

STRATEGIC UNDERSTANDING OF MALAYSIAN ONLINE CUSTOMERS' SERVICE QUALITY PREFERENCE THROUGH DEMOGRAPHIC CUSTOMER PROFILING AND E-PRODUCT BUNDLING

DEREK ONG LAI TEIK*
BSc. (Hons) in Computer Science
Masters in Applied Statistics

JESSICA SZE YIN HO&
BBA (Hons) Marketing with Multimedia
Master of Philosophy (Management)

Sunway University
No. 5, Jalan Universiti, Bandar Sunway,
46150, Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60(3)56358633 Ext. 8325

*dereko@sunway.edu.my
&jessicah@sunway.edu.my

ABSTRACT

In order to stay competitive in the arena of e-commerce, conventional e-marketing research have provided solutions to online businesses and marketing practitioners by understanding online purchasing behavior and thereby proposing various determinants influencing online purchasing behavior. Little research has been done in order to assist marketing practitioners to identify the precise online customer segmentation, making market targeting and positioning and use of effective marketing campaigns complex. Hence, this study aims to identify the appropriate online customer segmentation (product bundles) based on three determinants of online purchasing behavior, i.e. e-service quality, demographic profiles and types of product purchased. 680 useful data was collected from existing online shoppers and data mining technique was employed to identify the product bundles and decision trees were used for customer profiling. Findings have identified Tickets, Clothing and Travel product bundles as the basis of segmentation. Result from this study will assist online marketing practitioners to be conscious of online customers needs and astutely create marketing campaigns aiming at their targeted online customers segments.

Keywords: E-service quality, online purchase decision, demographic characteristics, types of product purchased, product bundling, customer profiling, data mining.

**STRATEGIC UNDERSTANDING OF MALAYSIAN ONLINE CUSTOMERS'
SERVICE QUALITY PREFERENCE THROUGH DEMOGRAPHIC CUSTOMER
PROFILING AND E-PRODUCT BUNDLING**

DEREK ONG LAI TEIK*
BSc. (Hons) in Computer Science
Masters in Applied Statistics

JESSICA SZE YIN HO&
BBA (Hons) Marketing with Multimedia
Master of Philosophy (Management)

Sunway University
No. 5, Jalan Universiti, Bandar Sunway,
46150, Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60(3)56358633 Ext. 8325

*dereko@sunway.edu.my
&jessicah@sunway.edu.my

ABSTRACT

In order to stay competitive in the arena of e-commerce, conventional e-marketing research have provided solutions to online businesses and marketing practitioners by understanding online purchasing behavior and thereby proposing various determinants influencing online purchasing behavior. Little research has been done in order to assist marketing practitioners to identify the precise online customer segmentation, making market targeting and positioning and use of effective marketing campaigns complex. Hence, this study aims to identify the appropriate online customer segmentation (product bundles) based on three determinants of online purchasing behavior, i.e. e-service quality, demographic profiles and types of product purchased. 680 useful data was collected from existing online shoppers and data mining technique was employed to identify the product bundles and decision trees were used for customer profiling. Findings have identified Tickets, Clothing and Travel product bundles as the basis of segmentation. Result from this study will assist online marketing practitioners to be conscious of online customers needs and astutely create marketing campaigns aiming at their targeted online customers segments.

Keywords: E-service quality, online purchase decision, demographic characteristics, types of product purchased, product bundling, customer profiling, data mining.

1. INTRODUCTION

The popularity of online shopping is moving almost linearly along with the growth of worldwide internet users. The increase of online shopping is highly credited towards the “frictionless” shopping features where communication barriers between consumers and employees created by geography, time zone and location could be removed (Yu, 2006). Additionally, online shopping experience which enables ease of product and price comparison also maximizes consumer value and return. Given such a noteworthy enhancement in consumer shopping experience, Chua, Khatibi and Ismail (2006) have predicted that traditional shopping to cease to function with coming decades. In the US itself, The eMarketer (2010) have reported a significant growth of the US retail e-commerce spending of approximately 75% from USD 92.5 billion in 2005 to USD 162.4 billion as of October 2010. In case of Malaysia, the growth of online retailing is gradual. In fact, the statistics reported in 2008 and 2009 have shown that almost of 50% of internet users in the country is purchasing something online, the forecasted rate for 2010, 2011 and 2012 remained at about 50-55% (The Oriental Daily, 2009).

The increase in spending over the internet as well as the reduced barriers to entering and existing the e-commerce marketplace in comparison to physical marketplace are encouraging the growth of online businesses (Goel & Hsieh, 2002). However, the incremental growths of online product and service providers have made customers decision to purchase online a paradox. On one hand, having access to variety of product offerings at their fingertips enable customers to negotiate for better prices and choices. On the other hand, the over usage of non-targeted marketing campaigns (pop-up banners, mass e-mails, viral messages, etc) are often not effectively and frequently annoys customers. While conventional marketing theories on purchasing decisions have always incorporated the importance understanding customer’s needs and wants which leads to targeting and segmentation, the question is: “how can marketers reach their target customers effectively?”

Various determinants have been tied to how online purchase decisions are derived. Among which, service quality (in form of e-service quality) is often tied to online customer satisfaction (Collier & Bienstock, 2006) and purchase behavior (Carlson & O’Cass, 2011; Lee & Lin, 2005). Major emphasis has also been allocated to studying the influence of demographic factors on online purchase intention (Kim & Kim, 2004; Ranaweera, McDougall & Bansal, 2005). In addition to studying the demographic influence on online purchase intention, researchers such as Girard, Korgaonkar & Silverblatt (2003) also discussed the relationship between types of product with preference for shopping over the internet. These past studies related to determinants of online purchase behavior have measured the determinants of online purchase decision independently using typically relationship and association statistical methodology, i.e. e-service quality and online purchase decisions, the influence of demographic factors on online purchase intention, as well as, type of product purchase and online purchase intention. Limited studies have demonstrated the use of combination of all three factors to churn out accurate combination of product bundle and customer profile segmentation for marketing targeting and positioning purposes.

Given the issues discussed in this section, this paper aims to help marketers to reach targeted online customer effectively by identifying the appropriate target customer segmentation based on customers’ e-service quality preferences, customers demographic profile, types of products and services purchased online. Segmentation methodology in the form of data mining is used to identify appropriate product bundling and customer profile segmentations.

2. LITERATURE REVIEW

For years, marketing theories and practitioners have emphasized the importance of segmentation and targeting as a pre-requisite to positioning and the design of marketing mix (Kotler & Keller, 2012). Understanding the market's needs and wants served as determinants for any consumer purchase decision. Grouping customers with parallel needs and purchasing behavior into segments with objective to classify effectual product bundle assist marketing practitioners to design effective marketing campaigns (Kassim, 2006). Data mining segmentation techniques revolutionize methods of segregating customers based on association and prediction help to determine the appropriate product bundle as a combination of specific customer profiles and purchasing behaviors (Ong & Andrews, 2007).

E-service quality has been popularized for the last few decades as a key factor in service product differentiation and a source of competitive advantage (Santos, 2003). The concept of e-service quality or quality of service in e-commerce is adapted from the concept of service quality aiming at increasing loyalty among online customers. Santos (2003) defined e-service quality as "...the consumers overall evaluation and judgement of excellence and quality of e-service offerings in the virtual marketplace" (p. 235). Over the years, researchers have introduced many variations of e-service quality model: WEBQUAL (Loiacono et. al, 2000); SITEQUAL (Yoo & Donthu, 2001); WEBQUAL 4.0 (Barnes & Vidgen, 2002); eTransQual (Bauer, Falk, Hammerschmidt, 2006); PeSQ (Cristobal, Flavian & Guinaliu, 2007); and e-SELFQUAL (Ding, Hu & Sheng, 2011). The similarity between the various e-service qualities models introduced is that most models have emphasized on the combination of multiple website characteristics (i.e. designs and visual appeal) and functionality (i.e. information quality, feedback, and usefulness) in determining e-service quality for e-commerce. Since e-service quality is adapted from the concept of service quality, many of the proposed variables and model linked to e-service quality is very much aligned to the original service quality variables especially Parasuraman, Zeithaml, and Berry (1998) SERVQUAL/SERVPERF model. Hence, on top of website characteristics and functionality, E-SERVQUAL (Zeithaml, et. al, 2001) and E-S-QUAL/E-ReS-QUAL (Parasuraman et. al, 2005) have incorporated the conventional service quality factors such as reliability and responsiveness into measuring e-service quality. Since e-service quality is strongly correlated with customer satisfaction and online purchase (Lee & Lin, 2005), incorporation as e-service quality as a basis of online customer segmentation and profiling is essential for marketing practitioners.

Demographic data is an important proxy that modulates other customer subsystems variables including needs, attitude and purchasing power (Lightner, 2003). Characteristics are the unique to individual (customer characteristics) also moderates customers' level of satisfaction, as well as loyalty (Ranaweera, et. al, 2005). Drawing from such common marketing understanding about usage of demographic data, some researchers have incorporated demographic characteristics as a determinant for online purchase behaviours. Kim and Kim (2004) have found that gender, household income and number of children were significant predictors for clothes, jewellery and accessories online product purchase intention. While many studies tend to prove the importance of demographic characteristics in physical businesses, Ranaweera et. al (2005) claimed that past findings of the effect of customer demographics on using new technologies and innovations are inconsistent, thereby suggesting to test the proposition of demographic characteristics for online purchasing scenarios. In comparison to e-service quality from the aspect of website characteristics and functionality, Lightner (2003) found that although customers demographic profiles are significant in determining the preference of e-commerce designs, website and purchasing decisions, the sensory impact of websites is less prominent as respondents age, income and education level increases.

In addition to e-service quality and customers' demographic profile, types of products purchase online also influenced the preferences. Traditional studies have acknowledged the fact that customers' buying behavior differs depending on product categories (Girard, et. al, 2003). When applied into online purchasing scenario, Girard, et. al. (2003) found that variation of different types of product and demographic variables such as gender, education and household income significantly influences preferences for shopping online. Rohm and Swaminathan (2004) also found that consumers who are motivated by convenience have higher propensity to make their purchases online, particularly for products and services such as books and travel.

3. METHODOLOGY

Out of the 700 survey questionnaires distributed through student administered questionnaires, only 680 were usable. Data was collected through primary data collection of online shoppers who MUST adhere to a criteria which was; has had at least 1 (One) online purchasing experience within the last year. The reason for the non-usability was primarily due to respondents incorrect and insufficient data provided while filling in the questionnaire. The data that was collected comprises of information on types of products that were purchased, online behaviors and demographic variables. Using the adapted Collier & Bienstock's (2006) e-service quality to measure overall online shopping experience, respondents were asked a series of 33 items corresponding to the following naming conventions:

Table 3.1 – E-Service Items identification

Variables	Variable Description
EOU 1 to EOU 5	Ease of Use
P1 to P4	Privacy
D1 to D5	Design
IA1 to IA5	Information Accuracy
F1 to F5	Functionality
OCT1 to OCT5	Order Accuracy and Timeliness
IP1 to IP5	Interactivity and Procedures

The above items were reduced to 5 main factors (shown in Table 3.2) using varimax rotation in factor analysis after checking for inter-item reliability (Chronbach's alpha >0.6). Loadings of less than 0.4 were suppressed. The new factors produced were tested significant for KMO and Barlett's test of adequacy (p<.05). These factors were used later in the analysis to assess their importance amongst online shoppers. The factors were then re-named as the following:

Table 3.2 – E-Service Quality Factors

Factors	No of Items	Item Variables
Order Accuracy and Timeliness (OAT)	7	IA2, F5, OCT1, OCT 2, OCT4, OCT5, IP5
Website Design (WD)	8	EOU1, EOU2, EOU3, EOU4, EOU5, D1, D2, D3
Functionality & Features (FF)	6	D4, D5, IA4, F1, F2, F3
Privacy & Security (PS)	4	P1, P2, P3, P4
Service Efficiency and Added Value (SEAV)	5	OCT3, IP1, IP2, IP3, IP4

Three items were not included in the new factors (IA1, IA3 and F3) due to their low loadings (<0.4) on either factors.

Listed below (Table 3.3) are the 12 groups of products/services which were identified from past research of e-services. The means (in Ringgit Malaysia) and frequencies of purchases (coded 1 – purchased before and 0 – never purchased) from the respondents are listed as well.

Table 3.3 – Mean (RM) spent on Products/ Services Online

Product/Service	Mean (RM)	Freq'	Product/Service	Mean (RM)	Freq'
Software	449.64	103	Clothing	384.96	304
Books or Magazines	248.93	109	Government Services	435.00	24
Food and Beverage	789.44	50	Tickets (concerts, movies, etc..)	212.74	263
Music, CDs, recordings	213.85	67	Banking Services (including insurance)	1672.71	81
Videos, DVDs	175.83	30	Online Memberships	410.00	28
Gadgets and Home Electronics	1382.81	120	Travel (Airlines, car rentals, Hotels, etc..)	1847.20	271

Analysis of the data was broken down into three phases using SPSS 15.0 and SPSS Modeler 14.0. Firstly, the E-service quality items (33 – see table 3.1) were subjected to reliability and factor analysis resulting in 5 extracted factors shown in table 3.2. Then the 12 online products/services were subjected to an association algorithm (Apriori algorithm was used in SPSS Modeler 14.0 to extract out the highest association of product/services that can be bundled together to form market segments).

Next, using the highest confidence of product bundles, a node was created to generate the rule sets. From these rule sets, decision tree analysis (C&R tree was used for binary outcomes) segments the demographic and e-service quality factors in terms of importance to the bundle purchase. With this information the online businesses will be able to identify demographics segments that will most likely purchase which type of products/service and also understand qualities of a good online business website.

4. ANALYSIS

4.1 Respondents Profile

Out of the 680 available data, 44.1% were males and 55.9% were females. The majority of the respondents were mainly single people with a mean age of 21 to 29 years old university graduates with an average monthly household income of less than 10 thousand Ringgit Malaysia (RM). The table below also shows a breakdown of credit card possession as with most online purchases are through credit cards. It is important to note here that 107 out of the 680 respondents do not possess a credit card and probably had purchased online goods or services through Pay Pal or other means. The table below shows the demographic breakdown of the respondents along with their perceived technological savvyness (rated as 1 – very little, to 5 –very good) and their corresponding mean time in hours spent on the internet per week.

Table 4.1 Respondent profile with mean perceived technology savvyness and mean hours spent on the internet per week.

Demographic Factors	%	Freq	Tech Savvy	Internet Hours/wk	Demographic Factors	%	Freq	Tech Savvy	Internet Hours/wk
<i>Gender</i>					<i>Marital Status</i>				
Male	44.1	300	3.38	21.49	Single	80.4	547	3.52	23.63
Female	55.9	380	3.54	24.36	Married	19.6	133	3.29	20.12
<i>Age</i>					<i>Average Monthly Household Income('000)</i>				
<20 years old	33.2	226	3.43	21.67	<10	76.7	521	3.42	22.42
21-29 years old	48.4	329	3.53	24.08	10 to below 20	17.7	120	3.45	22.19
30-39 years old	12.6	86	3.37	21.65	20 to below 30	3.7	25	3.80	29.50
40-49 years old	2.6	18	3.11	23.00	30 to below 40	1.2	8	3.87	22.20
Above 50 years old	3.1	21	3.09	16.00	Above 40	0.7	5	4.20	34.20
<i>Highest Education</i>					<i>No of Credit Cards</i>				
Secondary Level	10.1	69	3.29	21.51	One	41.0	279	3.45	22.96
University Level	89.9	611	3.48	22.95	Two	28.2	192	3.43	23.19
					Three or more	15.0	102	3.55	21.73

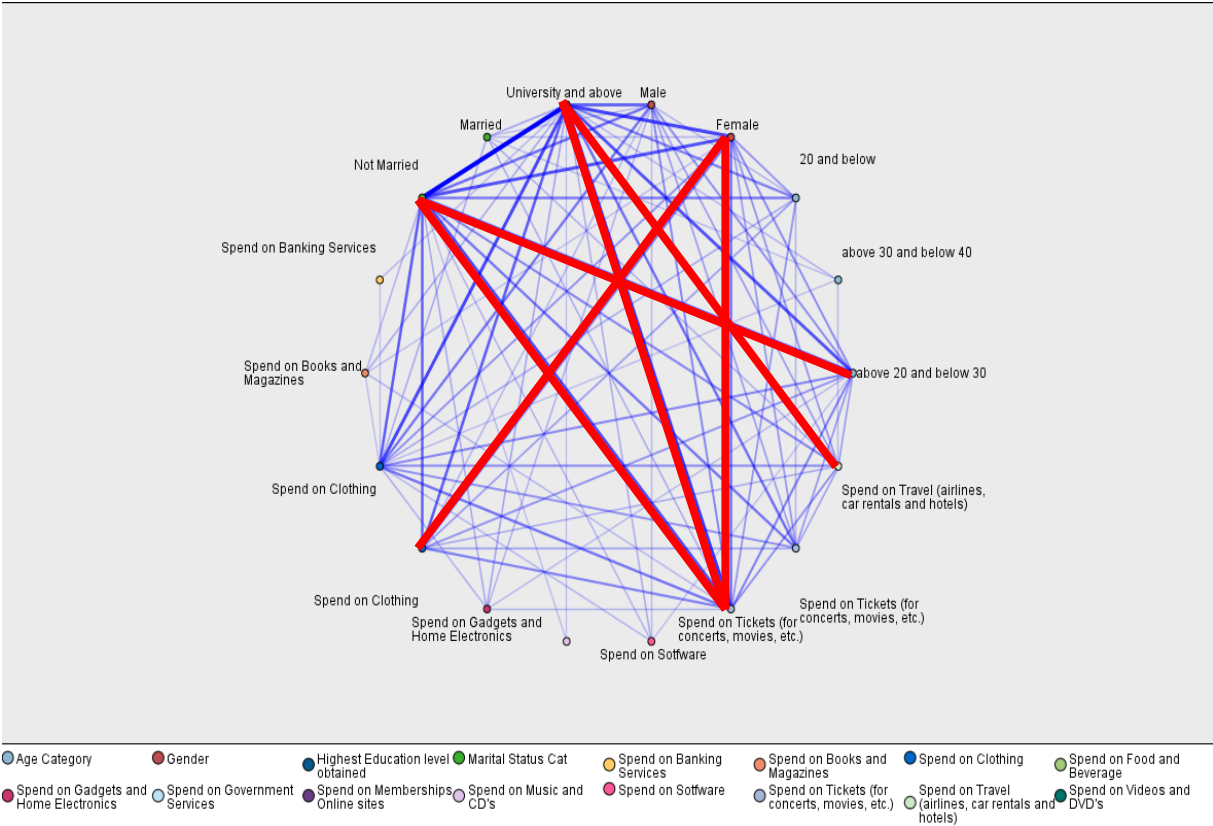
From table 4.1, we can see that those who perceive higher technological savvyness are mostly females, single, and between the ages of 21 to 29 years old. This segment also boasted higher time spent on the internet per week. It is also interesting to note that more credit cards owned by a respondent (which also translate to a higher average monthly household income) spend less time online but has a higher perceived technology savvyness.

4.2 Directed Graph Association of Products with Online Shoppers Segments

The directed graph below shows the association of products with the associated demographic segments. As shown in Figure 4.2.1, most of the respondents which are largely represented by

the single female with a university degree spend most of their purchasing power on tickets and clothing. Travel is also recorded highly associated with a university degree.

Figure 4.2.1 – Products and Demographic Segments of Online Shoppers



The graph above corresponds to the high mean and frequency values of Tickets, Clothing, and Travel recorded in table 3.3 above.

4.3 Product Bundling

Apriori association algorithm was employed in the process of determining which products/services bundle together in meeting the specified confidence rules. Apriori starts out by generating simple rules involving two items and then testing them against the data. This rule is then added to include other antecedents that have a strong association to those rules. Therefore, to find an association between the products, 12 items corresponding to the products were fed into the apriori algorithm node with a two-way directional analysis possibility. A minimum confidence of 70% and a maximum of 5 antecedents were set as the criteria for apriori association algorithm.

The results revealed (Table 4.3) 5 association rules that were produced and present within the data. Out of these 5 rules, 3 products that were used as the consequence for the rules stood out which includes, Clothing, Tickets and Travel. The products that are associated with these three was largely also associated with the corresponding antecedents. For example in RULE 1 from the table below; those who purchased both Clothing and Travel also purchased Tickets (Support of 30.88% meaning that 30.88% of the entire data finds this 3-way association). Confidence of 78.00% explains that 78.00% of the people who purchased Clothing or Travel

resulted in also purchasing Tickets. For each rule, the Support and Confidence figures will largely affect the rule generation for the association of products.

Table 4.3 Product Bundles of Tickets, Clothing and Travel

Rule	Consequent	Antecedent	Support (%)	Confidence (%)
1	Tickets	Clothing, Travel	30.88	78.00
2	Clothing	Travel, Banking Services	22.00	76.19
3	Travel	Banking Services, Books & Magazines	20.59	73.33
4	Tickets	Travel, Online Membership	19.12	71.69
5	Tickets	Software, Food & Beverage	10.82	70.23

From the bundles, rule sets are generated from the antecedents that links with the consequences of the top three products that has the strongest association with all other corresponding products (Table 3.3). These rule set will then be used to do profiling using decision trees.

4.3 Profiling of demographic and E-service quality factors using Decision Trees

From the rule sets generated (i.e. the bundles generated for Clothing (rule 2); Tickets (rule 1, 4 and 5), Travel (rule 3) a C&R (Classification and Regression) decision tree algorithm was used to determine the important variables used to segment important E-service quality factors and demographic variables. The C&R tree algorithm segments the products based on the highest Chi-Square value a variable that defines the optimal splits for the segment. Then it continues this split down the tree until it reaches a terminal node that will identify the full details of the segments based on important variables. All chi-square values are significant ($p < .05$) and allows for optimal identifications of segments with minimal overlap.

Using this algorithm a decision support framework is developed that will portray a clear picture of which variables (demographic or E-service quality factors) that is important to a particular product/service bundle. To facilitate the C&R decision tree algorithm, the E-service factor variables were each split into 2 categories (important (mean > 3.5) and not important (mean < 3.5)). The variables that were used to do the segmentation were chosen based on literature and observation of general trends of telecommunication subscribers. All variables in Table 3.2 (extracted E-service factors) and Table 4.1 (demographic variables) were used for segmentation. The results of the segmentation of the product bundles using the C&R Tree is presented in Tables 4.3.1 – 4.3.3 shows the summary of profiles in each bundle. The legend of abbreviations is noted as below:

- HEL – Highest Education Level Obtained**
- MS – Marital Status**
- AMHI – Average Monthly Household Income**
- NCCO – Number of Credit Cards Owned**
- IESF – Important E-Service Quality Factor**

Table 4.3.1 – E-service factors and demographic profile of Tickets bundle (rule 1, 4 and 5)

Profiles	Gender	Age	HEL	MS	AMHI	NCCO	IESF*
Rule 1 (Tickets, Travel and Clothing)	Female	21-29	University	Single	<10	1	OAT,PS, SEAV
	Female	<20	Secondary	Single	<10	1	OAT, PS, WD
	Male	21-29	University	Single	<10	1	OAT, PS, SEAV, WD
Rule 4 (Tickets, Travel, Online Membership)	Male	30-39	University	Single	10 to <20	2	PS, SEAV, FF
	Male	40-49	University	Married	30 to <40	2, >3	PS, SEAV, FF
Rule 5 (Tickets, Software, Food & Beverage)	Male	<20	Secondary	Single	<10	1	WD, OAT,PS
	Male	21-29	University	Single	10 to <20	1	FF, WD,PS
	Female	21-29	University	Single	<10	1	FF, WD, SEAV,PS

Table 4.3.2 – E-service factors and demographic profile of Clothing bundle (rule 3)

Profiles	Gender	Age	HEL	MS	AMHI	NCCO	IESF*
Rule 3 (Clothing, Travel and Banking Services)	Female	21-29	University	Single	10 to <20	1, 2	PS, FF, OAT, SEAV
	Female	<20	Secondary	Single	<10	1	OAT, PS, WD
	Male	21-29	University	Single	<10	1	PS, OAT, SEAV, WD

Table 4.3.3 – E-service factors and demographic profile of Travel bundle (rule 3)

Profiles	Gender	Age	HEL	MS	AMHI	NCCO	IESF*
Rule 2 (Travel, Banking Services, Books and Magazines)	Male	30-39	University	Married	10 to <20, 20 to<30	2, >3	PS, FF, OAC, SEAV
	Female	30-39	University	Any	20 to <30	2, >3	PS, FF, OAC, SEAV
	Male	21-29, 30-39	University	Single	<10, 10 to<20	1	PS, OAC, SEAV, WD

**Variables that appear first indicate relative importance to other variables; refer table 3.2 for abbreviation meanings of E-Service factors*

4.3.1 Segmentation of Tickets Bundle Purchasers

From the Table 4.3.1 above, Rule 1 (Tickets, Travel and Clothing) produced 3 distinct segments, which highlights mostly female purchasers. All three groups noted Order Accuracy and Timeliness as the most important E-service quality factor, followed by privacy and security.

In contrast to Rule 1, Rule 4 (Tickets, Travel and Online Memberships), notes that most of the purchasers are male and of an older segment. This segment is more affluent and notes privacy and security as their main concerns when purchasing online..

Interestingly for Rule 5 (Tickets, Software, Food and Beverage), sees both male and female purchasers alike. Privacy and security is noted as the lowest importance amongst variables listed in their E-service criteria.

4.3.2 Segmentation of Clothing Bundle Purchasers

From the Table 4.3.2 above, Rule 3 (Clothing, Travel and Banking Services) produced 3 distinct segments, which again highlights mostly female purchasers. As clothing is the highest frequency of purchasers, more affluent females (also older) note privacy and security ahead of any other E-service quality compared to their younger counterparts.

4.3.3 Segmentation of Travel Bundle Purchasers

From the Table 4.3.3 above, Rule 2 (Travel, Banking Services, and Books and Magazines) produced interesting segments. Firstly there is a comparison between married males and single males with varying age groups (21 to 39 years old). Interestingly enough too, females, regardless of marital status make up one segment in this bundle. All three segments note privacy and security as their main E-service quality factor.

5. DISCUSSION

This paper has identified three specific target customer segmentation using customer's e-service quality preferences and customer's demographic characteristics for the Tickets, Clothing and Travel product bundles. The three product bundles were identified based on the frequency of purchase made online. The high frequency of purchase for the Tickets and Travel products correlates with the Malaysian online product purchase findings presented in the 2010 Nielsen's Global Trends in Online Shopping Consumer Report (The Nielsen Company, 2010). Even though clothing did not appear to top the list of product that Malaysians purchase online, the high frequency of clothing purchased by respondents in this study is justifiable due to higher percentage of female respondents against male respondents. According by Kim and Kim (2004), female consumers are more important online shopper segments for clothing sector.

Further analysis based on the Tickets product bundle has distinguished three segments that marketing practitioners should look into. Order Accuracy and Timeliness is pin-pointed as the critical e-service quality factors for 1st segmented group is primarily made up of female customers (Rule 1 - Tickets, Travel and Clothing). As Tickets and Travel are services that can be categorized as intangible products which are perishable (Kotler and Keller, 2012), inaccuracy of details of orders as well as late delivery of these products would mean that the

customers would not be able to consume the services/products purchased. Customers in the 2nd segmented group, formed by majority of mid-aged males (Rule 4 – Tickets, Travel and Online Memberships), is more concerned about privacy and security. Customers from the 2nd segmented group are also seen to be more affluent with high disposable income. Online purchase is often made via credit card and an individual's credit card limit approved is correlated against an individual's income and disposable income (TheStarOnline, 2011). Since the 2nd segmented group is made up of male consumer group whose credit availability could be higher, the concern for privacy and security is therefore the utmost important e-service quality criteria. In contrary to customers in the 1st and 2nd segmented groups, customers in 3rd segmented group consist of both male and female purchasers (Rule 5 – Tickets, Software, Food and Beverages) did not rank privacy and security as important. The low emphasis on privacy and security by the 3rd segmented group can be highly attributed to the easy access of downloadable software available and low popularity of ordering food and beverage online amongst Malaysians.

As for the Clothing product bundle, only 1 segment (Rule 3 – Clothing, Travel and Banking Services) formed by majority female buyers were identified. As discussed earlier, female consumers often make up the biggest clothing consumer group. Once again, for this majority of female consumers, concern on privacy and security stood up as an important e-services variable. Since online banking services is noted as among the services categorized under this product bundle, privacy and security issues is among the top notch criteria influencing online banking services usage (Pikkarainen, Pikkarainen, Karjaluoto, & Pahnla, 2004).

For the Travel product bundle, the only segment (Rule 2 – Travel, Banking Services, Books and Magazines) identified comprise of few variations of age group and marital status. It is important to note that though this segment is made up of a variety of demographic profiles, privacy and security still remained the top priority of making travel, banking services and books and magazines purchase. Since this group is formed mostly by young and matured adults (aged 21-39) who are already in the workforce and earning some amount of disposable income earners that correlates with their credit availability in their credit cards, privacy and security will again be on top of their list of e-service quality concerns.

6. CONCLUSION, LIMITATION AND FUTURE RESEARCH

In conclusion, it is important to note that each customer segment is uniquely grouped based on similar needs and wants by customers. With better understanding of customers' individual product purchase preference in accordance to their e-service quality preference coupled with customers' specific demographic characteristics, e-marketing practitioners, particularly from the segments identified by the Tickets, Clothing and Travel product bundles, will be able to strategically design marketing campaigns to effectively reach their pre-identified target markets.

This study presents a few constrains that serve as avenues of future research. Firstly, this study is done based on Malaysian data, hence generalizing the product bundle segments identified to other countries is limited. Adoption or adaptation of the research methodology presented to identify appropriate segmentation for other regions or sectors of e-commerce is strongly encouraged. Secondly, the segmentation of this study is done based on three identified determinants of online purchasing behavior. Finally it is important to note too, that Asian consumers are generally reluctant to disclose personal information and thus are not too

keen to participate in surveys wholeheartedly, hence incorrect and insufficient information provided in the questionnaires. Future studies should consider the possibilities of incorporating more determinants of online purchasing behavior such as cost and purchase incentives.

7. REFERENCES

- Barnes, S.J. and Vidgen, R.T. (2002). An integrative approach to the assessment of e-commerce quality. *Journal of Electronic Commerce Research*, 3(3), pp. 114-27.
- Bank Negara sets new rules for credit cards. (2011, March 18). The Star Online. Retrieved 31 Oct, 2011 from <http://thestar.com.my/news/story.asp?file=/2011/3/18/nation/20110318125119&sec=national>
- Bauer, H. H., Falk, T., & Hammerschmidt, M. (2006). eTransQual: A transaction process-based approach for capturing service quality in online shopping. *Journal of Business Research*, 59, pp. 866-875.
- Carlson, J. & O’Cass, A. (2011). Developing a framework for understanding e-service quality, its antecedents, consequences, and mediators. *Managing Service Quality*, 21(3), pp. 264-286.
- Cristobal, E., Flavian, C. & Guinaliu, M. (2007). Perceived e-service quality (PeSQ): Measurement validation and effects on customer satisfaction and web site loyalty. *Managing Service Quality*, 17(3), pp. 317-340.
- Chua, P.H. Khatibi, A. & Ismail, H. (2006). E-commerce: A study of Online Shopping in Malaysia. *Journal of Social Sciences*, 13(3), pp. 231-242.
- Collier, J. E. & Bienstock, C. C. (2006). Measuring Service Quality in E-Retailing. *Journal of Service Research*, 8(3), pp. 260-275.
- Ding, D. X., Hu, P. J. – H., & Sheng, O. R. L. (2011). e-SELFQUAL: A Scale for measuring online self-service quality. *Journal of Business Research*, 64, pp. 508-515.
- Girard, T., Korgaonkar, P., & Silverbatt, R. (2003). Relationship of type of product, shopping orientations, and demographics with preference for shopping on the internet. *Journal of Business and Psychology*, 18(1), pp. 101-120.
- Goel, R. K. & Hsieh, E. W. T. (2002). Internet Growth and Economic Theory. *Netcomics*, 4(2), pp. 221-225.
- Kassim, N. M. (2006). Telecommunication Industry in Malaysia: Demographics Effect on Customer Expectations, Performance, Satisfaction and Retention. *Asia Pacific Business Review*, 12(4), pp. 437–463.
- Kim, E. Y. & Kim, Y. –K. (2004). Predicting online purchase intentions for clothing products. *European Journal of Marketing*, 38(7), pp. 883-897.

- Kotler, P. & Keller, K.L. (2012). *Marketing Management*. 14th ed, New Jersey: Pearson Prentice Hall.
- Lee, G. -G. & Lin, H. -F. (2005). Customer perceptions of e-service quality in online shopping. *International Journal of Retail & Distribution Management*, 33(2), pp. 161 – 176
- Lejeune, M A.P.M. (2001). Measuring the impact of data mining on churn management. *Internet Research, Electronic Networking Applications and Policy*, 11(5), pp. 375 – 387.
- Lightner, N. J. (2003). What users want in e-commerce design: effect of age, education and income. *Ergonomics*, 46(1-3), pp. 153-168.
- Loiacono, E.T., Watson, R.T. & Goodhue, D.L. (2000). *Webqual: a web site quality instrument* (Working paper 2000-126-0). Athens, GA: University of Georgia.
- Ong, L. T. & Andrews, E. (2007). Understanding Fitness Industry Customers in Malaysia Through Business Intelligence: A Data Mining Application in Marketing. *Proceedings of the 4th Biennial Conference of the Academy of World Business, Marketing and Management Development*, Oulu, Finland.
- Parasuraman, A., Zeithaml, V. & Berry, L. (1988). SERVQUAL: a multiple-item scale for measuring consumer perceptions of services quality. *Journal of Retailing*, 64(1), pp. 12-40.
- Parasuraman, A., Zeithaml, V.A. and Malhotra, A. (2005). E-S-Qual: a multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7(3), pp. 213-33.
- Pikkarainen, T., Pikkarainen, K., Karjaluoto, H. & Pahnla, S. (2004). Consumer acceptance of online banking: an extension of the technology acceptance model. *Internet Research*, 14(3), pp. 224 – 235.
- Ranaweera, C., McDougall, G., & Bansal, H. (2005). A model of online customer behaviour during the initial transactions: Moderating effects of customer characteristics. *Marketing Theory*, 5(1), pp. 51-74.
- Rohm, A. J., & Swaminathan, V. (2004). A typology of online shoppers based on shopping motivations. *Journal of Business Research*, 57, pp. 748-757.
- Santos, J. (2003). E-service quality: a model of virtual service quality dimensions. *Managing Service Quality*, 13(3), pp. 233-346.
- The eMarketer (2010). Retail Ecommerce Spending to Grow 13.7% in Q4 2010. Retrieved Oct 28, 2010, from <http://www.emarketer.com/blog/index.php/retail-ecommerce-spending-grow-137-q4-2010/>
- The Nielsen Company (2010). *Global Trends in Online Shopping A Nielsen Global Consumer Report*. USA. Retrieved Oct 31, 2011, from

<http://hk.nielsen.com/documents/Q12010OnlineShoppingTrendsReport.pdf>

The Oriental Daily (2009). Malaysia's E-commerce Statistics. Retrieved June 20, 2011, from <http://www.malysiacrunch.com/2009/09/malysias-e-commerce-statistics.html>

Yoo, B. & Donthu, N. (2001). Developing a scale to measure the perceived service quality of internet shopping sites (sitequal). *Quarterly Journal of Electronic Commerce*, 2(1), pp. 31-47.

Yu, J. (2006). Marketing to Chinese consumers on the internet. *Marketing Intelligence & Planning*, 24(4), pp. 380-92.

Zeithaml, V.A., Parasuraman, A. & Malhotra, A. (2001). A conceptual framework for understanding e-service quality: implications for future research and managerial practice (Working paper 00-115). Cambridge, MA: Cambridge, Marketing Science Institute.