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Hypothetical Propositions and Statistical Tests for Purchase Affectivity, Cognitive Learning and Social Behaviour in Consumer Decision Making

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ABSTRACT

This paper provides an adoptionary model to derive the factors that influence consumer decision making. Theories based upon purchase affectivity and search behaviour for information will be underpinned through research on offline and online methods. The underscoring variables highlighted in my study that affect consumer decision making include experience, learning, emotional, cognitive, social, cost, commercial, distribution. This is further enhanced by three groups of sub-variables involving impulsive buying behaviour, uninfluenced behavior and pre-search evaluation. The purchase presuppositions and surveys made here are related to the sector of luxury designer products. This is all conducted by analyzing data collected from respondents using reliability testing methods such Cronbach's Alpha, Pearsons Correlation, one-way ANOVA and multiple regression analysis. The key findings of this study depending on test types, designates that overall, certain sets of self-determining variables are strongly associated with the consumer decision making. For example, the Cronbach's Alpha analysis institutes show a positive significance attributed to impulse buying, uninfluenced purchases and prepurchase evaluation. Under the multiple regression two-tailed test method, five out of eight variables would be significantly accepted as positive factors related to consumer decision making.

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Abbreviations

SS: Sum of Squares
DF: Degree of Freedom
MS: Mean Square
Sig: Significance=P

Chronological Notes: Patrick Sim Puay-I is an Assistant Professor with China Agricultural University in Beijing and was previously a Principal Lecturer at the International Education Faculty of Jingchu University of Technology, as well as a lecturer with the Business and Management Faculty of EASB™ East Asia Institute of Management, Singapore. His other roles involved EAP/IELTS coaching at Shandong Education Association located in the campus of Shandong Normal University, in collaboration with NCUK The University Consortium brand. He first started his career with Peking University Founder Computer System Co., Ltd, Changsha, as an Adjunct Trainer in English and Marketing Communications, providing new concepts in English training to the entire sales and marketing department. Simultaneously, he was also the Teacher Associate for The London Chamber of Commerce Industry Examinations Board (LCCIEB) and The Association of Business Executive (ABEUK) programmes based in Hunan. He received his undergraduate degree in business administration from The University of West London, and an MMM from Griffith University, and a second Master's degree in Adult Education from Linköping University of Sweden. Additionally, he holds the prestigious Postgraduate Diploma in Marketing from The Chartered Institute of Marketing, U.K., as well as a Graduate Diploma in Human Resources Management from The Association of Business Executive. His teaching and research interests are in the areas of brand marketing, sports, entertainment and the arts marketing, strategic and global marketing, human capital, as well as in the areas of andragogy and experiential education. He has published articles in respected high impact factor journals such as Business and Economics Journal, Journal of Accounting and Marketing, International Journal of Information, Business and Management, Journal of Tourism Studies and Hospitality Research, IFR Journal of Economics and Business Management.

Introduction

This study will put emphasis on the resounding theories of purchase affectivity (emotion) that affects the social behavioural aspect, the cognitive learning aspect, of customers underpinning their information search behaviour and consumer decision making in the luxury designer product markets. Since the days of Descartes (1649), emotions were a series of automatisms and human behaviors different than cognitive processes. Affectivity is a state of emotion linked from cognitization to another ambit of social activity. According to, "An emotion is defined as a state of psychological arousal with cognitive aspects that depend from

the specific context'' [1]. There are simple and complex emotions though Ortony and Turner consider a different purview of basic emotions from good to the bad including the elements of anger, disgust, fear, joy and sadness, while Zamuner emphasizes on the values of joy, love, peace, compassion, anxiety, boredom, sadness, surprise and anger [2,3]. But how is this relevant to the process of information search behavior and consumer decision making? Consider how impulse buying, uninfluenced purchases, or pre-search evaluation are the resultant postcedental behaviour as a result of the triangulatory effects of affectivity, social behaviour and cognitive learning coming into crosshairs.

Literature Review

In social behaviour related to marketing, it is a behaviour amongst greater organisms in the identical species and encompasses any behavior in which one member influences the alternative [4]. It is because of the interplay amongst the members that social behavior may be noticeable as much like a trade of goods, with the expectancy albeit an individual gives, an individual may get hold of the identical (ibid). Therefore, it is perceived that social conduct arises because of the interplay among the organism and its environment. More recently, however, there has been a general trend toward a more integrative approach to understanding social behavior [5]. A characteristic that has been attributed to human social behavior is that it is not only determined by genes, but also by thoughts and ideas, which unlike genes easily flow from one person to another by imitation. This allows human social behavior to be modified and adapted during an individual's lifetime, for example through individual and group learning or cultural transmission [6]. Consumer decision making is thus being revolutionized by the everchanging paradigm of social behaviour and its constructs, such as group consensus on a strategic purchase via a quantum network control. En passant, quantum network controls are infrastructural tools and platforms that design algorithms and facilitate the transmission of information in the form of quantum bits (qubits) between physically separated quantum processors [7]. This would enable the evolvement of consumer decision making in quantum marketing.

In cognitive learning related to marketing, thinking and reasoning abilities are developed through cognitive development, i.e., an understanding of human learning, socialization, and behaviour that is based on examining the internal workings of the brain. According to Vygotsky and Cole their focus was on factors affecting cognitive development, which emphasized on the social environment attributes impacting upon cognitive development [8]. This would include information processing through the lens of everyday experiences rather than canvassing for opinions or judgments. How then would all of this relate to consumer decision making in the luxury designer product markets? What factors exactly drive consumers to purchase these luxury designer products? Are they experiential, learning, emotional, cognitive, social, or simply the micromanaging of marketing tactics? "Luxus", the Latin form for luxury, indicates majesty, opulence and indulgence, a prestige of living attached only to those who crave for high-status indicators. Kasztalska argues that "luxury services and goods are relative because it depends on many factors and prospects", and the relativity of luxury goods can be divided into: regional, temporal, economic, cultural and situational [9]. Consider purchasing a luxury designer product for a client's photoshoot commissioning, or refer to the fact that a limited-edition freemium item that comes with a main purchase has spawned a long queue into the thousands [10]. It is interesting to note that Caserta calls this luxury phenomenon, a "visible consumption", which applies to the continuous "trend of an increase in luxury good consumption because luxury goods convey wealth and thus convey status" (p.10). Hence, those who "desire status, which is affected by perceptions of wealth, they will visibly consume luxury goods in order to signal their desired level of wealth and position themselves as high as possible in the social hierarchy" [10] . They may be fair dinkum consumers or poseurs, both categories who signal off their high-status for intent not readily known by outsider categories.

In order to ascertain the purplexities of consumer decision making in the luxury designer product markets, for this study, I will adopt the Andreasen model proposed in 1965 as one of the earliest models of consumer behaviour which is shown below in Figure1. According to Andreasen the model recognizes the importance of information in the consumer decision-making process and emphasizes the importance of consumer attitudes even though it fails to consider attitudes in relation to repeat purchase behaviour [11]. Consumer attitudes do take into account the processual of purchase affectivity regardless of repeat purchases (ibid). All the sources of information collection are filtered and matched with other behavioural aspects such as belief, norms, values etc.; along with the search for alternate, substitute and other probable suitable products [12]. I have stressed the necessity of embedding social behaviour withing my model to reflect the importance of it in consumer decision making. Social behaviour is an antecedent or a postcedental variable that affects the cognitive and emotional aspect of purchase decision. The limitations of Andreasen model are that it hardly expounds on the significance of its components, mostly delimiting to its relational aspects. It also appears that the information search process critical in the consumer decision making is lacking, but otherwise this model provides a robust view of the purchase processes.

The model presides on consumer attitudes and change in attitudes. According to the Andreasen model, change in consumer attitudes or behaviour takes place because of exposure to big data over a period of time. This data may or may not have been randomly or systematically searched for. Rather, this model details the high computational effects of consumer decision making. According to Bettman and Jones , the linear experimental models give us idea on the behaviour of market in general but not the individual consumer behaviour [13]. The mathematical model concerned in this linear experimentation can be difficult to understand. The basic linear experimental model is described as follows:

$$f(y) = \Sigma gi(\chi i) + \varepsilon,i$$

Here y is the dependant variable, χi is the independent variable, and ε is a random element. Models in this category are basically descriptive (ibid.). The model raises inquisitive marketing questions such as the nature of relationship between consumer characteristics, i.e., their geo-demographic and psychographic attributes and the amount of information searched during a particular time period. For example, what kind of information do consumers look for from various sources of information? Are they ready to purchase after forming a certain bias towards the products? These are questions that the mathematical models may be able to answer. Bettman and Jones continue to refer to the concepts of large systems models as descriptive supplements that are related and applied to the Andreasen model [13]. These models are the equivalent to the modern-day large language models used by marketers in predicting consumer decision making. They describe behaviour in terms of variables and their relationships. In hindsight consumer decision making models are constantly evolving to address the everchanging complexities of consumers' attitudes, social behaviour and cognitive learning outcomes.

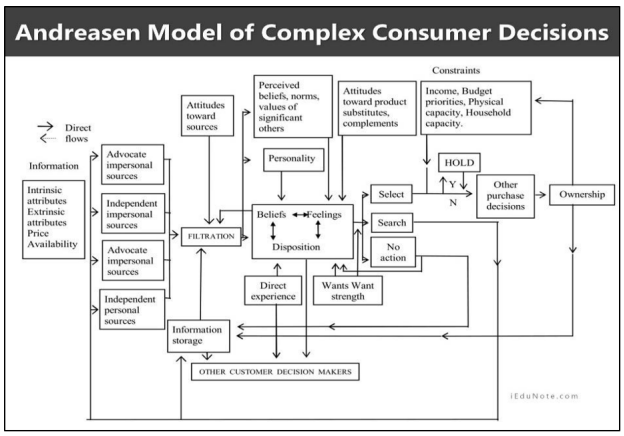

Figure 1: Source: Andreasen AR. Attitudes and Consumer Behavior: A Decision Model in New Research in Marketing

Methodology

The purpose of the survey is to obtain data pertaining to the influences of the research- mentioned factors on consumer decision making when consumers purchase luxury designer products. I have adopted the following algorithmically formula to be applied to the consumer decision making, and implement it to the consumer decision making decisions in the luxury designer product market. The algorithmically formula can be datametrically written as highlighted below:

The following research hypotheses are posited to determine significance and relevance to the topic:

H1: Experience variable has a direct affectivity with consumer decision making.

H2: Learning variable has a direct affectivity with consumer decision making.

H3: Emotional variable has a direct affectivity with consumer decision making.

H4: Cognitive variable has a direct affectivity with consumer decision making.

H5: Social variable has a direct affectivity with consumer decision making.

H6: Cost variable has a direct affectivity with consumer decision making.

H7: Commercial variable has a direct affectivity with consumer decision making.

H8: Distribution variable has a direct affectivity with consumer decision making.

The data employed to analyze the factors persuading consumer's purchase decision- making processes were achieved through a marketing survey. The mechanism used to collect the primary data was a set of questionnaires. The authors selected this tool because of its supplementary advantages. It is because each respondent receives the same questions and an interviewer is not present, the process is identical for each respondent. One advantage of using a questionnaire is that it minimizes errors made by an interviewer while recording the responses. Questionnaires guarantee secrecy and hence, respondents act without any fright or humiliation. A further advantage is that the interviewer, whose personal look, frame of mind or behaviour may influence the results of an interview, is not present when the questionnaire is being completed. Furthermore, a questionnaire is a rapid and an effectual way to obtain information from a large number of consumers. Nevertheless, designing a questionnaire is complex and time- consuming, and the quality of the data that are collected is determined by the quality of the questionnaire. The authors proposed that the questionnaire to be simple and the questions should be uncomplicated and to the point. The questions were divided into three segments as follows:

A. Questions on demographic information, including characteristics such as gender, age, education and income.

B. Questions on the factors that impact consumers and consumer behaviour. The succeeding part of the questionnaire restricted to nine sections, and each section represented a variable in the research model (the independent, dependent, and intermediate variables). The responses were measured on the Likert, Ordinal, Dichotomous and Semantic scales, usually ranging from one to five. The survey was conducted online in 2010 taking circa 6 months to complete. There was no inaccurate gathering of data and all questions were fully answered without any errors. The data collected had to be tabulated using the Statistical Package for Social Sciences (SPSS), which tested for the data using a series of various tests such Cronbach's Alpha, Pearson Coefficient, One-way ANOVA and two-tailed multiple regression. This would ensure a balance approach to the findings of results based on internal reliability, validity and robustness.

Findings and Results

A total of 200 survey respondents had participated with an equal percentage proportion of male and female respondents. 50% of males were found to be in the range of 25-35 years of age. 40% of males were found to be in the range of 35-45 years of age, and the remaining 10% 45> years of age. 30% of females were found to be in the range of 25- 35 years of age. 40% of females were found to be in the range of 35-45 years of age, and the remaining 30% 45> years of age. As for education, 50% of male respondents had diplomas with another 40% with bachelor degrees, and the remaining 10% being addition, the overall survey tabulation showed 21% of respondents had above $5000 per month income, 56% had between $1500 and $4900 per month income and 23% had less than $1400 per month income. This survey was conducted based on consumers purchase of luxury products in a developed nation. No graphs were needed to be illustrated for simple formulations.

Cronbach's alpha reliability is one of the most widely used measures of reliability in the social and organizational sciences. Cronbach's alpha reliability describes the reliability of a sum (or average) of qmeasurements where the qmeasurements may represent qraters, occasions, alternative forms, or questionnaire/test items [14]. Cronbach's Alpha reliability is one of the most widely used measures of reliability in the social and organizational sciences [14]. Cronbach's Alpha reliability describes the reliability of a sum (or average) of qmeasurements where the qmeasurements may represent qraters, occasions, alternative forms, or questionnaire/test items. Tavakol and Dennick expounded that internal consistency should be determined before a test can be employed for research or examination purposes to ensure validity. In addition, reliability estimates show the amount of measurement error in a test [15]. Put simply, this interpretation of reliability is the correlation of test with itself.

Squaring this correlation and subtracting from 1.00 produces the index of measurement error. Kline (1994, p.53) quoted an example, that "if a test has a reliability of 0.80, there is 0.36 error variance (random error) in the scores ($0.80 \times 0.80 = 0.64$; $1.00 - 0.64 = 0.36$). As the estimate of reliability increases, the fraction of a test score that is attributable to error will decrease. To calculate the effect of measurement error on the observed score of an individual student, the standard error of measurement must be calculated (SEM) [16]. Cronbach's Alpha, represented by the

Greek letter α is used to examine the internal consistency or reliability of summated rating scales [14]. Cronbach's Alpha is the most common estimate of internal consistency of items in a scale [14,17]. Alpha measures the extent to which item responses (answers to survey questions) correlate with each other. Alpha α estimates the proportion of variance that is systematic or consistent in a set of survey responses. Cronbach, Raykov and presented the equation as follows [14,18]:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k} \sigma_{y_i}^2}{\sigma_y^2}\right)$$

where:

k is the number of items

$\sigma_{y_i}^2$ is the variance of item

σ_y^2 is the variance of the total scores

The below Table 1 provides the list of the variables and sub-variables that were tested

Table 1List of Variables	Sub-variables	Details
Experience	Perception, References, Opinions, Insights	Experience is shaped by perception, recommendations, hearsays and opinions formed by previous purchases.
Learning	Stimulation, Learning environment, Access to media	Learning helps shape the buyer process depending on access to the learning environment and availed media. This can include online or offline learning materials.
Emotional	Friends, Influence, Interests, Motivation	This stems from excitement, boredom, happiness or sadness, to habitual buying, or private buying for certain happy occasions or emergency situations to suit one's likings or needs.
Cognitive	Memory, Beliefs, Attitudes	Consumer remember their experiences through memory and their beliefs in a particular brand or item through repeated purchases. This is often aided by additional market positioning statements or pictures that would embed into consumers' minds to feel good and stimulate purchase.
Social	Mores, Norms, Myths	Ascribed groups form a common subculture and this affects purchase and information search. Preconceived notions and subcultural practices decided what information to search. Aspired groups also fall into this category.
Cost	Price-off, Discounts, Warranties, Instalments, Rebates, Coupons	These are more direct variables that can affect purchase and information search. Usually quite the most effective tool in terms of pre-purchase to post-purchase decisions.
Commercials	Adverts, Instant flyers, Brochures, Liveries	Any last-minute commercials or adverts can sometimes stimulate last minute decision making. Internet often uses impression rates to measure their advertorial success.
Distribution	Item placements, Payment outlets, Partnership availabilities	Nearby kiosks or point-of-purchase solutions can also strengthen purchase opportunities. More suppliers and distributors can mean having more stocks readily available for the consumers through intensive, exclusive or selective networks of retail shops.

Cronbach's Alpha is the most common measurement test when it comes to adopting the Likert scale questions used in surveys to determine internal consistency, reliability and validity of an inter-item scale. It is not a bootstrap measurement of confidence interval. As shown in Table.B and especially in Table.C below, all Cronbach's Alpha scores were over 0.75, with the lowest at 0.76 and the highest at 0.97, suggesting that the items have a relatively high degree of internal consistency (note that a reliability coefficient of 0.70 or higher is considered "acceptable" in most social science research [19]. My scores reflected the three values of acceptability, good and excellence in most instances for the inter-items of internal consistency, reliability and validity (which is another synonym for accuracy). Anything that is below 0.70 is considered poor and unacceptable. The Alpha scores are acceptable for an exploratory analysis, indicating that the sub-variables within each variable are inter-related. There was a relationship between each variable and consumer decision making behavior. The value of Cronbach's Alpha was obtained to be .72 to (2 d.p) Streiner provides a table of values to explain the significance of the calculated value of Alpha, in relation to the inter-items of internal consistency, reliability and validity [20].

Table 2 Source: Streiner (2003:102)	Cronbach's Alpha Scale	Internal Consistency / Reliability / Validity Test
1	$\alpha \geq 0.9$	Excellent (High-stakes testing)
2	$0.8 \leq \alpha\ 0.9$	Good (Low-stakes testing)
3	$0.7 \leq \alpha < 0.8$	Acceptable
4	$0.6 \leq \alpha < 0.7$	Poor
5	$\alpha < 0.6$	Unacceptable

Table 3 Reliability 11 Variables	Cronbach's Alpha	Internal Consistency / Reliability Test
Experience	0.89	Good
Learning	0.86	Good
Emotional	0.83	Good
Cognitive	0.76	Acceptable
Social	0.81	Good
Cost (marketing tactic)	0.79	Acceptable
Commercial (marketing tactic)	0.97	Excellent
Distribution (marketing tactic)	0.94	Excellent
Impulsive Buying Behavior (Consumer decision making)	0.95	Excellent
Uninfluenced Behaviour (Consumer decision making)	0.91	Excellent
Pre-search Evaluation (Consumer decision making)	0.94	Excellent

The authors found Pearson's correlation coefficients among the variables linked with questions answered on the Likert scale such as emotional, cognitive and social factors, and the marketing tactics. As shown in Table.D, the Pearson's r for the correlation between each variable and consumer decision making was positive. This means that as one variable has a positive relationship with the second variable when their values are increased. Similarly, as one variable decreases in value, there is an inverse or negative relationship with the second variable. The values of the Pearson's correlation coefficients in this study were rather low which suggested there is a weak relationship between the variables. The strongest correlation value was between cognitive and social variables at 0.455 – 0.659 and it had a slight significant strength at 0.05<p>0.05, or bootstrap <95%> confidence interval. Thus, we can assume that there was no significant relation between these main variables and consumer decision making.

Table 4 Pearson's Correlation of 6 Variables

Variables	Behaviour	
	Pearson's Correlation	Sig. (2-tailed)
Emotional	0.277	0.00
Cognitive	0.455	0.04
Social	0.659	0.06
Cost	0.298	0.00
Commercial	0.287	0.00
Distribution	0.255	0.00

In addition, to bootstrap the relationship between experience and emotional variables, a bootstrap one-way ANOVA was adopted. The variables of occupational levels, gender and age were represented. The results shown in Table.E below purport that there is no significant difference between the inter-item variables of occupation levels and gender on consumer decision making at p>0.05 or bootstrap <95% confidence interval. Every variable was way above the p>0.05 point, with the lowest F-value at 0.115 and highest F-value at 9.530. Most certainly only age had an impact on consumer decision in pre- search evaluation at 0.030 (p<0.05).

Table 5: One- Way Anova 9 Variables

Factors	Types of Behaviour	SS	df	MS	F-value	MS error.	Sig.
Occupation Levels	Impulsive Buying Behaviour	2.141	4	0.535	0.853	0.627	0.538
	Uninfluenced Behaviour	2.745	4	0.686	1.381	0.497	0.360
	Pre-search Evaluation	15.513	4	3.878	0.611	6.347	0.670
Gender	Impulsive Buying Behaviour	0.354	4	0.089	0.128	0.694	0.969
	Uninfluenced Behaviour	0.487	4	0.122	0.115	1.064	0.974
	Pre-search Evaluation	13.166	4	3.292	4.172	0.789	0.063
Age	Impulsive Buying Behaviour	3.123	4	0.781	1.672	0.467	0.278
	Uninfluenced Behaviour	5.754	4	1.439	9.530	0.151	0.102
	Pre-search Evaluation	19.134	4	4.784	8.163	0.586	0.030

Abbreviations: SS (sum of squares) / df (degree of freedom) / MS (mean square) / Sig (Significance=P)

The data presented in Table.F below show the results of the multiple regression relations, which were used to study more about the associations between the independent variables and the dependent variable. The results that were derived based on several testings and calculations provided the following research model:

Variable Impact on Behaviourc,t = $\alpha 0 - \beta 1 Experiencec,t + \beta 2 LEarningc,t - \beta 3 Emotionalc,t + \beta 4 Cognitivec,t + \beta 5 Socialc,t + \beta 6 Costc,t + \beta 7 Commercialc,t + \beta 8 Distributionc,t + \varepsilon c,t$.

The statistical empirical findings indicate that hypotheses 1 and 3 were rejected because the variables have little or no relationship with consumer decision making and were thus rejected at $p>0.05$. The other hypotheses from 4-8 were accepted largely based on stronger associations between the variables at $p<0.05$. Cognitive variables at $\beta=0.388$ had a stronger influence than social variables at $\beta=0.224$ and the rest of the cost, commercial and distribution marketing mix reasons, but suppositions 1-3 were simply lacking in strength in associations. According to Lamont, Healey , they described the degrees of freedom as "the number of values in a distribution that are free to vary for any particular statistic [21-22]". Statisticians start with the number of terms in the sum (of squares), then subtract the number of mean values that were calculated along the way [22]. The degrees of freedom is equal to the number of independent scores (N) minus the number of parameters and is therefore equal to *N*-1.

Table 6 Multiple Regression

Suppositional relationship	Unstandardized coefficients		(Two-tailed test degrees of freedom df<30)		Results
	B	Std. error	t-value	Sig (p- value).	
H1 Experience	-0.095	0.0500	-1.900	0.060	Rejected
H2 Learning	-0.226	0.0513	-0.44	0.660	Rejected
H3 Emotional	0.069	0.0388	1.78	0.080	Rejected
H4 Cognitive	0.388	0.0575	6.74	<0.001	Accepted
H5 Social	0.224	0.0575	3.900	<0.001	Accepted
H6 Cost	0.178	0.0413	4.310	<0.001	Accepted
H7 Commercial	0.198	0.0550	3.600	<0.001	Accepted
H8 Distribution	0.155	0.0525	2.950	0.004	Accepted

Based on the formulaic calculations with unstandardized B, Standard error: [t=B/SE]0.069

The below Figure.B provides a holistic overview of the consistency, reliability, validity tests conducted over the study. Overall, most of the tests provided an acceptable rate of correlation, bootsrap confidence intervals between the variables, sub-variables and the inter-items.

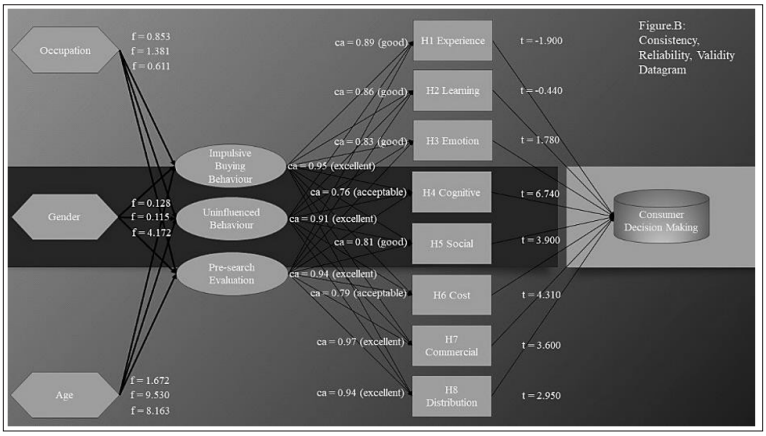

Figure 2: Consistency, Reliability, Validity Datagram

Conclusion

In summary, the resounding theories of purchase affectivity (emotion) do affect the social behavioural aspect, the cognitive learning aspect, of customers underpinning their information search behaviour and consumer decision. In hindsight consumer decision making models are constantly evolving to address the everchanging complexities of consumers' attitudes, social behaviour and cognitive learning outcomes. The results from the multiple test methods were conducted to determine the correlations, strength and confidence intervals of the variables and sub-variables to prove the research hypotheses have all produced quite precise results based on the inter- items of internal consistency, reliability and validity [23-24].

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