

# DO THE CHARACTERISTICS OF INDIVIDUAL CONSUMERS IMPACT THE STABILITY OF THE IMPLIED ATTRIBUTE WEIGHTS (FEATURE PREFERENCES) OF A PARTICULAR PRODUCT OVER A PERIOD OF TIME?

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**Abstract** - It is natural to expect the preference for different products, and within a generic product for its variants, and in fact for preference for different features (that make up the product), of a consumer will change over time. This has been studied extensively by the marketing researchers. However, the importance the consumer attaches to individual features of the product (generally known as attribute weight or feature weight) and how these weights could be changing over the time have not been explored by many researchers. Recently a study involving 161 UK participants of all ages and backgrounds participating in three rounds of survey over nine months' period has established that attribute weights do change over a time period for different products although the magnitude of the variation depended on the type of products studied. In this paper, an alternative aspect of the problem is being reported, namely whether the individual consumers' characteristics such as demographics, consumers' product usage pattern, their technical expertise etc. relate to the changes in attribute weights over a time period.

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**Key words** - Consumer Characteristics, Choice based conjoint, Attribute coefficient change, longitudinal study

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## I. INTRODUCTION

Throughout the history, the time has been an effective catalyst for change. Hence it is normative to expect the consumer preference will change over time. To identify and provision for such change in advance has been the main drive of the marketing function. It has been commonly noticed that the preference for different products, and within a generic product for its variants, and in fact preference for different features that make up the product, of a consumer change over a period of time. However, the impact of such observation has not been effective in forecasting accurately the product which will be in demand in the future.

One possible reason attributed to this condition could be not-recognising the lability (change) of attribute weights over time. Recently Meeran et al (2016) have reported the existence of the lability of attribute weights by doing three rounds of survey with 161 UK participants of all ages and backgrounds over nine months. In this paper, an attempt is made to investigate whether individual consumers' characteristics such as their demography, technical competency and product usage (such as the number of hours the product is used) have any impact on changes in attribute weights over time.

## II. LITERATURE REVIEW

There have been some studies on how individuals' characteristics or their usage behaviour might affect their consumer behaviour manifested in the choices they make. According to Pollak (1978) preferences and tastes of individuals might differ according to

different demographic characteristics (e.g. socio-economic characteristics, household budgets). Moreau et al. (2001) contended that how individual consumers learn about and develop preferences for new products has not been extensively researched. These authors argued that the factors that influence consumer preferences in relation to new products from both the consumer behaviour and psychology perspectives are: knowledge of existing products, consumer perception on product advantages that could be translated into the importance of a product to the consumer and consumer comprehension regarding a product that depends on the level of technological competency of the consumer and that could be measured as such.

Technological changes and advancement (Jahanbin et al., 2013) and internal desire for variety seeking (Kahn, 1995) could be the reasons for whether consumers choose to make upgrades or changes of devices. In addition to this, daily usage of technology and its influence on consumer behaviour have been studied from different perspectives in the literature, including: the effect of mobile phone daily usage on travel behaviour (Yuan et al., 2012), perceived enjoyment and perceived usefulness on internet daily usage (Teo et al., 1999), and mobile phone usage by students in college in relation to maintaining family relationships (Chen and Katz, 2009).

There is also an American study that compared mobile phone usage and internet usage showing that although there are great similarities between them, there might be also some differences due to individual characteristics and demography (Rice and Katz, 2003). Ishii (2004) conducted a study on

internet usage differences between PCs/laptops and mobile phones in Japan. All of these studies suggest that variation in usage of technology among individuals could provide an explanation for their differing behaviours. However, none of them has considered how these individual differences might influence the preferences for specific features over time. Several studies have been conducted to compare male and female consumer behaviour and preferences. These have been in relation to the clothing brand loyalty formation process in South Korea (Jin and Koh, 1999), self-concept and self-image (Oumlil and Erdem, 1997), the perception of product warnings (Larue and Cohen., 1987), and the effectiveness of celebrity endorsers (Premeaux, 2006). This suggested that it is worthwhile, to investigate the potential effects of gender on changes in consumer preferences over time.

Hledik (2012) did not find a significant relation between the complexity of a product and instability of preferences in his two stage study of mobile phones (complex product) and yogurt (simple product). His study had a few limitations, in particular, his participants were confined to a certain occupation and age category i.e. he used only college and university participants aged between 18 and 23, who had the same level of education. Hence, the homogeneity of his sample may have been one of the reasons why he did not find any significant relationship between the complexity of product and instability of preferences. To address this research question i.e. the effect of individual consumers' characteristics on the stability of the weights attributed to the features, we have carried out a longitudinal study on mobile phones, a product with complexity and multiple features. Here we report the finding whether the consumer characteristics have any influence in the change in preference weights of the features of mobile phones over time.

### III. STUDY DESIGN

A longitudinal study involving three rounds of survey was carried out over nine months which used a choice based conjoint analysis method and a logit model to extract the feature weights that the participants would have attached implicitly. In the choice based conjoint analysis, the participants chose a variant from various variants of mobile phones offered.

The variants of mobile phones are constructed from the combinations of feature levels (options) shown in Table 2. These choices were input into the model to obtain the attribute weights in each round. These extracted weights are analysed for the existence of change between the three rounds. In the study reported in this paper, individual characteristics of the participants i.e. gender, age, education, occupation and perceived technology competency, were included in the utility model for mobile phones to see their

influence on the change in the feature weights observed between rounds. The details of demography of the participants who participated in all the three rounds of survey are shown in Table 1. The significance of the difference observed between rounds is established using the distribution of deviations from the mean value of the three rounds for each item.

### IV. RESULTS AND DISCUSSION

The demographic factors, i.e. age, education, and occupation did not significantly affect change in the preferences of the participants over time at the 5% significance level. Perceived technology competency also did not have a significant effect on the participants' choices for the product at the 5% level of significance which is contra-intuitive. Mobile phones being a sufficiently complex product one would expect a significant effect of perceived technological competency when participants are choosing these products. An explanation for perceived technology competency not being significant could be that these products and their technology have become inseparable parts of the general population's daily life in the UK, in which case higher technological competency will not necessarily affect people's choice.

The gender did not significantly affect participants' choices at the 5% level. This could be due to increasing gender equality and consequent convergence in the behaviour of males and females in terms of change in preferences over time in the UK as a developed country.

The effects of individuals' usage behaviour for mobile phones were also examined by asking participants specifically designed questions. Three of those behaviours tested on the mobile phones had a significant effect whilst other features' weights have slight fluctuations. Three individual characteristics that would appear to influence participants' choices or preferences are the importance of technical specifications, daily usage (given in number of hours), and the importance they attach to their mobile phones. For all the participants, brands gained more weight over time, while the other features fluctuated. More variations in the brands' weights of all participants could be due to external reasons (Kahn, 1995), such as variety seeking by the participants as well as the subjectivity and superficiality of brand perception (Fader and Lattin, 1993).

Interestingly, the participants with greater daily usages of their mobile phones as well as those who placed high importance on their mobile phones turned out to be more stable in terms of their mobile phone choices over time. One of the reasons for these participants being more consistent in this respect could be due to their greater familiarity and prior knowledge of mobile phones as they place more importance on their device and likely to use it for

longer hours daily. Coupey, Irwin and Payne's (1998) research results on familiarity and prior knowledge support this view. Additionally, according to Moreau et al.'s (2001) research on consumer perceptions of the advantages of a product, over a period of time people build more solid preferences based on the perceived advantages of a particular product as well as knowledge of other existing products and hence, those who have higher daily usage and think that their phone is more important could be perceived to have had high preferences for their chosen mobile phones as well as having better knowledge of other existing devices in the market. These factors could have led to have more stable preferences and choices.

It can be summarised that the level of importance of mobile phones to the participants and their daily usage (in number of hours) clearly affected the stability of the attribute weights of the participants. Although there is some evidence that other individual characteristics have some effect, the findings were not strong enough to draw clear conclusions about how those characteristics influence individual choices.

## CONCLUSIONS

A longitudinal study was conducted over nine months in three rounds of survey using 161 participants. These were conducted on a choice based conjoint analysis framework. The participants chose a variant from available options of mobile phones offered. The choices were used in the model to extract the attribute weights in each round. These extracted weights were analysed for the existence of change between the three rounds. Although many of the characteristics of individual consumers did not have a strong effect on the lability of attribute weights, the level of importance of mobile phones to the participant and daily usage the consumer had clearly affected the stability of the attribute weights. It will be beneficial to do a more comprehensive study on how individual characteristics affect the attribute weights using a wider range of products and with a bigger sample of participants.

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**Table 1. Demographic detail of participants**

Demographics	Categories	Frequency	Percent
Gender	Male	82	50.9
	Female	79	49.1
Age	18-30	81	50.3
	31-45	50	31.1
	46-60	27	16.8
	Over 60	3	1.9
	Secondary School	13	8.1
Education	Undergraduate	41	25.5
	Postgraduate	107	66.5
Occupation	Unemployed	3	1.9
	Student	59	36.6
	Full-time employee	83	51.6
	Part-time employee	4	2.5
	Self-employed	11	6.8
	Retired	1	0.6

**Table 2: Levels of Features Mobile phone**

Brand	Apple, Samsung, Nokia, HTC, Sony, BlackBerry, Generic
Price (£)	<150, 150 to 299, 300 to 450, >500
Camera resolution (Mpix)	No camera, Normal (5 or less), High (>5)
Memory size (GB)	Small (<16), Medium (16 to 32), High (>32)
Display size(inches)	Small (<4), Medium (4 to 5), High (>5)
Battery life (hours)	Short (<8), Medium (8 to 12), High (12 to 15), Very High (>15)
Weight (g)	Very light (<120), Light (120 to 150), Medium (>150)

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