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Brooks, Gordon, Yusuf, Farhat (2007) The socio-economic characteristics of 'earlier adopters' at national and state levels: an empirical examination of the Australian mobile phone consumer market. *ANZMAC 2007 : 3Rs - reputation, responsibility and relevance*, 3-5 December, 2007, Dunedin, New Zealand.

Access to the published version:

http://conferences.anzmac.org/ANZMAC2007/papers/F%20Yusuf_1a.pdf

The Socio-Economic Characteristics of ‘Earlier Adopters’ at National and State Levels: An Empirical Examination of the Australian Mobile Phone Consumer Market

Gordon Brooks, Farhat Yusuf, Macquarie University

Abstract

Recognising the importance of the diffusion of innovations, and the disparate findings regarding Rogers’ socio-economic general characteristics of the ‘earlier adopter’, this paper examines the relationships between the adoption of mobile phones in Australia and the characteristics age, income and occupation status at the national and state levels. Evidence is found to support a negative relationship between adoption and age, and positive relationships between adoption and both income and occupation status. These relationships were in evidence at both national and state levels to varying degrees. Possible causes of this variability are posited, specifically a hierarchy of influence among the characteristics and a reduction in influence over time. The persistence of these characteristics over time is noted. Avenues for further research are identified.

Introduction

The diffusion of innovations is widely accepted as an important area of research for marketers, particularly for its ability to increase the efficiency of new product marketing endeavours (Rogers, 1962, 2003; Rogers and Shoemaker, 1971). Much attention has been directed at identifying those consumers who adopt products soon after their introduction, the consumer innovator and early adopter (McDonald, Corkindale and Sharp, 2003). Rogers’ (2003, pp. 287-92) profile of these ‘earlier adopters’, presents a set of characteristics that are intended to facilitate the identification of these people in terms of their socio-economic characteristics, personality variables and communication behaviour. A recent review by McDonald, Corkindale and Sharp (2003) noted that problems with identifying innovators by personality traits included a lack of consensus regarding the conceptualisation of “innovativeness”, and the equivocal results of trait-based studies (see also Kassarian and Sheffet, 1991). They concluded that “for the process of identifying innovators to be managerially useful it needs to be correlated to observable characteristics. Since we cannot measure the personality traits of the entire market, in order to find our desired segment, researchers have always sought to link personality traits to more readily identifiable variables” (McDonald, Corkindale and Sharp, 2003 p. 87) and that this, too, has proven difficult. On the one hand, innovators are regularly reported as being younger, more educated and possessing higher levels of income (McDonald, Corkindale and Sharp, 2003) yet a range of studies have reported no such significant relationships (*e.g.* Goldsmith and Flynn, 1992; Flynn and Goldsmith, 1993). Despite these disparate findings, diffusion of innovations continues to be widely taught (McDonald, Corkindale and Sharp, 2003). It would seem reasonable to suggest that resolving the socio-economic profile of the ‘earlier adopter’ would enhance the reputation, responsibility and relevance of this aspect of the marketing discipline by providing an understanding from which practitioners can evaluate new product investments and educators can evaluate syllabi.

One possibly useful factor in clarifying these issues is the level of analysis. Rogers' curve was framed around a population, either the market for the product being considered or the whole population if one includes those who do not adopt. The population was divided into the familiar innovator, early adopter, early majority, late majority and laggards groupings (Rogers and Shoemaker, 1971; Rogers, 2003). Academic research, however, has typically focussed on just one portion of that population, *i.e.* innovators. Consideration of these issues in the context of an entire population may produce useful insights. To this end, Yusuf and Brooks (2007) identified relationships between the adoption of mobile phones in Australia and both age and income at the national level, *i.e.* they considered a national population. This study aims to extend this prior work by addressing two objectives. The first objective is to examine the relationship between the adoption of mobile phones and occupation status at the national level. The second objective is to identify whether the relationships between adoption and the characteristics age, income and occupation status at the state level are consistent with those identified at the national level in Australia.

Data and Methodology

Data for this study was taken from the Australian Bureau of Statistics (ABS) Household Expenditure Surveys (HES) of 1998-99 and 2003-04. The sample sizes were 6,893 and 6,957 households respectively. These two cross-sectional surveys represent the number of households in 1998-99 and 2003-04. No information was available regarding the creation and dissolution of households in the intervening period. In this paper the reference person of the household is referred to as the "household head". Appropriate weighting factors were assigned by the ABS to each household to enable the estimation of the number, characteristics and expenditure patterns of all households in Australia. These weighted estimates, representative of the population, are the basis of data reported in this study.

Age is the age of the household head. Income is the total household income from all sources. Incomes in 1998-99 were indexed to 2003-04 levels using the ABS Wage Cost Index (Australia 1999, 2000, 2001, 2002, 2003).

Occupation was reported in the two surveys in ten categories. Occupation status was characterised as the percentage of household heads in higher status occupations (managers and administrators, professionals and associate professionals) in each group.

	1998-99	2003-04
Adopters	A	C
Non-Adopters	B	D

Figure 1 Diagrammatic Representation of the Data Comparisons

The general characteristics of 'earlier adopters' were examined by conducting a series of comparisons. 'Earlier adopters' were considered to be younger (*e.g.* Yusuf and Brooks, 2007), to have higher incomes (*e.g.* Rogers, 2003; Yusuf and Brooks, 2007) and to have higher status occupations (*e.g.* Rogers, 2003). Assuming that these characteristics are consistent over time, they will be evident in any given year. Therefore, in both 1998-99 and 2003-04, those who

have adopted (who are, by definition, earlier adopters than those who have not yet adopted) will have lower ages, higher incomes and higher occupation status than those who are yet to adopt. Comparison 1 compares the characteristics of adopters with those of non-adopters in 1998-99 (*i.e.* it compares section A with section B in Figure 1). Comparison 2 compares the characteristics of adopters with those of non-adopters in 2003-04, (*i.e.* it compares section C with section D in Figure 1).

As people adopt in the period between the 1998-99 and 2003-04 surveys, there will be a cohort of people who move from being non-adopters in 1998-99 to being adopters in 2003-04. The movement of this cohort from non-adopters to adopters will affect the characteristics of the later 2003-04 sample compared to those of the 1998-99 sample. If the characteristics of 'earlier adopters' are consistent over time, this cohort will, on average, have lower incomes and occupation status and higher ages compared to those who have already adopted in 1998-99. The joining of this cohort with those who have already adopted in 1998-99 will result in the average income and occupation status of adopters in the later 2003-04 sample being lower compared to the first sample, and the average age being higher. This premise was examined by Comparison 3, which compared adopters in 1998-99 with adopters in 2003-04 (*i.e.* section A with C in Figure 1). This cohort will also, on average, have lower ages, higher incomes and higher occupation status compared to others who had not adopted in the first sample (section B in Figure 1). As this cohort leaves the group of non-adopters, the average age of the remaining non-adopters will consequently increase, and their average income and occupation status will decrease. This premise was examined by Comparison 4, which compared non-adopters in 1998-99 with non-adopters in 2003-04 (*i.e.* section B with section D in Figure 1).

Comparisons one to four were conducted for the three characteristics age, income and occupation status in each of the eight geographic regions, *i.e.* nationally, in the six states and in the combined territories of Australia. Those comparisons that were consistent with the general characteristics were identified as supporting, while those that were not consistent, were identified as not supporting. Comparisons where the values of the characteristics were equal were identified as not supporting the general characteristics.

Table 1 Comparisons that did Not Support the General Characteristics of 'Earlier Adopters'

Geographic Region	Comparisons that Did Not Support the General Characteristics*		
	Age (Adopters are younger)	Income (Adopters have higher incomes)	Occupation (Adopters have higher status occupations)
Australia	nil	nil	Comp. 3
A.C.T. and N.T.	nil	Comp. 3	Comp. 3
New South Wales	nil	Comp. 4	nil
Queensland	nil	Comp. 3	Comp. 4
South Australia	nil	Comp. 3	Comp. 3
Tasmania	nil	Comp. 4	Comp. 4
Victoria	nil	nil	Comp. 3
Western Australia	nil	nil	Comp. 4

* A nil result indicates all four comparisons supported the general characteristics. Comparisons that supported the general characteristics are not reported, only comparisons that did NOT support the general characteristics are identified.

Results

The results of Comparisons 1 to 4 are shown in Table 1 by exception. Comparisons that did not support the general characteristics are identified, while those comparisons that supported the general characteristics are not identified. A nil result indicates all four comparisons supported the general characteristic being considered.

Examination of Table 1 shows a number of interesting phenomena. It should first be noted that of the 96 comparisons made, only one eighth did not support these general characteristics of the 'earlier adopter'. The characteristic with the most support is age, with 32 national and state-level comparisons supporting 'earlier adopters' being younger. The characteristic of 'earlier adopters' having higher incomes received less support, with five of 32 comparisons contrary to this characteristic, while 'earlier adopters' having higher occupation status demonstrated seven contrary comparisons, also out of 32. All comparisons at the national level supported the age and income general characteristics, while the occupation status characteristic was not supported by Comparison 3. The general characteristic of 'earlier adopters' being younger was supported in all geographic regions.

Discussion

These results allow some interesting observations about the utility of the age, income and occupation characteristics in identifying 'earlier adopters'. Support for all Comparisons 1 and 2 indicates that in each state and territory of Australia, and the nation as a whole, all characteristics (age, income, occupation status) were valid, on average, across the period from product introduction up to that point in time, i.e. the characteristics were valid for some period in that time. The nature of averages does not allow more than this to be deduced. If it is accepted that the earliest adopters will conform to the characteristics of the 'earlier adopter', then, considering income as an example, there will be a gap between the (higher) average income of adopters and that of non-adopters. While successive cohorts of new adopters continue to have higher incomes than non-adopters this gap will remain. However the higher average income of adopters (as opposed to new cohorts of adopters) will continue to exist for some time past the point (should there be such a point) at which the income of cohorts of new adopters ceases to be higher than that of non-adopters. It can, however be stated that where a cross-sectional examination of adopters v non-adopters supports a characteristic of 'earlier adopters,' the characteristic has been operational for some period in the time prior to the cross-sectional study.

Secondly, Comparisons 3 and 4 consider the characteristics of the cohort who adopt during the period between 1998-99 and 2003-04. All regions with regard to age, as well as Australia (with regard to income), New South Wales (with regard to occupation status) and both Victoria and Western Australia (with regard to income) demonstrated support from both Comparison 3 and Comparison 4 and hence, the general characteristics. Other cases failed in one comparison. No case failed both Comparison 3 and Comparison 4. It should be noted, however, that a failure of Comparison 3 alone does not necessarily negate the characteristic in question. In this circumstance the comparison between adopters in 1998-99 and 2003-04 fails, but the other comparisons hold. The implication is that the cohort that left the non-adopting group of 1998-99 had, for example, higher incomes than the group of adopters in 1998-99. This would suggest that the adopters in 1998-99 had a higher average income than the non-adopters at that time, but were not the highest income members of that geographic region. In

other words, those who had already adopted had high incomes, but not the highest incomes. It follows, then, that the non-adopters in 1998-99 were a mix of high income and low-income households. The same argument applies to occupation status.

Thirdly, a failure of Comparison 4 indicates that the cohort that left the non-adopting group of 1998-99 had, for example, lower average incomes than the group of non-adopters in 1998-99. This would simultaneously lower the average income of adopters in 2003-04 and raise the average income of non-adopters in 2003-04. In this circumstance, it would seem difficult to consider the general characteristic in question to still be operative in the adopting cohort.

It is interesting to consider the persistence of these general characteristics. For those characteristic and geographic region combinations where all four comparisons supported the characteristic, the particular characteristic was still valid, on average, in the period between 1998-99 and 2003-04, up to 15 years after the first Australian mobile phone call. This includes age in all geographic regions, income at the national level, occupation status in New South Wales and income in both Victoria and Western Australia. When the study of innovativeness has generally focused on much smaller time frames, it is of considerable interest to note the persistence that has been demonstrated by these characteristics in some geographic regions. Given that adoption of mobile phones was 37% in 1998-99 rising to over 60% in 2003-04 these characteristics are describing the early majority and perhaps parts of the late majority.

Considering the national versus state levels of analysis, the results of Table 1 indicate that there is complete consistency between levels with regard to age. There is less consistency with income and occupation status, confirming the importance of the variable 'level of analysis' for future investigations. As the national level is an aggregate of the states and territories, it would be appealing to suggest that the characteristics are more readily apparent in larger samples. This may be suggested by the results for income, but could not be concluded from the results for occupation status. Investigation into the causes of the variation between states and territories is commended, including the possible existence of different rates of expiration for the characteristics considered, or variation in a hierarchy of influence among the characteristics.

Conclusion

This study has demonstrated the existence of Rogers' (2003) general characteristics of 'earlier adopters' in the Australian mobile phone market and each of its geographic segments to varying degrees. Their persistence suggests that marketing practitioners would be well advised to continue to consider their relevance at the national level until late in the diffusion process, while acknowledging the possibility of variation or weakening of their influence at the state or territory level.

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