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CREDIT CARD BEHAVIOUR CORRELATING WITH SAVING BEHAVIOUR AMONG YOUNG FINNISH ADULTS

Bachelor's thesis

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ABSTRACT

Saving behaviour is one of the basic financial behaviours. Credit cards have grown in popularity. This study's aim is to find out how credit card spending behaviour correlate with people's saving behaviour among young Finnish individuals aged 18-30.

As a general consensus with young people is that more spending with credit effects negatively people's capability to save and willingness to save and people are more likely to be indebted. The purpose of this thesis is to more specifically analyse correlation between credit card behavior and saving behaviour.

This study uses logistic and ordinary least square regression analysis. The data for the study was collected using survey which had 111 participants from which 108 were valid for this thesis. Results implicates that high percentage of used credit regularly does effect the likeliness to save money regularly negatively. Other most significant results weren't tied to credit card behaviour but into education level and income level as predicted according to previous studies.

Keywords: Credit card behaviour, Saving behaviour, Financial behaviour

INTRODUCTION

Most of the people nowadays own a credit card. Advertisements can be seen throughout the internet and banks push their credit card products to their customers. Indebtedness within young individuals has also grown partially due credit cards but also due to increase of different quick consumer credits (Majamäki, Rantala 2016). On the other hand saving has been trend for a long time and due different ways of saving money like into funds, its popular among young people. This is also highly pushed by financial institutions and covid has had its effect influencing people's saving behaviour.

There is differences in credit cards and its availability. For example in Finland some of the credit cards are offered to students with no income if they are doing higher education and they do not have previous entries in credit information register. Credit information register entries are given if your payment is sent for execution proceedings by a district court's decision after not paying on time. Cards offered are usually advertised using their benefits for example no price during the first five years and included travel insurance (Nordea 2021). Cards being partially easily available for consumers with no income and which have lucrative benefits raises issue of being indebted especially for younger people who are inexperienced in handling finances.

Saving is also lucrative for younger people who are looking to invest in future for example in own house or in another investment. It is also general trend to talk about saving money by doing investments for example into funds.

The research problem is to find out does credit card behaviour have correlation with saving behaviour. No previously made studies were found to analyse the same subject which the author found interesting. There is no publicly available data about credit card correlation to saving behaviour withing young Finnish individuals. This study wants to find out if there is correlation between the two different financial behaviours.

This study aims to find out if credit card behaviour correlates with saving behaviour among young Finnish adults. The results will be analysed with similar field's studies.

The main research questions for this study are:

1. How does higher credit card used limit regularly affect regular saving?
2. Does credit card behaviour affect savings ratio?

Based on this thesis' aim and previous studies, the following hypotheses were formulated

1. Higher regular credit usage in credit cards decreases regular saving behaviour
2. Higher knowledge in credit cards has positive outcome in saving behaviour

This thesis used quantitative method with survey collecting results in Google Forms. Survey was was meant to Finnish citizens aged 18-30. Two different regression analysis was used to analyze the data. Logistic model was used for one and ordinary least squared for the other.

The first part of this thesis is theoretical framework which goes through study context about saving and credit cards following into Europe and Finnish based statistics. Afterwards it will also go briefly what common these two subjects have in general level and then to previous studies and hypothesises. Second part is about data and methods including data received, sampling, descriptive statistics elaboration and analyzing methods. Third part will have results for regression and discussion of the results and limitations. Finally last part is the conclusion to the research.

1. THEORETICAL FRAMEWORK

1.1. Credit card

Credit card is issued constant credit to consumer usually by financial company. It's available credit is usually set to certain sum which can be used by the consumer when in need or available on the promise that card's issuer will pay the used credit. Typically cards have certain price of upkeep and interest rate to used credit which generates profit to card's issuer. Usual benefits to the card are interest free period for goods purchased with the card, insurances ranging from product to travel insurances, bonus programs which benefits people buying goods using the credit with different benefits depending of the card's issuer and discounts from certain service or goods providers which either are part of the credit card issuing company or is in cooperation with credit card company. Credit cards can be paid in installments and is generating interest to the credit in doing so which profits the credit's issuer.

Credit cards can be issued to only one responsible or with joint responsibility. This determines who is responsible of the used credit. Card companies also offer parallel cards to the main card. Parallel cards are linked to the main credit card's credit and the responsibility is on the main card's holder. These are fairly common in households where one of the members have a credit card and rest or some of the members have a parallel card by author's observation.

Credit cards can be categorized in three different types in Finland. There is basic credit card which have the basic credit card features. Then there is Gold cards which have the basic features, higher credit amount and additional benefits using the card like insurances. Then there is Premium cards which usually requires certain wealth to be able to get one and have the features of Gold cards and a lot of other benefits and higher issued credit amounts.

Cards are widely available to people with different economic statuses in Finland. Credit cards can be issued to students doing higher education studies who have no regular income. These sorts of cards usually have low maximum credit amount, can offers benefits like insurance to users and

also can be free for limited time (Nordea 2021). Giving card with lucrative benefits to individuals with no regular income can lead to financial trouble.

In Finland part of credit decision is upon the fact if one has previous entries in credit information register. Register entry is given if your payment is sent for execution proceedings by a district court's decision after not paying on time. This can prevent person receiving new credit for several years.

Many of the cards have differences from other cards in price, features and terms. These differences can have impact on the consumer's decision making process and behaviour regarding consumption both negative and positive way.

1.2. Credit cards in Europe and Finland

Card transfers as payment method have increased tremendously during past 20 years so has credit card transfers. According to European Central Bank the estimated change of card transfers has been from around 7.5 billion transfers in 2000 to around 47 billion transfers in 2019 in the euro area (ECB 2020). Number of credit cards per inhabitant has also ranged from 0.8 to 3.6 in 2018 in the EU member states (ECB 2018). This doesn't really conclude that almost every individual in EU member states has a credit card but that the number of issued cards are high almost covering every inhabitant by the volume.

Research was also priorly done by Finnish bank S-pankki which concluded that 80% of person 25 years or older have atleast one credit card in Finland (S-pankki 2017). This most likely is not the absolute truth since it contradicts though with official records from 2016 informing that 22.2% of Finnish households have credit card or account credit (SVT 2016). In Finland variety of credit cards are offered by financial companies like Nordea, Osuuspankki, Bank Norwegian, S-pankki and also by airline Finnair and by department store Stockmann in cooperation with financial companies. These are not the only providers but some of the many. More often than not people in Finland have credit card from their primary bank and then can have additionals from other providers which has been observed by the author. Credit cards are often linked to online services

and used for travels by Finnish people. Also bigger household acquisitions like home appliances are a popular choice.

1.3. Saving

Saving as a concept has different methods. This research wants to find out are private individuals saving from their income not taking expenditures reduction into account. Saving as a term used in this research also includes partially investments. Funds for example is usually linked to saving which is technically wrong since funds are investments which have risks of losing money. On the other hand funds are usually lower risk products in terms of investing since the allocation of investment is divided to multiple investment targets. Funds are also used as a means to save money since the fluctuations to the value of saved money is less subject to inflation. More specifically this research uses definition the savings being in liquid assets. If the meaning of the investment is to save money it will be categorized as such.

Saving is important for various reasons. In Finland it is wondered how the pensions for current working age generation will be paid in future. This has caused increase for relevant saving products to be used to save for retirement age. This is only one of the reasons. Reasons for saving can be divided to two categories; internal personal reasons and external out of persons control reasons. Saving is not only dependent of the ability to save but is as well dependent from motivation (Väyrynen 2014).

1.4. Saving in Europe and Finland

Saving in Europe by households has been quite steady for a long time except for last year. Huge rise in household gross saving rate can be seen up to 23-25% from the start of 2020 which started to dip after second quarter, this is most likely due the effects of COVID-19. Usual rate has been around 11% to 14% starting from 2008 (Eurostat 2020). Net household savings rate in Europe has been around 5% to 7% from 2000 to 2019 (OECD 2021).

Gross household savings rate in Finland had fluctuated from 24.3% to 26.7% in 2020. The rate had strong increase at the start of the year decreasing after summer. The rating started to increase again in autumn the same year (GEIC 2021). This is also most likely due to the effect of COVID-19. Closing all the stores and services not being necessary requiring physical contact leaves savings for persons automatically. Also most likely the sudden change and pandemic scared people of the world's economic situation encouraging saving. This has been especially true for young people according to previously made study (Lähitapiola 2021). Net household savings rate has been low, no data was available for last year. Fluctuations in the rate can be seen both sides of zero from 2000 to 2019. Recent net rate from 2019 has been 0.39%. Net household savings rate is calculated using net household income divided by net household expenditures with the household expenditures being adjusted with the change in pension entitlement of households. (OECD 2021). Same is used for gross savings ratio using gross values.

There are different reasons to save. In Finland people save for retirement, some sort of procurement, for a case of a bad day or just for the sake of it. Retirement savings is one of the popular methods.

1.6. Similarities and differences between saving and credit card behaviour

Saving and credit cards can serve same purpose. You can save money for goods or services which you can purchase later with the saved money or you can buy the goods or service now with credit and pay it later usually costing bit more. Both can be used to reach same goal.

Both of saving and use of credit card also have lot of differences. There are the basics; saving money, spending money. But the goals for both can serve same purpose. You can save money for incase of bad day, some future investment, for your descendants and so on. You can use credit card for some bad day experiences like breaking essential home apparel, you can buy something which you would buy in future but earlier but its much harder to make profitable investments with credit card than it is with saved money and then to pass it to your descendants. Credit cards usually yield higher interest rates and costs compared to regular credits and investments credits issued by financial companies excluding quick credits.

1.7. Consumer behaviour factors

To analyse credit card behaviour and saving behaviour, it is also important to understand consumer behaviour. Different aspects influencing the behaviour of consumer can have widely different effects to the research which some of them are later used in regression.

Consumer behaviour is affected by different factors. Firstly are the cultural factors. Behaviour expressed by people is largely learned. When living in a society, lots of behavioural tendencies are learned from family and other important institutions. Shifts can happen in cultural preferences impacting consumer behaviour. (Kotler et al. 2005, 256-257).

Subcultural factors comes in second. Subcultural factors consists of certain group of people that have similar experiences and situations with shared value systems. Religion, ethnicity and citizenship are part of subcultural factors. (Kotler et al. 2005, 257).

Social class comes in third. People belonging to same division that shares values, interest and behaviours belong in the social class considering that the divisions are relatively permanent and ordered. Importantly in western countries lower social classes exhibit buying behaviour similar to upper classes. Young individuals are less dependent in cultural factors and more inclined global youth brands. (Kotler et al. 2005, 258-259).

Groups are social factors that effect consumer behaviour. Person can belong in to different groups them being family, friends and coworkers among others. In these groups roles and and status within the groups have also different effects to consumer behaviour. For example in families child and father have very different roles guiding their consumption. (Kotler et al. 2005, 259-262).

Personal factors are also influential. These factors consist of age, life-cycle stage, occupation, economic situation, lifestyle, personality and self-concept and more. Life-cycle stage is part of age but contains family and marital status as defining factors. (Kotler et al. 2005, 262-264)

1.7.1. COVID-19 effecting consumer behaviour in Finland

COVID-19 started to spread in December 2019 in China. Global pandemic was only declared few months later 11.3.2020 by WHO. COVID-19 has affected consumer behaviour severely. Different countries have had different sets of restrictions for basic services and movement. Restrictions in Finland had closing of sector around capital city's area, restricting travelling and restaurant services among other things. General public health precautions which have affected people are social distancing and using face masks. Working routines have changed into remote work if available and schools have given lessons using video conference applications. Few studies are already made from which publications regarding Finland are elaborated.

According to study by Wilska et al. many individuals lost their summer job or got laid off out of the 1000 participants who took part in the study. Physical shopping reduced significantly due to restrictions imposed by government. Interestingly web shopping didn't increase a lot. Worryingly young adults' future prospects have significantly reduced compared to other people (Wilska et al. 2020). Finland's household saving has increased during the COVID-19 but it has also fluctuated a lot. According to another study many of the people not spending now are waiting to spend later. Reasoning for that is acquisitions that individuals would normally purchase will be pushed to the future due to uncertain economic times. If the situation gets better after COVID-19, people were willing to spend more (Anttinen et al. 2020).

Considering these articles this study can have bias and reflection from the current world situation. Now vaccines are distributed around the globe which will most likely result for things slowly returning back by removing restrictions. Results of this thesis might be completely different after COVID-19 has disappeared.

1.8. Previous studies and hypothesis

No previous studies researching the same problem directly were not found by the author. Studies that research parts of phenomena in this research were found and parts of these are used to evaluate and make hypothesises.

Previous study shows that young individuals indebtedness has grown in Finland. This is partially due increase of credit cards but also due other consumer credits with easy availability. Study shows that more people with lower education are more likely to be indebted than people with higher education or still studying. (Majamaa, Rantala 2016). S-bank's study about credit card's in Finland concluded that high ratio of individuals are unaware of their card's expenses. Out of 822 respondents 23% didn't know about the expenses of their cards or had very limited knowledge. (S-pankki 2017).

Previous study done in USA showed that college students have high rate of indebtedness. Average amount of credit card debt was around 1500$ per student in 2006 (Norvilitis et al. 2006, 943).

Higher indebtedness can be seen that people who use credit card and are constantly in high amounts of used credit are most likely not saving money. This is due to fact that higher contant credit rates ranging near the maximum amount of available credit is viewed to be in risk of being over-indebted as a general concensus from financial companies and organizations. Being over-indebted means that people do not have enough money to pay the debts and therefore aren't able to save.

Financial knowledge also has been found to be mitigating factor in making bad financial choices (Hilgert et al. 2003; Robb, Woodyard 2011). This can reflect to lower amount of total credit used, having no credit card at all and higher likeliness for the individual to be saving money. Previous studies show that financial knowledge have positive effect on college students credit card usage by making their decision regarding the credit card usage be more responsible (Robb 2011). Financial knowledge have been found to affect positively saving and investing. People lacking in the financial knowledge have been noted to have trouble meeting financial obligations or ability to save (Hilgert et al. 2003; Robb, Woodyard 2011).

Research studying Britain's education affecting financial behaviour found out that education has strong correlation to multiple financial behaviours, including having incresing female's saving decision and regular saving (Gray et al. 2021). As education is heavily represented in this thesis, it will be interesting to see the results.

Aim of this study was to find out if credit card behaviour correlates with saving behaviour. From the results of the previous research hypothesises could be made even though the research did not address the whole topic in the same way as this thesis does.

Based on this thesis' aim and previous studies, the following hypotheses were formulated

1. Higher regular credit usage in credit cards decreases regular saving behaviour
2. Higher knowledge in credit cards has positive outcome in saving behaviour

2. DATA AND METHODS

2.1. Survey and sampling

Research method used for this study is survey. Methods can be separated to three different categories including quantitative, qualitative and mixed methods. Survey used in this research represents quantitative method as numerical data is used. Qualitative method has textural data and mixed methods include both qualitative and quantitative research in same research. (Williams 2007, 65). The quantitative method was chosen due to fact that author thinks it's more appropriate for this type of research allowing to use mathematical model to analyse collected data and to get more clearer conclusion.

The empirical data for this research was collected using Google Forms platform. Survey was designed by the author of this study (Appendix 1). Survey contained questions based on basic socioeconomic characteristics, saving behaviour and credit card characteristics. Sampling method was non-probability sampling since not every individual had the chance to be part of it. The more specific method used for this study was purposive sampling. Purposive sampling is used when specific features are chosen to base the sample (Etikan, Bala 2017, 215). Main features deciding the quota was to be Finnish citizen aged between 18-30. To collect the data author contacted his Finnish associates and asked them to fill the survey. Associates included friends, family members, relative and coworkers among others. Recipients of the survey were asked and were able to share the form with their associates. Sharing the survey this way seemed like the best way to authentic results compared to sharing the survey in open forums or in a similar way. Survey was done in four parts and contained 21 questions all in English. The questions were not translated into Finnish which as an afterthought might influence the answers based on recipient's English skills.

First part contained nine questions about socioeconomic characteristics. The participants of the survey were asked about age, gender, citizenship, main occupation, education, field of education, main source of income, net income and living status. Net income was answered with different

levels of income predefined in a multiple choice answer. These questions were partly chosen to take into account relevant factors effecting consumer behaviour.

The second part only contained one question. Question was about how many credit cards does the participant have. If they have a credit card or multiple credit cards they would be directed to the next part which asked more about the credit card characteristics and spending behaviour. If participants did not have any credit cards they would be directed to the fourth part about saving behaviour. The questions in third part were not relevant for any participant that didn't have a credit card.

The third part was about credit card characteristics and spending behaviour. This part contained seven questions. The questions asked from participants contained the type of main credit card, credit's payer, knowledge about credit's features, price and terms, timely usage of credit card, awareness of used credit regularly, regularly used credit in percentages, preference of paying credit in full or in installments on time or not. Knowledge about credit card's features prices and terms was asked in 0 to 10 scale. 10 indicated full knowledge and 0 indicated no knowledge. Awareness of used credit used percentage scaling from 0 to 100%.

The fourth and last part of the questionnaire asked about saving behaviour. This part had four questions. First participants were asked do they save money regularly from their income. Participants were then asked to put percentage on 0-100% scale of much net income they are able to save regularly. Multiple choice answer was used to ask amount of savings the participants have. Last question was to clarify what makes the main portion of participant's savings if they have any.

2.2. Data and sample size

In total 111 people answered the survey from which 108 were eligible for this study. This amount was sufficient minimun amount to conclude the research using survey. Target amount for the research was to get around 100 participants which was met. Target group for the research was individuals aged 18-30 being Finnish citizens preferably with credit cards. Because the way the survey was shared, author couldn't be sure about the backgrounds of the participants. The amount

for participants was reached in a little over week. After acquiring the sample size, the questionnaire was locked allowing no new answers to be added to the dataset.

Gender distribution between participants was close to equal. 44.1% (49) of participants were female and 55.9% (62) were male. In this way study didn't have gender bias and both genders were presented equally. Answer choices also included the choice of other, but none of the participants chose this as identifier of gender.

Age of the participants ranged from 16 to 42 years old. As the target group for this research was young adults aged 18-30, the participants who were either under or over this limit were left out to fulfill the aim of this study. In total 3 of the total amount of the participants were left out. Most of the participants were aged 23-27 years old. All of the participants were Finnish citizens, therefore no more participants needed to be left out. Total number of the individuals taken into account was 108.

Main occupation of the participants was evenly divided between being student or employed with 54.1% (60) being employed and 44.1% (49) being students. The question had option to answer other which had 2 answers. First one was full-time student and employed and second one was student and self-employed. None of the participants were just unemployed. Due to the way this question was asked to only choose the main occupation, the preference of the participant might influence the answers and not give good statistical value which is why this question was left out of regression.

Most of the participants were bachelor graduates with 54.1% (60) out of participants. Having master's degree or lower education than bachelor's closely divided with 18.0% (20) being master's and rest being lower degree. Education field had two options for answers; business and other. Deviation between options were quite even with 51.4% (57) answers on business. Other option had answers from multiple different fields which were not taken into account separately due to small amounts per field.

Most of the participants received their main income from salary with majority of 64.9% (72). This statistic confirms the fact stated above for the preference of choosing main occupation. Social benefits was second highest option. Few of the participants had no source of income. None of the participants received their main income from investments. One of the participants had stated in the

free field option answer ‘’job’’. Not clear what participant meant, answer not calculated into salary block. The amount of net income was divided quite evenly between options except over 6,000e which none of the participants had. 0-499e had 15 answers (13.5%), 500-999e had 24 answers (21.6%), 1,000-1,999e had 29 answers (26.1%), 2,000-2,999e had 29 answers (26.1%) and finally 3,000-6,000e had 14 answers (12.6%).

Living status had the options rent, own and other. Most of the participants were living in rented apartment. 17 (15.3%) participants had their own apartment. When choosing other, 10 out of 111 participants had typed living with parents which makes 9% out of total. The persons living with parents had high rates savings ratio, most likely due to having no regular duties or liabilities.

Having 1 credit card was most popular between participants. In total 27.9% (31) did not have a credit card. 16.2% (18) of the participants had 2 credit cards and only 2.7% (3) had 3 or more. This part of the questionnaire divided participants in to different categories. In the next, third part there was 80 participants. Category was based on owning credit card. Basic credit as a main credit card was owned by 43 of the participants. 33 people had Gold Card. 4 out of the 80 participants had Premium card as their main card. All of the participants paid the credit regularly themselves so this questions shows statistically no value. It can be assumed that either none of the participants have parallel cards or that people are hesitant to tell that someone pays together or alone one’s debt.

Regarding the knowledge of the participants, most of the participants felt that they had good knowledge on their credit card’s features, price and terms on a scale 0 to 10. Most popular of the answers chosen were 7, 8 and 10. Smaller amount felt like they had very limited knowledge and 3 of the participants felt that they had no knowledge.

All the choices were represented in usage of the credit card. Weekly and monthly usage were most popular with 17.5% (14) and 28.8% (23) respectively. In total 15.0% (12) of the participants used the card rarer than few times per year and 15.0% (12) used it every day.

Awareness of used credit was on high level. Scale for the answers was on 0 to 10 scale with the most popular answers being 10 and 9. Very small amount of the individuals felt that they had lower awareness. Amount of used credit was divided on large scale. Participants were asked to type

between 0-100%. Most of the participants regularly had 0% credit used and 1 of the participants did not know how much they have regularly.

Most people answered payment method being full amount of credit regularly with 76.3% (61) of answers. Smaller amount answered to paying the credit in installments. None of the participants chose the option of paying in installments but usually late or lower than minimun amount required. This can be nothing to be taken note of or it can be related to not wanting share if having financial trouble due to shame or other reason.

All of the participants were included in the question about saving behaviour. Close everyone did save money regularly from their income with 82.0% answering yes. The amount of net income they were able to save varied a lot between 0-100%.

Amount of savings was not anticipated by the author. In total 49.5% (55) of the participants had over 10,000e in savings leaving 5,000-10,000e as a second choice with 17.1% (19) and 1,500-4,999e as a third with 15.3% (17). Only smaller amount of participants had no savings or small amount of savings. This question was most surprising for the author due to anticipation between the results being more even. Due to fact author lives in a different environment and country, the answer choices were biased to his own view of expected values of usual total savings amounts, making this question biased. This question's choices should have been divided differently to give better view of the total saving amounts.

Final question was about the main portion of the savings. Question had 47.7% (52) of the individuals answered having main portion of their total savings in account savings. Funds were represented by 25.7% (28) and other investment products by 24.8% (27). Cash and secured goods had both only one answer respectively.

2.3. Descriptive statistics

Here I will shortly go through of the data used for the regression of this research and its descriptive values. The descriptive values here are listed in Appendix 2 and more information of the variables used is discussed in next chapter 2.4.

The average age of the participant was around 25. Median for the age was 25.50. Therefore age groups had nice variance among answers. Almost equal gender distribution could be seen as 55.9% of participants were males. Out of all the 111 participants 62 were males and 49 females.

Higher education was more biased with around 73% of the participants having acquired at least bachelor's thesis. 31 persons had lower education level compared to 80 higher educated persons. Income levels divided as follows; 64% (72) were on the higher income level going over net income over 999e. This left 36% to the low income sector which was 39 individuals. Even when it looks a little disturbing, it has to be taken into account that most of the students which were receiving low income most likely have student loan to cover expenses during studies. Both of these statistics were imbalanced,

Out of range from 0 to 10 credit card knowledge regarding price, terms and features was average of 6.475 with median of 7. The balance going over to the higher end was expected due to larger attendance of highly educated people and also it was good thing to notice that at least from the sample most of the younger individuals have good understanding of their credit.

Around 32% of the participants used their credit card at least weekly. This was 26 of all the participants.

Awareness of used credit used scaling method with 0 to 10 range. Mean was 8.40 and median 9. This can be partly linked into knowledge of the credit card's terms. People who are knowledgeable of their card as a whole, most likely also are concious when using it. But most importantly statistic which affects this data a lot is that many of the participants had a credit card but almost never uses it. Therefore they are always aware of the used credit.

Credit regularly in use had mean of 20.72 with median 15. Out of 0-100% the values are low and there was not enough of variance on the whole scale.

Saving regularly had around 82% (91) people answering yes. With the distribution of high education and people receiving their main source of income from salary, this was not surprising.

Mean for the savings ratio was 20.41 with median of 15. This had same scale as regularly used credit and the results also were extremely close. Variance wasn't big enough to be considered even.

2.4. Data analysing

Data from the survey was analysed using regression analyses. Main dependent variables were regular saving and percentage of net income able to be saved regularly also known as savings ratio.

Since regular saving was measured binarily, logistic regression analysis was used. Independent variables chosen were age, gender, education level, net income, credit card knowledge, credit card usage, awareness of used credit and credit regularly in use. Logistic regression models the probability of certain variable existing with assigned value between 0 and 1.

For savings ratio ordinary least squares model was used as a dependent variable since the scale was not binary. Independent variables chosen were same as in logistics model. In both of the analysises some variables were simplified to binary form. Ordinary least squares model estimates unknown parameters in a linear regression model by using the principle of least squares.

Regression analysises were done using Gretl software for both of the analysises. Most of the independent variables were turned in to binary form. Education level was turned into 0 representing lower education and 1 representing higher education. Net income level was divided to people who earn under 1000e which in binary was 0 and to people who earn 1000e or over which in binary was 1. Credit card usage was divided that 0 meant less than weekly and 1 meant atleast weekly. Chosen variables and making them binary was done that the regression would be easier and more clear with the number of observations available. Some of the independent variables were dropped due high correlation with each other, others' statistical value were low and not interesting for the study. Some of the variables were left out since correlation could be clearly seen but causality would be easily ruled out. For example card type being only basic could be seen affecting saving amount but most likely people have basic card due already lower wages and therefore can not save. All the chosen variables were run in correlation matrix showing no value over 0.5. This concludes that the variables are different enough to act in a regression.

The independent variable were chosen on the following basis. Age and gender are most basic identifiers that make difference in behaviour. Income level was added to model the likeliness of not saving if based on income. As a common notice people with small income aren't able to save on the same level as higher income. Also higher and lower education was chosen due to fact that previous studies show significance in financial behaviour. Independent variables regarding credit cards were chosen from the questions which author thought had most significance in study after exclusions by correlation matrix. Knowing your credit card's basic information represented area of financial knowledge, awareness of used credit can be linked into behavioural studies, using the card often was used to measure does just using the card matter or no relation with it was found and finally regular credit in use represents person's probability for indebtedness

Both analysises had three models. These will be more explained on part 3.1. The significances that this study recognises have three levels; 0.01 or 1%, 0.05 or 5% and 0.10 or 10%. If the p-value is lower than one of these values, the result will be considered statistically significant. The explanatory power of the models was measured with the adjusted R-squared. Higher percentage in the model means higher relevance.

3. RESULTS OF REGRESSION AND DISCUSSION

3.1. Regression results

For logistic regression 3 models was used. First 2 models have 108 observations with 3 dropped observations due going over age limit. Variables chosen for first model were age and gender. Second model had added higher education and higher income. Since the last model contained independent credit card variables, everyone that did not have a credit card were left out of observation. Last model had 78 observations with 33 of the observations dropped from which 30 didn't have a credit card and 3 were ruled out based on age limit.

First column's Coef. stands for coefficient showing the variance between observations. Second column shows standard error which shows the wrongness of the model by variable. The stars represents p-values from which * stands for 10%, ** stands for 5% and *** stands for 1% of significance.

Table 1. Regression results

	Model 1			**Model 2**			**Model 3**		
Variable	Coef.	St. Error	p/***	Coef.	St. Error	p/***	Coef.	St. Error	p/***
age	0.145758	0.0877942	*	−0.00191376	0.106730		0.427249	0.249058	*
gender_male	1.02568	0.564220	*	1.18781	0.602657	**	0.659415	1.20700	
education_higher				1.31840	0.636394	**	2.61730	1.43669	*
incomelevel_higher				0.640611	0.619232		0.950892	0.990360	
crdt_knowledge							0.0720130	0.220899	
crdt_usageoften							1.49699	1.18562	
crdt_awareness							0.0804295	0.221204	
crdt_regularlyinuse							−0.0642189	0.0233280	***
N	108			108			78		
Adj. R2	2.65%			4.33%			25.34%		

Note: *p < 0.1; **p < 0.05; ***p < 0.01, model: logit, dependent variable is *regular saving*

From Table 1 the first model of the logistic regression shows small significance for both of the variables with significance level 0.1. Coefficients are positive so they have positive relation for person's likelihood to save as they grow meaning the older the individual, more likely they are to save regularly and being male has higher likeliness to regularly save. Age loses its significance in next model and gains it back in the last model.

Gender comes more significant in second model alongside with new variable education level showing 0.05 significance. These are also positive, higher education increases chance to save regularly.

Final model has the highest rate of significance 0.01 which was on the percentage of credit regularly in use of credit card. Age and education level have small significance with significance value 0.1. This matches previously caught results. Standard error for the regularly used credit was extremely low suggesting that the estimation is accurate.

Final model also has the highest adjusted R-squared (Adj.R2) with 25.34%, which makes it most relevant model out of logistic regressions. Model 1 has adjusted R-squared of 2.65% and Model 2 has 4.33% which are significantly lower than with Model 3. (Table 1)

Table 2. Regression results

	Model 1			**Model 2**			**Model 3**		
Variable	Coef.	St. Error	p/***	Coef.	St. Error	p/***	Coef.	St. Error	p/***
age	−0.652826	0.631890		−1.74739	0.712296	**	−0.334369	0.717974	*
gender_male	−0.738777	3.66667		−0.467234	3.57427		1.38708	3.35567	
education_higher				8.56637	4.21119	**	18.7198	4.18050	***
incomelevel_higher				8.20262	3.88292	**	11.8644	3.42971	***
crdt_knowledge							0.518586	0.635923	
crdt_usageoften							4.80382	3.34919	
crdt_awareness							1.24471	0.746236	*
crdt_regularlyinuse							−0.0181905	0.0697306	
N	108			108			78		
Adj. R2	-0,66 %			5,66 %			36,91 %		

Note: *p < 0.1; **p < 0.05; ***p < 0.01, model: OLS, dependent variable is *savings ratio*

Table 2 shows ordinary least squares regression for dependent variable savings ratio. First model with age and gender shows no significance for either of the variables.

Second model has three medium significance variables with 0.05 significance to age, education and higher income level. Age has negative influence to savings ratio. Education level and higher income level have positive influence.

Last model increases education level's and higher income level's significance to the highest level of significance at 0.01. Both have positive relation to savings ratio. Age's significance diminishes to 0.1 statistical significance and it still has negative influence to savings ratio. Lastly awareness of used credit shows small significance at 0.01 with positive relation meaning that being more aware of the used credit also has likelihood of increasing saving rate.

Final model is again with highest adjusted R-squared rate with 36.91% which makes it the most relevant one. Model 1 has -0.66% adjusted R-squared rate and Model 2 has 5.66% adjusted R-squared rate making them both substantially less relevant than Model 3. (Table 2)

3.2. Discussion

This section will discuss the results from regression analyses comparing the results to previous studies and hypothesises. Also in this section author will discuss critically the limitations and challenges of this study and will present improvement suggestions for future research.

This study had two research questions and two hypothesises. The first question was how does higher credit card usage affect regular saving and second question was does credit card behaviour affect savings ratio? Hypothesises concluded that higher regular credit usage in credit cards affects regular saving behaviour negatively and that higher education affects positively towards saving behaviour.

This study used ordinary least squared and logistic regression models for regression analysises. These regression studied the affects of different independent variables to savings ratio and regular saving as dependent variables. Independent variable used were gender, age, education level,

income level, credit card knowledge, credit card usage, awareness of used credit and regular percentage of credit in use. The sample size used for this regressions was 108 observations with last model being 78 observations due to model using credit card variables. Study wasn't limited to having a credit card which left lots of data blank causing the decreased value in observations affecting the accuracy of the last regression models.

The results were formulated from three logistic regression models per dependent variable. Towards regular saving, regular credit in use showed highest statistical significance in third model that was also most relevant. Age and gender showed varying significance through different models along with higher education. The results suggest that higher credit which is regularly in use from credit card lowers the likelihood of regular saving. This matches hypothesis made interprating previous studies. Higher education and age showed slight significance in increasing the chance to be regularly saving. Regular usage of the card didn't have significance in regular saving which was on the contrary what author expected. Also higher knowledge of cards didn't have statistically significant effect, but this can be explained with the fact that it only measured credit card knowledge not knowledge related to saving or financial literature in general. Person might have higher knowledge in other financial fields or aspects and in general. Still the coefficient is positive which at least in this study relates to positive correlation while not significant.

Second regression model ordinary least squared regression to measure savings ratio correlation. Higher income and higher education both had strong statistical significance in the final model which was also most relevant out of the three. The two variables also showed medium significance in the second model along with age. Age and awareness of used credit showed small significance in third model. Age had completely different result comparing to the logistic model that higher age showed negative influence towards dependent variable. This might be due to fact that sample didn't have enough observations and also due to fact some of the youngest participants still lived at home and could save almost all the net income received. Also some variables showed high coefficient meaning that the variance between answers was high. Used credit's awareness is difficult to measure in terms of affecting savings ratio which this study can't do. Many of the participants didn't use credit regularly at all which meant that they were fully knowledgeable of their used credit without effort. Therefore any result from this can not be considered scientifically significant and true. Only if the observation range contained people who regularly used their card and it would have same result, it would give more appropriate base. Likewise with previous model the credit card knowledge did not provide any significant statistic in correlation.

Regression model itself caused limitations to this study. Even though something correlates significantly it does not mean that those variable have causation (Kamer-Ainur, Marionara 2007). Limitation to this study was in the questionnaire. Simplifying the process might have also lost some scientific value. The sample size also should have been bigger to get better and more accurate results. The questions were based on self-evaluation for the most part which is why the results might contain personal biases. Bias can be seen in the distribution method since connection were mostly author's own either related in social class, geographically and field of study. In the future this research can be expanded with larger sample and bigger and better defined data. Preferably data set would be real available banking data including broader questionnaire regarding knowledge and some other variables not measurable straight from the data sets.

Final notion can be made that credit card behaviour and saving behaviour indeed correlates in some ways according to this thesis. The causation between these two behaviours can and most likely lie elsewhere There is not supportive data either way. Due to COVID-19 increasing individuals' saving behaviour and steadily increasing amounts of card transfers this subject will likely stay topical.

CONCLUSION

The aim of this thesis was to find out if credit card behaviour does correlate with saving behaviour among young Finnish adults aged 18-30.

The research questions for the study were as follows:

1. How does higher credit card used limit regularly affect regular saving?
2. Does credit card behaviour affect savings ratio?

Based on this thesis' aim and previous studies, the following hypotheses were formulated

1. Higher regular credit usage in credit cards decreases regular saving behaviour
2. Higher knowledge in credit cards has positive outcome in saving behaviour

Answers to these questions were partially received. Answer could be derived from regression relating first question. Second question's answer was left more open. Higher credit card credit regularly in use lowered the chance for one to be regularly saving. Age and education level also had slight significance increasing the change to be saving regularly. This can be related to the older the person is the more experience and knowledge they have gathered including financial literature (Hilgert et al. 2003; Robb, Woodyard 2011). This is specially true for higher education. Interestingly higher income levels didn't affect regular saving. Second question's answer is that credit card behaviour didn't have strong correlation with savings ratio with any statistical significance. Even tough correlation can be seen with awareness of used credit, this statistic can't be considered relevant because how the questionnaire was conducted and how the answers made bias. On the other hand income level and education level had strong influence positively which was expected.

All in all most results matched previous studies. Based on these results first hypothesis was accepted and second was rejected.

The questionnaire most likely had the biggest limitation along with sample size to make this study more significant. Due the way study was shared, there might be bias with values. It has to be taken into account that this research was performed during COVID-19. Results of this same research could have been way different without COVID-19.

For similar research in future the correlation between variables should be investigate with more detail. The sample size and used data should be larger and possible causation between credit card behaviour and saving behaviour should be investigated in detail. This study is only applicable for small sample.

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APPENDICES

Appendix 1. Survey

PART ONE (Socioeconomic characteristics)

Age

- _____

Gender

- Male
- Female
- Other

Citizenship

- Finland
- Other

Current occupation

- Student
- Employed
- Self-employed in a single owned company
- Unemployed
- Other

Education

- High School graduate/corresponding or lower
- Bachelor’s degree
- Master’s degree or higher

Field of education

- Business
- Other

What is your main source of regular income?

- Salary
- Social benefits
- Investments
- No regular source of income
- Other

What is your monthly net income level?

- 0-499e
- 500-999e
- 1000-1999e
- 2000-2999e
- 3000-6000e
- Higher than above

Living status

- Own
- Rent
- Other

PART TWO (Credit card characteristics)

Do you have credit card/s?

- 1
- 2
- 3 or more
- I don’t have a credit card

PART THREE (Credit card characteristics)

What type of credit card is your main credit card?

- Basic
- Gold
- Premium

Who pays your credit card's used credit regularly?

- You yourself
- Together with someone
- Someone else pays the credit

How well do you think you know your credit card's features, price, terms?

0. No knowledge 10. Full knowledge

How often do you use your credit card's credit?

- Daily
- Weekly
- Monthly
- Few times per half a year
- Few times per year
- Rarer than above

How aware are you about your credit card's used credit regularly?

0. No awareness 10. Full awareness

What percent of credit do you have regularly in use of your credit card's credit? (on a scale 0-100%)

- _____

Do you pay credit card's credit in installments or in full regularly?

- Installments
- Full amount
- Pay in installments but usually late or lower amount that is required

PART FOUR (Saving behaviour)

Do you save money regularly from your income?

- YES
- NO

What percent of net income are you able to save regularly? (on a scale 0-100%)

- _____

How much do you approximately have savings?

- 0-499e
- 500-1499e
- 1500-4999e
- 5000-10000e
- Over 10000e
- I don’t have any savings

If you have savings, what makes the main portion of the savings?

- Account savings
- Cash
- Funds
- Secured goods like gold
- Other investment products

Appendix 2. Descriptive statistics

	Descriptive Statistics				
Variable	**Mean**	**Median**	**S.D.**	**Min**	**Max**
age	25.04	25.50	2.890	18.00	30.00
gender_male	0.5586	1.000	0.4988	0.0000	1.000
education_higher	0.7207	1.000	0.4507	0.0000	1.000
incomelevel_higher	0.6396	1.000	0.4823	0.0000	1.000
crdt_knowledge	6.475	7.000	2.815	0.0000	10.00
crdt_usageoften	0.3250	0.0000	0.4713	0.0000	1.000
crdt_awareness	8.400	9.000	2.281	0.0000	10.00
crdt_regularlyinuse	20.72	15.00	23.66	0.0000	100.0
saving_regular	0.8198	1.000	0.3861	0.0000	1.000
savings_ratio	20.41	15.00	18.46	0.0000	100.0
Source: Vento (2021), author's calculations					

Appendix 3. Correlation matrix

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. age	1									
2. gender_male	0,26	1								
3. education_higher	0,40	0,01	1							
4. incomelevel_higher	0,41	0,16	0,20	1						
5. crdt_knowledge	0,05	0,14	0,09	0,26	1					
6. crdt_usageoften	-0,22	0,24	-0,10	-0,05	0,19	1				
7. crdt_awareness	0,29	0,01	0,08	0,27	0,48	0,04	1			
8. crdt_regularlyinuse	-0,26	-0,27	-0,11	-0,04	0,20	0,22	-0,01	1		
9. saving_regular	0,23	0,24	0,28	0,23	0,13	0,04	0,20	-0,49	1	
10. savings_ratio	-0,11	-0,02	0,12	0,17	0,37	0,17	0,36	-0,07	0,38	1

Source: Vento (2021), author's calculations

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