reduced.

This study aims at feasibility analysis of the paid socket market, which is divided into two parts. Firstly, to understand what factors affect the consumers' willingness to use this socket? Secondly, to understand merchants' ideas and thoughts about the socket.

The contents of this paper are organized as follows. Next section presents literature review. Section three presents methodology. After reporting results, we described the target market, and discussed two business models (Alexander and Yves, 2010), proposed competitive strategy and estimated business risks (Miles, 2011; Jolly, 2003) through SWOT (Birkenmaier, 2001; Quincy, 2012; Menon, 1999) and 4P analysis (Needham, 1996; Kerin and Rudelius, 2001). Finally, we concluded the research.

## LITERATURE REVIEW

In applied economics, there are a variety of approaches to study consumers intention, among which the most general and useful one is asking consumers to show their willingness to use one product, and the market availability of the product (Gil *et al.*, 2000; Radam *et al.*, 2010). This study interviews the experts and designed group, which factors are important for consumers willing to use paid socket, and summarizes four dimensions as functional, safety, green and educational.

Along with the discussion pertaining to influence new products, in several marketing literature, product-attribute impacts consumers to evaluate new product (Herr *et al.*, 1991; Hong

and Wyer, 1989; Mitchell and Olson, 1981). After reviewing related literature, we propose the attributes of function and safety. The reasons for using these two attributes are as follows. First, paid socket is an innovative product, not only changed the way of payment, but also innovated new functions (e.g., function of interface shows the charging time, quick charge performance, USB battery charging slot and with reminders such as battery has completed charging etc.). Second, paid socket is an electric product, the safety is an important attribute for consumers, so the paid socket has some safety concerns (e.g., overheat auto power-off system, safety devices to prevent electric shock, waterproof, and has passed inspection certification). Therefore, the two attributes are the most important for paid socket. In sum, the effects of attributes of function and safety seem to strongly influence consumers' will. Thus, the following hypotheses are proposed:

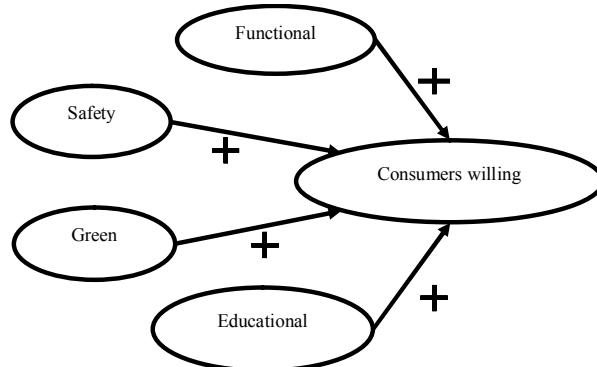
$H_1$ : Functional factor has positive impact on consumers' willingness to use paid socket.

$H_2$ : Safety factor has positive impact on consumers' willingness to use paid socket.

Another argument may refer to eco-friendliness of the product, many empirical studies show that consumers are willing to pay a premium for "green" products, (Mina and Mais, 2010; Hartmann and Apaolaza, 2006). One explanation is that, climate change has aroused people's consciousness of environmental protection.

This concept for user-paid is specifically associated with environmental protection. For that reason, based on past studies, we propose “green” value of product has relationship with consumer willingness to use paid socket (e.g.,

Based on the hypotheses, that functional, safety, green and educational dimensions have positive impact on consumers’ purchase intention, the study proposed the model, shown in Figure 1:



**Figure 1: Preliminary Model**

user-paid concept shows avoid wasting public resources, use of power exercise bike for charging services, making full use of energy, free charge services, resource recycling, etc.). Furthermore, we propose the educational value of product has similar relationship with consumer willingness to use paid socket (e.g., promotion of environmental and social fairness has relationship with consumer willingness to use paid socket).

Accordingly, these arguments as discussed by Mina and Mais (2010), and Hartmann and Apaolaza (2006) imply that consumers may be more likely to consider the influences of eco-friendliness of products when making evaluation decisions. Thus, the following hypotheses are proposed:

$H_3$ : Green factor has positive impact on consumers’ willingness to use paid socket.

$H_4$ : Educational factor has positive impact on consumers’ willingness to use paid socket.

## METHODOLOGY

This study analyzed the market needs of paid socket. We induced factors affecting consumers to choose paid socket by using expert interviews and market survey. This study divides research samples into two parts. The first part investigate the end users i.e. “public” to assess what factors will affect the consumers’ intention to use paid socket. 122 copies of internet based questionnaire with 121 valid samples recycled. The reason for using internet questionnaire is that the paid socket’s potential consumers are mostly web surfers.

The second part explores ideas of “merchants” for paid socket by conducting in-depth interviews. We interviewed merchants running cafes, tea houses, convenience stores and fast-food restaurants in Taipei.

### -Questionnaire Design

Based on the experts’ interviews, the study observed the possible factors influencing customers’ willingness/intention to use socket,

and thus designed the questionnaire. Questionnaire content was divided into two parts, the first part explored characteristics of the paid socket affecting consumers' intention by asking people the importance of the various factors and the intention to use; the second part reflected hypothetical items for the characteristics of paid socket, and to undertake demand analysis.

The first part of the questionnaire used Likert Scale to ask the respondents the importance of affecting factors and intention to use. According to Herr *et al.*, (1991), using consumer's self-ratings of paid socket's attributes should be suitable because different rating source from respondents' reports can avoid common variance. Thus, we asked consumers to self-report their opinions and indicate their agreement using 7-point Likert scale (1 = Very Unimportant; 7 = Very Important). The second part of the questionnaire asked the subjects' feeling about the product.

After carefully reviewing various measurements of product's attributes (e.g. Herr *et al.*, 1991), seven items were adopted to measure paid socket's functional attribute. Items include "F1: Two-pin flat + battery charging slot, F2: USB Hole battery charging slot, F3: Quick charge performance, F4: Fun, interactive installation, F5: With reminders, such as battery has completed charging ..., F6: Interface shows the balance device, and F7: Interface shows the charging time". The Cronbach's alpha for this measure was .70 (Table 6, see Appendix-VI).

We used four items to measure paid socket's safety attribute including two items from Hong and Wyer (1989) and two items from Mitchell and

Olson (1981). Items include "S1: Overheat auto power-off System, S2: Safety devices to prevent electric shock, S3: Waterproof, and S4: Has passed inspection certification". The Cronbach's alpha for this measure was .80.

We measured paid socket's value of product by using the green values. Four items were adopted from Mina and Mais (2010) to measure green value of paid socket. Items include "G1: Use of power exercise bike for charged services, making full use of energy, G2: Free charge services, resource recycling, G3: In user-paid concept, to avoid wasting public resources, and G4: Forming electric vehicle friendly environment, reducing carbon emissions". The Cronbach's alpha for this measure was .73.

Four items were adopted from Hartmann and Apaolaza (2006) to measure educational values of paid socket. Items include "E1: Promote the concept of user-paid, E2: Promote the concept of reducing power consumption to save energy, E3: Promote the concept of reducing damage to the environment, and E4: Promotion not to steal public electricity, safeguard social fairness and justice". The Cronbach's alpha for this four-item measure was .86.

According to above hypothesis, four items were adopted to measure consumers' willingness. Sample items include "C1: When functionality satisfies my request, my intention was..., C2: When safety satisfies my request, my intention was..., C3: When green satisfies my request, my intention was..., and C4: When educational satisfies my request, my intention was..." The Cronbach's alpha for this four-item measure was .82.

## RESULTS

This study attempted to conduct the paid socket market feasibility analysis, which was divided into two parts. The first part was the view of "public" about factors affecting the consumers' willingness to use paid socket; the second part was in-depth interview of "merchants" to understand the idea for adopting paid socket. We analyzed data by using PASTW Statistics 18 and Excel statistical software. Structural Equation Modeling (SEM) is used as main analysis method.

### -Descriptive Statistics

122 copies of internet based questionnaire with 121 valid samples recycled were issued to the sample. Descriptive statistics are as follows:

*Functional:* F1 and F2 items show "important"; F3, F5, F6 and F7 four items show "very important"; only F4 shows "no comment". Functional descriptive statistics analysis is shown in Table1 (see Appendix-I).

*Safety:* S1–S4 all items show "very important", which point out importance of safety dimension. The analysis is in the Table 2 (see Appendix-II).

*Green:* this section is average, tend to concentrate on the "important" and "very important". Save for G3 shows "very important"; G1, G2 and G4 items show "important". The descriptive statistics data analysis is in the following Table 3 (see Appendix-III).

*Educational:* this section is average; tend to concentrate on "important" and "very important". Items E1 and E3 show "important"; items E2 and E4 show "very important". The statistics is in the following

Table 4 (see Appendix-IV).

*Consumers' Willingness:* C1 item shows "very important"; C2 and C3 items are concentrated on "important"; G4 are relatively "no comment" showing the people pay little attention to this part shown in Table 5 (see Appendix-V).

### -SEM Analysis

After constructing the model, model fit must be judged by looking some indices. The study used  $\chi^2$  value,  $p$ -value, GFI, AGFI, RMSEA, principally the smaller  $\chi^2$  value is better,  $p$ -value greater than .05, is the most appropriate, GFI , AGFI should be between 0 to 1, the higher the better, and RMSEA represents residuals, should be as small as possible, and usually require less than 0.08 (Berne *et al.*, 2005).

Besides, SEM will be less fit with the complexity of the model. When the original model is not fit, the insignificant coefficients will gradually be removed and adjusted through the value of standardized residual matrices according to the times and degree of coefficients, and gradually remove the absolute value is greater than 2. Finally, modify indices (MI) must be used to find out the problematic variables not having a single dimension. This mode of study from the initial to final model fit indices is shown in Table 7.

The Table 7 shows that  $p$ -value is zero and other indices don't meet the standard and therefore modification is needed. Looking at standardized residuals in the matrix, variable F1 has a number of residual values greater than 2 and therefore preferred to delete, and based on this principle we continue modification.

| Model | The original Model | Deleted variable | df  | $\chi^2$ | p-value | GFI   | AGFI  | RMSEA |
|-------|--------------------|------------------|-----|----------|---------|-------|-------|-------|
| 2     | 1                  | F1               | 180 | 355.375  | 0       | 0.77  | 0.705 | 0.101 |
| 3     | 2                  | G4               | 142 | 310.881  | 0       | 0.794 | 0.725 | 0.100 |
| 4     | 3                  | S4               | 125 | 270.606  | 0       | 0.803 | 0.730 | 0.099 |
| 5     | 4                  | C3               | 109 | 192.888  | 0       | 0.841 | 0.777 | 0.080 |
| 6     | 5                  | C4               | 94  | 145.633  | 0.001   | 0.872 | 0.815 | 0.068 |

**Table 7: SEM with Model Fit Indices Table of Each Model**

After deleting 5 variables, access to model 6, and RMSEA value less than .08 for the first time, GFI, and AGFI and  $\chi^2/df$  values reaches the general requirements level, only the p-value is less than .05, but p-value can no longer be further improved by deleting variable. Therefore, we accept model 6 as the final model.

According to MI, it releases the bias of G1 and E1 observed variables, and improves 15.45 the Chi-square values, and modify the model for the first time, other values are improving by model revision and p-value improved to .008. Modified for the third time, it releases F6 observed variables, associating with a potential variable error in consumers' willingness, can improve 6.86 Chi-square values, p-value up to 0.11, and shows the model can be accepted. Detailed data is shown in the Table 8. Adjusted model is shown in Figure 2 and Table 9 (see Appendix-VII).

Therefore, hypothesis H<sub>1</sub> was rejected. Therefore, functional factor doesn't have positive impact on consumers' willingness to use paid socket.

For safety factors, we found their path coefficient ( $\beta = .25$ ,  $p = .008$ ) reached to a significant value with and positive relationship, showing the more safety introduced in paid socket product, more people will use it, hence, H<sub>2</sub> stating "safety factor has positive impact on consumers' willingness to use paid socket" is accepted.

For environmental factors, we found significant value of path coefficient ( $\beta = .47$ ,  $p = .001$ ) and relationship between Green factor and consumers willingness is positive. This shows that if paid socket is more environmental friendly, more people will use it. Therefore, H<sub>3</sub> stating that "green factor has positive impact to consumers' willingness to use paid socket" is valid.

| Model | Release parameters | df | $\chi^2$ | p-value | GFI   | AGFI  | RMSEA |
|-------|--------------------|----|----------|---------|-------|-------|-------|
| 6     | ----               | 94 | 145.633  | 0.001   | 0.872 | 0.815 | 0.068 |
| 7     | G1 errors          | 93 | 128.844  | 0.008   | 0.886 | 0.833 | 0.057 |
| 8     | F6 errors          | 92 | 115.763  | 0.048   | 0.895 | 0.845 | 0.046 |
| 9     | F6 errors          | 91 | 107.767  | 0.111   | 0.903 | 0.856 | 0.039 |

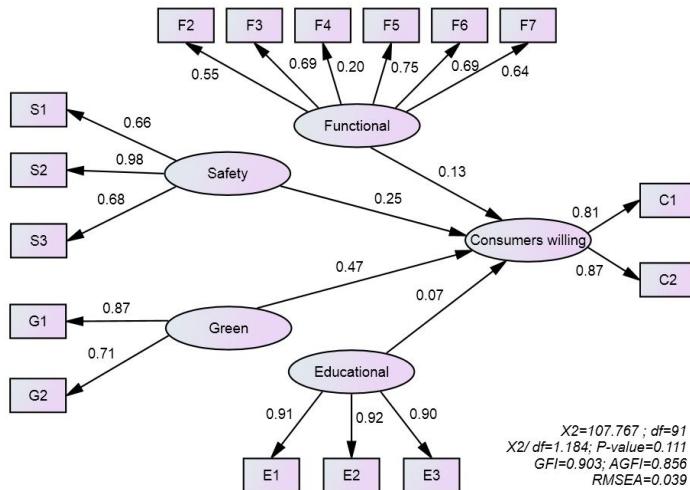
**Table 8: SEM with Model Fit Indices Table of Each Model**

#### Results of Hypotheses Test

For functional factors, we found that their path coefficient ( $\beta = .13$ ,  $p = .24$ ) is not significant.

Relationship between educational factors

and consumers' willingness: Educational factors

**Figure 2: The Modified SEM**

reflect a non-significant path coefficient ( $\beta = .07$ ,  $p = .472$ ). Therefore,  $H_4$  stating “ educational factor has positive impact to consumers’ willingness to use paid socket.” is rejected.

#### Market Demand Analysis

This section analyzes market demands for paid socket, which is divided into two parts. First, we analyze population needs and the consumers’ willingness to use paid socket, and the second part discusses merchant needs, ideas and suggestions to use paid socket.

#### Population Needs Analysis

This section provides population needs, willingness and motivations to use paid socket, and we list result of willingness to pay, way of payment, possible location to use the socket, possible used product, motivation for left field and reasons for charging in public place. The analysis and data percentage is shown in Table 10 (see Appendix-VIII).

#### Merchants Need Analysis

This section portrays merchant needs and ideas to this paid socket. The focused locations for interviews were cafes, restaurants, tea houses,

convenience stores and fast-food restaurants.

The results are shown in Table 11 (see Appendix-IX):

#### Competition Policy

##### -Market Segmentation

Market segmentation variables include demographic, geographic, psychological and behavioral factors. Because the socket has unique features, installation locations, and motivations of the user’s behavior is in accordance with the use of separate segmentation variables that are used primarily for observing the behavior in the “time” period. Locations can be divided into public places and stores, motivation of using the socket includes forget charging, power-lacking fast, need continue charging, by the way charge and save electricity for charging.

##### -Target Market

According to the questionnaire results, 50 percent samples need charging because the device runs out of electricity, 31.15 percent samples forget charging and charging devices. Charging products there are 38.56 percent for cell phones, and 23.86 percent for notebook computers. In

addition, investigation of public place may use the socket location show that 15.58 percent people have charge needs in MRT station, 14.49 percent in the library but mostly are in long-stay shops so it is most likely to setup this type of socket. Therefore, this study focuses on public transit, libraries and long-stay shops as a target market.

#### -Market Positioning

This study is expected to design and develop paid socket marketing strategy because the socket is expected to bring benefits for businesses and public places like convenience to the public. On the other hand, this socket is also

positioning the product as “ Socket providing convenience and fairness.”

#### Business Model

Questionnaires and interviews intended to develop a business model provided in this section is the field installed paid socket model. For adjusting different fields, the business model is divided into two sections. First, the public stay in fields (e.g. MART) is mostly for short-time; second, merchant belongs to long-time stay type (e.g. fast food restaurants, Cafes). The study installed paid socket into two kinds of location and nine business model building blocks are reported as shown in Table 12 and Table 13.

|  |   |  |  |   |
|--|---|--|--|---|
| <b>Key partnerships(KP)</b><br>The socket of the dealer and service maintenance of vendors                   | <b>Key activities (KA)</b><br>Provide charge service platform                               | <b>Value proposition(VP)</b><br>Convenience and fairness         | <b>Customer relationship(CR )</b><br>Customers active participation and self service                 | <b>Customer segmentation(CS)</b><br>As a niche market, lock charge needs specific consumers |
|  | <b>Key resources(KR )</b><br>Corresponds to the original socket line and charging mechanism |  | <b>Marketing channel (CH )</b><br>Passive marketing through print advertising and website to promote |   |
| <b>Cost structure (C\$)</b><br>Fixed costs for the socket's fees, variable cost for maintenance fees (Less). |   | <b>Source of income (R\$)</b><br>Cover the cost of using socket. |  |   |

*Table 12: Business model for paid socket in short time stay public places*

|  |  |   |  |   |
|--|--|---|--|---|
| <b>Key partnerships(KP)</b><br>The socket of the dealer and service maintenance of vendors                   | <b>Key activities (KA)</b><br>Provide charge service platform  | <b>Value proposition(VP)</b><br>In order to facilitate the  | <b>Customer relationship(CR )</b><br>Customers active participation and self service                                 | <b>Customer segmentation(CS)</b><br>As a niche market, lock charge needs specific consumers |
|  | <b>Key resources(KR )</b><br>Lines, corresponding to the original socket charging mechanism and electronic invoice |   | <b>Marketing channel (CH )</b><br>Dominated by active marketing through print media and official website to advocate |   |
| <b>Cost structure (C\$)</b><br>Fixed costs for the socket's fees, variable cost for maintenance fees (More). |  | <b>Source of income (R\$)</b><br>Payment socket fees or additional spending by charging service or buy more store products. |  |   |

*Table 13: Business Model for Paid Socket in Long Time Stay Merchant*

hoping to reach the idea of user-paid, avoiding the costs passed onto consumers, in order to make more equity and justice. Therefore, we are

#### Competitive Strategy

##### -SWOT Analysis

*Strengths:* Indoor socket is widespread: most

businesses and public places are equipped with self-build socket, so it is very convenient to install paid socket. User fee can become an incentive for merchant. However, when electricity fee rises, many merchants will be reluctant to provide sockets for public use anymore, the user-paid socket idea can provide incentives for merchants to support. Behind the business opportunity, the socket marketing can be derived for merchants to create interests. For example, when the devices are charged, it will automatically link to 3C products and promote the latest discounts.

*Weaknesses:* Not conducive for electric vehicle recharging: electric vehicle charging rate is low, and the charging socket has limits on outdoor venues or parking lots. Climate changes and environmental factors: If the socket set at outdoors, weather change will affect the socket performance. With different locations, the environmental factor varies quite a lot, such as indoor and outdoor venues, will impact socket sets.

outdoor high demand need to be recharged, the plugs can increase its convenience. Social justice under electric fee rise: electric fee rises, many people in public places recharging to save on home electricity fees. The paid socket can avoid people paying all conditions, and safeguard social fairness and justice. Public places in the charging standard: in many public places, people see a socket, they occupy for a long time, so that people in urgent need cannot use. Library is a more serious place and some libraries are clearly prohibit personal electrical products to charge, which makes the management of charges more complicated. This paid socket can save manpower and to help people who really need to charge services.

*Threats:* Law for paying to public socket is not clear. Currently, the payment mechanism is not clear for using public socket and the socket is easily questioned by the public. In order to meet the security concerns of merchants' conditions are likely to tripped off, as one of the merchants doubts. The SWOT Analyses are as Table 14.

|  |  |
|--|--|
| <b>Strengths</b>   | <b>Weaknesses</b>  |
| <ul style="list-style-type: none"> <li>✓ Prevalence of indoor socket</li> <li>✓ User fee to become a business incentives</li> <li>✓ Behind business opportunity</li> </ul>   | <ul style="list-style-type: none"> <li>✓ Not conducive to electric vehicle charging</li> <li>✓ Weather and environmental changes</li> </ul>                          |
| <b>Opportunities</b>   | <b>Threats</b>   |
| <ul style="list-style-type: none"> <li>✓ Meet the carbon reduction trends</li> <li>✓ Portable 3C Outdoor high demand charge</li> <li>✓ Electric double-up under social fairness and justice</li> <li>✓ Public places ban on charging standard</li> </ul> | <ul style="list-style-type: none"> <li>✓ Specification for pay-for-use public power has not expressly</li> <li>✓ Meet the security concerns of businesses</li> </ul> |

**Table 14: SWOT Analysis**

*Opportunities:* In order to meet the global cut of carbon emissions, the socket can use the concept of user fees and promote the concept of people to conserve electricity. Portable 3C outdoors are in high demand of charging: the

**Marketing Strategies: 4P Analysis**

*Product:* "Paid socket" refers to open service after charging users fees with the available payment like Easy Card or IC Cards. Installation method is to change existing socket into new

one, which doesn't need huge effort. In addition to charging function, other functions are provided below:

- a. 2 T Socket and 2 USB 3.0 socket to solve the socket shortage.
- b. Waterproof plug avoid electric shock, ensuring security.
- c. Equipped with display screen tells the user the remaining charging time.
- d. Radio frequency identification device (RFID) scanning can be combined with the easy cards to complete the payment process.
- e. In addition to easy card, it also provides IC Chip card payment.
- f. Scan of a scene with electronic invoices bar or QR code and derivatives marketing issues as part of business marketing campaigns, such as, get free charge when consuming or get free charge points for purchasing some products, to limit the charging effect.
- g. Equipped with extension cord in customer service so they won't be limited to the socket location.

*Price:* Because the paid socket has not yet appeared on the market, it belongs to innovative products. New product pricing can be divided into Market Skimming Pricing and Market Penetration Pricing, depends on the elasticity of demand, emphasis on economies of scale degrees, speed of technology changes and barriers to market entry, the discussion are as follows:

- a. *Elasticity of demand:* there is no substitute in the market for target audience, commodity becomes increasingly essential;

besides, the acquisition of this product account little for small stores' total expenditure. In sum, elasticity of demand is small.

- b. *Emphasis on the degree of economies scale:* in different types of public places and merchants, the desired product type is different. This product set different model for each field in pursuit of customized socket, low degree of emphasis on economies of scale.
- c. *Speed of technology changes:* the prevailing creative invention, plus matured Taiwan connector industry, will soon have a new technology and new products launched, technology is changing very fast.

*Barriers to market entry:* the creators of this technology have applied for patent. During the unauthorized and unprotected period, market entry barriers are high.

From the above points of view, Market Skimming Pricing is the most suitable and will consider the cost factor to set the product in high price.

*Place:* In general, the market access for socket is in grocery stores and electronic materials stores. Because the objective of the research group focus on fast-food restaurants, convenience stores, coffee shops and restaurant, tea house, mainly in the virtual path, such as: official website, Yahoo and the PC home malls and so on, then the entity path as a supplement. Setting paid sockets in local electronic materials stores in developing city or some business circle are top choices.

*Promotion:*

- a. *Free Trial*: provide one month free trial period, those merchants are not satisfied with the idea of getting full refund (not including installation costs). Basically, if the socket can solve problems for merchants, such as saving electricity and reduce free rider or increasing revenues and so on, socket itself is no problem; the return rate is quite low. It can increase merchants' confidence in offering a free trial paid socket.
- b. *DM Flyer*: set the understandable public DM, issued to merchants which may use the paid socket, such as cafes, restaurants and so on. In consideration of the above pathways are still inaccessible to potential customers, through DM can respond to business issues in real time.
- c. *Public Marketing*: when businesses began trials of the socket, it will start to have news media coverage to increase exposure. But it must prevent a negative marketing, demonstration of merchants and journalists must be carefully chosen so that they cover favorable information, such as intelligent concepts socket, everyone could use the charge.

### **Business Risk Assessment**

*Political Risk*: Legal norms are the most important issue, charging fees are different for merchants and private charging stations, and even providing free charge, one of the risk to this socket is whether in future will there be a law regulating the charging ways?

In addition, Taipei MRT open 110 Free charging socket for public use in September 2012,

it also became one of the threat for paid socket for people may be tempted to give up paid socket if there is free charge. New Taipei City Government opened 4 free charging stations for public use as well, so whether the government will open more free charging station continues to be a problem for marketing the paid socket.

*Market Risk*: The same type of merchants, few do not provide socket, few need extra fees, and others offer free charging service; therefore, it will be a disadvantage for the store to adapt paid socket. More and more merchants provide services free of charge, consumers will gradually see free charge as a basic requirement, other merchants must follow, so it will reduce the willingness of merchants to use paid socket.

*Technology Risk*: Qi Wireless charging technology is from Finland's Wireless charging technology provider PowerKiss. In Europe, McDonald's has begun testing Qi Standard for Wireless charging system. People can charge their mobile phones or tablets on the table once the devices are inserted PowerKiss ring. If the fast-food industry began to introduce such a device, it will not be conducive to the development of paid socket. In addition, McDonald's has begun to import this technology in Europe, showing the technology has received recognition, increasing the risk of replacing paid socket.

*Financial Risk*: In the design and development of paid socket position, all the fees of design and technical innovation are sunk costs. In business or public places stands, the possible financial risks, including mobile charging, take approximately 0.1 dollar for an hour; laptop charge 1 dollar for an hour. When this product

just set up, the cost recovery won't appear immediately, it must be longer to see the effectiveness of investments, and therefore merchants must have spare more cash in the beginning of promotion, which also elevate the risk of the socket sales, more likely to face financial risks.

*Managing Risk:* In the design and development of paid socket position, it is most likely to engage in risk management for production management and marketing management. In terms of production management, because socket use the modular concept for merchants to create the most suitable customized goods under each merchant requirements are not the same, therefore, how to arrange the production schedule, integrate enterprise resource has become the most important issue. In terms of marketing, when the paid socket first listed, how to work through various marketing activities to increase product visibility quickly make people feel the urgent demand and smoothly promote merchants to accept the product are the two big challenges.

## CONCLUSION

This research shows different point of views of public and merchants about using paid socket. With the development and improvements in design of the socket, problems of both sides will be solved. When this product will be able to meet requirements of the public or merchants and recover the cost, it will not only give birth to new marketing strategies, consumers won't have to spend a lot of money to enjoy convenience, fairness and justice.

Business opportunities behind the paid socket are large, although there are a number of risks and threats involved, overall, paid socket should be launched in the market and be feasible to the consumers as soon as possible. The study recommends the first step is to have in-depth understanding of consumer needs, and provide the most reasonable price and marketing activities, in order to make paid socket marketing activities be implemented smoothly and successfully.

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|    | Item   | 1     | 2      | 3      | 4      | 5      | 6      | 7      |
|----|--|-------|--------|--------|--------|--------|--------|--------|
| F1 | Two-pin flat + battery charging slot                       | 1.64% | 4.92%  | 4.1%   | 23.77% | 15.57% | 30.33% | 19.67% |
| F2 | USB Hole battery charging slot                             | 0%    | 2.46%  | 4.1%   | 5.74%  | 18.03% | 32.79% | 36.89% |
| F3 | Quick charge performance                                   | 0%    | 0%     | 0%     | 6.56%  | 8.2%   | 27.05% | 58.2%  |
| F4 | Fun, interactive installation                              | 5.74% | 16.39% | 15.57% | 25.41% | 14.75% | 12.3%  | 9.84%  |
| F5 | With reminders, such as battery has completed charging ... | 0%    | 0%     | 0%     | 4.1%   | 12.3%  | 31.97% | 51.64% |
| F6 | Interface shows the balance device                         | 0.82% | 0.82%  | 0%     | 4.92%  | 17.21% | 29.51% | 46.72% |
| F7 | Interface shows the charging time                          | 0%    | 0.82%  | 2.46%  | 6.56%  | 13.11% | 31.97% | 45.08% |

**Table 1: Functional Description and Statistics**

**Appendix-II**

|    | Item                                     | 1  | 2     | 3     | 4     | 5      | 6      | 7      |
|----|--|----|-------|-------|-------|--------|--------|--------|
| S1 | Overheat auto power-off System           | 0% | 1.64% | 0%    | 2.46% | 9.02%  | 27.87% | 59.02% |
| S2 | Safety devices to prevent electric shock | 0% | 0.82% | 0.82% | 0.82% | 8.2%   | 21.31% | 68.03% |
| S3 | Waterproof                               | 0% | 2.46% | 2.46% | 1.64% | 13.11% | 22.95% | 57.38% |
| S4 | Has passed inspection certification      | 0% | 0%    | 0.82% | 0%    | 3.28%  | 21.31% | 74.59% |

**Table 2: Safety Descriptive Statistics**

## Appendix-III

|    | Item   | 1     | 2     | 3     | 4      | 5      | 6      | 7      |
|----|--|-------|-------|-------|--------|--------|--------|--------|
| G1 | Use of power exercise bike for charged services, making full use of energy | 2.46% | 4.92% | 3.28% | 22.95% | 17.21% | 29.51% | 19.67% |
| G2 | Free charge services, resource recycling                                   | 0.82% | 3.28% | 0%    | 14.75% | 17.21% | 36.07% | 27.87% |
| G3 | In user-paid concept, to avoid wasting public resources                    | 0.82% | 0.82% | 2.46% | 11.48% | 15.57% | 33.61% | 35.25% |
| G4 | Forming electric vehicle friendly environment, reducing carbon emissions   | 0.82% | 0.82% | 1.64% | 18.85% | 19.67% | 31.97% | 26.23% |

*Table 3: Green Description and Statistics*

**Appendix-IV**

|    | Item   | 1     | 2     | 3     | 4      | 5      | 6      | 7      |
|----|--|-------|-------|-------|--------|--------|--------|--------|
| E1 | Promote the concept of user-paid   | 0.82% | 0.82% | 3.28% | 13.93% | 22.95% | 27.87% | 30.33% |
| E2 | Promote the concept of reducing power consumption to save energy                 | 0.82% | 0.82% | 3.28% | 10.66% | 18.03% | 32.79% | 33.61% |
| E3 | Promote the concept of reducing damage to the environment                        | 0.82% | 0.82% | 4.92% | 13.93% | 16.39% | 31.97% | 31.15% |
| E4 | Promotion not to steal public electricity, safeguard social fairness and justice | 0%    | 1.64% | 0.82% | 15.57% | 16.39% | 27.87% | 37.7%  |

**Table 4: Educational Descriptive Statistics**

**Appendix-V**

|    | Item   | 1     | 2     | 3     | 4      | 5      | 6      | 7      |
|----|--|-------|-------|-------|--------|--------|--------|--------|
| C1 | When functionality satisfies my request, my intention was... | 0%    | 1.64% | 0.82% | 9.02%  | 16.39% | 35.25% | 36.89% |
| C2 | When safety satisfies my request, my intention was...        | 0%    | 0.82% | 1.64% | 11.48% | 17.21% | 35.25% | 33.61% |
| C3 | When green satisfies my request, my intention was...         | 0.82% | 0.82% | 9.84% | 13.11% | 25.41% | 27.87% | 22.13% |
| C4 | When educational satisfies my request, my intention was...   | 2.46% | 1.64% | 5.74% | 25.41% | 23.77% | 22.95% | 18.03% |

**Table 5: Consumers' Willingness Descriptive Statistics**

## Appendix–VI

| Dimensions             | Item         | Alpha if deleted | Cronbach alpha |
|------------------------|--------------|------------------|----------------|
| Functional             | F1           | 0.705            | 0.706          |
|                        | F2           | 0.536            |                |
|                        | F3           | 0.558            |                |
|                        | F4           | 0.678            |                |
|                        | F5           | 0.541            |                |
|                        | F6           | 0.550            |                |
|                        | F7           | 0.569            |                |
| Safety                 | S1           | 0.753            | 0.801          |
|                        | S2           | 0.625            |                |
|                        | S3           | 0.753            |                |
|                        | S4           | 0.785            |                |
| Green                  | G1           | 0.645            | 0.733          |
|                        | G2           | 0.622            |                |
|                        | G3 ( delete) | 0.782            |                |
|                        | G4           | 0.614            |                |
| Educational            | E1           | 0.779            | 0.862          |
|                        | E2           | 0.790            |                |
|                        | E3           | 0.773            |                |
|                        | E4 ( delete) | 0.934            |                |
| Consumers' willingness | C1           | 0.785            | 0.820          |
|                        | C2           | 0.747            |                |
|                        | C3           | 0.739            |                |
|                        | C4           | 0.792            |                |

**Table 6: Reliability Analysis of Various Factors**

## Appendix-VII

|                              |      |                          | Estimate<br>(Standardized) | S.E.<br>. | C.R.   | p      |
|------------------------------|------|--------------------------|----------------------------|-----------|--------|--------|
| Consumers' willingness<br>_C | <--- | Functional_F             | 133.                       | 152.      | 1.159  | .247.  |
| Consumers' willingness<br>_C | <--- | Safety_S                 | 253.                       | 138.      | 2.647  | .008** |
| Consumers' willingness<br>_C | <--- | Educational_E            | 465.                       | 078.      | 4.568  | ***    |
| Consumers' willingness<br>_C | <--- | Green_G                  | 068.                       | 078.      | 719.   | 472.   |
| F2                           | <--- | Functional_F             | 552.                       | -----     | -----  | -----  |
| F3                           | <--- | Functional_F             | 693.                       | 171.      | 5.277  | ***    |
| F4                           | <--- | Functional_F             | 202.                       | 256.      | 1.955  | 051.   |
| F5                           | <--- | Functional_F             | 753.                       | 169.      | 5.501  | ***    |
| F6                           | <--- | Functional_F             | 688.                       | 207.      | 5.235  | ***    |
| F7                           | <--- | Functional_F             | 635.                       | 203.      | 5.015  | ***    |
| S3                           | <--- | Safety_S                 | 677.                       | 183.      | 6.846  | ***    |
| S2                           | <--- | Safety_S                 | 984.                       | 183.      | 7.365  | ***    |
| S1                           | <--- | Safety_S                 | 659.                       | -----     | -----  | -----  |
| G2                           | <--- | Green_G                  | 874.                       | 292.      | 3.548  | ***    |
| G1                           | <--- | Green_G                  | 708.                       | -----     | -----  | -----  |
| E3                           | <--- | Educational_E            | 907.                       | -----     | -----  | -----  |
| E2                           | <--- | Educational_E            | 923.                       | 059.      | 16.310 | ***    |
| E1                           | <--- | Educational_E            | 898.                       | 062.      | 15.454 | ***    |
| C1                           | <--- | Consumers' willingness_C | 814.                       | -----     | -----  | -----  |
| C2                           | <--- | Consumers' willingness_C | 870.                       | 124.      | 8.603  | ***    |

Note: \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 9: Adjusted Model Coefficient Estimation Results**

## Appendix-VIII

|   |                                |                                  |   |  |                                   |                           |
|---|--------------------------------|----------------------------------|---|--|-----------------------------------|---------------------------|
| <b>Willingness to pay</b>                   | Overcharged 5 dollars / KWh    | Overcharged 4 dollars/ KWh       | Overcharged 3 dollars / KWh                     | Overcharged 2 dollars / KWh                                    | Overcharged 1 dollar / KWh        | As long as more won't use |
|   | 13.01%                         | 11.38%                           | 15.45%  | 17.89%   | 13.82%                            | 28.46%                    |
| <b>Way of payment</b>                       | Easy card payment by amount    | Easy card payment by time        | New leaf graphics card for units of measurement | Easy card access underground train station and charging device | Easy card power supply power      |                           |
|   | 33.61%                         | 13.93%                           | 4.92%   | 17.61%   | 30.33%                            |                           |
| <b>Possible use the socket location</b>     | Government agencies            | Parking lot                      | MRT station                                     | Transfer station   | Compartment                       | High-speed train          |
|   | 7.32%                          | 2.80%                            | 15.58%  | 9.66%  | 10.44%                            | 9.35%                     |
| <b>Possible used product</b>                | MRT train                      | Park                             | Activity center                                 | Library  | Airport                           | Exhibition Center         |
|   | 9.03%                          | 2.65%                            | 4.98%   | 14.49%   | 9.66%                             | 4.05%                     |
| <b>Motivation for left field</b>            | Mobile phone                   | Tablet computers                 | Laptop  | Audio-visual products  | Electric vehicle                  | Other                     |
|   | 38.56%                         | 17.97%                           | 23.86%  | 11.44%   | 5.88%                             | 2.29%                     |
| <b>Reasons for charging in public place</b> | Battery has completed charging |                                  | Completion of activities or the end consumer    |  |                                   |                           |
|   | 37.70%                         |                                  | 62.30%  |  |                                   |                           |
|   | Forgot to charge               | Power quickly and needs charging | Charging way                                    |  | Saving money on electricity bills |                           |
|   | 31.15%                         | 50%                              | 17.21%  |  | 1.64%                             |                           |

**Table 10: Population Needs, Willingness and Motivations to Use Paid Socket**

|   |   |
|---|---|
| <b>Customers use the socket</b>                     | <p><b>85 C Taipei Nanjing branch:</b> Storefront is small and does not set socket, the consumers are mainly officers, the majority consumption are take-away or delivery, most asked if there is Wi-Fi.</p> <p><b>Set guest teahouse Chang-shop:</b> Most of the tables are equipped with a socket, socket for the install, so lines are clearly visible on the walls. In addition, wireless network, so the use of socket very frequent but modest fee increases.</p> <p><b>OK Fuzhou convenience store iron store:</b> Customer group for the general public and students, using most of the seats in the restaurant is students, mainly chat and use mobile phones. Socket is not set for customers.</p> <p><b>MOS Burger shandao Temple store:</b> Stores near schools, companies and homes. Frequently the customer use socket, mostly use laptop and mobile phone charging, using time is more than 2hours.</p> |
| <b>Expect functions of the socket</b>               | <p><b>85 C Taipei Nanjing branch:</b> Simple operation, customers can operate without extra manpower. Location of the socket, not need to dig a hole for the appliance socket.</p> <p><b>Set guest teahouse Chang-shop:</b> Adapter functionality, and allows multiple people to use a socket and transformer function (220V).</p> <p><b>OK Fuzhou convenience store iron store:</b> Offers a charging function.</p> <p><b>MOS Burger shandao Temple store:</b> Hope also provides network functionality.</p>   |
| <b>What would match the bundle plan</b>             | <p><b>85 C Taipei Nanjing branch:</b> Work with corporate events with advertising, joined the system cannot have their own additional marketing activities.</p> <p><b>Set guest teahouse Chang-shop:</b> The main functionality, such as: a socket offers for many people and they use no more transfer plug, which can go away from home with 3C easy and enjoyable.</p> <p><b>OK Fuzhou convenience store iron store:</b> mainly reminder promotion.</p> <p><b>MOS Burger shandao Temple store:</b> pay with MOS card bonus point.</p>  |
| <b>Ways to recycle costs</b>                        | <p><b>85 C Taipei Nanjing branch:</b> Monthly, hope everything with a simple convenience.</p> <p><b>Set guest teahouse Chang-shop:</b> Lowering prices and are mainly convenience point of view, consumer ease of use.</p> <p><b>OK Fuzhou convenience store iron store:</b> same with Easy cards payment mechanism</p> <p><b>MOS Burger shandao Temple store:</b> MOS card or cash can be.</p>   |
| <b>Willingness to build this public paid socket</b> | <p><b>85 C Taipei Nanjing branch:</b> Reluctant. Mainly take-out, not many customers stay in, and rents are high, incapable of expanding storefront for many consumers.</p> <p><b>Set guest teahouse Chang-shop:</b> Is very high.</p> <p><b>OK Fuzhou convenience store iron store:</b> Just fine. Near by the House majority and outsiders less urgent needs to charge less.</p> <p><b>MOS Burger shandao Temple store:</b> High at all. Because partial cost can recover.</p>  |
| <b>Other suggestions</b>                            | <p><b>OK Fuzhou convenience store iron store:</b> Proposals should be set depends on the location. Because our restaurant is located in remote places, and the habits of customers is not suitable for the socket.</p>  |

Table 11: Merchant Needs and Ideas about Paid Socket