



TOPIC 15
TRAVEL CHOICE AND
DEMAND MODELLING

THE ROLE OF ASPIRATION LEVEL FOR DECISIONS TO REPLACE AUTOMOBILES

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Abstract

A survey of 572 automobile owners was undertaken. One aim was to determine whether the timing of replacement purchases depends on the owners aspiration level and assessments of the current quality of the automobile they own. A conceptualisation is proposed in which the intention to replace the automobile is related to the difference between aspiration level and the current level. Path analyses indicates that purchase intentions are related to such a difference.

INTRODUCTION

The decision process leading to household replacements of automobiles is an important but largely neglected topic of research. Although several empirically estimated econometric models of the joint timing of replacement and choice of type of automobile (eg Gilbert 1992; Golob 1990; Train 1986) provide information about factors affecting the actual choices, they may not describe (or describe inaccurately) the preceding decision-making process.

A conceptual framework of purchase decisions that includes timing must recognize that an assessment of the currently owned automobile in some way enters into the process (Bayus and Gupta 1992; DeBell and Dardis 1979). If the replacement decision precedes market search and brand choice an aspiration level defining a minimally acceptable quality may, in accordance with Simon's satisficing principle (1955, 1956), constitute a standard against which the quality of the current automobile is judged. If so, an owned automobile becomes a candidate for replacement after being assessed for some time as worse than an aspiration level (Figure 1). The actual purchase of a new automobile is then followed by several additional steps including the coordination of purchase goals (Dickson et al. 1983; Hebden and Pickering 1974; Soutar et al. 1990), the formation of replacement intentions (Bruner and Pomazal 1988), and market search (Bettman 1979; Punj 1987; Punj and Staelin 1983). The implication is that the replacement intention increases in strength with how much the assessment of the current level of the quality of the owned automobile differs from the aspiration level.

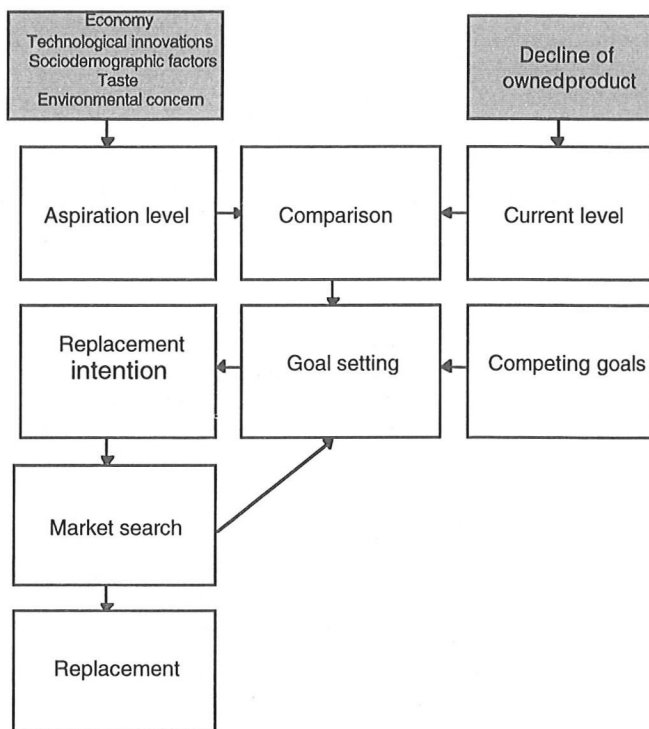


Figure 1 A conceptualization of the decision to replace an automobile

Several factors may affect replacement purchases. The aspiration level has a key role since it is supposed to mediate influences of many of these factors, such as expected changes of the economy (ie consumer confidence, Katona 1975; Van Raaij and Gianotten 1990), changes in taste, changes in sociodemographic factors, and marketing of technological innovations.

Another role of the aspiration level is to direct attention to important those attributes of the owned automobile. For instance, if styling is important, the assessments of the quality of the owned automobile will be influenced by styling. For automobiles reliability is likely to also be important, in which case the assessments will be influenced by this factor. Product failure thus becomes essential to anticipate and avoid. However, in other respects the assessments of the current automobile are assumed to be independent of the aspiration level.

Although several of the questions mentioned are worthwhile to study, they all rely on the assumption that an aspiration level affects the replacement decision. The objective of the present study is to investigate if automobile owners' intentions to replace their automobiles are directly related to the difference between the assessments of the quality of the currently owned automobile and an aspiration level, and thus to investigate the role of the aspiration level for replacement decisions.

METHOD

To achieve the study objectives, a telephone survey was conducted with a random sample of automobile owners. Interview questions were asked with the aim of measuring the perceived quality of the currently owned automobile, the aspiration level, and the strength of the intention to replace the automobile. In addition, data on sociodemographic factors were collected.

Sample

A sample of 847 car owners were randomly selected from the Swedish national register of automobiles. Only automobiles which were less than 10 years old was included. Of the originally sampled car owners, 94 were excluded whose telephone number were inaccessible, who were ill, or were not fluent in Swedish, 39 who did not answer after five different attempts at different days and time of day, 14 who had sold the automobile, and 128 who refused to participate. A total of 572 (68%) households agreed to answer the questions.

Interviews

The telephone interviews were conducted by 20 trained students. On average the interviews were completed in about 30 minutes. Only questions which were subjected to data analyses are reported verbatim below. Questions which are only briefly described or omitted were either unrelated, were similar to those described but did not contribute anything over and above them, or were similar to those described but the response rate was much lower.

In an introductory part of the interview three questions were asked to determine whether the registered owner of the automobile was the household member (in multiperson households) who is primarily responsible for the decision when to replace it. If the registered owner stated that he or she has at least as much influence on this decision as any other household member, the interview proceeded with this interviewee. In a few cases when this was not so, the household member who was said to have this influence was interviewed instead. Questions were also asked to confirm that the automobile owner knew the make, model, and year of the automobile. In addition, information was obtained about for what purposes the household used the automobile, household size, and age of household members. Other sociodemographic questions concerning education, occupation, and income were asked at the end of the interviews. Information was also acquired about type and frequency of use of the automobile, its different characteristics including cost and year of

purchase, depreciation value, recent repair costs, and number of other automobiles available to the household.

In the second part of the interview, aspiration level was measured with a set of three questions aiming at assessing the lowest acceptable perceived quality. First, respondents indicated on a good-bad scale from 0 to 100 corresponding to the worst possible automobile (legal to drive) and the best possible (a brand new) automobile. The same question was asked another two times with the good-bad dimension replaced with high-low quality and high-low standard, respectively.

- After two interpolated questions about knowledge of and interest in technological innovations and seven questions with the aim of measuring environmental concern, the perceived level of quality of the currently owned automobile was measured in a parallel way to how aspiration level was measured. On the same scales from 0 to 100 respondents indicated the current quality level of the automobile they owned.

Questions were finally asked about replacement intentions. The design of these questions followed earlier studies (Pickering 1984). In one set of questions respondents indicated on 7-point numerical scales ranging from no intention to very strong intention whether they intended to replace the automobile in a specified time period. The same question was asked for each of the time periods 3 months, 6 months, 12 months and 2 years. The other set of questions asked how likely respondents were to replace the automobile. Subjects responded on a 7-point scale with verbally defined steps defined as absolutely certain not, very unlikely, rather unlikely, neither likely nor unlikely, rather likely, very likely, and absolutely certain. This question was likewise asked for each of the four different time horizons.

RESULTS

For aspiration level and current level indices were computed by averaging across the three overall ratings. For both measures of replacement intentions, the ratings were summed across the four time horizons. If the interviewee indicated a maximal value for a time horizon the interviewer did not continue and inserted maximal values for the remaining time horizons. The scales thus ranged from 4 to 28. In another sample (n=100), this intention measure was shown by Marell et al. (1995) to predict actual replacements of automobiles.

Figure 2 shows mean ratings of current level, aspiration level, and replacement intention plotted against age of the owned automobile, separately for new automobiles (n=185) and used automobiles (n=387). As may be seen, the expected decline of current level and increase of replacement intention is found. A decline of the aspiration level is also observed. Only for new automobiles do the current level and aspiration level cross over before the replacement intention increases.

The relationships illustrated in Figure 2 were confirmed in a path analysis using LISREL8 (Jöreskog and Sörbom 1993). As displayed in Figure 3, age of automobile affects current level which together with aspiration level affect replacement intention. Table 1 shows that an acceptable fit was obtained for the model and that the path coefficients are all significant with signs as expected.

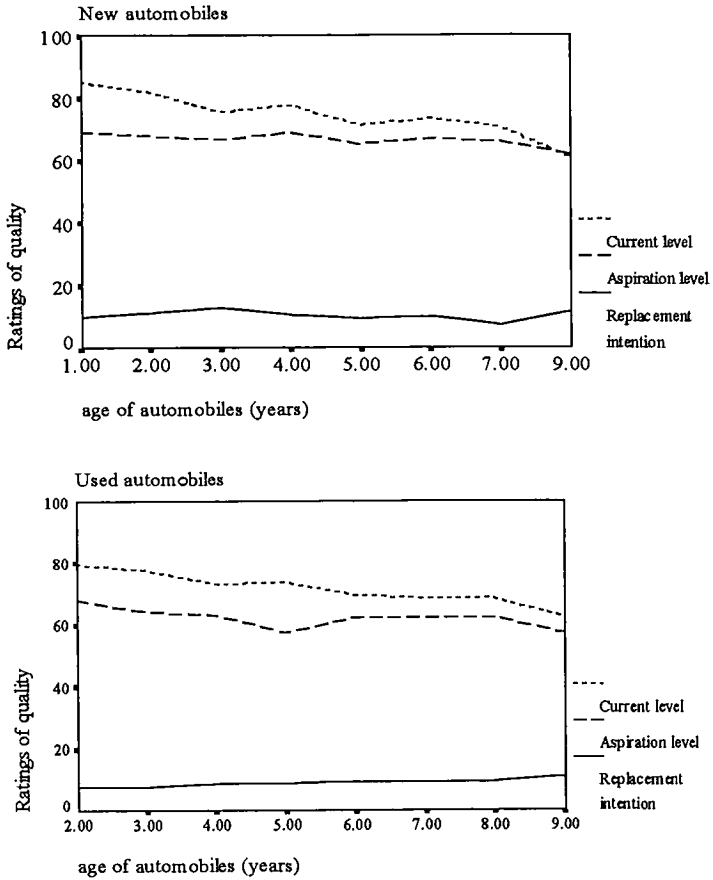


Figure 2 Mean ratings of current level, aspiration level, and replacement intention plotted against number of years since manufactured (model year) separately for new and used automobiles

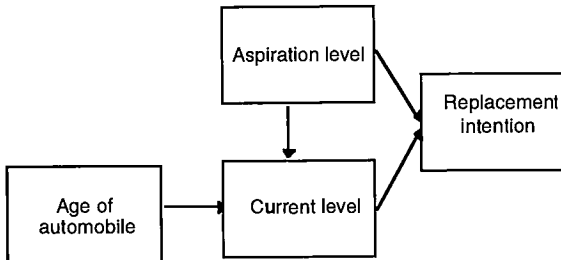


Figure 3 Model of the causal relationships between replacement intention, aspiration level, current level, and model year of the automobile

Table 1 Standardized path coefficients and significance tests of model of the causal relationships between replacement intention, aspiration level, current level, and age of the automobile

	Dependent variables	
	Current level	Replacement intention
Independent variables:		
Age of automobile	-0.19 ^{***}	
Aspiration level	0.17 ^{****}	0.11 ^{**}
Current level		-0.14 ^{***}
Squared multiple correlations	0.08	0.03
χ^2 (1)	0.13	
p	0.72	
Goodness-of-fit index	1	
Root mean square residual	0.004	

Note

* p<.05 ** p<.01 *** p<.001

DISCUSSION

Although a majority of purchases of automobiles are replacements, households' decisions to replace an owned automobile has not attracted much research interest. A conceptual framework was proposed which specifies factors that affect the timing of replacement purchases. In this framework the replacement intention is hypothesized to be related to the difference between an assessment of the current quality level of the owned automobile and an aspiration level defining a minimal quality. For a cross-sectional sample of automobile owners the results of the telephone survey were consistent with this hypothesis. When plotted against age of the owned automobile (Figure 2), the expected decline of the current level and the increase of replacement intention was observed for both owners of new and used automobiles. In a path analysis model year was positively related to current level, aspiration level positively and current level negatively related to the intention to replace the owned automobile (Table 2 and Figure 3).

An unexpected finding was that aspiration level declined with model year. In a cross-sectional sample of respondents this may however reflect a correlation between current level and aspiration level. Such a correlation can be explained since one implication of the conceptual framework is that subjects with higher aspiration levels own automobiles with a higher current level and vice versa. A more accurate assessment of how aspiration level varies with age may only be obtained from a rotating panel. Such a study is now under way. During a 2-year period 400 respondents will be interviewed every four months. When purchasing a new automobile, respondents will be replaced by new ones. Respondents are systematically selected in a way so that a maximal number can be expected to replace their automobiles during the study period.

Yet, the illustration of the relationship between aspiration level, current level, and purchase intention is consistent with the conceptual framework. In particular it witnesses to the role played by aspiration level in replacement decisions. Further detailed analyses of the decision making process is however desirable. It would be particularly interesting to investigate which attributes are important components of the aspiration and current levels.

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