Master's Thesis

What makes us so different?

Credit card behavior of Dutch vs. U.S students

"A credit card is what you use when something costs too much and you want to pay more for it."

Marketing Institute

Erasmus School of Economics

Erasmus University Rotterdam

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Abstract

Since students are the 'high potentials' of the future with above expected income, they form an attractive niche market for credit card companies. Credit card companies in the United states anticipated and in today's world, U.S. students are using credit cards without restraints. In the Netherlands, however, credit card usage falls behind, given the small number of Dutch students using a credit card. The present study examines possible drivers behind credit card usage among students which clarify the difference between credit cards usage of Dutch students and U.S. students. These drivers are subsequently students attitude towards credit cards usage, dealing with financial matters, financial literacy, cultural dimensions and socio-demographics such as gender, age, income, spending, living situation and education. The findings suggest that age, income, the attitude towards credit cards and the cultural dimension vertical collectivism predict credit card usage among students. Unfortunately, the present study was not able to reveal the underlying factors explaining the difference between Dutch students and U.S. students. Interestingly, Dutch students show the same positive attitude towards credit cards as U.S. students. The only difference is that Dutch students are less likely to use a credit card. For Dutch credit card companies it seems worthwhile to further investigate the underlying reasons for this discrepancy between the positive attitude and the likeliness to use a credit card.

PREFACE

Each period in life eventually comes to an end. Writing this master thesis puts an end to my student days which were challenging but especially fun and exciting. A period in life you did not want to miss which brought knowledge, skills and a network of friend and professional relationships. Nevertheless, now it is time to make the next step and enter a new period in life, a professional career!

First of all, I would like to predicate my gratitude to my supervisor professor dr. Martijn de Jong for his helpful comments and insights during the process of writing my master thesis. Additionally, I would like to express my appreciation to ... for serving as second assessor. Furthermore, I would like to thank my parents and girlfriend for their support during my study the last couple of years and be grateful for the fact they encouraged me to complete a master study after I graduated for a bachelor study at the Rotterdam School of Applied Sciences. In particular, I would like to express my gratitude to my girlfriend, Noëlle Fischer. Despite the fact she was writing a master thesis herself and was doing a internship, she was able to review my thesis and supported me with critical comments which stimulated me and pushed me in the right direction.

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1. INTRODUCTION

Looking at today's world, buying on credit is a quite normal phenomenon in the lives of many people. However, buying on credit is known as a worldwide societal problem because it facilitates numerous people to struggle with financial debts. This chapter will introduce the present research. First, an introduction and background of the topic is given. This is followed by the problem statement and research questions, which form the basis of this thesis. Subsequently, academic and managerial relevance of the study will be discussed. In the last paragraph, the structural outline of the thesis is presented.

1.1 Background

Consumer credit is probably older than money (Homer & Sylla, 1996). Peterson (2001) states that credit can be defined as the procedure of trading valuable resources with the commitment of future repayment. Already centuries ago, people borrowed things from each other to fulfill their own social needs with the agreement to pay it back in the near future. After World War II, the foundation of consumer credit as known nowadays was build. Given the allowance for economic growth and the emergence of a major credit system in the 21st century, consumer credit was an important factor during this period. This system, of which the modern credit card became an essential part, stimulated both household and personal spending (Ritzer, 1995).

Particularly in the United States, the use of credit cards is enormous, since the majority of U.S. households across all income classes use consumer credit. Deregulation of the banking industry and the need for lenders in the United States of America at the beginning of the 21st century resulted in increased availability of consumer credit in the form of credit cards for younger consumers (age 18-25; Manning & Kirshak 2005). Although students have low present earnings, it is generally assumed that those 'high-potentials' have above average expected future incomes. Given this fact, students form an attractive market for credit card companies (Robb, 2011). The number of students is high and their spending level during college is huge because students are about to get their first dorm room, first car, first apartment, first job and in combination with these, their first long distance service and first credit card (Speer, 1998). Besides, students can use a credit card for essential purchases, for example college, rent, gas, food, insurances, and study books (Warwick & Mansfield, 2000).

Credit card companies in the U.S. are fighting for the student market and make it very easy for students to acquire a credit card. Card applications are readily available at the college

campus (Warwick & Mansfield, 2000). Applications can easily be obtained through different sources, such as direct mail, websites, school events, telephone solicitations, at campus bookstores and signing up by classmates is even a possibility (Warwick & Mansfield, 2000). The percentage credit cardholders under students in the U.S. is approximately 84 percent, with an average of 4.6 credit cards per cardholder and corresponding average debt of over more than $3.000 (Sallie Mae, 2009).

The attitude of Dutch students towards the use of a credit card is not comparable with the attitude of students in the United States. Research of the Nibud (a national institute of budget education) into credit behavior of Dutch students points out that the percentage of credit cardholders is approximately 17 percent, corresponding to an average debt of €1.400 (Nibud, 2010). Besides, Dutch students have the possibility to obtain a student loan from the IB group with a low interest rate and attractive repayment schedule to pay for college and rent, for instance.

Regarding the possible difference in attitude towards credit cards between Dutch students and U.S. students, it might be interesting to identify the cause of this difference. What is the reason for the low number of credit cardholders among Dutch students compared to U.S. students? It is too obvious to refer to the aggressive marketing strategy of credit card companies (Robb, 2011) and the simplicity to obtain a credit card for students in the United States (Warwick & Mansfield, 2000). On the other hand, Dutch students have the possibility to attain and use credit cards too. The question arises, what make us, Dutch students, that different?

1.2 Problem statement

A credit system with possibilities to purchase on credit stimulates the economy (up to a certain level), because household and personal spending increases. Students are attractive credit consumers in this system, given the assumption that students have above average expected future incomes (Robb, 2011). However, the population of students in the Netherlands that uses a credit card to purchase on credit lags far behind a country like, for instance, the United States. Keeping this in mind, the following problem statement can be formulated;

What drives credit card usage among students, in a context where Dutch students do not use credit cards compared to U.S. Students who use credit cards without restraint?

1.3 Research questions

This study, focusing on the use and attitude towards credit cards of Dutch students, will address the following the research questions:

1) Is credit card usage among students (partly) determined by their attitudes towards using it?

2) Is credit card usage among student (partly) determined by financial literacy?

3) Is credit card usage among student (partly) determined by their responsible or irresponsible financial practice?

4) Is credit card usage among student (partly) determined by cultural influences?

5) Is credit card usage among student (partly) determined by demographic characteristics, such as gender, age, living situation, income, spending and academic level?

6) Are there differences in areas of attitude, financial literacy, financial practices or cultural influences between Dutch students and U.S. students?

1.4 Academic relevance

Several previous studies using students as a research sample, discuss the number of credit cards that students use in relation to their attitude towards using a credit card, financial practices of students, financial knowledge and cultural influences.

Research of Sallie Mae (2009) indicates that approximately 84 percent of U.S. students use a credit card. Xiao et al (1995) conducting a study about the attitude of students towards credit, state that U.S. students tend to have favorable feelings about using a credit card. Students with more favorable attitudes regarding credit cards appeared to be more likely to purchase goods such as clothes and electronics with their credit card. Besides, demographic characteristics like gender, academic level and living situation (either on campus or off campus) showed significant divergence in relation with favorable attitudes (Xiao et al., 1995). Warwick and Mansfield (2000) contributed that most students have a reasonable attitude towards credit card usage, although students are not always knowledgeable about financial details on their credit card, such as interest rates, balance or credit limits.

Evidence from previous studies implies that the majority of students using credit cards appear to have little financial knowledge concerning their own credit cards (Robb, 2011, Warwick & Mansfield, 2000). Half of the students does not know the interest rate they pay (Warwick & Mansfield, 2000).

Results from a research employed by Cude et al (2006), suggest that financially educated students are expected to pay their complete balance each month and are less likely to use a credit card relative to students who are not financial well-informed. However, Jones (2005) contradicts these suggestions with results which imply that there is no relation between knowledge about credit and the use of credit. He states that students with more knowledge do not necessarily have lower levels of debt.

Research of the Nibud (2010) among Dutch students suggests that only 17 percent of Dutch students uses a credit card. Level of education can be related to the number of students that own a credit card as well as to the usage of student loans and corresponding negative credit balances (Nibud, 2010). However, this research lacked an in-depth investigation of relationships between variables such as financial literacy, financial practices and attitude of Dutch students towards credit cards, compared to several other academic studies.

The present study investigates credit card behavior among Dutch students, compared to the behavior among U.S. students. The practice of credit cards is generally accepted by the majority of U.S. students, who are born and raised in a culture where credit debt is used without restraints (Ritzer, 1995). Results from Nibud (2010) show that the usage of credit cards among students in the Netherlands lacks far behind those in the United States. Therefore, this study will probably yield different results compared to similar studies among U.S. students and might give new insights in the phenomenon of credit cards in Dutch credit market.

1.5 Managerial relevance

Students form an attractive market for credit card companies, given their low earnings during their time in college while their spending level is huge. Besides, students have above average expected income after college, which accelerates the easiness of reimbursing debts. The present study will provide useful information for many companies in the Dutch banking industry. Results give an explanation why only a small part of the Dutch student population uses a credit card. It may be possible that these new insight will lead to a better understanding of this part of the credit card market and enables credit cards companies to anticipate at this type of consumers in the future.

1.6 Structure outline thesis

The purpose of the present study is to explain why Dutch students lack using credit cards in comparison with U.S. students, who use credit cards without restraint. To come to a well-considered explanation and answer for the research questions, the present study is structured as follows.

Chapter 2 is the foundation of this thesis. First, prior academic literature about credit card behavior, attitude toward credit cards, financial literacy, financial practices and cultural influences is reviewed. Based on this review a theoretical framework is build and translated into hypotheses which are examined later on. Subsequently, chapter 3 provides the methodology used in this study, divided into research design, explanation of the different variables, the research sample and description of hypotheses testing. Chapter 4 presents the results of our data analyses, which is divided into descriptive analysis and the analysis of the hypotheses. Conclusions and answers to the research questions based on the data analyses are given in chapter 5, together with the discussion, limitations and implications for further research.

2. THEORETICAL FRAMEWORK

In this chapter, different theories are discussed in relation to the usage of credit cards. Based on these theories, a conceptual model is created and subsequently hypotheses are given. The effect of a possible moderator on the variables is discussed at the end of this chapter.

2.1 Theory

Before a theoretical framework can be build, it is important to find literature which provides relevant theories about credit card usage. Therefore, this paragraph will discuss multiple studies to embark on in the present study.

2.1.1 Attitude

Research by Kaynak, Yucelt and MacGregor (1986) into attitudinal characteristics of American and Canadian credit card holders, found demographic differences in credit card attitudes for different regions as well as, for instance, urban versus rural people and English versus French speaking people. Generally, young people and college students maintain favorable attitudes regarding credit cards (Bloom and Steen, 1987., Xiao et al 1995). Credit cards usage behavior appears to be influenced by a consumer's attitude towards credit cards. Results from Kaynak et al. (1986) suggest that consumers with a more favorable attitude towards credit cards are more likely to use a credit card and consumers with a less favorable attitude towards credit cards are less likely to use a credit card. This confirms results from a previous study by Etzel and Jones (1978). They demonstrated differences in usage patterns between active and inactive credit card holders. That is, they found that inactive credit card holders do not use their credit cards because they tend to have a negative attitude towards credit. These inactive card holders believe that credit cards should solely be used in urgent circumstances.

Xiao et al. (1995) built a model to measure the attitude of college students based on a series of affective, cognitive and behavioral attitudes, related to feelings towards credit cards. Respondents were asked to rate a total of thirty-seven statements which resulted in a summated index. Results of the research by Xiao et al. (1995), showed that in general college student tend to have favorable attitudes towards credit cards. However, when the attitude is divided into cognitive, affective and behavioral components, the attitude of students regarding behavioral attitude is less favorable.

Characteristics such as gender and living arrangements influence the attitude towards credit cards. For instance, female students living on the college campus and working less than twenty hours a week have more favorable attitude towards credit cards (Xiao et al, 1995).
Hayhoe, Leach, Turner, Bruin & Lawrence (2000) have been exploring purchasing behavior of college students in relation with affective attitudes towards credit cards and gender. To measure the affective attitude of students, a customized version of the attitude index modeled by Xiao et al. 1995 is used. Hayhoe et al. (2000) found that affective credit attitudes influence purchasing behavior of college students. Students with an affective attitude towards credit cards are more likely to buy goods such as, for instance, clothes, electronics, entertainment and take-away food, compared with students with a less affective attitude towards credit cards (Hayhoe et al, 2000).

A study by Warwick & Mansfield (2000) contributed to the literature in that students in general appear to have a realistic attitude towards credit cards, although they are not knowledgeable about their own credit. Students were asked to choose one out of four statements that most closely described their feelings towards a credit card. The feeling that most closely described their feelings towards credit cards is 'good, if used properly' (Warwick and Mansfield, 2000). In addition, attitude was linked to different demographics like gender and number of credit cards. Unfortunately no significant effects could be established.

2.1.2 Financial literacy and practices

Financial literacy takes part in various academic researches. Following Hogart and Hilgert (2002), someone who is financially literate can be described as an knowledgeable individual on the concepts of managing money, banking and credit, who understands the basic elements underlying the management of money and assets and who uses that knowledge and understanding to make financial decisions. In other words, financial literacy is a person's understanding and knowledge of financial concepts (Hogart and Hilgert 2002). Recent studies suggest that financial literacy can have significant implications for financial behavior and decision making, such as participation in stock markets (Rooij et. all. 2011), retirement planning (Lusardi and Mitchell, 2007) and problems with debt (Lusardi and Tufano 2009).

Van Rooij, Lusardi and Alessie (2011), examined the relationship between financial literacy and participation in stock markets. In this study, data is used from a survey among households, executed by the De Nederlandsche Bank. Financial literacy is measured with a survey which consists two parts.

The first part measures basic financial knowledge with five questions about numeracy, interest compounding, inflation, time value of money and money illusion. The second part measures more sophisticated financial knowledge with eleven questions about differences between stocks and bonds, the function of the stock market, risk diversification, and the relation between bond prices and interest rates. A great part of the respondents in this study understands the basics of financial knowledge. However, only a small part of the respondents appears to have financial knowledge further than the basics. Results show that households are not likely to participate in stock markets when they are less financially literate (Rooij et. al., 2011) .

Financial literacy has impacts on retirement planning (Lusardi & Mitchell, 2007). Lusardi and Mitchell (2007) studied financial literacy of working people during their prime earning years. At this time in their life, people appear to be making key financial decisions. Financial literacy turns out to be an important determinant of retirement planning. Besides, respondents show higher results in literacy when they followed economics in school (Lusardi and Mitchell, 2007).

Lusardi and Tufano (2009) examined financial literacy in relation with debt, referred to as debt literacy, among people in the United States. Debt literacy is measured by testing knowledge of elementary ideas linked to debt. They found that financial knowledge about debt is very low. Less than one third of the population seems to know how credit cards work. Individuals with less financial knowledge about debt tend to live beyond their means and finance these means with loans against high interest rates. In relation to credit cards, the interest fees paid for using credit cards can be explained by ignorance (Lusardi and Tufano, 2009).

Hilgert and Hogart (2003) explore in their research among households the relationship between what consumers know (knowledge) and what consumers do (practices), regarding financial management such as spending management, credit management, saving and investments. It was found that financial knowledge influences financial practices, given that knowing about credit and saving leads to better financial management (Hilgart and Hogarth 2003). In other words, people who are financially knowledgeable act more financially responsible.

A study by Chen and Volpe (1998) is one of the first that found a significant relationship between financial knowledge and financial decision making among college students. In this study, financial knowledge is based on different aspects of personal finance. Students who were more knowledgeable achieved higher scores on spending-, insurance- and investment decisions and keep financial reports. Students do not have enough knowledge of personal investments, which facilitates them to make inefficient financial decisions (Chen and Volpe 1998).

A survey by Merrick (1999) found that college students in the United States do not know much about personal finance. The majority of these students does not feel confident about basic financial knowledge (Merrick, 1999). Following a study by Warwick and Mansfield (2000) about college students' knowledge and attitude about credit, many students do not know the current interest rate they pay. Furthermore, they underestimate repayment of credit card debt. Students lack the capability to successfully manage credit (Warwick and Mansfield, 2000). The Jump$tart Coalition for Personal Fiancial Literacy (Mandell 2004) suggests that financial illiteracy is widespread among college students and young adults. Lusardi, Mitchell and Curto (2007) examined financial literacy among young people in the United States, using the latest version of the 1997 National Longitudinal Survey of Youth. This study showed that financial literacy among college students is insufficient. Less than thirty percent of the respondents have basic knowledge about elementary financial concepts such as interest rates, inflation and risk diversification (Lusardi, Mitchell and Curto, 2007). Following research of Sallie Mae (2009) into credit card behavior of American Students, financial literacy is a meaningful element of financial decision making and students indicate their desire to have more financial knowledge (Sallie Mae 2009). Research by Cude et al. (2006) explains that financially literate students were less likely to own a credit card compared with students who are less financially literate.

In the present study, financial literacy and practices are related to credit card usage and the attitude towards credits cards of students in the United States and the Netherlands. The purpose of this study is to find a significant relation between these variables.

2.1.3 Culture

In the past, several cross cultural researches go into the cause of attitudes towards money and provide evidence for cultural differences between populations. One of those studies is conducted by Baily and Lown (1993), which compares the attitude towards money between people in the United Kingdom and people in the United States of America. Some important

differences between the two populations were found in areas of socio demographic characteristic in relation with attitudes towards money (Baily and Lown 1993).

Baily and Lown (1993) suggest that these differences in attitude between the two populations are caused by cultural diversity in terms of family life and are influenced by the society in general. For instance, it was found that in American families, men have a more strict responsibility than women when it is about future money management compared with men in British families (Baily and Lown 1993). A subsequent study conducted by Tang (1993) demonstrated differences in the way people in Taiwan and the United States reflect on money. Important characteristics that are of influence on this perception are social, religious and political ideals (Tang 1993). As previously mentioned, cross-cultural differences are found for credit card attitudes between people living in urban regions or rural regions in the same country. Similarly, individuals from English and French speaking regions appear to exhibit such divergence (Kaynak et al. 1986). Research about the comparison of English and French speaking Canadians regarding their attitude towards and usage of credit cards, as executed by Chebat, Laroche and Mallette (1988), shows that the French speaking population is less likely to use a credit card compared with the English population. The French Canadians believe that a credit card comes in handy on holidays or emergency situations, while English Canadians believe a credit cards is very practical for paying expenses (Chebat et al., 1988).

The different studies described above provide evidence for the fact that cultural background of an individual affects attitudes towards and usage of a credit card. There are many ways to explore cultural differences between populations (Hofstede and Bond 1984, Hofstede 1994, 2004, Triandis and Gelfand 1998). Hofstede's (2004) definition of culture is as follows, "the collective programming of the mind that distinguishes one group or category of people from another".

Hofstede (1994) measures cultural differences based on five cultural dimension. These dimensions are successively; power distance, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity and long vs. short term orientation. The foundations of the first four dimensions came from Hofstede's study into cultural differences between employees working for the company IBM in 64 countries. The fifth dimension is added after a study by Bond (1988) among students in 23 countries. The five dimensions, as defined in several studies, can be described as follows;

Power Distance is the level of which the less powerful members of societies and organizations acknowledge that power is spread unequally. In societal terms power distance is related to social inequality and the totality of authority people have over others (Hofstede and Bond 1984).

Uncertainty Avoidance can be defined as the level in which people feel threatened by uncertain circumstances, and have a shaped idea and institutions that attempt to avoid such situations. In societal terms, uncertainty avoidance is the manner in which a society deals with arguments and violence (Hofstede and bond 1984).

Individualism vs. Collectivism, a individualistic culture is a culture in which people are believed to look after themselves and their direct family. A collectivistic culture is a culture in which people belong to a group that look after each other. In societal terms, individualism is more self-centered and collectivism is about the we-concept (Hofstede and Bond 1984). Although results from Hofstede's VSM 2008 suggest that both Americans and Dutch people are individualists, Dutch people tend to own more collectivistic characteristics than Americans (Hofstede, 2008).

Masculinity vs. femininity, following results from the value survey module (VSM) by Hofstede (2008), Americans are masculine and Dutch are feminine. In a masculine culture, people are driven by success, money and things and people are performance-oriented and assertive (Hofstede and Bond, 1984). In a feminine culture, people are tender, act humble and are driven by the quality of life (Hofstede and Bond, 1984).

The last dimension, *long vs. short term orientation*, can be defined as the dimension in which people are focused on a frugal lifestyle, think about their future and are perseverance in contrast to people who live today, that realize their social commitments, have respect for traditions and protect their proverbial face (Hofstede and McCrae 2004). Dutch people have shown to be long term orientated and American people to be short term orientated (Hofstede 2008). This long term orientation of Dutch people reflects on their financial decisions in terms of saving and pre plan expenditures (Hofstede, 2008). These findings highlight the possibility that Dutch people are less likely to use credit cards because they are long term orientated and Americans do use a credit card because they are short term orientated.

Although the Hofstede's dimensions are well known and used for many cross-cultural studies, there are still some constraints. Research by Sondergaard (1994), about the influence of

Hofstede's work in academic world, found three major limitations using Hofstede's dimensions. The first limitations is the outdated data which is collected between 1966 and 1973. Indicators for Hofstede's data, such as demographics, economics and politics, would change over time. A second limitation is the representativeness of the used population. The majority of employees from IBM at that time existed of men. Besides, employees of a huge company would not explicitly give an accurate impression of the population of a country as a whole. The third and last limitation is the developed attitude survey in general, that measures the different dimensions. (Sondergaard 1994).

Considering the constraints discussed above, there are other options to measure cross cultural differences between populations. Triandis, Bhawuk, and Gelfand, (1995) and Triandis, Chen and Chan (1998) originated a different view, using 32 attitudinal statements and 16 scenario questions, to study cultural differences between populations by making a distinction between horizontal and vertical dimension within the existing cultural dimension individualism and collectivism (Singelis et al, 1995). Regarding Singelis et al. (1995), the four developed dimensions are defined as Horizontal Individualism (HI), Vertical Individualism (VI), Horizontal Collectivism (HC), Vertical Collectivism (VC).

An individual categorized in dimension HI considers himself as independent and equal to others concerned to social status. Someone categorized in dimension VI, considers himself as independent but considers other people not as equal. Inequality is accepted and competition within a certain social group is important. A culture classified as HC, can be described as a group of individuals who consider themselves as part of a social group and consider each other as equals. On the other hand individuals classified as VC consider themselves as part of social group, but members of the social group are not each other's equals.

Findings from research by Triandis et al (1998) show that Dutch people have a higher score on HI and HC than Americans and Americans have a higher score on VI than Dutch. Initially, these result do not directly correspond to the findings from Hofstede (2008), which suggest that people from the United States are more individualistic compared to people from the Netherlands. However, the fact that Dutch people are more horizontally orientated implies that people consider themselves as equals compared with others in the society and are less result driven compared with vertically orientated people. This is consistent with the idea that Dutch people are more feminine and people from the United States are more masculine (Hofstede 2008).

2.2 Hypotheses

The previously discussed literature underlies the hypotheses that can be formed for the purpose of the present research. The formulated hypotheses will be covered in the current paragraph. In order to express and strengthen these hypotheses, a theoretical framework is drawn. The framework consists of different constructs which are related and communicate expectations (hypotheses) to each other. These constructs are divided in dependent and independent variables. The dependent variable in this framework is credit card usage among students, which is expected to be influenced by several independent variables, such as attitude, financial practices, financial literacy, cultural aspects and demographic characteristics.

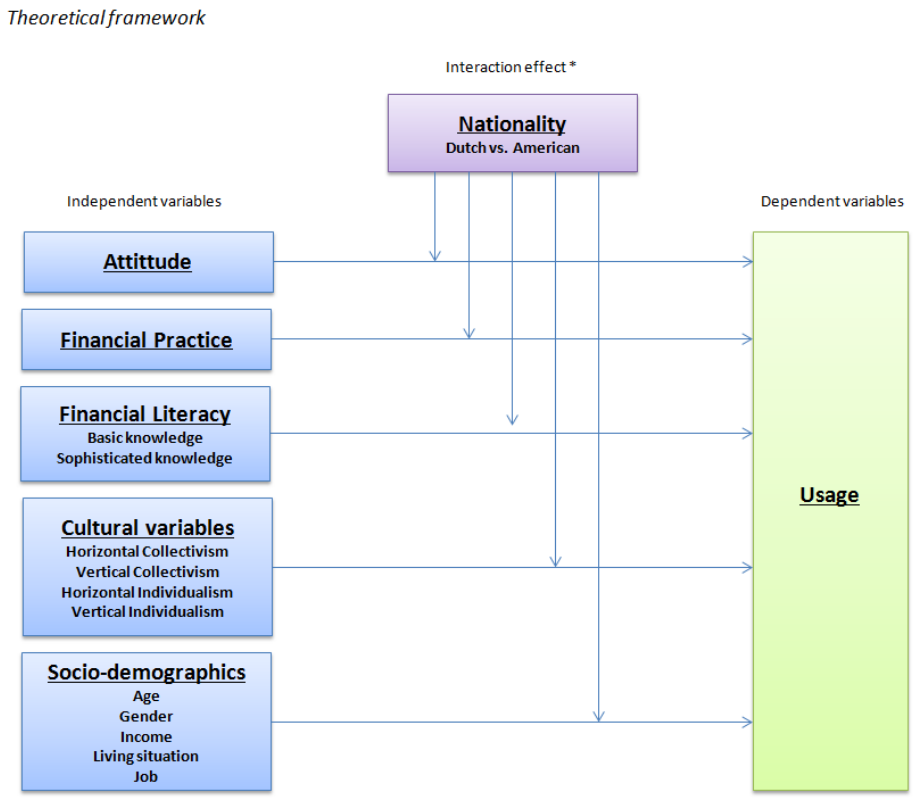

Figure 1. *Theoretical framework that displays expected relationships between dependent and independent variables.*

Regarding Figure 1, the following hypotheses are formulated and examined to investigate the research questions in the present study. Research by Xiao et al. (1995), Hayhoe et al. (2000) and Warwick and Mansfield (2000) found that students using credit cards tend to have favorable feelings and attitudes towards the practice of credit cards. In addition, research by (Nibud 2010) and (Sallie Mae 2009) revealed that Dutch students lack using credit cards compared with U.S. students, who use credit cards without restraint, which highlights the

possibility that Dutch students tend to have a less favorable attitude towards using credit cards and, therefore, are less likely to use credit cards compared with U.S. students. These findings suggest that attitudes towards credit cards have explanatory power for the usage of a credit card. Therefore, the following hypotheses are proposed;

H1a: Students attitude towards credit cards predict credit card usage for students.
H1b: The influence of attitude towards credit cards on the credit cards usage depends on the nationality of the student.

Results from previous studies by Robb (2011), Warwick & Mansfield (2000) have indicated that the majority of students using credit cards do not have sufficient financial knowledge concerning their own credit. Besides, Chen and Volpe (1996) found a significant relationship between adequate financial decision making and knowledge about financials of students. Hilgart and Hogarth (2003) contributed that people who save money and are more concerned about their financials act more financially responsible. Based on these findings, it is reasonable to expect that credit cards usage among students is related to their financial knowledge regarding dealing with financials. Previously discussed literature indicates that Dutch students are less likely to use credit cards, which emphasizes the possibility that Dutch students are more concerned in managing their financials compared with U.S. students. Therefore, the following hypothesis is postulated;

H2: Responsible decision making of students, regarding financial management, has a negative influence on credit card usage among students.

The discussed prior studies into financial literacy found a significant relationship with credit card behavior of people. Lusardi and Mitchell (2007) are questioning whether people who are active in financial markets and use financial products, possess sufficient financial literacy to deal with it in the right way. Their study revealed that people lack literacy of even the most basic economic principles. Another study by Lusardi and Tufano (2009) showed that people who are less financially literate tend to live beyond their means and finance these means with loans and credit cards. Research among the student population explained that financial illiteracy is widespread and students with few financial knowledge are more likely to use credit cards (Mandell, 2004; Cude et al., 2006). It is aimed to examine whether these finding also apply in the case of Dutch and U.S. students in the present study. Therefore, the following hypothesis is proposed;

H3: Financial literacy has a negative influence on credit card usage of students.

Cultural differences between populations have an important role in the way people manage their financials and look at credit card usage (Kaynak et. al., 1986; Baily and Lown, 1993 and Tang, 1993). Bailly and Lown (1993) found that differences in attitude and money behavior between populations are caused by cultural diversity in terms of family life and the society they live in. A previously discussed research by Chebat et al. (1988), found that English speaking Canadians are likely to use a credit card, while French speaking Canadians are unlikely to use credit card. The present study examined the differences between two cultures, to be exact the Dutch and U.S. culture. Following Hofstede (2008), both cultures are individualistic. However, Dutch people also tend to own more collectivistic characteristics. Besides, important differences are that Dutch people live in a feminine culture and are long term orientated, rather than the masculine and short term orientated culture U.S. people live in. Triandis et al. (1998) suggest to make a distinction between horizontal and vertical dimension within the existing cultural dimension individualism and collectivism described as Horizontal Individualism (HI), Vertical Individualism (VI), Horizontal Collectivism (HC), Vertical Collectivism (VC). As previously mentioned, research by Triandis et al. (1998) indicates that Dutch people have a higher score on HI and HC than Americans and Americans have a higher score on VI than Dutch. Supposing that, Dutch people are more horizontally orientated, there can be assumed that Dutch people consider themselves as equals compared with others in the society and are less result driven compared with vertically orientated people like Americans. These findings highlight the idea that people living in the Netherlands are less likely to use credit cards compared with people living in the U.S. Based on the cultural dimensions founded by Triandis et al. (1998) the following hypotheses are proposed;

H4.a: Cultural dimension VC, has a positive influence on credit card usage of students.
H4.b: Cultural dimension HC, has a negative influence on credit card usage of students.
H4.c: Cultural dimension VI, has a positive influence on credit card usage of students.
H4.d: Cultural dimension HI, has a negative influence on credit card usage of students.

As aforementioned, demographic characteristics appear to have both positive as negative influence on usage of credit cards. Hayhoe et al. (2000) found that females are more risk-averse in relation to their financial spending, compared to male students, and females are more likely to save money for daily spending. It is therefore interesting to investigate whether gender influences the usage of credit cards.

Another research by Cude et al. (2006), stated that students with high academic backgrounds are unlikely to use credit cards. On the other hand, students have above average expected future incomes and low present earnings, such that they are not presumed to have difficulties with repayment. It is interesting to investigate the educational influence (in either way) on credit card use. Besides, it can be assumed that students living on their own need more money for everyday live than students living at their parents. The need for credit may therefore be lower among students that do not have many financial responsibilities. Also the age of students can impact credit card usage, given that older students may have more financial responsibilities and needs to fulfill. Given that in the present study the relationship between different demographic characteristics and the usage of credit cards are used to obtain additional insights, the following hypotheses are proposed;

H5.a: Male students have a positive influence on credit card usage, compared with female students who are less likely to use a credit card.

H5.b: Age has a positive influence on having a credit card.

H5.c: Level of education has a positive influence on credit card usage.

H5.d: Income of a student has a negative influence on credit card usage.

H5.e: Spending level of a student has a positive influence on credit card usage.

H5.f: Living at their parents has a negative influence on credit card usage, compared with living on their own, which is more likely to have a positive influence.

All the previously discussed hypotheses measure the direct effects and correlations between the presented variables and credit cards usage among students. However, an important variable in the present theoretical framework is the presence of nationality as a moderator, to test whether nationality is of influence for the relationship between the independent variables, such as attitude, and credit cards usage among students.

3. METHODOLOGY

This chapter will describe the research method and design of present study. First the research design will be explained. Subsequently, the examined population and sample size of the present study will be described. Thereafter, the way in which the research is organized and the measurement of variables will be discussed. Finally, the types of data analyses are presented.

3.1 Research method

The present study attempts to find reasons for why Dutch students are not likely to use credit cards and U.S. students do. To find these underlying motives, a quantitative research method is used to obtain the data for analysis. The present quantitative research method involves a questionnaire which is completed by respondents. These respondent are Dutch and American students who were asked to complete the questionnaire. Data from the questionnaire is used for statistical evidence on which conclusions can be drawn.

Initially the questionnaire is composed in English. However, all the respondents received the questionnaire in their native language, which means that the questionnaire is translated into Dutch. Obviously, the questions asked remained the same for both groups of respondents. To verify the correctness of the questions' translations and to avoid misinterpretations, the questionnaire has been read and checked by numerous persons, before it was spread among the respondents.

The questionnaire is made and distributed with a free, online tool called thesistools. With this tool, the questionnaire was spread among Dutch respondents via facebook and email. To reach American respondents, the questionnaire was in addition distributed via Amazons Mturk. MTurk is a website where so called workers with specific characteristics, are paid to complete multiple tasks, such as answering questionnaires. A limitations using MTurk is that everyone with an Amazon account can complete the questionnaire. To minimize this bias, American respondents are asked to leave their account number at the end of the questionnaire, which is checked to be sure the respondent is really an American student.

3.2 Population and sample size

The population examined in the present study consists of students in the Netherlands and United States. In the Netherlands, there are approximately 240,000 registered students at different Universities and around 415,000 registered students at different Universities of Applied Sciences (CBS, 2011). Compared to this population of students in the Netherlands, the student population in the United Stated is enormous.

Given the size of the two groups of students, it is impossible to reach a sample of student that is large enough to represent the complete population of Dutch and U.S. students, with the limited resources and small timeframe available. Therefore, a non-random sample is used, called a convenience sample. With this kind of sampling, data is collected from respondents which can be easily and rapidly reached.

To obtain data from Dutch students, the survey is spread online via e-mail and social media. The survey contains questions regarding usage of credit cards, the attitude towards credit cards, financial literacy, financial practices and demographic characteristics. A concern is the potential non-respond rate because students might see this way of approaching as spam. In total, 210 Dutch students started answering the online survey, from which 122 totally completed the survey and therefore could be used for statistical analyses. Approximately 90 surveys were lost due to incompleteness or dishonestly answering the survey. To compare Dutch students with U.S. students, the survey is distributed with Amazon's MTurk. In total 140 respondents completed the survey from which 118 were used for analyses.

3.3 Questionnaire

The present study involves several variables, such as, credit card usage (dependent variable) and attitude, financial literacy, financial practices, culture and demographic characteristics (independent variables). All the variables are added together in the present questionnaire, which is shown in Appendix A. The questionnaire begins with a short introduction about the purpose of the study, time needed to complete the questionnaire and respondents are thanked for their participation. Important is that respondents are informed about the complete anonymity and will only be used for scientific purposes. The second part of the questionnaire consists of questions and statements which measure all previously mentioned variables. This part begins with questions about demographic characteristics of the students to start slowly and let respondents adjust. Subsequently, questions are asked which go deeper into the behavioral variables and need more attention. At the end of questionnaire, respondents are once again thanked for their participation.

All the questions and statements in the second part of the questionnaire are measured using scales from prior studies. The scales used and the way these variables are measured will be discussed below.

Credit card usage

The usage of credit cards is used as the dependent variable. In order to measure the dependent variable, students will simply be asked if they do or do not use a credit card. This variable takes either the value one (in case a student uses a credit card) or the value zero (in case a student does not).

(Socio-) Demographic characteristics

Demographic characteristics are used to examine potential relationships between different characteristics of respondents and credit cards usage. Besides, these characteristics might provide an overview of the respondents that are involved in this study. Characteristics that are examined include gender, age, level of education (University, college), income, spending level, employment and living situation (student room, parents home, own apartment/flat).

Attitude

The attitude of students can be measured using a simplified version of the model developed by Xiao et al. (1995). In their study, the attitude of students is based on a series (total of thirty-seven) of affective, cognitive and behavioral statements, related to feelings towards credit cards. Each statement was rated on a likert-scale resulting in a summated index. Hayhoe, Leach, Turner, Bruin & Lawrence (2000) used only four affective statements rated with a five-point likert-scale (1=strongly disagree, 5=strongly agree), to measure the attitude of students towards credit cards. Warwick & Mansfield (2000) used four statements from which students had to choose the one that most closely described their feelings towards a credit cards. In the present study, the statements of Warwick & Mansfield (2000) are used and rated with a five-point likert-scale (1=strongly disagree, 5=strongly agree). The four statement used are subsequently; *credit cards are the best thing man ever invented, credit cards are good, if used properly, credit cards are not the best way to manage money and Credit cards are the worst thing man ever invented.*

To determine the attitude of Dutch students, a summated index is created resulting from the four statements. In this case, the third and fourth statement are reverse coded, to give a correct representation of the attitude.

Financial practices

Previous studies have emphasized on students using a credit card to measure their financial practices. For instance, Warwick & Mansfield (2000) assume that the majority of students uses a credit card and therefore emphasized on students' knowledge of their own credit card

to investigate financial knowledge/practices. In addition, Jones (2005) and Robb (2011) used six questions about credit management to measure financial knowledge of students using a credit card. These studies do not add much value to the present study, given that only a small fraction of Dutch students does use credit cards (Nibud, 2009). To measure financial knowledge in the present study, the focus is on how students manage their financials in general. Hayhoe et al. (2000) present a financial practices index. First, students are asked to rate ten statements about dealing with their financials, measured on a four-point likert-scale (1= never, 4= always). Subsequently, an index is formed by summation of these responses. A simplified version of this method is used to measure financial practice. Five statements, such as for example *I save money on a regular basis* or *I purchase goods when I have insufficient funds in the bank*, are measured on a five-point likert-scale (1= never, 5= always). From the results, a summated index is created. All the five statement are shown in Appendix A and B.

Culture

Prior studies suggest that cultural differences between populations can be measured by making a distinction between horizontal and vertical dimensions within the existing cultural dimension individualism and collectivism (Singelis et al, 1995, Triandis et al. 1995, 1998 and Soh and Leong, 2002). In the present study, a modified version of the measure from Singelis et. al (1995) is used, as introduced by Triandis and Gelfand (1998). To measure the four cultural dimensions, HI, VI, HC and VC, sixteen statements (four items per dimensions) are given, such as for example *(VI) Winning is everything, (HI) I would rather depend on myself than on others , (VC) Family members should stick together, no matter what sacrifices are required and (HC) I feel good when I cooperate with others,* which the respondents rated on a 7-point likert-scale ranging from 1 (strongly disagree) to 7 (strongly agree). For each dimension, the score of the four related statements is summated, which presents an individual score for every respondent on each dimension. All sixteen statement are subsequently presented in Appendix A and B.

Financial literacy

Van Rooij, Lusardi and Alessie (2007) developed a model to measure financial literacy, on behalf of the Dutch DNB who held a survey among households. This model is divided into two sections. In the first section, five question are used related to basic financial literacy. Areas of basic financial literacy measured in this section are numeracy, compound interest, inflation, time value of money and money illusion (Lusardi & Mitchell, 2007).

For example numeracy is measured with the following question; Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

In the second section, eight questions are used related to more sophisticated financial literacy. Areas of more sophisticated financial literacy measured in this section are the function of the stock market, risk, mutual funds, time value of money and money illusion (Lusardi & Mitchell, 2007). A question used to measure more sophisticated financial literacy is for example; True or false? Buying a company stock usually provides a safer return than a stock mutual fund.

All the thirteen questions of Van Rooij et. al. (2007) have multiple answer possibilities from which a respondent needs to make a choice. However, only one answer is correct. In the present study, basic and sophisticated financial literacy is measured by summing the total correct answers given per section. All the thirteen questions are subsequently shown in Appendix A and B.

3.4 Validity and reliability

A condition for research is that used items measure what needs to be measured, identified as validity. As previously described, the current study makes use of validated measurements proven in prior literature, to examine the different variables. Consequently, this study meets conditions of internal validity. Another condition of research is that results are more than just a single observation and therefore are repeatable. This requirement is called reliability. Given that the used items and scales are already tested, with for example Cronbach Alpha, in prior studies, this research meets the requirements of reliability.

3.5 Analyses

All the analyses are performed with SPSS statistics, version 20. To explain the use of credit cards by the different explanatory variables, as presented in the previous paragraph, a logistic regression is used. In the present study, the outcome variable can only display two possibilities, uses a credit card or does not use a credit card. Therefore, a logit model is used to quantify relationships between credit cards usage and all the possible predictor variables.

To find out whether nationality of the students influences the predictor variables in relation with credit card usage, we include an interaction effect for each of the predictor variables with a nationality dummy variable in the regression model. Considering the possibility of multicollinearity between variables when all interaction effects are performed in one model,

each interaction effect is separately analyzed. Therefore, analyses include fifteen regression models, which consist of one model with only the direct effects of the predictor variables on credit card usage and fourteen models with the direct effects and one interaction effect. This means, however, that values for the coefficients of the direct effects fluctuate for the different performed models. Therefore, there is decided to interpret the direct effect of a variable in the model where it is also added as an interaction effect. The following specification for the probability that a student uses a credit card is used:

$$P(Y_i = 1|X_i) = \frac{1}{1+e^{-(\beta' X_i + \gamma N_i Z_i)}}, \quad (1)$$

which is for each interaction effect separately analyzed, and in which Y_i indicates whether student i uses a credit card ($Y_i = 1$) or not ($Y_i = 0$), X_i represents the vector of predictor variables, Z_i represents the predictor variable for which the interaction effect is considered, β denotes the parameter vector of direct effects, N_i represents a dummy variable indicating whether student i is American ($N_i = 1$) or Dutch ($N_i = 0$) , and γ denotes the parameter of the interaction effect of the considered predictor variables in Z_i and the nationality indicator. Besides a constant, X_i contains demographic characteristics (gender, age, education level, income, spending level and living situation), the attitude regarding credit cards, financial practices, cultural measures (VC, HC, VI and HI) and financial knowledge (both basic and sophisticated). As previously mentioned, the interaction effect for one of the predictor variables is considered in addition to these direct effects, in each of the fourteen models, denoted by γ.

In addition, descriptive statistics are used to present more information on possible differences between Dutch and U.S. students. With a variance analyses called ANOVA, the significance of differences between population averages of Dutch and U.S. students is examined.

Furthermore, a correlation matrix is performed, for both populations separately, to examine coherency between the variables in the model. However, these values can only support the results from regression analyses, because no conclusions about causality can be drawn from Spearman's rho correlations. Therefore, results are presented in Appendix F and not used for further research.

Conclusions based on the results from our data analyses need to be statistically significant before they are worth further discussing. Therefore, a confidence interval of 95%, or in other words a significance level of 5% is used for all the performed analyses and tested hypotheses.

4. RESULTS

The current chapter presents all the results from the performed data analyses. First descriptive statistics of the variables are presented, which will reveal possible differences between Dutch and U.S students. Subsequently, the results are shown for each tested hypotheses. In this case, the hypotheses tested will be accepted or rejected.

4.1 Descriptive results

Employing ANOVA's, the purpose of our analysis of descriptive statistics is to identify significant differences between Dutch and U.S. students related to credit cards usage, socio-demographics, financial practices, financial knowledge and culture. Results are reported in Appendix C and D and described separately for each variable below.

Credit card usage

As reported in Appendix D, there is a significant difference between Dutch students and U.S. students regarding credit card usage, $F(1,238) = 25.013$, $p = 0.000$. Only 29,5 percent of the Dutch students has indicated to use one or more credit cards, compared with 60,3 percent of U.S. students. Although, these percentages do not completely correspond with findings from Sallie Mae (2009) and Nibud (2010), the difference in credit card usage between the two populations is clearly demonstrated.

Socio-demographics

Results from the ANOVA test, presented in Appendix D, reveal significant differences between Dutch students and U.S. students related to age $F(1,238) = 10.628$, $p = 0.001$, spending level $F(1,238) = 6.221$, $p = 0.013$ and living situation $F(1,238) = 46.243$, $p = 0.000$. On average, the age of Dutch students who have participated in this study is twenty two and a half, while the average age of U.S. students is almost twenty four. Worth mentioning is that the spending level of U.S. students is in general higher compared with Dutch students. Also, U.S. students are more likely to have their own apartment or dorm room, while Dutch students are more likely to live at their parents' house. Reasonably, one might expect students living on their own to have a higher spending level compared to student who live at their parents.

Attitude

The expectation is that Dutch students tend to have a more negative attitude towards using credit cards compared with U.S. students. Surprisingly, no significant differences are found, $F(1,238) = 0.047$, $p = 0.829$, in the attitude towards using credit cards between Dutch and U.S. students. Attitude is measured with a summated index from which the mean score can range from one (negative) to five (positive). Results in Appendix C and D present that a Dutch student's attitude, *mean* = 2.951, is on average slightly more negative compared to the attitude of U.S. students, *mean* = 2.973. However, as explained before, the difference in attitude is not significant which means the attitude of both groups could not be considered unequally.

Financial practices

Financial practices in the present study can be described as the way in which students act and are concerned regarding management of their financials. Results from the ANOVA test as presented in Appendix D, show a significant difference between Dutch students and U.S. students dealing with their financials, $F(1,238) = 46.691$, $p = 0.000$. Financial practices is measured with a summated index. The mean score can range from one (negative) to five (positive). The scores on financial practices as presented in Appendix C and D show for Dutch students, *mean* = 3.144, a lower score compared with U.S. student, *mean* = 3.749. These results suggest that U.S. students are more concerned dealing with their financials than Dutch students. Interestingly, previous results show that U.S student are more likely to use credit cards. Reasonably, one might expect people who are more concerned about their financials to act more financially responsible, and therefore to be less likely to use a credit card to pay for their needs.

Financial literacy

In the present study, financial literacy of students can be explained as the understanding and knowledge of financial concepts. Financial literacy of the students is divided in basic and sophisticated knowledge. Measures of both variables are based on the number of correct answered questions. According to the results as presented in Table 1, significant differences are identified for basic knowledge between Dutch and U.S. students, $p < 0.05$, and no significant difference is demonstrated for sophisticated knowledge, $p > 0.05$. These results suggest that Dutch students have a better understanding of basic financial concepts compared with U.S. students while the understanding of sophisticated concepts is equal for both groups.

Table 1. Results Financial Literacy

Financial Literacy	**Mean** *correct answers*	***F*** *(1,238)*	**Sig.** *(p)*
Basic knowledge *(five questions)*			
Dutch students	4.15	9.743	0.002
U.S students	3.68		
Sophisticated knowledge *(eight questions)*			
Dutch students	4,43	1.443	0.231
U.S students	4,75		

Cultural dimension

Although both Dutch and U.S. students live in individualistic cultures, prior research suggests that there are differences within individualistic and collectivistic cultures. Therefore, the two dimensions of individualism and two dimensions of collectivism (Singelis et al. 1995) are examined. With ANOVA's, differences across the population of Dutch and U.S. students are revealed, which are shown in Table 2.

Table 2. Result cultural dimensions

Culture	**Mean** Dutch student	***Mean*** U.S. student	***F*** (1,238)	**Sig.** (*p*)
Vertical Collectivism (VC)	4.375	5.013	18.727	0.000
Horizontal Collectivism (HC)	5.041	5.098	0.242	0.623
Vertical Individualism (VI)	4.631	4.434	1.739	0.188
Horizontal Individualism (HI)	4.879	5.598	27.524	0.000

Only for HI ($p < 0.05$) and VC ($p < 0.05$), significant differences between Dutch and U.S. students are identified. These findings suggest that U.S. students are more horizontally individualistic and vertically collectivistic than Dutch students. However, more important are the mean scores which suggest that Dutch students scored higher on HC (*mean* = 5.041) than on HI (*mean* = 4.879), VI (*mean* = 4.631) and VC (*mean* = 4.375). These results indicate that Dutch students are likely to be horizontally collectivistic. That is, they consider themselves as part of a social group and equal to everyone within that social group. As is apparent from Table 2, U.S. students scored higher on HI (*mean* = 5.041) than on HC (*mean* = 5.041), VC (*mean* = 5.041) and VI (*mean* = 5.041). This finding indicates that U.S. students consider themselves as independent and equal to others concerned to social status. It can be stated for both populations that they see themselves to be the same as others.

However, an important difference between both groups is the slightly preferred individualistic character of the U.S. students against the slightly preferred collectivistic character of the Dutch students.

4.2 Hypotheses results

In this section, the previously postulated hypothesis are tested. As previously mentioned, given that credit card usage can only display two possibilities, a logistic regression is performed to explain the effect of the above discussed explanatory variables, as parameters, on credit cards usage. To find out whether nationality influences the effect of these parameters, nationality is interacted with each of the explanatory variables in the regression model. The coefficients and *p*-values of the parameters are reported in Appendix E.

As is evident from Appendix E, only age, income and attitude appear to have a statistically direct effect on credit card usage among students. This indicates that credit card usage depends on the attitude of students towards credit cards, the income level of a student and a student's age. Looking at the models with the interaction effect of student nationality, only a significant result is found for the cultural variable vertical collectivism. As previously marked, all the postulated hypotheses are tested in this paragraph. To clarify whether the hypotheses are accepted or rejected, all the hypotheses are covered separately below.

4.2.1 Attitude

To examine whether attitude predicts credit card usage among students, the following previously determined hypotheses are tested:

H1a: Students' attitudes towards credit cards predict credit card usage of students.

H1b: The influence of attitude towards credit cards on credit cards usage depends on the nationality of the student.

Results presented in Table 3, show a direct relationship between the attitude towards credit cards and credit cards usage ($p < 0.01$). Therefore H1a is accepted. Regarding the coefficients ($B = 1.266$) shown in Table 3, the likelihood of credit card usage is stronger for students with a positive attitude towards credit cards. Although attitude seems to have a direct effect on credit cards usage, there is no significant interaction effect found for nationality ($p > 0.05$). Therefore, H1b is rejected. This findings suggest that attitude predicts credit card usage regardless the nationality of the respondent.

Table 3.Results Logistic Regression models *(Attitude, Financial practices and literacy)*

	General (direct effects)	**Attitude** (Interaction)	**Financial P.** (Interaction)	**B. Knowl** (Interaction)	**S. Knowl.** (Interaction)
	Coefficient *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*
Constant	-9.543	-10.373	-10.832	-9.504	-9.196
Gender	.201	.210	.170	.201	.223
Age	.157**	.143**	.159**	.156**	.152**
Education	.347	.360	.411	.349	.363
Income	.458*	.448*	.438*	.458*	.486*
Spending Level	.087	.092	.125	.087	.070
Living Situation	.040	.043	.022	.041	.052
Attitude	.916***	1.266**	.907***	.916***	.923***
Financial Practices	.059	.047	.456	.060	.020
VC	-.128	-.136	-.138	-.127	-.126
HC	-.108	-.099	-.079	-.105	-.073
VI	.133	.133	.110	.135	.150
HI	-.012	.000	.005	-.012	-.032
Basic Knowledge	.095	.100	.054	.079	.075
Sophisticated Knowledge	.015	.009	.028	.014	-.060
Dum. Nationality	1.432**	3.214**	3.642**	1.321	.686
Attitude*Nationality		-.577			
Financial P.*Nationality			-.661		
Basic K.*Nationality				.028	
Soph. K.*Nationality					.171

*** significant for $p < 0.01$
** significant for $p < 0.05$
* significant for $p < 0.10$

4.2.2 Financial practices

To examine whether responsible financial practice predicts credit card usage of students, the following postulated hypothesis is tested:

H2: Responsible decision making of students regarding financial management, has a negative influence on credit card usage among students.

Results in Table 3 reveal no significant effect between financial practices and credit cards usage, ($p > 0.05$). Therefore, hypotheses H2 is rejected.

4.2.3 Financial literacy

To test whether financial literacy influences credit card usage of students, the following postulated hypothesis is examined;

H3: Financial literacy has a negative influence on credit card usage of students.

Findings presented in Table 3 show no significant effects between financial literacy and credit cards usage, ($p > 0.05$). Therefore, hypotheses H3 is rejected.

4.2.4 Cultural dimensions

To investigate whether cultural dimension influences credit card usage of students, the following postulated hypotheses are examined;

H4.a: Cultural dimension VC, has a positive influence on credit card usage of students.
H4.b: Cultural dimension HC, has a negative influence on credit card usage of students.
H4.c: Cultural dimension VI, has a positive influence on credit card usage of students.
H4.d: Cultural dimension HI, has a negative influence on credit card usage of students.

Results in Table 4 found a significant negative relationship between vertical collectivism and credit cards usage ($p < 0.05$). Unfortunately, a positive relationship is hypothesized. Looking at the other variables, no significant effects are found for the variables horizontal collectivism, vertical individualism and horizontal individualism. Therefore, all hypotheses H4 are rejected, However, it is worth mentioning that the in interaction model in Table 4 reveals a significant interaction effect for nationality on vertical collectivism ($p < 0.05$) and an almost significant direct effect ($p < 0.10$, to be exact 0.056), which indicates that the effect of vertical collectivism on credit cards usage differs for Dutch students and U.S. students. More clearly, the coefficient for the direct effect (B = -0.497) and the interaction effect (B = 0.669) suggest that Dutch students with a high score for vertical collectivism are less likely to use a credit card (B = -0.497), while U.S. student with a high score for vertical collectivism are more likely to use a credit card (B = -0.497+0.669). For the three other cultural dimensions, no significant interaction effects are found.

Table 4. Results Logistic Regression models *(Cultural dimensions)*

	General (direct effects)	**VC** (Interaction)	**HC** (Interaction)	**VI** (Interaction)	**HI** (Interaction)
	***Coefficient** (B)*	***Coefficient** (B)*	***Coefficient** (B)*	***Coefficient** (B)*	***Coefficient** (B)*
Constant	-9.543	-8.019	-9.901	-9.500	-8.981
Gender	.201	.102	.207	.198	.222
Age	.157**	.154**	.157**	.157**	.159**
Education	.347	.257	.357	.345	.366
Income	.458*	.479*	.452*	.459*	.494*
Spending Level	.087	.027	.088	.085	.057
Living Situation	.040	.049	.039	.041	.045
Attitude	.916***	.974***	.917***	.917***	.921***
Financial Practices	.059	.056	.066	.061	.059
VC	-.128	-.497*	-.124	-.126	-.105
HC	-.108	-.120	-.047	-.109	-.138
VI	.133	.149	.134	.120	.153
HI	-.012	.015	-.005	-.011	-.169
Basic Knowledge	.095	.118	.089	.096	.105
Sophisticated Knowledge	.015	.024	.012	.015	.007
Dum. Nationality	1.432**	-1.635	2.018	1.328	.005
VC*Nationality		.669**			
HC*Nationality			-.117		
VI*Nationality				.022	
HI*Nationality					.279

*** significant for $p < 0.01$
** significant for $p < 0.05$
* significant for $p < 0.10$

4.2.5 Socio-demographics

To find out whether socio-demographics influence credit card usage among students, the following previously postulated hypotheses are examined:

H5.a: Male students have a positive influence on credit card usage, compared with female students who are less likely to use a credit card.

H5.b: Age has a positive influence on having a credit card.

H5.c: Level of education has a positive influence on credit card usage.

H5.d: Income of a student has a negative influence on credit card usage.

H5.e: Spending level of student has a positive influence on credit card usage.

H5.f: Living at their parents has a negative influence on credit card usage, compared with living on their own which is more likely to have positive influence.

As presented in Table 5, the general model shows a positive significant effect for age ($p < 0.05$, $B = 0.157$) and income level ($p < 0.10$, $B = 0.458$) on credit cards usage. More clearly, the higher the age of a students and the higher the income, the more likely a student is to use a credit card. Therefore, hypothesis H5.b is accepted. Hypothesis H5.d is rejected because a negative effect was expected. Unfortunately, no significant effect is found when both variables are separately included in the interaction model. For the other socio-demographics variables no significant effect is found on credit cards usage of students, ($p > 0.05$). Therefore, hypotheses H5.a, H5.c, H5.e and H5.f are rejected.

Table 5. Results Logistic Regression models *(Socio-demographics)*

	General (direct effects)	**Gender** (Interaction)	**Age** (Interaction)	**Education** (Interaction)	**Income** (Interaction)	**Spending** (Interaction)	**Living S.** (Interaction)
	Coefficient *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*	***Coefficient*** *(B)*
Constant	-9.543	-10.494	-9.591	-9.675	-9.347	-9.362	-9.536
Gender	.201	.650	.201	.188	.236	.202	.196
Age	.157**	.162**	.159	.153**	.151**	.155**	.156**
Education	.347	.320	.345	.497	.362	.370	.344
Income	.458*	.399*	.458*	.462*	.358	.450*	.460*
Spending	.087	.131	.087	.077	.082	.000	.085
Living S.	.040	.016	.039	.037	.036	.038	.062
Attitude	.916***	.935***	.916***	.912***	.930***	.925***	.915***
Financial P.	.059	.057	.060	.074	.046	.045	.060
VC	-.128	-.110	-.127	-.116	-.135	-.143	-.126
HC	-.108	-.072	-.108	-.111	-.093	-.092	-.108
VI	.133	.151	.133	.136	.136	.135	.131
HI	-.012	-.019	-.012	-.016	-.003	-.012	-.012
Basic K	.095	.082	.095	.092	.095	.098	.093
Sophis K.	.015	.014	.015	.012	.020	.014	.015
Dum. Nat	1.432**	2.668**	1.503	1.812	.975	1.090	1.504*
Gender*Nat		-.870					
Age*Nat			-.003				
Education*Nat				-.270			
Income*Nat					.193		
Spending*Nat						.176	
Living S.*Nat							-.038

*** significant for $p < 0.01$
** significant for $p < 0.05$
* significant for $p < 0.10$

5. GENERAL DISCUSSION

In the next section, a conclusion is given and the results from data analyses are discussed, followed by the limitations of the study as a whole and openings for further research.

5.1 Conclusion

In the present study, different factors are observed that could clarify underlying reasons for credit card usage among students. By examining these factors there is sought to find and explanation for the difference in credit card usage between Dutch students, from which a small number uses credit cards and U.S. students, who use credit cards without restraint. More clearly, the number of Dutch students using a credit card lags far behind credit card usage of U.S. students. Therefore, the current study answers the following problem statement; *What drives credit card usage among students, in a context where Dutch students do not use credit cards compared to U.S. Students who do use credit cards without restraint?*

The examined factors that could answer previously postulated research questions and collectively explain the problem statement are subsequently, the effect of attitude towards credit cards, financial literacy, financial practices, cultural dimensions and other socio-demographics. To investigate whether these factors are of influence on credit card usage, a logistic regression model was conducted. To explain the extent to which Dutch students and U.S. are different from each other regarding these parameters, ANOVA tests are used.

Unfortunately, there can be concluded that the present study has not found a clear answer about what the drivers are behind credit cards usage among students that could explain the difference between the two populations. In this case, the difference between Dutch students and U.S. students. Findings suggest that age, income, attitude towards credit cards and the cultural dimension VC can predict credit card usage. However, there are no significant differences found between the two populations regarding attitude and VC. For other variables such as financial practice, spending level, living situation and the cultural dimensions, interesting differences are found. Unluckily, all these variables seem not to have any influence on credit card usage. This result implicates that there are probably other (unobserved) and deeper underlying reasons that can explain the huge discrepancy in credit card usage between Dutch student and U.S. students. This discrepancy shows to be a more difficult phenomenon to clarify than previously thought.

5.2 Discussion

Initially, the present research is conducted in a response to prior research by Sallie Mae (2009) and the Nibud (2010), which has shed light on the difference between the number of Dutch students and U.S. students concerning credit card usage. Therefore, it is satisfying that the present study reveals a difference between the number of credit card users of Dutch students and U.S. students that is consistent with prior research.

As consistent with the proposed hypotheses regarding attitude towards credit card usage, as well as with findings from Etzel and Jones, Kaynak et al. (1986) and Warwick and Mansfield (2002), a positive effect is found for attitude towards credit cards on credit card usage. Obviously, this finding suggests that a student that has a more positive attitude is more likely to use a credit card. Interestingly, no discrepancy is found between the attitude towards credit cards of Dutch students and U.S. students, while one might expect Dutch students to have a more negative attitude, given the small number of students using a credit card. A possible clarification for this finding, as stressed by Warwick and Mansfield (2000), is that a positive attitude can be seen as a realistic opinion about credit cards. Therefore, Dutch students might consider credit card usage as a good payment method you can fall back on, such as in an emergency situations.

Previous studies found that financial practices, financial literacy, and socio-demographics influence credit card usage in positive as well as negative directions (Chen and Vople, 1996; Cude et al., 2006; Hayhoe et al., 2000; Hilgart and Hogart, 2003 and Mandell, 2004). The present study confirms these findings for social demographic variables, age and income. Against the odds, the present study has not been able to reveal direct effects of financial practices, financial literacy, and socio-demographics such as gender, spending, living situation and education, on credit card usage of both student populations. Therefore, the proposed hypotheses for all of these previously stated areas could not be confirmed. Possible inabilities of the research, which might have affected the present findings, are discussed later, together with other limitations of this study.

However, analyses within previously discussed areas have still discovered interesting differences between Dutch and U.S. students, which are worth mentioning. U.S. students are more likely to live on their own and their spending level is high, while Dutch students are more likely to live at their parents' home and have a relatively low spending level on average.

This seems to be logical, having an own apartment will lead to higher expenses compared to living at their parents' house. Besides, the necessity to move out because of the travel distance is much lower for Dutch students compared to U.S. students. Furthermore, a difference is found in the way students manage their financial matters.

Following Hilgert and Hogart (2003), people who are concerned about their financial matters act more financially responsible. Against expectations, findings reveal that U.S. students are more concerned managing financial matters compared with Dutch students. One might expect U.S. students to be less concerned when looking at, for instance level of debt, spending level and the number of students that actually use a credit card. Because this result deviates strongly from the expectations and the reality, the question raises whether the U.S. respondents have tried to present their selves differently than they really are and therefore did not answer the questions in the survey honestly. However, a possible reasoning might be a behavioral change of U.S. students caused by the economic downfall in the United States, which initiated more financially responsible behavior. Although the present study does not confirm the prior finding that less financially literate students tend to live beyond their means and are more like to use credit cards (Mandell,2004; Cude et al., 2006; Lusardi and Tufano, 2009), a discrepancy is found for financial literacy between both student populations. Dutch students show to have a better understanding of basic financial concept, such as interest compounding and inflation, compared with U.S. students.

As consistent with prior findings from Kaynak et al., (1986), Chebat et al., (1988), Baily and Lown, (1993) and Tang (1993) as well as with the proposed hypotheses regarding cultural dimension, an effect is found for cultural difference on credit card usage. Dutch students with a high score in the VC dimension are less likely to use credit cards, while U.S. students with a high score in the VC dimension a more likely to use credit. Additionally, findings reveal differences between Dutch and U.S. students for the VC and HI dimension, which suggest that U.S. students are more horizontally individualistic and vertically collectivistic compared to Dutch students. The fact that U.S. students are more vertically collectivistic indicates that they are more likely to use credit cards over Dutch students. Interestingly, these findings are consistent with research by Triandis (1998). Research by Triandis (1998) partly contrasts the present findings, as they demonstrate that Dutch students have a higher score on HI and HC than U.S. students and U.S. students have a higher score on VI than Dutch students.

However, in the present results as well as in findings of Triandis (1998), U.S. students are more vertical orientated and Dutch students more horizontal orientated, which indicates that Dutch students consider themselves as equals compared with others in the society and are less result driven compared with vertical orientated people. This is in line with the idea that Dutch people are more feminine and people from the United States are more masculine (Hofstede 2008).

5.3 Limitations

In the current research multiple factors are examined, using different methods, in an attempt to clarify credit card usage among students. Unfortunately, the present study has not brought the desired results that was hoped for in advance. Therefore, a number of limitations pertaining to the present study are meaningful to discuss.

The first limitation is the size of both population samples. Given the limited resources and small time frame a convenience sample is used. Unfortunately, a large part of the respondents, in general Dutch students, who started the questionnaire did not seriously completed the questionnaire or not even finished the total questionnaire. This meant the number of respondents was almost halved. Finally, the used dataset consisted 122 Dutch students and 118 U.S. students. The used sample never represents the total student population of the Netherlands and the U.S.A, with the consequence that generalizability can be questioned. Possible explanations for respondents to drop can be the length of the questionnaire and the questions in the end, which could be considered as strenuous. Future studies might consider to include more variety of students from both countries and use a bigger sample size.

Another limitation is the scale used to measure attitude towards credit cards usage and should be conducted otherwise in future studies. Respondents are asked to rate four affective attitude statements on a five point likert-scale. Findings from the present study suggest the attitude towards credit cards predicts credit card usage among students. However, the attitude between Dutch students and U.S. students shows no significant discrepancy. A plausible clarification would be that the five point likert-scale is not wide enough to present their actual attitude. Another explanation can be, as stated in the discussion, that a positive attitude can be seen as a realistic opinion about credit cards. For example, a Dutch student who normally do not use a credit card might consider a credit card as a good payment method to fall back on.

In this case, using the simplified version by Warwick and Mansfield (2000), only measures the affective component of attitude which apparently is not enough to measure attitude as a whole. A model used by Xiao et al. (1995), which takes into account attitudinal components such as affective attitudes, cognitive attitudes and behavioral attitudes, would have possibly given a more complete and better picture of students attitude towards credit cards.

In retrospective, the questionnaire in general consisted of many questions about behavioral issues. Respondents can feel some sort of pressure to meet social expectations. The easiness in which respondents can influence the outcomes allows the findings not to show any similarity with the reality and would therefore be classified as a limitation. For example, the manner in which students deal with their financial matters. One might expect U.S. students to be less concerned about their financial matters compared with Dutch students regarding level of debt, spending level and credit card usage. Interestingly, findings in the present study reveal that U.S. students are more concerned managing financial matters compared with Dutch students. This findings deviate strongly from the expectations and the reality. Therefore, it seems evidential to suggest that the U.S. students present themselves differently than they actually are in an attempt to meet certain social expectations such as responsible dealing with money and therefore, did not answered the questions in the survey honestly. The same problem applies for questions to measure the four cultural dimensions. Future studies, which measure variables based on behavioral issues have to take into account that respondent deal with pressure to meet social expectations.

5.4 Implications

As previously concluded, the present research does not clarify the drivers behind credit cards usage among students and does not explain the difference between Dutch students and U.S. students. Findings suggest the probability of the existence of deeper underlying reasons that can explain the discrepancy in credit card usage between the two student populations. However, these are avenues worthwhile for future research to undertake.

In managerial fields, the present research gives an interesting insight into Dutch credit card market. Findings suggest that Dutch students tend to have a predominantly positive attitude towards credit cards although they do not actually use a credit card. Potentially, students form an attractive market for credit card companies regarding their low earnings during their time in college while their spending level is high. Besides, students have above average expected income after college, which makes them a less risky target group. Therefore it would be

worthwhile for Dutch credit card companies to undertake further investigation into this niche market to be able to serve this group in the future. Further research needs to go deeper into the question why Dutch students are not likely to use a credit card. Interesting variables not included in the present study are for example, students' knowledge about how and when to use credit cards, or the extend in which students are informed how to obtain a credit card. An even less complicated way is to ask the respondent directly why he may or may not use a credit card.

A more rigorous option for Dutch credit cards companies to reach the student market is to follow a push strategy like the American credit card companies did at the beginning of the 21th century and start promoting credit cards usage among students. Promotion can be for example an advertising campaign, the launch of a new credit card especially for students together with consumer education at universities about using credit cards and a user rewarding system offering incentives. However, credit card companies have to take a certain social responsibility into account. It is very obvious that when the number of credit card users among students increases, this will lead to an increase in credit card debt.

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APPENDIX 1. QUESTIONNAIRE

Thank you for participating and taking the time to complete this questionnaire. This questionnaire is part of my research that contributes to my final thesis at the Erasmus University Rotterdam in the Netherlands.

Filling in this questionnaire should only take about 10 minutes of your time. There are no right or wrong answers. The only thing that matters is your opinion. Your answers will be completely anonymous and will only be used for scientific purposes.

Kind regards,

Jan Groenendijk

1. What is you gender?

◊ Female
◊ Male

2. What is your age?

◊ .....

3. What is your nationality?

◊ .....

4. What is your current level of education?

◊ Higher education
◊ University

5. What is your current living situation?

◊ I live at my parents home
◊ I live in a dorm room
◊ I live in my own apartment/flat
◊ Other

6. Do you have a job next to your study?

◊ Yes
◊ No

7. What is your average income per month?

◊ Less than 300
◊ Between 300 and 600
◊ Between 600 and 900
◊ More than900

8. How much money do you spend each month on average?

◊ Less than 300
◊ Between 300 and 600
◊ Between 600 and 900
◊ More than 900

9. Do you borrow money when you have insufficient funds during your study? If so, from whom?
(In this case you are able to choose multiple options)

◊ No, I never borrow money
◊ Yes, I obtain a extra student loan (IB group).
◊ Yes, I obtain extra credit from my bank.
◊ Yes, I borrow money from my parents.
◊ Yes, other.

10. Do you use a credit card?
If so, how many credit cards do you have?

◊ No
◊ Yes, 1
◊ Yes, 2
◊ Yes, more than 2

11. Please, describe your feelings regarding credit cards by selecting one of the four following statements:

	Strongly disagree	**disagree**	**Don't agree or disagree**	**agree**	**Strongly agree**
Credit cards are the best thing men ever invented.	1	2	3	4	5
Credit cards are good, if used properly.	1	2	3	4	5
Credit cards are not the best way to manage money.	1	2	3	4	5
Credit cards are the worst thing man ever invented.	1	2	3	4	5

12. Please, indicate to what extent you recognize yourself in the following statements:	**Never**	**Sometimes**	**Regularly**	**Often**	**Always**
I give myself a monthly budget and then I make a plan for my expenses.	1	2	3	4	5
Before I go shopping, I make a list of the things I need.	1	2	3	4	5
I save money on a regular basis.	1	2	3	4	5
I purchase goods when I have insufficient funds in the bank.	1	2	3	4	5
I have the feeling I do good job managing my financials.	1	2	3	4	5

13. Please, indicate to what extend you agree or disagree with each statement:	**Strongly disagree**	**disagree**	**Somewhat disagree**	**Don't agree or disagree**	**Somewhat agree**	**agree**	**Strongly agree**
Family members should stick together, no matter what sacrifices are required	1	2	3	4	5	6	7
It is my duty to take care of my family, even when I have to sacrifice what I want.	1	2	3	4	5	6	7
It is important to me that I respects decisions made by my group.	1	2	3	4	5	6	7
Parents and children must stay together as much as possible.	1	2	3	4	5	6	7
I feel good when I coorporate with others.	1	2	3	4	5	6	7
The well being of my coworkers is important to me.	1	2	3	4	5	6	7
If a coworker gets a prize, I would feel proud.	1	2	3	4	5	6	7
To me, pleasure is spending time with others.	1	2	3	4	5	6	7

14. Please, indicate to what extend you agree or disagree with each statement:	**Strongly disagree**	**disagree**	**Somewhat disagree**	**Don't agree or disagree**	**Somewhat agree**	**agree**	**Strongly agree**
Winning means everything to me.	1	2	3	4	5	6	7
Competition is the law of nature.	1	2	3	4	5	6	7
When another person does better than I do, I get tensed and aroused.	1	2	3	4	5	6	7
It is important to me that I do my job better than others.	1	2	3	4	5	6	7
I would rather depend on myself than on others.	1	2	3	4	5	6	7
I rely on myself most of the time; I rarely rely on others.	1	2	3	4	5	6	7
I often do my own thing.	1	2	3	4	5	6	7
My personal identity, independent from others, is very important to me.	1	2	3	4	5	6	7

In the following and last part of the questionnaire, several questions about general financial matters are given. It is important to read the questions carefully and choose the answer you think is right.

15. Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

◊ More than $102
◊ Exactly $102
◊ Less than $102
◊ Do not know

16. Suppose you had $100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have on this account in total?

◊ More than $200
◊ Exactly $200
◊ Less than $200
◊ Do not know

17. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

◊ More than today
◊ Exactly the same
◊ Less than today
◊ Do not know

18. Assume a friend inherits $10,000 today and his sibling inherits $10,000 3 years from now. Who is richer because of the inheritance?

◊ My friend;
◊ His sibling;
◊ They are equally rich
◊ Do not know

19. Suppose that in the year 2012, your income has doubled and prices of all goods have doubled too. In 2012, how much will you be able to buy with your income?

◊ More than today;
◊ The same;
◊ Less than today;
◊ Do not know

19. Which of the following statements describes the main function of the stock market?

◊ The stock market helps to predict stock earnings
◊ The stock market results in an increase in the price of stocks
◊ The stock market brings people who want to buy stocks together with those who want to sell stocks
◊ None of the above
◊ Do not know

20. Which of the following statements is correct?

◊ Once one invests in a mutual fund, one cannot withdraw the money in the first year
◊ Mutual funds can invest in several assets, for example invest in both stocks and bonds
◊ Mutual funds pay a guaranteed rate of return which depends on their past performance
◊ None of the above
◊ Do not know

21. If the interest rate falls, what should happen to bond prices?

◊ Rise
◊ Fall
◊ Stay the same;
◊ None of the above
◊ Do not know

22. True or false? Buying a company stock usually provides a safer return than a stock mutual fund.

◊ True;
◊ False
◊ Do not know

23. True or false? Stocks are normally riskier than bonds.

◊ True
◊ False
◊ Do not know

24. Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return?

◊ Savings accounts;
◊ Bonds; or
◊ Stocks
◊ Do not know

44. Normally, which asset displays the highest fluctuations over time?

◊ Savings accounts,
◊ Bonds,
◊ Stocks;
◊ Do not know

45. When an investor spreads his money among different assets, does the risk of losing money:

◊ Increase,
◊ Decrease
◊ Stay the same
◊ Do not know

This is the end of the questionnaire. Thank you for your corporation!

APPENDIX B. ATTITUDE STATEMENTS

ATTITUDE STATEMENTS
1. Writing a budget every month and planning expenditures.
2. Make a list when I go shopping.
3. I save money on a regular basis.
4. I purchase goods when I have insufficient funds in the bank.
5. Feeling I did a good job managing my financials.

CULTURAL STATEMENTS	
VI	Winning is everything
	Competition is the law of nature
	When another person does better than I do, I get tense and aroused .
	It is important to me that I do my job better than others
HI	I would rather depend on myself than on others .
	I rely on myself most of the time.
	I rarely rely on others.
	I often do “my own thing.
VC	Family members should stick together, no matter what sacrifices are required.
	It is my duty to take care of my family, even when I have to sacrifice what I want.
	It is important to me that I respect decisions made by my group.
	Parents and children must stay together as much as possible.
HC	I feel good when I cooperate with others.
	The well-being of my coworkers is important to me.
	If a coworker gets a prize, I would feel proud.
	To me, pleasure is spending time with others.

QUESTIONS FINANCIAL LITERACY

Basic knowledge

1. Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

2. Suppose you had $100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have on this account in total?

3. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

4. Assume a friend inherits $10,000 today and his sibling inherits $10,000 3 years from now. Who is richer because of the inheritance?

5. Suppose that in the year 2010, your income has doubled and prices of all goods have doubled too. In
2010, how much will you be able to buy with your income?

Sophisticated knowledge

6. Which of the following statements describes the main function of the stock market?

7. Which of the following statements is correct?

8. If the interest rate falls, what should happen to bond prices?

9. True or false? Buying a company stock usually provides a safer return than a stock mutual fund.

10. True or false? Stocks are normally riskier than bonds.

11. Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return?

12. Normally, which asset displays the highest fluctuations over time?

13.When an investor spreads his money among different assets, does the risk of losing money.

APPENDIX C. DESCRIPTIVE STATISTICS

		Dutch	American
Gender	male	67	78
	female	55	40
Age	Mean	67	78
Income	< 300	22	26
	300 - 600	51	39
	600 - 900	28	18
	900 <	21	35
Education	Other	1	2
	Higher education	73	64
	University	48	52
Income	< 300	22	26
	300 - 600	51	39
	600 - 900	28	18
	900 <	21	35
Spending	< 300	50	35
	300 - 600	44	40
	600 - 900	18	25
	900 <	10	18
Living situation	Parents	76	32
	Dorm	21	15
	My own app	23	64
	Other	2	7
Attitude	Mean	2.9508	2.9725
Financial Practice	Mean	3.1443	3.7492
Culture	VC	4.3750	5.0127
	HC	5.0410	5.0975
	VI	4.6311	4.4343
	HI	4.8791	5.5975
Financial Literacy	Basic	4.15	3.68
	Sophisticated	4.43	4.75
Credit cards	Yes	36	71
	No	86	47

APPENDIX D. ANOVA-TEST

	ANOVA					DESCRIPTIVES	
		Sum of Squares	**df**	**F**	**Sig.**		**Mean**
Gender	Between Groups	.750	1	3.152	.077	Dutch	1.45
	Within Groups	56.646	238			American	1.34
	Total	57.396	239			Total	1.40
Age	Between Groups	110.780	1	10.626	.001**	Dutch	22.59
	Within Groups	2481.203	238			American	23.95
	Total	2591.983	239			Total	23.26
Education	Between Groups	.089	1	.332	.565	Dutch	1.39
	Within Groups	63.707	238			American	1.42
	Total	63.796	239			Total	1.40
Income	Between Groups	1.045	1	.933	.335	Dutch	2.39
	Within Groups	266.538	238			American	2.53
	Total	267.583	239			Total	2.46
Spending	Between Groups	6.092	1	6.221	.013**	Dutch	1.90
	Within Groups	233.091	238			American	2.22
	Total	239.183	239			Total	2.06
Living situation	Between Groups	37.575	1	46.243	.000***	Dutch	1.60
	Within Groups	193.387	238			American	2.39
	Total	230.962	239			Total	1.99
Attitude	Between Groups	.028	1	.047	.829	Dutch	2.9508
	Within Groups	143.428	238			American	2.9725
	Total	143.456	239			Total	2.9615
FinancialPractice	Between Groups	21.947	1	43.691	.000***	Dutch	3.1443
	Within Groups	119.556	238			American	3.7492
	Total	141.503	239			Total	3.4417
VC	Between Groups	24.394	1	18.727	.000***	Dutch	4.3750
	Within Groups	310.012	238			American	5.0127
	Total	334.406	239			Total	4.6885
HC	Between Groups	.191	1	.242	.623	Dutch	5.0410
	Within Groups	187.799	238			American	5.0975
	Total	187.991	239			Total	5.0688
VI	Between Groups	2.324	1	1.739	.188	Dutch	4.6311
	Within Groups	317.955	238			American	4.4343
	Total	320.279	239			Total	4.5344
HI	Between Groups	30.954	1	27.524	.000***	Dutch	4.8791
	Within Groups	267.658	238			American	5.5975
	Total	298.612	239			Total	5.2323
Basic_Knowledge	Between Groups	13.226	1	9.743	.002**	Dutch	4.15
	Within Groups	323.107	238			American	3.68
	Total	336.333	239			Total	3.92
Soph knowledge	Between Groups	6.124	1	1.443	.231	Dutch	4.43
	Within Groups	1010.209	238			American	4.75
	Total	1016.333	239			Total	4.58
Dummy_Credit_Card	Between Groups	5.639	1	25.013	.000***	Dutch	.70
	Within Groups	53.657	238			American	.40
	Total	59.296	239			Total	.55

Note. Presented p-values are one-tailed tested. Before assign level of significance , values are doubled (two-tailed test).
*** significant for $p < 0.01$
** significant for $p < 0.05$
* significant for $p < 0.10$

APPENDIX E. LOGISTIC REGRESSION ANALYSIS

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Direct effect	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*
Constant	-9.543***	.000	-10.494***	.000	-9.591**	.003	-9.675***	.000*	-9.347	.000*	-9.362***	.000*
Gender	.201	.586	.650	.196	.201	.586	.188	.610	.236	.528	.202	.583
Age	.157**	.013	.162**	.011	.159	.204	.153**	.016	.151**	.018	.155**	.014
Education	.347	.281	.320	.322	.345	.295	.497	.295	.362	.264	.370	.256
Income	.458*	.030	.399	.064	.458*	.030	.462*	.028	.358	.182	.450*	.033
Spending Level	.087	.716	.131	.589	.087	.717	.077	.749	.082	.734	.000	.999
Living Situation	.040	.838	.016	.936	.039	.843	.037	.847	.036	.852	.038	.843
Attitude	.916***	.000	.935***	.000	.916***	.000	.912***	.000	.930***	.000	.925***	.000
Financial Practices	.059	.800	.057	.807	.060	.800	.074	.756	.046	.846	.045	.850
VC	-.128	.404	-.110	.476	-.127	.407	-.116	.455	-.135	.378	-.143	.357
HC	-.108	.588	-.072	.720	-.108	.589	-.111	.576	-.093	.644	-.092	.646
VI	.133	.385	.151	.325	.133	.387	.136	.378	.136	.377	.135	.377
HI	-.012	.945	-.019	.912	-.012	.944	-.016	.928	-.003	.988	-.012	.947
Basic K	.095	.531	.082	.587	.095	.531	.092	.543	.095	.531	.098	.518
Sophisticated K	.015	.870	.014	.877	.015	.870	.012	.893	.020	.827	.014	.875
Nationality dummy	1.432**	.001	2.668**	.010	1.503	.649	1.812	.064	.975	.265	1.090	.159
Interaction effect												
Gender			-.870	.187								
Age					-.003	.983						
Education							-.270	.666				
Income									.193	.553		
Spending Level											.176	.601
Living Situation												
Attitude												
Financial Practices												
VC												
HC												
VI												
HI												
Basic K												
Sophisticated K												

Note. Presented p-values are one-tailed tested. Before assign level of significance , values are doubled (two-tailed test).
*** significant for $p < 0.01$
** significant for $p < 0.05$
* significant for $p < 0.10$

	Model 7		Model 8		Model 9		Model 10		Model 11		Model 12	
Direct effect	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*
Constant	-9.536***	.000	-10.373***	.000	-10.832***	.000	-8.019**	.001	-9.901***	.000	-9.500***	.000
Gender	.196	.597	.210	.571	.170	.646	.102	.783	.207	.574	.198	.591
Age	.156**	.015	.143**	.023	.159**	.012	.154**	.015	.157**	.013	.157**	.013
Education	.344	.286	.360	.263	.411	.206	.257	.426	.357	.269	.345	.284
Income	.460*	.030	.448*	.034	.438*	.039	.479*	.024	.452*	.033	.459*	.030
Spending Level	.085	.724	.092	.702	.125	.604	.027	.912	.088	.711	.085	.723
Living Situation	.062	.826	.043	.822	.022	.912	.049	.801	.039	.841	.041	.833
Attitude	.915***	.000	1.266**	.001	.907***	.000	.974***	.000	.917***	.000	.917***	.000
Financial Practices	.060	.800	.047	.842	.456	.214	.056	.815	.066	.779	.061	.796
VC	-.126	.411	-.136	.374	-.138	.368	-.497*	.028	-.124	.418	-.126	.411
HC	-.108	.588	-.099	.621	-.079	.692	-.120	.549	-.047	.864	-.109	.585
VI	.131	.397	.133	.388	.110	.475	.149	.342	.134	.380	.120	.600
HI	-.012	.948	.000	.998	.005	.979	.015	.933	-.005	.975	-.011	.952
Basic K	.093	.545	.100	.510	.054	.728	.118	.444	.089	.559	.096	.529
Sophisticated K	.015	.867	.009	.925	.028	.766	.024	.797	.012	.897	.015	.868
Nationality dummy	1.504*	.054	3.214**	.036	3.642**	.023	-1.635	.252	2.018	.296	1.328	.357
Interaction effect												
Gender												
Age												
Education												
Income												
Spending Level												
Living Situation	-.038	.913										
Attitude			-.577	.223								
Financial Practices					-.661	.153						
VC							.669**	.024				
HC									-.117	.755		
VI											.022	.940
HI												
Basic K												
Sophisticated K												

Note. Presented p-values are one-tailed tested. Before assign level of significance , values are doubled (two-tailed test).

*** significant for $p < 0.01$

** significant for $p < 0.05$

* significant for $p < 0.10$

	Model 13		Model 14		Model 15	
Direct effect	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*	*Coefficient (B)*	*Sig. (p)*
Constant	-8.981***	.000	-9.504***	.000	-9.196***	.000
Gender	.222	.549	.201	.585	.223	.545
Age	.159**	.012	.156**	.013	.152**	.017
Education	.366	.253	.349	.279	.363	.262
Income	.494**	.022	.458*	.030	.486**	.023
Spending Level	.057	.815	.087	.714	.070	.771
Living Situation	.045	.819	.041	.832	.052	.790
Attitude	.921***	.000	.916***	.000	.923***	.000
Financial Practices	.059	.802	.060	.797	.020	.934
VC	-.105	.497	-.127	.406	-.126	.411
HC	-.138	.496	-.105	.600	-.073	.717
VI	.153	.330	.135	.382	.150	.330
HI	-.169	.510	-.012	.944	-.032	.856
Basic K	.105	.492	.079	.727	.075	.620
Sophisticated K	.007	.943	.014	.875	-.060	.602
Nationality dummy	.005	.998	1.321	.272	.686	.397
Interaction effect						
Gender						
Age						
Education						
Income						
Spending Level						
Living Situation						
Attitude						
Financial Practices						
VC						
HC						
VI						
HI	.279	.392				
Basic K			.028	.922		
Sophisticated K					.171	.287

Note. Presented p-values are one-tailed tested. Before assign level of significance , values are doubled (two-tailed test).

*** significant for $p < 0.01$

** significant for $p < 0.05$

* significant for $p < 0.10$

APPENDIX F. CORRELATION MATRIX

Correlation Matrix Spearman's Rho

			AMERICAN														
			Gender	Age	Edu	Income	Spending	Living	Attitude	FinancialP	VC	HC	VI	HI	Basic_Kn	Soph_kn	Credit C.
DUTCH	Gender	Correlation Coefficient		-,154	-,028	-,246**	-,167	,023	,025	,165	-,030	,259**	-,046	,115	-,255**	-,384**	-,149
		Sig. (2-tailed)		,096	,760	,007	,070	,805	,784	,074	,751	,005	,624	,214	,005	,000	,108
	Age	Correlation Coefficient	-,123		-,052	,507**	,415**	,137	-,206*	,070	,130	-,047	-,162	-,009	,086	,230*	,293**
		Sig. (2-tailed)	,178		,574	,000	,000	,138	,026	,452	,161	,616	,080	,923	,355	,012	,001
	Education	Correlation Coefficient	,054	,471**		-,063	,008	-,040	-,012	,092	,198*	,079	-,124	-,325**	,119	,118	,043
		Sig. (2-tailed)	,552	,000		,495	,932	,668	,893	,324	,031	,394	,182	,000	,201	,205	,646
	Income	Correlation Coefficient	,101	,285**	,084		,713**	,227*	-,108	,143	,112	-,073	-,100	,030	,058	,125	,328**
		Sig. (2-tailed)	,270	,001	,357		,000	,013	,245	,123	,226	,429	,282	,748	,531	,176	,000
	Spending	Correlation Coefficient	-,049	,426**	,323**	,570**		,439**	-,112	,061	,183*	-,080	-,073	,060	,040	,226*	,259**
		Sig. (2-tailed)	,593	,000	,000	,000		,000	,228	,515	,047	,391	,430	,517	,668	,014	,005
	Living S	Correlation Coefficient	,149	,456**	,349**	,190*	,524**		-,020	,086	,035	,068	-,058	,127	-,099	-,022	,069
		Sig. (2-tailed)	,100	,000	,000	,036	,000		,833	,354	,705	,465	,535	,172	,287	,811	,455
	Attitude	Correlation Coefficient	-,049	,166	,101	,180*	,114	,126		-,015	-,111	,023	,091	,044	-,016	,021	,111
		Sig. (2-tailed)	,594	,067	,267	,047	,209	,166		,870	,230	,801	,329	,633	,867	,819	,229
	Financial P.	Correlation Coefficient	,159	-,092	-,047	,098	-,102	,087	,105		,223*	,361**	-,035	,155	-,050	,102	-,036
		Sig. (2-tailed)	,081	,313	,605	,285	,263	,341	,250		,015	,000	,709	,093	,594	,271	,699
	VC	Correlation Coefficient	-,294**	-,049	-,179*	,007	-,097	-,178	,020	,026		,368**	-,024	-,039	-,052	,087	,104
		Sig. (2-tailed)	,001	,593	,049	,938	,289	,050	,831	,774		,000	,794	,674	,576	,349	,261
	HC	Correlation Coefficient	-,153	,104	-,004	,223*	,093	,071	,147	,158	,271**		,092	,098	-,139	-,114	-,032
		Sig. (2-tailed)	,093	,255	,963	,014	,308	,437	,106	,081	,003		,324	,289	,133	,220	,732
	VI	Correlation Coefficient	-,258**	,020	-,083	,061	,063	,050	,111	,105	,249**	,058		,290**	-,144	-,002	-,028
		Sig. (2-tailed)	,004	,824	,365	,508	,488	,585	,223	,252	,006	,525		,001	,121	,983	,767
	HI	Correlation Coefficient	,078	-,067	-,195*	,135	-,051	-,040	-,104	,144	,200*	-,109	,326**		-,009	,106	,022
		Sig. (2-tailed)	,391	,466	,031	,140	,579	,661	,256	,113	,028	,233	,000		,920	,255	,814
	Basic_Kn	Correlation Coefficient	-,113	,092	,257**	,076	,087	,166	-,122	,224*	,078	,249**	,134	,106		,512**	,093
		Sig. (2-tailed)	,215	,314	,004	,405	,338	,068	,180	,013	,395	,006	,140	,245		,000	,314
	Soph_kn	Correlation Coefficient	-,338**	,106	,251**	,083	,130	,083	,096	-,008	,144	,155	,280**	,018	,358**		,169
		Sig. (2-tailed)	,000	,245	,005	,365	,152	,365	,293	,930	,114	,088	,002	,840	,000		,067
	Credit C.	Correlation Coefficient	,100	,271**	,218*	,265**	,226*	,190*	,346**	,121	-,197*	,095	,056	-,013	,077	,012	
		Sig. (2-tailed)	,273	,002	,016	,003	,012	,036	,000	,183	,030	,299	,538	,889	,399	,895	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).