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CUSTOMER SOCIO-DEMOGRAPHIC AND MANAGERIAL CHARACTERISTICS AS
PREDICTORS OF CAR TYPE CHOICE

Master's thesis

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I have written this Master's thesis independently. Any ideas or data taken from other authors or other sources have been fully referenced.

Abstract

The aim of the thesis is to find out which customer's socio-demographic and managerial characteristics are associated with car type choice. The data includes four socio-demographic and five managerial characteristics for the longitudinal whole population of customers of a large Estonian car retailer. Multinomial logistic regression results enable to find out which characteristics determine the choice between seven different car classes. While the applied socio-demographic characteristics lead to multiple novel conclusions compared to the extant literature, the managerial variables are being used for the first time in this research domain.

Keywords: Car type choice, socio-demographic characteristics, managerial characteristics, multinomial logistic regression

CERCS: S190

1. Introduction

The wide range of price, outlook, properties and functions in which cars are being produced and sold suggests that cars cannot be regarded as simple, whole and uniform product for which there exists just one single market of fairly similar consumers. Rather the available variety of cars indicates that their consumers may be just as diverse as the products themselves, and that people with certain common attributes could also express strong collective preference, which car to choose or not to choose. Just as people can be grouped in various ways based on some common feature which they share, cars of innumerable makes and models can be classified into car types. If a relationship is discovered that people with a certain common feature may prefer a certain type of car over other available car types, such discovery is of great practical value. Its first and most obvious implications are to the product development of a car manufacturer and to the marketing strategy of a car seller. A thorough knowledge of the characteristic features of a customer of a particular model of car enables the car manufacturer to adjust that model further to the perceived wishes and needs of such customer. For example, knowing that a particular model could be favoured by younger women with small children may induce the car manufacturer to increase the size of the model's trunk in order to accommodate a baby carriage. Likewise, if car sellers know well which kind of customers are most likely to buy a certain model, they can concentrate their whole marketing effort on that particular target group, making the best use of all the appropriate channels to reach them. This is certainly more effective in terms of results, and less wasteful in terms of resources dedicated. However, the importance of the above-described relationships is not limited solely to private and commercial domain. An identified preference of certain groups of customers for certain types of cars constitutes a valuable input in the realm of urban planning, environmental sustainability and other similar fields of public interest that directly shape our future.

Given the obvious and vital importance of the matter, it can hardly be surprising that the preference of certain car types by certain kinds of customers is a subject of much debate and exchange of views or even prejudices in the eyes of public opinion. A notion that it might be difficult or even impossible to find a grown-up person who doesn't have any strong and colourful (but usually biased, unfounded and plainly wrong) opinion of a kind of person who uses one or another particular type of car, illustrates this point well. For example Jäggi et al. (2013) have found out that despite of their supposedly greater interest in technical innovation and tendency to experiment with new inventions, it is actually not men but mainly women who in real life choose cars of new alternative energy types, whereas Cao et al. (2006) have

discovered yet another paradox that the persons most highly involved in such presumably environmentally-friendly activities as hiking, biking and camping, are at the same time actually likely to use the most fuel-inefficient and polluting cars (SUVs).¹

Besides popular opinion, the car manufacturers themselves are very eager to draw up detailed profile descriptions of the consumers who use one or another of their products. Such profile descriptions are usually treated as business secrets and it is therefore difficult to assess whether they are predominantly of scientific or commercial substance. This research (and any previous academic research in the same field) therefore needs to establish whether any kind of statistically relevant results and scientific conclusions can eventually be extracted from this so-called common knowledge which is in fact made up of stereotypes, passionate preconceptions and clear commercial interests. Thus, the aim of the thesis is to find out which customer's socio-demographic and managerial characteristics are associated with car type choice.

The previous academic research in this field spans over four decades, and although originating from the United States, it has later moved on to being conducted in other countries and regions as well, including Europe. Despite their enormous and valuable overall contribution to the scientific understanding of the topic, previous studies also leave one significant research gap which this thesis hopes to fulfil. Being mostly based on surveys and questionnaires of wider or smaller selective samples of people who either owned a car, had recently purchased a car, or only intended to purchase a car in the near future, the previous research usually lacks a full and concise database of actual car purchases spanning over a sufficiently long period of time to draw conclusions from. This thesis, however, is exactly founded on such data which correctly reflects the actually materialized and completed car purchases of actual customers of one of the largest car-selling companies of Estonia over a period of nearly 17 years. If the aim of a research is to identify the characteristics that describe the customers of one or another particular type of car, the relevant actual sales data is information of the highest possible accuracy. The use of higher-quality data in this research can therefore contribute much into corroborating or disproving the findings of the previous research. As almost every conducted research so far has used some kind of socio-demographic attributes to describe a customer, this thesis will also have to use such available

¹ The latter statement is disputed by Potoglu (2008) who reached an exactly opposite conclusion. Special attention should be drawn to the fact that the two researches were conducted in different environments which have potentially different cultural context: Cao et al. (2006) in the United States and Potoglu (2008) in Canada.

characteristics. Out of the numerous available methods of classifying the cars, this thesis is founded on the classification of Euro Car Segment.²

Nevertheless, this thesis does not intend to satisfy with only the aforementioned task. This thesis intends to step over the limits of the traditional description of the customers of car types with a certain set of socio-demographic attributes, and to offer some completely novel opportunities for perfecting any such descriptions in the future. The novel contribution of this thesis to the existing research is the use of features characterizing the customer's managerial background, namely whether customer had any managerial background at all and if yes, what was the number of companies the customer was involved in as well as their turnover, profitability and solvency in the year of the purchase of the car. To the best knowledge of the author such characteristics have never been used before in describing a person's choice of car. As a method for both sets of variables, the thesis uses multinomial logistic regression.

In the light of the above, the results of this thesis were twofold: on one hand they partially reaffirmed the general results of the previous research which had shown how customers with a certain socio-demographic characteristic may have a propensity to prefer a certain type of car, and supplemented some additional specific findings to the already-existing set of conclusions. On the other hand, this thesis came up with some completely new discoveries which suggest that at least some of the features of the customer's managerial background can be used to characterize the customer's choice of car with an equal success, as compared to the socio-demographic characteristics. The patterns formed by some of the explanatory variables used for the first time in this research were no less eloquent than those formed by the already long-known and much-used explanatory variables.

The rest of the thesis has been built up in the following way. Literature review is being given in Chapter 2. Data, method and variables are being explained in Chapter 3 and its subsections. The results of the study are being presented in Chapter 4, the findings being divided into subsections corresponding to the examined car types. Chapter 5 discusses the most significant results, and Chapter 6 provides the conclusion with pointing out limitations of this thesis and revealing opportunities for further research.

2. Literature review

The question of the common characteristics of the consumers of cars has been a subject of academic research for at least since the mid-20th century. As summarized by Baltas and Saridakis (2013), the very early research was mostly focused on just how many

² Euro Car Segment consists of the following car classes: A – mini cars, B – small cars, C – medium cars, D – large cars, E – executive cars, F – luxury cars, S – sport coupés, M – multi purpose cars, J – sport utility cars.

cars a household owned, and the studies became more sophisticated only in the late 1970s and early 1980s when as a result of two subsequent oil crises energy efficiency, sustainability and environmental concerns all of a sudden acquired a more prominent place. This also caused the focus of the research to shift from the mere number of cars that people drive, to the different car types that they prefer.

As of today, environmental considerations are still the underlying driving force of a substantial part of the academic literature that engages in car types, and many studies have been conducted with the purpose of identifying the common characteristics of car consumers who prefer a particular type of fuel. The general increasing environmental awareness has contributed to the trend in some countries where consumers' buying preferences are starting to move away from cars associated with greater size, weight and power, as shown by Kok (2013). Such trend naturally affects the choice of some car types to a greater extent than others.

Another traditional direction of research has been the safety-related issues of different car classes. For example Hellinga et al. (2007) and Eichelberger et al. (2015) have both focused their researches on the car types used by teenage drivers and have concluded that many of the teenage drivers actually use vehicle types (small cars, sports cars, pickup trucks and SUVs) which are not suitable for novice drivers either because of their size or their lack of basic safety features. In the near past, a sudden surge in the popularity of such formerly uncommon alternatives as hybrid cars and electric cars has brought along a considerable number of studies that focus on the particular characteristics of the consumers of such cars, e.g. Nayum and Klöckner (2014), Higgins et al. (2017), Simsekoglu (2018) and others. Naturally, the practical implication of the results of such research is to influence an increasing number of consumers to switch their car preference to safer or more environmentally-friendly options.

Unfortunately, not many of the results of such studies can be directly and automatically comparable to each other, even if the same methods are being used. First of all this is so because no common and universal classification of cars exists. In the United States from where the research of the subject began, the Environmental Protection Agency (EPA) defines vehicle types for the purposes of strictly environmental reasons (federal emissions regulations). However, such official EPA classification is far from being the definitive basis of academic research, not even in the United States alone. For example, Choo and Mokhtarian (2004) have shown at least nine different classification schemes of cars used both in the academic literature and statistical reports over time, the fundamental basis of the

classification being the function or the size of a car (or both). In addition, Baltas and Saridakis (2013) have pointed out that in different studies there have been different basis for classifying the cars (e.g. body type, make/model, fuel type, vintage, acquisition type). Inevitably, different basis of categorizations that frequently overlap and mix with each other constitutes a source of confusion if the results are to be compared.

Moreover, research such as Giuliano and Dargay (2006) has shown that the car usage pattern in the United States and in Europe is very different. As average American households tend to be larger and the Americans use cars more frequently, for covering longer distances and at a higher speed, there are consequently more households in the United States that own a car and the individual households own more cars as well. In comparison to the United States market, some car segments such as SUVs and pickups are only marginally represented on the European market (Prieto and Caemmerer, 2013).

In Europe, there exists a classification of cars according to the European New Car Assessment Programme (Euro NCAP) the aim of which is the voluntary assessment of the safety performance aspects of a new car. However, a car as a concept quite clearly encompasses so much more than just the environmental and safety aspects which lie in the sphere of public interest. A car also has aspects of sheer private interest (e.g. comfort, performance, status and prestige) which the purely environmental or safety-related classifications may fail to grasp fully. Therefore a comprehensive and all-embracing 9-category classification of cars – the Euro Car Segment – has been proposed and used by the European Commission since 1999. However, in the same document where the European Commission proposes such segmentation, it also immediately acknowledges its limitations and states: “The boundaries between segments are blurred by factors other than the size or length of cars. These factors include price, image and the amount of extra accessories. Also, the tendency to offer more options like ABS, airbags, central locking etc. in small cars further dilutes the traditional segmentation. Customers choose their cars using a combination of parameters, such as brand, size, equipment and price. On the other hand, segmentation is generally used by the industry and it still seems to be regarded as an important indicator for the positioning of a car in the market place.” (Commission of the European Communities, Case No COMP/M.1406 – HYUNDAI/KIA, page 3). From the above it is evident that one needs to express a certain amount of caution if one is to compare the results of a study of one continent to a study of another continent, and even when two studies of the same continent are being compared to each other.

The range of independent variables that have been used in the previous studies of the consumers of car classes is wide, and to the author's knowledge no study has ever involved all of them. Hackbarth and Madlener (2019) have divided such repeating independent variables into six main categories which are: vehicle attributes (e.g. taxes, incentive or the rank of the vehicle in the household), socio-demographic characteristics (e.g. age, gender, education, income), characteristics of individual mobility-related behaviour (purpose of vehicle usage, usage of car sharing services, usage of public transportation, annual mileage), household characteristics (size of household, number of children, number and type of household vehicles), housing conditions (location and characteristics of the residential neighbourhood), and psychological factors (environmental attitude, technical interest, attitude towards specific vehicle attributes, pre-purchase information sources, personality and societal influences). A research into the significance of some of these variables has a relatively long history. For example, the study of socio-demographic and household characteristics and the choice of a car type have been constantly present since the academic research in this domain began. In other cases, the research has widened to include such independent variables fairly recently. For instance, Baltas and Saridakis (2013) point out Choo and Mokhtarian (2004) as one of the pioneers who (besides obvious objective characteristics) started to examine subjective characteristics such as the attitudes and the lifestyle of a consumer and the choice of a car type. In Table 1, the author has assembled significant findings from the previous studies which have dealt with the same independent variables that the author has examined in this thesis. For the purpose of conciseness, the author has omitted studies and findings which involve independent variables different from the ones used by the author in this thesis.

Table 1.

Previous studies about the association of customer characteristics and car type choice

Research	Characteristics	Significant conclusions
Lave and Train (1979), United States	Age	Older people tend to prefer larger (heavier) cars.
Manski and Sherman (1980), United States	Age	People over 45 years of age prefer larger (heavier) cars.
Hocherman et al (1983), Israel	Age	Older people tend to prefer more expensive cars. People of the age 30-45 attribute higher value to the acceleration of a car which they view as a luxury; it has no effect on the decisions of older people.

Research	Characteristics	Significant conclusions
Berkovec and Rust (1985), United States	Age, place of residence	People under the age of 45 have a higher appreciation to the horsepower of a car. People in urban areas prefer smaller cars.
Kitamura et al (2000), United States	Age, gender, place of residence	Younger people are more likely to prefer sports cars, utility vehicles and pickup trucks. Men are more likely to prefer pickup trucks. Sports cars are preferred in urban areas. Sports utility vehicles and pickup trucks tend to be preferred in the fringe of the metropolitan area.
Zhao and Kockelman (2002), United States	Place of residence	Households living in areas of lower population density favour pickup trucks.
Mohammadian and Miller (2003), Canada	Gender	Men are more likely to buy bigger cars (large cars, special purpose vehicles and vans).
Choo and Mokhtarian (2004), United States	Age, gender, place of residence	People who live in urban areas have two inclinations: either to prefer smaller cars or more expensive cars (luxury cars or SUVs). People outside urban areas prefer minivans and pickup trucks. Younger people prefer smaller cars, sports cars and SUVs. Older people and men prefer larger cars and luxury cars. Women prefer small cars, mid-sized cars and minivans, and are least likely to choose pickup trucks.
Bhat and Sen (2006), United States	Gender, place of residence	Households with more men in the household tend to prefer pickup trucks to other car types. Households in densely populated areas are less likely to choose pickup trucks.
Cao et al. (2006), United States	Age, gender, place of residence	Men are more likely to choose pickup trucks. Older people are more likely to choose minivans. Light-duty trucks (minivans, pickup trucks, SUVs) are preferred in suburban neighbourhoods.
Kim et al. (2006), United States	Age	Older people generally prefer passenger cars to pickup trucks and SUVs. However, older people with health problems prefer SUVs.
Potoglu (2008), Canada	Place of residence	Suburban and low residential density area is associated with the choice of a pickup truck.
Bhat et al. (2009), United States	Age, gender, race, place of residence	People who live in urban areas are less likely to buy pickup trucks and vans. Older people are more likely to own cars of an older vintage. Men prefer older and larger cars, compared to women. Asians are more likely to own sedans and new minivans, and less likely to own pickup trucks, compared to other ethnicities.
Chiou et al. (2009), Taiwan	Gender	Men are more likely to buy larger cars, women are more likely to buy new cars (as opposed to used cars).

Research	Characteristics	Significant conclusions
Spissu et al. (2009), United States	Age, gender, race, place of residence	Younger people (16-35 years) are more likely to buy sedans, middle-aged people (36-55 years) are more likely to buy coupés and vans. Men are more likely to buy large sedans, coupés, SUVs and pickup trucks than women, and less likely to buy vans. African-Americans are less likely to buy pickup trucks and vans, Hispanics are less likely to buy sedans and coupés, and Asians are more likely to buy sedans and vans. SUVs and vans are more likely to be bought by suburban/rural households.
Adjemian et al. (2010), United States	Age, place of residence	Higher population density increases the likelihood of compact vehicle purchase and decreases the likelihood of mid-size sedan and station wagon purchases. Younger people prefer smaller cars (compacts and coupés), pickup trucks and SUVs, older people prefer sedans and premium cars.
Baltas and Saridakis (2013), Europe	Gender, place of residence	Men are significantly less likely to prefer mini cars, super-mini cars, station wagons, MPVs and cabriolets. Large family cars, luxury cars, MPVs, coupés and cabriolets are more likely to be preferred by people who live in urban areas. Super-mini cars and especially station wagons are more likely to be preferred by people who live in rural areas.
Jäggi et al. (2013), Switzerland	Age, gender, place of residence	Men prefer luxury diesel cars, women prefer petrol micro cars. In general women are more open to alternative fuels and means of transport than men. Residential area did not have a great influence on the choice of a type of car.
Prieto and Caemmerer (2013), France	Age, gender, place of residence	Older people are more likely to choose luxury cars; younger people prefer used cars and generally lower car segments. Men are more likely to prefer higher car segments than women. People who live in urban areas are most likely to buy new small cars.
Zhan et al. (2013), United States	Age	The most common vehicle owned by older people is a 4-door sedan.
Yagi and Managi (2016), Japan	Age	Older people are more likely to own larger cars and less likely compact cars.
Higgins et al. (2017), Canada ³	Age, gender, ethnicity, place of residence	French-speaking Canadians have a propensity to prefer economy cars, full sedans and luxury cars. Men have a propensity to prefer intermediate cars, full sedans, luxury cars and SUVs.

³ The research of Higgins et al. (2017) was restricted to the different car types of alternative-fuel vehicles only. Hence it inevitably produced results which showed the overall propensity of more urban and younger people to prefer most of the observed car types. Nevertheless, some of the patterns discovered by previous researchers remained significant even if the choice of a vehicle was limited to alternative-fuel types.

Research	Characteristics	Significant conclusions
Hackbarth and Madlener (2019), Germany	Age, gender, place of residence	People who live in suburbs and in rural areas are more likely to prefer MPVs. Younger people and females prefer smaller cars.
Kim et al. (2020), Japan	Age, place of residence	Younger people who live rural areas are seven times more likely to own a car than those who live in urban areas. However, larger cars and foreign cars are more likely preferred in urban areas.

Source: composed by the author

The existing literature suggests that although socio-demographic characteristic may be manifold, not all of them are by far significant enough to characterize the consumers of one or another type of car. For example, Baltas and Saridakis (2013) find just one example where such an otherwise important characteristics as the educational level of the customer may be used to describe the choice of car (individuals who have higher educational levels are more likely to prefer small family cars). Hackbarth and Madlener (2019) make an even bolder statement by arguing that out of all of the socio-demographic characteristics they studied only age and gender had any significant influence on vehicle choice. As for the socio-demographic characteristics which are statistically significant, there has so far been a general consensus among the previous researchers that there is a propensity of females and younger people to prefer smaller cars. Interestingly, this seems to be a cross-cultural phenomenon which does not appear to depend on the time and location of the research and is equally valid in Europe, America and Asia. Other results seem to be less universal and more related to the specific context of the research. The propensity of people from certain residential areas to prefer certain types of car seems to be more distinguishable in the United States where rural areas are constantly associated with vans and pickup trucks, and suburban areas with generally larger and urban areas with smaller cars. In Europe such distinction is less apparent, and in Switzerland's case Jäggi et al. (2013) for example concludes that residential area does not have a great influence on the choice of a type of car at all.

Baltas and Saridakis (2013) concluded their research with an appeal that apart from obvious objective socio-demographic measures, future researchers should incorporate behavioural and psychographic variables into describing the car type choice. This thesis intends to answer to that appeal, and emphasizes that any socio-demographic characteristic is not important solely in itself but because it is believed to represent a peculiarity in character, attitudes or decision-making of a person denoted by such characteristic. The part of the thesis that analyses the managerial characteristics of a customer is by nature novel and exploratory, and can therefore not rely on an extensive previous research. However, managerial

characteristics are certainly to an extent both behavioural and psychographic. Jaskolka et al (1985) have found out that managerial success in the companies was associated with certain characteristics of the managers; Judge et al (1995) listed a wide number of predictors of an executive career success, including motivation, ambition and education. Such information about the customers was not available to the author of this thesis. However, unlike such information, the person's managerial characteristics (whether or not a person is a member of the management board of a company, and what are the financial results of such company) are easily obtainable from the public data sources (primarily, from the commercial register) and the person's managerial success has a potential to portray them all as a complex indicator. In that respect the person's managerial success is even a better characteristic than a person's wealth. The latter could be unearned and merely incidental and may have nothing to do with the person's own character, personal traits and qualities. However, managing a company is always a result of person's own choice, it requires a certain amount of initiative and enterprisingness, and may already reveal something of the customer's personality, especially if a person manages the company successfully. The existing literature therefore allows suggesting that the managerial characteristics of a person are at least worth of an initial analysis in the context of the person's car type choice.

The existing literature (e.g. Lukason et al., 2021) allows to suggest that a mere number of memberships of the management board of different companies contributes to the person's overall entrepreneurial experience. Therefore it was justified to choose this number as a first managerial characteristic for this thesis. The company's turnover is an effective way of measuring the scale and volume of the entrepreneurship of the customer, who holds the position of a member of the management board, and was therefore chosen as a second managerial characteristic. Ratios measuring profitability and solvency have been frequently used in the literature as predictors of company's failure (e.g. Altman, 1968, Altman et al. 2017, and other following research) from which it consequently follows that they can also be used to measure the opposite – the success of a company, and the managerial success of its management board. As it would be correct to assume that higher values would indicate a more successful company and a more successful manager, these indicators could also be used as the managerial characteristics for this thesis in order to explore whether the person's choice of a car type could be predicted by the person's success as a manager.

Finally, as far as the contemporary context of Estonia is concerned, there has been previous academic research in a broadly similar domain as well. Most recently, the master's thesis of Jakko Viilo ("Factors Affecting Buying Behaviour of Estonian Consumers in the

Process of Purchasing Used Cars”, University of Tartu, 2019) has attained some interesting results which are also relevant in the context of the current thesis, e.g. a conclusion that people from urban areas have a propensity to prefer smaller cars to larger cars (as opposed to people from the rural areas), or another conclusion that females regard environmental friendliness higher than men when choosing a car. However, one has to keep in mind that the referred study was based on an internet survey of self-acknowledged recent or potential (not actual) car buyers and had a relatively small sample size (453 people). Also, it had a specific focus on the segment of consumers who bought used cars and completely omitted the consumers of new cars. Another master’s thesis of the same year, of Jana Suikanen (“Consumer Car Purchasing Motives in Estonia”, Tallinn University of Technology, 2019) reaches very similar conclusions, i.e. women tend to prefer smaller and more environmentally friendly options when choosing a car, and also has the same overall limitations (being based on an internet survey, and having an even smaller sample size). Therefore, the previous academic research in Estonia so far has neither used the data of real completed car purchases nor strictly observed the actual classification of cars (instead of some general isolated feature of a car, e.g. smaller/larger or more/less environmentally friendly). Despite attaining interesting results, these studies monitor a smaller number of the consumer’s characteristics than this thesis, and the independent variables of the studies overlap only to a certain extent. Hence there is a significant gap in the domain both in Estonia and in the world that this thesis aims to fill (existing research predominantly does not use actual purchase data, and managerial characteristics have never been used before).

3. Data, method and variables

3.1. Data and method

The data for the research was drawn from the business software of one of the major Estonian car sellers over the period of nearly 17 years (01.01.2004-13.10.2020) which contains the data of cars actually sold by the company to its customers during that period, and the characteristics of every car purchaser. The total number of individual sales transactions in the database during the observed period was 44 357. Out of these transactions, the researcher removed all transactions which involved used cars and concentrated solely on the sales of new cars. The purpose of such differentiation was to lose extra attributes that could have otherwise started to distort the meaningful conclusions about comparable car types: if compared to new cars, used cars have various significant extra attributes (e.g. age, mileage, possible defects) which have a considerable impact on their price, make them all unique and nearly fundamentally incomparable to each other. A used car of a certain car type, make and

model with considerable age and mileage cannot be considered comparable with a new car of the same car type, make and model, and could therefore appeal to a customer with a completely different profile. As a result, this would blur the boundaries between car types and create a completely new set of divisions, based on the age, mileage and other possible features of cars. This was not the purpose of the hereby research.

The researcher also removed all non-passenger vehicles, e.g. vans, trucks, buses and other similar products from the pool of examined data. Such vehicles are primarily used for commercial purposes, and not for personal consumption. Therefore the individual characteristics and subjective preferences of the purchaser are to a lesser extent reflected in the purchaser's choice of car which is likely to be more economic and less personal. Exactly for the same reason, certain transaction types or transactions made by certain types of customer were removed. Such transactions included vehicles acquired through public procurement by a state, a municipality or any other public authority, or through other similar procedures (even if the purchaser was a privately-owned company); all vehicles acquired by car rental companies or companies engaged in taxi services, mobility services or other similar fields of business. If a company acquired cars strictly for business purposes and it was clear or highly probable that the economic considerations of the company or the work-related peculiarities prevailed over the personal preferences of the end-user, such transactions were not taken into account. On the other hand, if a company acquired a car for its member of the board, it was assumed that the end-user had at least a certain extent of influence over the choice, and the transaction was included. In general, the transactions made by car leasing companies were included in the research if the data of the end-customers (lessees) was known and had been properly recorded. The same rule was applied if the official purchaser of the car was a legal person but the data of the physical person who was to become an end-user of the car, was known and had been recorded. All intra-group transactions of the seller itself were however omitted as a rule (i.e. cases when the company had sold cars to its subsidiaries or vice versa), as such transactions were likely not to be motivated by the intended use of cars but rather of various legal or accounting purposes.

All cars acquired or likely acquired by the purchaser with the purpose of export or simply reselling were removed from the examined data as well. Naturally, purchasers are not systematically inquired about their planned use of a car on concluding a transaction and such information, even if asked, is customarily not recorded in the business software. Therefore it was a case-by-case decision whether to include or to omit a particular transaction into the research. In certain cases the decision could have been based on indirect and circumstantial

evidence and may therefore (to a certain extent) be accessible to argument. For example, a fact of purchasing a large fleet of cars – especially if they are exactly of the same make and model – may strongly indicate that the cars were not acquired for personal use of the purchaser but for some other purpose. Also, if a customer acquired more than one car simultaneously (or almost simultaneously, with the observed transactions just a few days or some weeks apart from each other), it could have pointed to the fact that the customer did not acquire them just for personal consumption. The researcher acknowledges the subjectivity of judgment in certain borderline situations and cannot rule out the possibility that some of the transactions might have been erroneously included (or omitted from) the pool of data of the subsequent research. However, given the sheer volume of such pool of data, these possible individual and random cases could not have had a statistically significant impact on the overall quality of the results of the study.

Finally, the researcher omitted any transactions that had been erroneously entered into the business software. Typically such cases occurred when the data of a purchaser had not been correctly recorded upon sales, e.g. the personal identification code of the purchaser was either completely missing or consisted of an impossible or highly improbable sequence of numbers. The number of such cases was proportionally higher in the earlier entrances to the database: the quality of recorded data improved significantly in the subsequent years. The transactions made by foreign customers (i.e. customers who had a non-Estonian personal identification code) were omitted completely from the final pool of data exactly for the same reason: if a purchaser did not possess an Estonian personal identification code, the ability to identify and to determine the investigated characteristics of the purchaser was significantly hampered.

As a result of the previously described process of leaving out irrelevant, inconsequential, distorting and simply incorrect data, the research finally narrowed down to 6413 cases of individual purchase of cars distributed over the aforementioned period. Out of these, in 3512 cases the customers had managerial background (i.e. on the date when the transaction took place, a customer held a position of a member of a board in at least one company in Estonia). According to the best knowledge and efforts of the author, such 6413 transactions represent cases when the purchaser acquired a car either directly or through a car leasing company, as a result of personal choice, and for the purchaser's own personal consumption. Therefore it would be justified to assume that the characteristics of the purchaser could be reflected in the type of car the purchaser chose.

The method used in the thesis (multinomial logistic regression) has been successfully used in a number of previous studies⁴ in this domain which is the reason why the author considers its use justified in this thesis as well. Three different multinomial logistic regressions were conducted for the purposes of this study: a) using socio-demographic characteristics for 6413 cases, b) using the fact of having a managerial background for 6413 cases, c) using managerial characteristics for 3512 cases.

3.2. Variables

3.2.1. Dependent variables

The classification of cars according to the Euro Car Segment was chosen as a nominal dependent variable for this thesis, and is abbreviated as “CLASS”. Although such classification has its serious limitations, namely the vagueness of definitions and certain ambivalence in the classification of cars (especially in case of crossover models which could be categorized into more than one segment and therefore cause some overlapping), it also has an authority of being proposed by the European Commission in 1999 as a practical attempt to overcome narrowly environmental- or safety-oriented classifications and to introduce a comprehensive classification to the car-selling market which could become a standard practice. As this research has no special focus on the environmental- or safety-related aspects of the consumption of cars, a broader classification has significant advantages over more specialized ones. Using Euro Car Segment enables to compare the results of this research to other European research. For example Hackbarth and Madlener (2019) have used the segmentation scheme set by the German Federal Motor Transport Authority which has nine categories exactly corresponding to the nine car types of Euro Car Segment. Different classifications used in the United States have served as a basis of extensive research in the field. However, due to the general geographical remoteness and accompanying significant differences in the car using patterns between Europe and America as pointed out by previous research, e.g. by Giuliano and Dargay (2006), such classifications were set aside by the author in this research.

The Euro Car Segment divides cars into nine segments, each segment denoted by a name and a letter from A to F (in an alphabetical order), broadly corresponding to the increase in the size, complexity, luxury and the perceived status of a car type, and then further by special letters S, M and J representing special car types. Out of the listed segments, the A-segment (mini cars) was intentionally disregarded in the hereby research. Mini cars are

⁴ For example: Lave and Train (1979), Manski and Sherman (1980), Kitamura et al (2000), Choo and Mokhtarian (2004), Baltas and Saridakis (2013) and Prieto and Caemmerer (2013).

neither widely marketed nor sold on the Estonian car market and are therefore not widespread. Naturally, there are still isolated instances when mini cars are being sold on the Estonian market but such cases are infrequent and rather small in number. This number decreased even further when a certain amount of transactions was left out of the analysis because of the reasons already described. It was unlikely that the remaining few cases of the sales of mini cars in Estonia could provide any reliable results – when compared to the remaining eight segments. The segments are presented in Table 2 alongside with the number of corresponding purchases included to this study.

Table 2

Car segments and the structure of data used in the thesis

Segment		All customers		Customers with managerial background only	
Letter	Name	Number	Percentage	Number	Percentage
A	Mini cars	-	-	-	-
B (2)	Small cars	821	12.8	194	5.5
C (3)	Medium cars	1787	27.9	733	20.9
D (4)	Large cars	1078	16.8	634	18.1
E (5)	Executive cars	956	14.9	705	20.1
F (6)	Luxury cars	208	3.2	178	5.1
S (7)	Sport coupés	78	1.2	56	1.6
M (8)	Multi purpose cars (also: MPVs)	268	4.2	163	4.6
J (9)	Sport utility cars (including off-road vehicles, also: SUVs)	1217	19.0	849	24.2
	Total:	6413	100.0	3512	100.0

Source: composed by the author

3.2.2. Explanatory (independent) variables

Nearly all of the previous research has used different common socio-demographic characteristics such as the gender and the age of a consumer as explanatory variables which is the underlying reason why they could not have been disregarded in this research either. Such information can be easily extracted from the personal identification code of any purchaser at any time. The gender variable is abbreviated as “WOMAN” in this thesis and is coded as 1 (woman) and 0 (man). The age variable is abbreviated as “AGE” in the thesis and is defined as the age of the customer at the moment of purchasing the car. Some of the explanatory variables that had been frequently used in previous studies were unavailable for this research,

e.g. education, income or household data. As this research was based on the recorded data of actual sales, not on a survey or a questionnaire, the data which was used was inevitably limited by the extent of information that is typically asked and recorded during the sales process.

Place or area of residence (urban compared to rural) of the consumer is also a fairly common explanatory variable used in the previous research. Given the data entered into the business software, such variable was also available to use for this study. However, in the Estonian context the usage of such variable poses one particular problem for the researcher – there is no clear and indisputable method that would enable to divide the country into urban-type and rural-type settlements. The official division of the country into towns (*linn*) and parishes (*vald*) is largely historical and traditional, not substantial, and does not reflect the actual difference between an urban-type and rural-type settlement in any meaningful and accurate way. There are a number of highly urbanized parishes just outside the administrative borders of major Estonian towns where a transition from town to parish is hardly visible. On the other hand, there is a number of settlements which, although historically denoted as towns (i.e. urban-type settlements) have in all respects become indistinguishable from the parishes (i.e. rural-type settlements) which surround them. Any use of this variable is therefore bound to be arguable, at least to a certain extent.

Although the author could therefore not draw as clear distinction between the car purchasers in urban-type settlements and rural-type settlements as had been done in previous studies, the notion that consumers with different type of residence may prefer different types of car, was not abandoned completely. Instead, the author compared the preference of cars of the residents of the two largest towns in Estonia (Tallinn and Tartu) as well as their adjacent counties (i.e. Harjumaa and Tartumaa) to the residents of the remainder of Estonia. Even though such comparison does not accurately and in pure form reflect the urban-rural divide (both Harjumaa and Tartumaa include rural-type parishes relatively remote from the urban centres; the remainder of Estonia does not consist of solely rural parishes but includes some significant urban centres as well), the distinction is still justified as Harjumaa and Tartumaa are indisputably and without competition two of the most economically developed regions of Estonia with Harjumaa exceeding the national average of gross wages and Tartumaa approximately equalling it, all other counties remaining below the average (Statistics Estonia, 2015, page 35). It should also be noted that exactly the same distinction is being used throughout the Statistics Estonia 2015 edition of “Regional Development in Estonia” which clearly states: “The new strategy includes a slightly updated indicator and the system for

assessing balanced development is based on comparing Harju county together with Tartu county with the rest of Estonia.“ (page 51). One can therefore consider it to be not a novel but rather common approach in the literature concerning regional development. In this thesis, the variable is abbreviated as “COUNTY” and coded as 1 (Harjumaa and Tartumaa) and 0 (the remainder of Estonia).

The final socio-demographic characteristic used in this research as explanatory variable, is the ethnic background of the consumer. Naturally, it is a characteristic which is neither asked nor recorded in the business software in its own right upon concluding the sales contract, and it therefore had to be derived from indirect data in order to be used in the research. As hereinafter shown, the chosen way of doing it was unfortunately not without a chance of individual errors. The author is also fully aware of the fact that such characteristic is by nature far more subjective and ambiguous than the previous three characteristics, and that it is virtually impossible to verify in retrospect how the customer would have identified his or her own ethnic background (which of course can be neither Estonian nor non-Estonian but also mixed). However, the plain fact that a very significant part of the Estonian population is of non-Estonian ethnicity, and that the opportunity of discovering differences in consumption patterns of Estonians and non-Estonians overweighs in the author’s opinion the natural constraints and limitations that any such arguable division would inevitably have. The study of such explanatory variable could therefore have clear, significant and valuable practical implications as it could as a result suggest different marketing strategies for customers of Estonian and non-Estonian ethnic groups, and ethnicity (or race) as an explanatory variable has been used by previous researchers of this field, e.g. Bhat et al. (2009), Spissu et al. (2009) or Higgins et al (2017). This on its own justifies in the author’s opinion the choice of an otherwise debatable characteristic. In this thesis, the variable is abbreviated as “EST” and coded as 1 (Estonians) and 0 (non-Estonians).

The division of the customers into Estonian and non-Estonian categories was facilitated by the fact that according to the data of the census of 2011, there is heavy non-Estonian concentration in one of the counties of Estonia: in Ida-Virumaa, the share of the ethnic Estonian population is just 19.5% (Tiit, 2014, page 46). In all of the remaining counties of Estonia, the ethnic Estonian population is always in the majority without a single exception. This fact enabled to make a division on the basis of a given name of a customer: if a given name of a customer was statistically most common in Ida-Virumaa (where the concentration of the non-Estonian population is overwhelming) as opposed to other counties, the likelihood that the customer was of non-Estonian ethnicity, was also high. If the given

name of the customer was most common in any other county, the customer was for the purposes of this study identified as of Estonian ethnicity.⁵ Unquestionably such division is prone to error in individual cases, as in reality people of Estonian ethnicity may have non-Estonian given names, and vice versa. In addition, there also exist certain given names which Estonians and non-Estonians use interchangeably and almost in equal numbers. Nevertheless, such possible errors in determining the ethnicity of a customer were not likely to bias the results of the research in any particular direction. The group of non-Estonian customers was not divided into further subgroups based on their specific ethnicity. Firstly, this was not done due to the lack of data that would have enabled such differentiation. Secondly, according to the data of the census of 2011, the non-Estonian population of Estonia constitutes 30.3% of the total population of the country with Russians being overwhelmingly the largest minority group (25.2%), and the Russian language the predominant minority language: Russian is considered to be a native language by almost 30% of the population of Estonia (Tiit, 2014, pages 46 and 48). These facts justify the treatment of non-Estonian customers as a homogenous group in this research as their further division would not have likely given any meaningful results.

A novel contribution of this study to the already existing research was the use of such explanatory variables that characterize the managerial background of a customer. For that purpose the data from the Estonian Commercial Register was used, as the data from the corresponding registers of other countries was inaccessible to the author. First of all, it was ascertained whether the customer who purchased the car had any kind of managerial background at all. The customer was considered to have managerial background if at the moment of the purchase of the car there was at least one valid entry to the commercial register which confirmed that the customer was a member of the management board of an existing company. The variable was abbreviated as “ENTREP” and coded as 1 (customers with managerial background) and 0 (customers with no managerial background). The customer who was not a member of the management board of an existing company but had some other connection to it (e.g. a member of the supervisory council, or a shareholder) was not considered to have managerial background. Unlike a member of the supervisory council or a shareholder, a member of the management board is as a rule actively involved in running a company. If former positions could be attained due to various incidental circumstances (e.g.

⁵ In case of rare given names relevant statistics is not available. These cases were considered one by one, also by accounting the family name. For instance, several people of Finnish, Swedish and other ethnicity were detected in this way.

membership in a supervisory council can often be only titular or honorary; a shareholder may have acquired the ownership of shares by being merely a passive investor, or as a result of inheritance), a membership of the management board is often the most clear and easily identifiable sign of the person's active involvement in business.

If a customer had no managerial background, the investigation was limited to the socio-demographic characteristics of such customer. For the customers who had managerial background, the number of companies where the customer held the position of a member of the management board at the moment when the customer purchased the car was first used as an explanatory variable and the variable was abbreviated as "FIRMSWIN". The turnover (abbreviated as: "TRMAXLNWIN"), profitability (abbreviated as: "ROAMAXWIN") and solvency⁶ (abbreviated as: "EAMAXWIN") of the companies where the customer held the position of a member of the management board in the same year when the customer purchased the car were used as additional explanatory variables in the study. For the purposes of this thesis, the turnover of a company is defined as operating revenue of the company inclusive of sales and other operative income. The variable is presented in the format of natural logarithm. The profitability of a company is defined as its net income divided by its total assets; and the solvency of a company is defined as its total equity divided by its total assets. The latter two are presented in numerical format, not as a percentage. In order to limit the extreme values, all managerial variables were winsorized. If the customer held the position of a member of the management board in more than one company and several indicators and values for financial variables were available for more than one company, always the highest variable value available to the author was used because this represented the best particular performance that the companies managed by the customer could achieve. Descriptive statistics of the independent variables has been presented in Table 3.

⁶ This ratio also reflects capital structure and proxies accumulated profitability.

Table 3

Descriptive statistics of variables applied in the thesis

	Frequency	Mean	Standard deviation	Median	Minimum	Maximum
WOMAN (1 – woman, 0 – man)	6413	0.24	0.43	0.00	0.00	1.00
AGE	6413	45.26	11.33	45.07	18.03	89.05
COUNTY (1 – Harjumaa, Tartumaa, 0 – other)	6413	0.67	0.47	1.00	0.00	1.00
EST (1 – Estonian, 0 – other)	6413	0.73	0.44	1.00	0.00	1.00
ENTREP (1 – managerial background, 0 – other)	6413	0.52	0.50	1.00	0.00	1.00
FIRMSWIN	3512	2.06	1.91	1.00	0.00	10.00
TRMAXLNWIN	3512	11.71	4.59	12.96	0.00	19.90
ROAMAXWIN	3512	0.16	0.28	0.10	-1.00	1.00
EAMAXWIN	3512	0.68	0.34	0.80	-1.00	1.00

Source: composed by the author

4. Results

The results are summarized into a shorter version in Table 4 while being presented in full detail in Annex A of the thesis. A description of the results is given in subsections 4.1. to 4.8. of this Chapter. The author chose $p < 0.05$ level to determine the statistical significance (although most of the variables are significant at $p < 0.001$). In Table 4 only the statistically significant results have been presented. Letters B, C, D, E, F, S, M and J in both rows and columns denote the eight car types (out of the total nine) stipulated by the Euro Car Segment and examined in this thesis. Explanatory variables are abbreviated and coded as explained in section 3.2.2. of the thesis and in Table 3. Signs “+” and “-“ denote a preference of the car type in the row to the car type in the column with the rise in the value of the variable noted in rows: if a car type in the row is preferred to the car type in the column with the rise in the value of the variable denoted in the row, such relationship is denoted with the sign “+”. In the opposite case (i.e. when a car type in the column is preferred to the car type in the row with the rise in the value of the variable denoted in the row) such relationship is denoted with the

sign “-“. The results are obtained from three different multinomial logistic regressions with dependent variable CLASS and independent variables as follows (see also the end of section 3.1): a) WOMAN, AGE, COUNTY, EST; b) ENTREP; c) FIRMSWIN, TRMAXLNWIN, ROAMAXWIN, EAMAXWIN. The base category in multinomial logistic regression has been changed as long as all interrelations of classes have been covered. Combinations and comparisons of different categories (e.g. younger Estonian woman with managerial background compared to older non-Estonian men with no managerial background) have been disregarded. Although such comparisons would have been interesting, then: a) the number of the sub-categories would have been too large to be presented in this thesis, b) many of the sub-categories would have become too small to get reliable results.

Table 4

Statistically significant independent variables in multinomial logistic regression

		B	C	D	E	F	S	M
C	WOMAN	-						
	AGE	-						
	COUNTY							
	EST	+						
	ENTREP	+						
	FIRMSWIN							
	TRMAXLNWIN	+						
	ROAMAXWIN							
	EAMAXWIN							
D	WOMAN	-						
	AGE	-	+					
	COUNTY	+	+					
	EST							
	ENTREP	+	+					
	FIRMSWIN	+	+					
	TRMAXLNWIN	+						
	ROAMAXWIN		-					
	EAMAXWIN							
E	WOMAN	-	-	-				
	AGE		+	+				
	COUNTY	+	+					
	EST							
	ENTREP	+	+	+				
	FIRMSWIN	+	+					
	TRMAXLNWIN			-				
	ROAMAXWIN							
	EAMAXWIN							

		B	C	D	E	F	S	M
F	WOMAN	-	-	-	-			
	AGE		+	+				
	COUNTY	+	+	+	+			
	EST		-					
	ENTREP	+	+	+	+			
	FIRMSWIN	+	+	+	+			
	TRMAXLNWIN	+	+	+	+			
	ROAMAXWIN	-	-					
	EAMAXWIN							
S	WOMAN	-			+	+		
	AGE	-			-	-		
	COUNTY	+	+					
	EST		-					
	ENTREP	+	+	+		-		
	FIRMSWIN	+	+	+	+			
	TRMAXLNWIN						-	
	ROAMAXWIN							
	EAMAXWIN							
M	WOMAN	-	-	-	-		-	
	AGE	-	-	-	-	-	-	
	COUNTY	+	+			-		
	EST	+	+	+	+	+	+	
	ENTREP	+	+			-		
	FIRMSWIN	+	+			-	-	
	TRMAXLNWIN	+	+	+	+		+	
	ROAMAXWIN							
	EAMAXWIN							
J	WOMAN	-	+	-	-		-	
	AGE	-		-	-	-		+
	COUNTY	+	+	-	-	-		
	EST	+	+	+	+	+	+	-
	ENTREP	+	+	+		-		+
	FIRMSWIN	+	+	-	-	-	-	
	TRMAXLNWIN	+	+	+	+		+	
	ROAMAXWIN					+		
	EAMAXWIN			+	+			

Note: “+” means the rise in the variable in the row leads to the statistically significant preference of car type in the row to the car type in the column; “-“ means the rise in the variable in the row leads to the statistically significant preference of car type in the column to the car type in the row; blank cell means no statistically significant association present.

Source: composed by the author

4.1. Small cars (B-segment)

A small car is the most-preferred car type of women customers who prefer it to any of the other seven car types. The age of a customer produces a statistically significant outcome in five comparisons: older customers increasingly prefer small cars to medium cars, large cars, sport coupés, multi purpose cars and sport utility cars. Interestingly, the age of a customer is not a statistically significant factor if customer's choice of a small car over an executive car or a luxury car is compared. Geographical location is important in six comparisons: a small car is not the preferred choice of the residents of Harjumaa and Tartumaa, if compared to a large car, executive car, luxury car, sport coupé, multi purpose car or sport utility car. Only if the choice of a small car is compared to a medium car, geographical location does not constitute a statistically significant factor. The ethnicity of a customer is a relatively minor factor in choosing a small car. The Estonian customers prefer medium cars, multi purpose cars and sport utility cars over small cars; but in all other comparisons the ethnicity of a customer is not statistically significant factor. However, a customer with a managerial background least prefers a small car, and the factor is statistically significant if small car is compared to any of the seven other car types. For the customers with a managerial background, the number of companies with the involvement of the customer has statistical significance in six comparisons: if the number of companies is higher, the customer generally has a propensity to prefer any other car type to a small car (the sole exception being a medium car where the factor is not statistically significant). The turnover of the customer's companies is statistically significant in five out of seven comparisons: if the turnover increases, the customer generally has a propensity to prefer other car types (medium car, large car, luxury car, multi purpose car, sport utility car) to a small car. Only in case of executive cars and sport coupés, the turnover does not constitute a statistically significant factor. Finally, the profitability and solvency of the customer's companies generally show no statistically significant relationships between such characteristics and the customer's choice of a car type. Only in case of profitability there exists one such relationship which interestingly suggests that if the profitability of the customer's companies increases, there is a propensity of the customer to prefer a small car to a luxury car.

4.2. Medium cars (C-segment)

Women have a propensity to prefer medium cars over executive cars, luxury cars, multi purpose cars and sport utility cars. In case of comparing medium cars to large cars or sport coupés, the gender of the customer is not a statistically significant factor. However, women prefer small cars over medium cars. The age of a customer makes a statistically significant outcome in five out of seven comparisons: although older customers prefer

medium cars to multi purpose cars, in most of the other comparisons they prefer other car types (small car, large car, executive car, luxury car) to a medium car. The age factor is not statistically significant if a medium car is compared to either a sport coupé or a sport utility car. Geographical location is important in six comparisons: a medium car is not the preferred choice of the residents of Harjumaa and Tartumaa, if compared to any other car type except a small car. Only in the latter case the geographical location does not constitute a statistically significant factor. A medium car is preferred by the Estonian customers over a small car, a luxury car and a sport coupé. However, a multi purpose car and a sport utility car are preferred by the Estonian customers over a medium car. The ethnicity is a statistically insignificant factor in characterizing the choice of a medium car over a large car or an executive car. If the customer has managerial background, there is a propensity to prefer any other types of car to a medium car with the only exception of a small car. In the latter case, a medium car is preferred. For the customers with a managerial background, the number of companies with the involvement of a customer has statistical significance in six comparisons: if the number of companies is higher, the customer has a propensity to prefer any other car type to a medium car with the exception of a small car (where the factor is not statistically significant). The turnover of the customer's companies is statistically significant in four out of seven comparisons: if the turnover increases, the customer has a propensity to prefer a luxury car, a multi purpose car or a sport utility car to a medium car. Only if a medium car is compared to a small car, does the increasing turnover indicate a preference of the medium car. In case of large cars, executive cars and sport coupés, the turnover does not constitute a statistically significant factor. Just like in the case of small cars, the profitability and solvency of the customer's companies generally produce no statistically significant relationships between such characteristics and the customer's choice. Only in case of profitability there exist two such relationships. They suggest that if the profitability of the customer's companies increases, there is a propensity of the customer to prefer a medium car to a large car and to a luxury car.

4.3. Large cars (D-segment)

Large cars are preferred by women over executive cars, luxury cars, multi purpose cars and sport utility cars but not over small cars and medium cars. In case of comparing large cars to sport coupés, the gender of the customer is not a statistically significant factor. The age of a customer makes a statistically significant outcome in six out of seven comparisons: older customers prefer large cars to medium cars, multi purpose cars and sport utility cars. However: they also prefer small cars, executive cars and luxury cars to large cars.

In case of comparing large cars to sport coupés, the age of a customer is not a statistically significant factor. Geographical location is important in four comparisons: a large car is the preferred choice of the residents of Harjumaa and Tartumaa, if compared to a small car, a medium car and a sport utility car. However, the residents of Harjumaa and Tartumaa prefer a luxury car over a large car. In case of comparing the choice of a large car to the choice of an executive car, a sport coupé or a multi purpose car, there exists no statistically significant factor to suggest that the geographical location is an important factor. The ethnicity of a customer is a statistically insignificant factor in most cases. Only in case of multi purpose cars and sport utility cars, the Estonian customers have a propensity to prefer them to a large car. If the customer has a managerial background, there is a propensity to prefer a large car to either a small or a medium car; however, executive cars, luxury cars, sport coupé and sport utility cars are all preferred to large cars by such customers. In case of comparing the choice of a large car to a multi purpose car, the managerial background of a customer has no statistically significant importance. For the customers with managerial background, the number of companies with the involvement of a customer has statistical significance in five comparisons: if the number of companies is higher, the customer has a propensity to prefer a large car to a small car, a medium car or a sport utility car. A luxury car and a sport coupé are still preferred to a large car, however. The number of companies with the involvement of a customer has no statistical significance in preferring a large car over an executive car and a multi purpose car. The turnover of the customer's companies is also statistically significant in five cases. If the turnover increases, the customer has a propensity to prefer a large car to a small car but, interestingly enough, also to an executive car. However, luxury cars, multi purpose cars and sport utility cars are preferred to large cars, if the turnover increases. Turnover does not constitute a statistically significant factor, if the choice of a large car to a medium car or to a sport coupé is compared. Increase in profitability suggests a propensity to prefer a medium car over a large car, and increase in solvency a propensity to prefer a sport utility car over a large car; all other relationships are not statistically significant.

4.4. Executive cars (E-segment)

Executive cars are preferred by women only over luxury cars, multi purpose cars and sport utility cars, in all other comparisons women prefer other car types. The age of a customer makes a statistically significant outcome in five out of seven comparisons: older customers prefer executive cars to medium cars, large cars, sport coupés, multi purpose cars and sport utility cars. The age of a customer is not a statistically significant factor if a customer's choice of an executive car over a small car or a luxury car is compared.

Geographical location is important in four comparisons: an executive car is the preferred choice of the residents of Harjumaa and Tartumaa, if compared to a small car, a medium car and a sport utility car. However, such residents also prefer luxury cars over executive cars. If the choice of the residents of Harjumaa and Tartumaa of an executive car is compared to a large car, a sport coupé or a multi purpose car, results are not statistically significant.

Estonian customers prefer both a multi purpose car and a sport utility car to an executive car; in all other aspects the ethnicity of the customer is statistically insignificant. If a customer has a managerial background, there is a propensity to prefer an executive car over a small car, a medium car and a large car. However, such customers also prefer luxury cars over executive cars, and all other comparisons give statistically insignificant results. For the customers with a managerial background, the number of companies with the involvement of a customer has statistical significance in five cases: if the number of companies is higher, the customer has a propensity to prefer an executive car to small car, a medium car and a sport utility car. Such customer also prefers a luxury car and a sport coupé to an executive car. Comparing the choice of an executive car over a large car and a multi purpose car does not give a statistically significant result. The turnover of the customer's companies is statistically significant in four cases: if the turnover increases, the customer has a propensity to prefer a large car, a luxury car, a multi purpose car or a sport utility car to an executive car. Profitability of the customer's companies does not characterize the customer's choice of an executive car over other car types in any statistically significant way; and the solvency of the customer's companies produces just one statistically significant relationship (increase in solvency also increases a propensity to prefer a sport utility car over an executive car).

4.5. Luxury cars (F-segment)

Luxury car is one of the women's least-preferred car types: women prefer almost any other car type to luxury cars; only comparisons with multi purpose cars and sport utility cars produce statistically insignificant results. The age of a customer also makes a statistically significant outcome in five out of seven comparisons: older customers prefer luxury cars to medium cars, large cars, sport coupés, multi purpose cars and sport utility cars; other comparisons are statistically insignificant. Geographically, there exists a preference of the residents of Harjumaa and Tartumaa of the luxury cars over five car types (small cars, medium cars, multi purpose cars and sport utility cars); all other relationships being statistically insignificant. Estonian customers prefer a medium car, a multi purpose car and a sport utility car to a luxury car. With all other ethnicity-based comparisons producing statistically insignificant results, this makes a luxury car one of the least-preferred car types

of Estonian customers. If a customer has managerial background, there is a propensity to prefer a luxury car to any other type of car. Also, out of the customers with managerial background, the number of companies with the involvement of a customer indicates a propensity to prefer a luxury car over any other types of car in six cases out of seven (only the comparison between a luxury car and a sport coupé being statistically insignificant). The higher turnover of the customer's companies indicates a preference of a luxury car over a small car, a medium car, a large car, an executive car and a sport coupé (only the comparison between a luxury car and a multi purpose car or a sport utility car is statistically insignificant). If the customer's companies have higher profitability, there is a propensity to prefer either a small car, a medium car or a sport utility car to a luxury car (all other comparisons being statistically insignificant). The solvency of the customer's companies does not have any statistically significant relationship with the choice of a luxury car.

4.6. Sport coupés (S-segment)

Sport coupés are preferred by women over executive cars, luxury cars, multi purpose cars and sport utility cars. However, women still prefer small cars over sport coupés; and comparisons of the choice of a sport coupé over a medium car and a large car produce results which are statistically insignificant. The age of a customer makes a statistically significant outcome in four out of seven comparisons: older customers prefer a sport coupé over a multi purpose car but at the same time have a propensity to prefer a small car, an executive car and a luxury car over a sport coupé. Sport coupé is a preferred choice of the residents of Harjumaa and Tartumaa over a small car and a medium car, other comparisons being statistically insignificant. A sport coupé is relatively less preferred choice among the Estonian customers as they have a propensity to prefer a medium car, a multi purpose car and a sport utility car to a sport coupé, other comparisons being statistically insignificant. If a customer has managerial background, there is a propensity to prefer a luxury car over a sport coupé but a sport coupé in its turn is preferred over three other types of car (small car, medium car, large car) with other comparisons being statistically insignificant. Out of the customers with managerial background, the number of companies with the involvement of a customer indicates an increasing preference of a sport coupé over any other type of car in six comparisons out of seven (only the comparison between a sport coupé and a luxury car is statistically insignificant). Higher turnover of the customer's companies indicates a statistically significant propensity to prefer a luxury car, a multi purpose car and a sport utility car over a sport coupé. Profitability and solvency of the customer's companies have no statistically significant effect on the preference of a sport coupé in any comparison.

4.7. Multi purpose cars (M-segment)

Multi purpose cars are generally not preferred by women who have a propensity to prefer five out of seven other car types to a multi purpose car (only if a multi purpose car is compared to a luxury car or to a sport utility car, the result is statistically insignificant). It is also clear that a multi purpose car is the least-preferred car type of an older customer – such customer prefers any other car types to a multi purpose car. A multi purpose car is a preferred choice of the residents of Harjumaa and Tartumaa over a small car and a medium car but such residents also prefer a luxury car over a multi purpose car (all other comparisons not being statistically significant). Multi purpose car is also clearly a favourite choice of customers of Estonian ethnicity who prefer it without exception to any other car. Customers with managerial background prefer a multi purpose car over a small car and a medium car but they also prefer a luxury car and a sport utility car over a multi purpose car. Out of the customers with managerial background, the number of companies with the involvement of a customer indicates a preference of a multi purpose car over a small car and a medium car. However, such customers also prefer a luxury car and a sport coupé over a multi purpose car. If the turnover of the customer's companies increases, there exists a propensity to prefer a multi purpose car over five out of seven car types (a small car, a medium car, a large car, an executive car, and also a sport coupé). Increasing turnover still means that there is a propensity to prefer a sport utility car to a multi purpose car, and comparison between a multi purpose car and a luxury car produces a result that has no statistical significance. Just like in some previous cases, the profitability and solvency of the customer's companies have no statistically significant relationship with the preference of a multi purpose car in any case.

4.8. Sport utility cars (J-segment)

Sport utility cars are generally not preferred by women who have a propensity to prefer five out of seven other car types to sport utility cars (only if a sport utility car is compared to a luxury car or to a multi purpose car, the result is statistically insignificant). In four comparisons out of seven, older customers do not prefer sport utility cars to other car types (a sport utility car compares favourably only to a multi purpose car; comparisons to a medium car and to a sport coupé being statistically insignificant). The residents of Harjumaa and Tartumaa prefer a sport utility car to a small car and to a medium car – but not to a large car, an executive car and a luxury car (comparisons to a sport coupé and to a multi purpose car are statistically insignificant). Sport utility car is one of the favourite choices of the customers of Estonian ethnicity: they favour it to any other type of car, except a multi purpose car. Sport utility car is also favoured by customers of managerial background: they

prefer it to a small car, a medium car, a large car and also to a multi purpose car. However, such customers still prefer a luxury car over a sport utility car, and comparisons with an executive car and a sport coupé produce a statistically insignificant result. Out of the customers with managerial background, the number of companies with the involvement of a customer indicates a propensity to prefer a sport utility car only over a small car and a medium car. If a customer is involved in a higher number of companies, there is a propensity to prefer a large car, an executive car, a luxury car and a sport coupé to a sport utility car (comparison to a multi purpose car gives a statistically insignificant result). If the turnover of the customer's companies increases, a sport utility car is preferred almost to any other car type (only comparisons to a luxury car and to a multi purpose car are not statistically significant). Increase in the profitability of the customer's companies suggests a propensity to prefer a sport utility car over a luxury car. However, increase in the solvency of the customer's companies suggests a propensity to prefer a sport utility car over a large car and an executive car.

5. Discussion

The present research confirms the dominant position of the already-existing literature that women have indeed a clear overall propensity to prefer smaller cars, e.g. Choo and Mokhtarian (2004), Chiou et al. (2009), Baltas and Saridakis (2013), Hackbarth and Madlener (2019) and many others. However, the author elaborates such findings and shows that if a female customer was to make her choice from the top-end car segments, she would still maintain this propensity and choose a relatively smaller car (a sports coupé) over larger alternatives from comparable segments (i.e. a luxury car or a sport utility car). To an extent, this conclusion is inconsistent with the findings of Spissu et al. (2009) who consider men more likely to prefer coupés than women. On the other hand, male customer's preference for a specific car type progresses quite logically with the increase of its size and perceived status – a luxury car being the top choice, if possible. Male customer's preference for ever more larger and luxurious means of transportation corroborates the findings of Choo and Mokhtarian (2004), Bhat et al. (2009) and Jäggi et al. (2013).

The age of a customer is also an important factor in choosing a car. However, the propensity of older customers to prefer larger and generally more expensive cars was somewhat less clearly distinguishable in this research than in the previous studies, for example Choo and Mokhtarian (2004), Adjemian et al. (2010) and Prieto and Caemmerer (2013). On one hand, there is indeed a recognizable tendency of some older customers in Estonia to prefer larger and more luxurious car types over their smaller and more ordinary

counterparts. Concurrently, the smallest and presumably the least-expensive of the examined car types (B-segment or a small car) is also among the top of preferences of older customers in Estonia. This indicates the possibility of the existence of two heterogeneous sub-groups among the older customers, whereas one of the groups is either more rational or more price sensitive and significantly less oriented on the external characteristics and comfort functions of a car than the other. Younger customers' preference of sport utility cars and sports coupés is concurrent with the findings of Kitamura et al (2000), Choo and Mokhtarian (2004), Kim et al. (2006) and Adjemian et al. (2010).

The research of the consumers of multi purpose cars gives a completely different set of results than the earlier studies. This thesis shows that the buyers of multi purpose cars tend to be younger people and men; the earlier studies have found them to be either middle-aged (Spissu et al., 2009) or older (Cao et al., 2006) and predominantly women (Choo and Mokhtarian, 2004). While analysing these results, it should be kept in mind that the earlier studies have mainly been conducted in the United States and that the classification of cars in Europe and in America is essentially different: there exists no such car type as a multi purpose car in America, the equivalent vehicles being categorized as minivans. It should also be noticed that most of the studies in America distinguish one of their favourite options, a pickup truck as a category of its own (which is neither so popular nor a separate car type in Europe), and that nearly all of the studies show that pickup trucks are being preferred by younger men, e.g. Kitamura et al (2000), Choo and Mokhtarian (2004), Bhat and Sen (2006), Cao et al. (2006), Kim et al. (2006), Spissu et al. (2009) and Adjemian et al. (2010). This is indeed one of the strongest associations between customer characteristics and car type choice in the United States. Multi purpose cars, minivans and pickup trucks share one very important feature between themselves – they can all be used for transporting cargo, and could therefore (to a certain extent) be substituted for each other. Hence a question remains whether the results of this thesis could have been different if it had been based on a different classification.

As expected from the previous studies, gender and age are indeed two of the most significant socio-demographic characteristics to describe customer's choice of a car type. Nevertheless, some interesting, novel and country-specific results are related to other socio-demographic characteristics as well. As explained earlier, in terms of the customer's place of residence no such clear urban-rural distinction was made as it had been done in most of the earlier studies. In analysing the results one should not oversimplify the matters and mistakenly equate Harjumaa and Tartumaa with an urban area, and the rest of the country

with a rural area. The distinction used in the thesis has relatively more to do with the different living standard or wealth of the regions. Geographically, the residents of Harjumaa and Tartumaa hence stand out with their propensity to prefer larger and presumably more expensive and luxurious car types. Nevertheless, it should be noted that if a resident outside of Harjumaa and Tartumaa was to choose a car from top-end car segments, there exists some indication of a propensity to prefer a sport utility car to comparable alternatives.

As each country has its own specific ethnic structure of population, no meaningful comparisons can here be drawn with the findings of previous studies – but the results of this thesis are still noteworthy on their own. Although it is not among the strongest socio-demographic characteristics, the customer's ethnic background can indeed be associated with the customer's choice of car. This is especially clear in the top-end car segments where the customers with non-Estonian ethnic background are inclined to prefer sports coupés and especially luxury cars; the preferred choice of an ethnic Estonian customer from the comparable alternatives is a sport utility car. Overall, the most favourite car of the customers with an Estonian ethnic background is a multi purpose car which such customers prefer to any other type of car.

As the research into the managerial background of the consumers of cars is a completely novel contribution to this research area, there exists no exact comparative material from the previous research for the discussion of results. Nevertheless, it should be emphasized that the sheer fact of whether the person has (or does not have) a managerial background is a significant characteristic of its own in describing the person's choice of a car type. It is of course self-evident that persons with (successful) managerial background tend to have more than average resources to spend, and that they can therefore afford a more expensive and luxurious car. However, earlier research allows us to suggest that it would be an oversimplification to suggest that a mere amount of wealth is the only characteristic that distinguishes such persons from others. Successful managers have also shown a set of other interesting characteristics. According to Jaskolka et al (1985) they demonstrate an ideology called "human pragmatism", have more education and enjoy greater managerial authority and influence; Judge et al. (1994) and Judge et al. (1995) show them to be well-educated and well-motivated with a desire to get ahead in life, but also pay attention to the downside of the path such manager have chosen: lower level of life satisfaction, higher level of stress and work-family conflict. This leaves an interesting room for discussion whether the propensity of people with successful managerial background to prefer certain types of car has more to do with the resources that they possess, some of their psychological attributes (e.g. ambition,

authority, certain amount of vanity) or rather an attempt to find compensation or even consolation for something that they have sacrificed in the pursuit of their successful managerial career.

Consequently, persons with managerial background have a clear and increasing preference of larger and presumably more expensive and luxurious car types with F-segment (a luxury car) being the most-preferred choice over all other alternatives, if possible. If the customer already has a managerial background, the number of companies with the customer's involvement is also very meaningful: increase in this number also indicates similar clear and increasing preference for the top-end car segments. Out of the different financial indicators that characterize the performance of the person's companies, turnover is paramount in giving the most statistically significant results. With some noticeable exceptions it can be said that turnover follows the above-described pattern: higher turnover of the person's companies indicates a propensity of the person to prefer top-end car segments. It was also discovered that the two last financial indicators which were chosen to characterize the performance of the person's companies (profitability and solvency) gave remarkably less statistically significant results than the turnover – and that no comprehensive approach of the preference of all types of car can be founded solely on them. Some of the significant results attained by using managerial characteristics could also not describe the customer's personal preference of a car type but some other phenomena. For example the finding that if the profitability of the customer's company increases, the customer may actually start preferring small cars and medium cars to large cars and luxury cars, may very well show that smaller companies with less funds are relatively more profitable than larger ones.

Nevertheless, it is important to emphasize again that this part of the study was entirely exploratory by its nature and none of the managerial characteristics used in the thesis had ever been used before in describing the customer's choice of a car type. Hence the unevenness of the results is at least partially justified as the thesis first of all had to find out whether managerial characteristics can fundamentally be used in this way, and if yes, then which of these characteristics are relevant. On the basis of the results of this thesis it should be highly recommended to include at least some of the more significant explanatory variables addressing the managerial background of the customer to the similar researches to be conducted in the future (e.g. being a manager as the first-hand choice, if necessary accompanied by the number of managerial positions and turnover of respective firms). The latter argument is also proven by the fact that the multinomial logistic regression model with four socio-demographic variables included leads to a lower pseudo- R^2 value than the model

with a single variable (i.e. ENTREP) reflecting managerial background. In addition, in the sub-population of individuals with managerial background, the pseudo- R^2 values equal in case of multinomial logistic regression models including either only socio-demographic or managerial background variables.

6. Conclusion

This thesis found out which socio-demographic and managerial characteristics could be associated with car type choice. For that purpose, the sales data of one of the largest car-selling companies in Estonia was analysed, using the method of multinomial logistic regression. The results of the thesis suggest that the traditional belief that such fundamental socio-demographic characteristics as the customer's age and (in particular) gender may be used to successfully predict customer's choice of car on a statistically significant level is indeed justified. Other socio-demographic characteristics, such as the place of residency or the ethnic background of the customer can also prove to be important in certain cases but their importance is already far more limited. Such results of course have a remarkable practical implication both to product development and marketing. Naturally, one has to take into account the fact that the Estonian market for cars is so small that it cannot have a significant implication to the product development solely on its own but only to the extent that the results of this thesis are valid and applicable in a wider, most likely European context. For example it indeed appears to be reasonable to consider women as a target group of generally smaller cars with also an interesting and noteworthy side-affection for sport coupés. If the perceived wishes and needs of women are taken into account in the design, functionality and marketing of such car types, one could potentially anticipate excellent commercial results. Men in Estonia have in general a straightforward pattern of preference for larger and more luxurious cars with an interesting division at the highest level: with all other circumstances equal, the customers of Estonian ethnicity incline to prefer sport utility cars and the customers of non-Estonian ethnicity incline to prefer luxury cars. Yet again, such knowledge of the association of socio-demographic characteristics with a car type choice is practicable both in product development as well as in sales and marketing.

As far as the managerial background of the customer is concerned, it is just as important feature as the principal socio-demographic characteristics, especially if assessed by the simplest indicators (i.e. whether or not the customer has a managerial background at all, the number of companies with the customer's involvement, and their turnover). More complicated indicators incline to give already mixed and less meaningful results. However, the overall pattern of the more business-involved customers to prefer larger and more

luxurious cars is strong and traceable throughout all segments. One of the most remarkable conclusions that can be drawn from this thesis is that out of all the customers who have managerial background, their managerial characteristics even outperform their socio-demographic characteristics in describing the choice of a car type of such customers. Although its implications to product development may be slightly more limited (the use of a car by a customer with a managerial background is probably not fundamentally different from the use of a car of a customer with no managerial background), such information can still prove to be valuable for sales and marketing purposes, especially when the availability of socio-demographic characteristics is limited.

A limitation of the thesis is that in spite of the volume of the examined data and the fact that it comes from a long-term period and spreads well over all car classes (with the exception of A-segment, mini cars), it is still a data of one single car-selling company in Estonia. Any company, regardless of its size and market share, has still its peculiarities both in the product range and clientele. Therefore a certain amount of care should be applied if the results are to be projected onto a general scale. Given the quantitative method used, the thesis therefore has also all the typical and inevitable shortcomings of any purely quantitative research (i.e. it is able to describe various phenomena but not necessarily explain them). Although the conclusions of previous researches which had been drawn up mostly on the basis surveys and questionnaires (and not on the basis of actual sales data) were in general upheld and also developed further by this thesis, ample of opportunities still remain for further research. On one hand it is always possible to expand the scope of any research to an even wider range of explanatory variables and find further novel characteristics to describe the consumer of one or another car type in a meaningful way. On the other hand, qualitative research can reveal the underlying reasons of the discovered phenomena, and provide substantive explanations to the questions why the preference of car types is so much different if persons of different genders and ages or various managerial backgrounds are compared to each other.

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		B		C		D		E		F		S		M	
		Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
F	WOMAN	-2.307	0.000	-1.503	0.000	-1.625	0.000	-1.020	0.000						
	AGE	0.004	0.000	0.028	0.000	0.019	0.004	0.003	0.650						
	COUNTY	1.299	0.595	1.274	0.000	0.503	0.012	0.474	0.018						
	EST	-0.164	0.000	-0.367	0.019	-0.246	0.126	-0.238	0.142						
	ENTREP	2.903	0.000	2.115	0.000	1.435	0.000	0.969	0.000						
	FIRMSWIN	0.420	0.000	0.394	0.000	0.190	0.000	0.135	0.001						
	TRMAXLNWIN	0.136	0.000	0.102	0.000	0.094	0.001	0.120	0.000						
	ROAMAXWIN	-0.913	0.031	-0.872	0.010	-0.383	0.262	-0.620	0.065						
	EAMAXWIN	-0.068	0.857	0.102	0.752	0.372	0.250	0.366	0.255						
S	WOMAN	-0.704	0.007	0.099	0.698	-0.022	0.932	0.583	0.028	1.602	0.000				
	AGE	-0.024	0.023	0.000	0.988	-0.009	0.412	-0.025	0.019	-0.028	0.019				
	COUNTY	0.798	0.004	0.773	0.004	0.002	0.995	-0.027	0.921	-0.501	0.121				
	EST	-0.271	0.273	-0.474	0.049	-0.354	0.148	-0.345	0.160	-0.107	0.698				
	ENTREP	1.963	0.000	1.176	0.000	0.496	0.045	0.030	0.905	-0.940	0.002				
	FIRMSWIN	0.447	0.000	0.421	0.000	0.271	0.001	0.162	0.010	0.027	0.687				
	TRMAXLNWIN	0.018	0.618	-0.017	0.620	-0.024	0.474	0.001	0.971	-0.118	0.005				
	ROAMAXWIN	-0.630	0.292	-0.590	0.278	0.101	0.853	-0.337	0.532	0.283	0.636				
	EAMAXWIN	-0.538	0.280	-0.368	0.421	-0.098	0.831	-0.105	0.819	-0.470	0.376				
M	WOMAN	-1.948	0.000	-1.144	0.000	-1.266	0.000	-0.661	0.002	0.359	0.278	-1.243	0.000		
	AGE	-0.052	0.000	-0.028	0.000	-0.037	0.000	-0.053	0.000	-0.056	0.000	-0.028	0.018		
	COUNTY	0.599	0.000	0.574	0.000	-0.197	0.194	-0.226	0.143	-0.700	0.002	-0.199	0.503		
	EST	1.137	0.000	0.934	0.000	1.054	0.000	1.063	0.000	1.301	0.000	1.408	0.000		
	ENTREP	1.710	0.000	0.922	0.000	0.242	0.082	-0.224	0.117	-1.193	0.000	-0.253	0.350		
	FIRMSWIN	0.200	0.017	0.173	0.003	-0.030	0.582	-0.085	0.106	-0.220	0.000	-0.247	0.001		
	TRMAXLNWIN	0.105	0.000	0.070	0.004	0.063	0.011	0.088	0.000	-0.032	0.369	0.087	0.029		
	ROAMAXWIN	-0.640	0.139	-0.599	0.088	-0.111	0.755	-0.347	0.323	0.273	0.533	-0.010	0.987		
	EAMAXWIN	0.107	0.771	0.277	0.374	0.548	0.081	0.541	0.082	0.176	0.670	0.646	0.220		

		B		C		D		E		F		S		M	
		Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
J	WOMAN	-1.794	0.000	-0.990	0.000	-1.111	0.000	-0.507	0.000	0.513	0.070	-1.089	0.000	0.154	0.465
	AGE	-0.026	0.000	-0.002	0.493	-0.011	0.004	-0.027	0.000	-0.030	0.000	-0.002	0.837	0.026	0.000
	COUNTY	0.386	0.000	0.361	0.000	-0.410	0.000	-0.439	0.000	-0.913	0.000	-0.412	0.129	-0.213	0.147
	EST	0.435	0.000	0.233	0.009	0.353	0.000	0.361	0.000	0.599	0.000	0.707	0.004	-0.701	0.000
	ENTREP	2.071	0.000	1.284	0.000	0.604	0.000	0.138	0.135	-0.832	0.000	0.108	0.663	0.361	0.010
	FIRMSWIN	0.153	0.033	0.127	0.001	-0.076	0.023	-0.131	0.000	-0.267	0.000	-0.294	0.000	-0.046	0.378
	TRMAXLNWIN	0.114	0.000	0.080	0.000	0.072	0.000	0.098	0.000	-0.022	0.445	0.096	0.005	0.010	0.701
	ROAMAXWIN	-0.155	0.633	-0.114	0.576	0.374	0.078	0.138	0.501	0.758	0.022	0.475	0.377	0.485	0.160
	EAMAXWIN	0.108	0.687	0.278	0.122	0.548	0.003	0.542	0.003	0.176	0.586	0.646	0.160	0.000	0.999

Note: The results are obtained from three different multinomial logistic regressions as explained in the textual part of the thesis.

Source: composed by the author

Kokkuvõte

KLIENDI SOTSIO-DEMOGRAAFILISED JA KLIENDI KUI ETTEVÕTTE JUHATUSE LIIKME KARAKTERISTIKUD AUTOKLASSI VALIKUT ISELOOMUSTAVATE TEGURITENA

Juhan Raudam

Käesoleva magistritöö eesmärgiks on selgitada välja, kas isiku sotsiaal-demograafilised karakteristikud ja need tunnused, mis on omased talle kui ettevõtte juhatuse liikmele, võivad aidata iseloomustada seda, millist tüüpi autot selline isik eelistab. Kui isiku sotsiaal-demograafiliste karakteristikute seost autovalikuga on uuritud ka varem ning siin on leitud selgeid ja olulisi seoseid, siis isiku kui ettevõtte juhatuse liikme tunnuste ja tema autoeelistuse vahelisi seoseid ei ole siiani uurimustes käsitletud. Töö põhineb ühe suurima Eesti automüügiettevõtte poolt 17 aasta jooksul realselt teostatud müügitehingute andmetel, mida analüüsitakse multinomiaalse logistilise regressiooni abil. Asjaolu, et varasemates töodes on tuginetud peamiselt küsitlustele, aga mitte tegelikele tehinguandmetele, on antud magistritöö oluliseks uuenduseks.

Töös kasutatud sõltumatuteks muutujateks on esmalt neli sotsiaal-demograafilist karakteristikut: sugu, vanus, elukoht ja rahvuslik päritolu. Seejärel on tehtud kindlaks, kas isikul oli ka vähemalt ühe Eestis registreeritud ettevõtte juhatuse liikme staatus. Juhul, kui isikul oli selline staatus, siis on järgnevalt sõltumatute muutujatena kasutatud selliste ettevõtete arvu ning nende käivet, kasumlikkust ja omakapitali olemasolu. Sõltuvate muutujatena on kasutatud kaheksat autoklassi vastavalt Euroopa Komisjoni autode klassifikatsioonile Euro Car Segment.

Need tulemused, mis osutusid statistiliselt olulisteks, kinnitavad osaliselt järeldusi, milleni on jõudnud ka varasemad uurijad. Nii näiteks kalduvad naised tõepoolest eelistama väiksemaid autosid suurematele, seda nii odavamates kui ka kallimates autoklassides. Meeste eelistus kuulub seevastu võimalikult suurtele ja hinnalistele autodele. Ka isiku vanus omab tähtsust tema autoeelistuse iseloomustamisel, kuigi siinkohal pole seosed enam niivõrd selged ja ühesuunalised. Isiku elukoht ja rahvuslik päritolu on isiku autoeelistuse iseloomustamisel aga juba märkimisväärselt nõrgemad karakteristikud, kuigi pakuvad samuti võimalust mõningateks huvitavateks järeldusteks.

Isiku staatusel ettevõtte juhatuse liikmena on tugev ja oluline seos isiku autoeelistusega: isikud, kes on mõne ettevõtte juhatuse liikmed, eelistavad suuremaid ja kallimaid autosid, võrreldes nendega, kes mitte ühegi ettevõtte juhatusse ei kuulu. Ka juhatuse liikmete endi seas eelistavad need, kes kuuluvad suurema arvu ettevõtete

juhatustesse või kelle ettevõtetel on suurem käive, järjest suuremaid ja kallimaid autosid. Kaks ülejäänud näitajat (vastavate ettevõtete kasumlikkus ja omakapitali olemasolu) ei anna statistiliselt niivõrd olulisi tulemusi. Olulise järeldusena tuleb välja tuua, et neil isikutel, kellel on ettevõtte juhatuse liikme staatus, iseloomustavad vastavad näitajad nende autovalikut veelgi paremini kui nendesamade isikute sotsiaal-demograafilised karakteristikud. Seega osutus vastavate tunnuste uurimine igati õigustatuks.

Magistritöö tulemused omavad praktilist tähtsust nii autode müügi, turunduse kui ka tootearenduse jaoks. Töö on keskendunud andmete kvantitatiivsele analüüsile ja statistiliselt oluliste seoste leidmisele ega saa seetõttu lisaks nähtuse kirjeldamisele selgitada selle põhjuseid; sellegipoolest võib ta olla aluseks edasistele kvalitatiivsetele uuringutele.

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Juhan Raudam

24/05/2021