Situational Factors Influencing Customers´ Credit Use Online: A Behavioral Economic Approach

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Abstract

This study investigates consumers´ credit use online from the perspective of intertemporal choice and focuses on the impact of personalized credit information when choosing utilitarian versus hedonic product. In a simulated shopping experiment, participants from a Norwegian university college could either save money for the product and get it in the future or buy the product on credit and get it now. A between-group design was used with a randomized selection divided into two groups. The test group (n=37) received personalized credit information while choosing the utilitarian and hedonic products. The control group (n=36) did not have this information. Area Under Curve was calculated and used to make statistical operations. Results show that all participants discounted the saving alternative when the time delay increased, which, therefore, increased their willingness to buy on credit online. Participants´ discounting of the saving alternative was near the hyperbolic model. Second, a significant difference between the utilitarian versus the hedonic products was found for all participants´ willingness to buy on credit online. Finally, personalized information about credit debt had little influence on credit use, but some indications related to hedonic product calls for further research. Implications for research and practice as well as suggestions for future studies are given.

1. Introduction

Over the past years, extensive research has been conducted on consumer credit use [e.g., 1, 2, 3] as well as online shopping. Researchers have linked psychological traits with credit behavior [4] and found factors affecting online shopping intentions, decisions [5, 6], and consumer trust [7]. However, the understanding of consumer credit use in an online shopping context is limited. Understanding of consumers´ credit use online is of vital importance as well as for the responsible policy-makers, credit card companies, researchers, as for the individual credit users. This study aims, therefore, to increase the understanding of credit use online.

Credit use online can be understood as a reflection of the consumer situation. Research in this category focuses on situational influences that fall in the category of behavioral economics [see 8]. One such approach to understanding consumer credit use online is to look at how delayed outcomes affect choices [9, 10]. For example, in a situation with limited liquidity, the consumer often has two choice options to obtain a product: saving to purchase the product later or buying the product on credit now. If the consumer saves money, putting aside immediate consumption to provide for future consumption, he will get the product at some point in the future when he can afford to pay the cash price. An alternative could be to purchase the product on credit and get it immediately. In this case, the consumer put aside future consumption for immediate consumption but must also pay a higher price (cash price + interest). Choices that encompass tradeoffs between outcomes that occur at different times are referred to as intertemporal choice [see 11]. In a situation with limited liquidity, the consumers' preferences for the long-run saving money to buy the product tend to conflict with his short-run buy on credit and get the product immediately. An editorial by Goes [12] in MIS Quarterly discusses the opportunity within the fields of behavioral economics and information systems research to find common ground, and enable new research possibilities. This study addresses the

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call for research by Goes [12] by investigating the consumer´s credit use online through the lenses of intertemporal choice.

The consequence of credit use can impact people's happiness and wellbeing negatively, and it is, therefore, a relevant field for policy makers, social analysts, and researchers working with credit-accumulation [10]. Recent law changes, for example, the EU-directive PSD2 (Revised Payment Service Directive) [13] reflects the continuous effort within the government to reinforce customer protection, as well as potentially provide ways to slow development of consumer debt. The EU-directive stipulates that any business that provides and maintains customer information is obliged to share information with third parties, such as mobile payment services, if the customer consents to it. This will force banks to facilitate access to their customer-care applications (Application Programming Interface) for third parties, facilitating economization possibilities for outstanding applications. For example, your phone could inform you of your credit debt costs or how much time it will take for you to pay it back, or you could allow a pop up to show your potential current accumulated credit debt each time you were to use your credit card. Previous research [e.g., 14] within information systems and consumer research supports that both online marketing and e-commerce can benefit from the real-time personalization of content, as exemplified above. Kaptein and Parvinen [14] argue that solid theoretical knowledge should be the basis for all selections of content to be personalized. Research about presenting credit debt to potential customers is limited. Therefore, this study investigates how personalized information about total credit debt can influence the consumer´s credit use online. Previous studies [e.g., 4, 15] investigated consumer credit use in general. However, to our knowledge, little is known about the effect of personalized information about consumer credit debt and shopping for hedonic products, which are symbolic [16], versus utilitarian, which are products filling a functional need [17]. To reach the overall aim of this study, we will, through the lenses of intertemporal choice, investigate the impact of personalized credit information when consumers choose hedonic versus utilitarian products online.

This study has four parts. Firstly, the concept of intertemporal choice, hedonic and utilitarian products, and, personalized credit debt information is reviewed in relation to credit use online. This is followed by a presentation of the experimental design used in the study. Next, the findings are discussed and summarized. The paper concludes with a discussion of academic and practical implications, and directions for future research are given.

2. Literature review

2.1. Intertemporal choice

Although traditional economics have been favored [10], there are some critics who argue that humans are not always rational and can easily be misled into making irrational choices, for example, procrastination or unrealistic optimism [18]. This view is often referred to as behavioral economics, which attempts to account for the irrational factors when making economic choices [10]. Although Brown and Plache [18] research on credit card use supported the rational or traditional models and concluded that credit cards might not be as harmful as many critics' state, other research has shown that the essence of irrationality in economics is present in everyday life and that traditional economics lacks the tools to explain these phenomena [10, 19]. Behavioral economics attempts to account for this lack of knowledge by incorporating theories from economics, psychology, and neuroscience [10].

One of the contributions of behavioral economics to the field of economy is the theory of intertemporal choice: when short-term gains conflict with long-term preferences, for example, when buying on credit and sometimes ignoring the higher cost, as opposed to saving first and buying later [3]. In this situation, the consumer's preference for the long term—saving money to buy the product—tends to conflict with his short-term desires—buying on credit and getting the product immediately.

Intertemporal choice can be described using different models. One of the most well-known is the discounted utility model which intends [10] "to offer a generalized idea of intertemporal choices, which would be valid for multiple time periods and it also gave an impression that representations of such trade-offs necessitated a cardinal measure of utility." (p. 19). For example, a person with a yearly discount factor of 80% would be indifferent given a choice between an option with a reward utility of $800 today and an option with a reward utility of $1,000 next year, because $800 is 80% of $1,000. Thus, the standard discounted utility model refers to the decrease in the person's subjective value of a reward or cost as a function of increasing delay, and this value would be expected to be a consistent, exponential function [20].

Findings from behavioral economic studies suggest that the discount rate for values in a future

period is not an exponential function of delay, as the standard discounted utility model implies [3]. One implication of the hyperbolic discounting model is that a consumer would consume more than he or she would like from a prior perspective [21]. Another implication is that people are more impatient in making short-run versus long-run decisions [10]. The hyperbolic discounting model is also found to explain procrastination and self-control problems more accurately [10, 22]. The first assumption is, therefore, that the saving alternative is discounted hyperbolically, which, consequently, increased willingness to buy on credit online.

2.2. Hedonic versus utilitarian products

In-store shopping and offline shopping motivations are often divided into either experimental or goal-directed [23]. Experimental behavior is often connected to "thrill of the hunt" shopping, while goal-oriented or utilitarian shopping is connected to shopping in a [23] "task-oriented, efficient, rational, and deliberate" way, (p. 4). This is similar to the concepts of hedonic and utilitarian values connected with different purchases [24]. Babin, Darden [24] states that "pure enjoyment, excitement, captivation, escapism, and spontaneity" as all fundamental aspects of hedonic shopping value, (p. 654). Utilitarian value, on the other hand, is found to be paired with "expressions of accomplishment and/or disappointment over the ability (inability) to complete the shopping task" [24], (p. 654). In other words, utilitarian products are seldom related to having a fun shopping experience, but rather providing benefits in practical functionality [17] such as, for example, a washing machine or dishwasher. On the contrary, hedonic products tend to be more symbolic, related to experience, and often have shorter and more rapidly declining life cycles [16], the pattern of demand is found to strongly decline over time for many of the hedonic goods categories. Examples of a typical hedonic product can be a gaming console or movie tickets.

Wolfinbarger and Gilly [23] conducted a survey which showed that 29% of the respondents made their last purchase while browsing. The other 71% stated that their last purchase was planned. This indicates that most online consumers tend to be goal-directed or looking for utilitarian goods when shopping online. The remaining 29% in Wolfinbarger and Gilly [23] research shopped impulsively, indicating experimental motivations. Experimental shopping can be associated with excitement, social communities, deals, and involvement [23] and can, therefore, also be connected with the hedonic

shopping category. Okada [17] states that "people will be more likely to consume hedonic goods when the decision context allows them the flexibility to justify the consumption", (p. 43). Consumers need to justify spending money on hedonic goods and are typically more willing to pay over time rather than with cash for what they perceive as hedonic and vice versa for utilitarian [17]. The second assumption is therefore that consumers will prefer to save rather than spend credit online on the hedonic product and vice versa for the utilitarian product.

2.3. Personalized credit debt information

Kaptein and Parvinen [14] define personalization of e-commerce as "the act of specifically selecting content, in the sense of Web page or other digital content, for individual customers based on properties of the customer with the goal of increasing business outcomes for an e-commerce platform," (p. 8). Content points to anything displayed to the customer, while business outcome(s) can be both increases in revenue as well as increase in engagement or user satisfaction [14]. Mulvenna, Anand [25] define personalization as "the provision to the individual of tailored products, services, information or information relating to product or service," (p. 124). They also state that personalization on the Internet depends on the ability of the personalization community to promote responsible and relevant use of the technology.

The Web content that is personalized needs to have an effect on the business outcome [14]; this means that in the case of the experiment for this study the information regarding credit debt needs to influence consumer behavior in a way that increases either engagement, trust, or user satisfaction. To warrant personalization, the influence should also be heterogeneous and stable between customers [14]. However, information about credit debt Web personalization does not necessarily increase business profit. Rather, it is a personalization technology made for increasing the consumer's profit. This makes this Web personalization technology suggestion different from other well-established personalization technologies such as, for example, Amazon's recommendation system [26]. A popular label for defining a method modifying the decision environment to improve reasoning skills is "Nudge" [10]. The personalization of information regarding credit use could, therefore, be described as a kind of online interactive nudge. From this, the third assumption is that personalized information of consequences of credit use online will have a larger impact on hedonic goods than for utilitarian goods.

3. Method

3.1. Participants

Seventy-three students from Westerdals Oslo School of Arts, Communication and Technology (Institute of Technology) accepted an invitation to participate in an experiment about how students make economic choices online. The participants consisted of 23 females and 50 males, and they were aged between 19 and 41 years. The mean age of all participants was 24.75 years. Participants were informed that the experiment lasted for 15 minutes on average, and they were offered some sweets as a reward for participating in the study.

3.2. Apparatus

The experiment was conducted in a PC lab consisting of eight computers. The computers had 2.5 GHz Intel Core i5 processors and 24-inch monitors with a resolution of 1920 x 1080 pixels. Participants' were seated so no one could see the stimuli on the others monitors. The participants used a standard mouse and keyboard to indicate answers. A simulated shopping microworld [27] was programmed in MediaLab (version 2010).

3.3. Procedure

Upon arrival, each participant was led to one of the computers and was informed about his or her general rights as a participant in the experiment. The experimenter explained that all necessary information for the task would be presented via the monitor. Participants then completed the experiment alone. When the experiment was over, they were told that they could contact the experimenter if they had any questions about the experiment later. After the participants read the information regarding the consent form, and pressed "Continue," a new text was presented for pre-training with a standard classical discounting experiment as presented by Rachlin, Raineri [28]. The pre-training session was undertaken to ensure that participants familiarized themselves with the titration procedure used in the main experiment.

When they completed the pre-training session, the participants were presented with a simulated purchasing situation with two different scenarios: shopping online for a utilitarian product and for a hedonic product. For both scenarios, the participants were told that they could either save money for the product and get it in the future, or buy the product on credit and get it now. The utilitarian scenario was that they should assume that their washing machine was broken beyond repair, and they needed to buy a new one. This scenario was presented like this on the monitor (translated from Norwegian, 100 NOK is approximately 11.70 USD):

> Imagine that your washing machine just broke and it is impossible to repair it for a reasonable price. You have found a new washing machine online that costs 4,430.50 NOK. A more affordable option does not meet your needs. The challenge is that you at this time do not have money available to buy the washing machine. You now have two options: Save money and buy the washing machine later or buy the washing machine on credit and get it now. Click "Continue" to decide how you are going to acquire the new washing machine.

The hedonic scenario was that a new gaming console was recently launched in the market, and the participants were to assume that they really wanted the machine, but again they could not currently afford to buy it now. This scenario was presented like this on the monitor (translated from Norwegian):

> Imagine that a new gaming console has just been released to the market. The console is your favorite brand, and it has some new functionality that you really want to test out. You have found the gaming console online where it costs 4,430.50 NOK. This is the cheapest option you can find. You really want this gaming console, but for the moment you do not have the money to buy it. You now have two options: Save money and buy the console later, or buy the gaming console on credit and get it now. Click "Continue" to decide how you are going to acquire the new gaming console.

The two alternatives for each of the scenarios were presented in pairs on the monitor to all participants. Participants chose by mouse clicking on the preferred alternative. The saving-plan alternatives stated how many weeks (1 week, 3 weeks, 5 weeks, 7 weeks, 14 weeks, and 21 weeks) it takes to save 4,430.50 NOK and get the product later. The credit alternative stated the amount of money the participants had to pay if they chose to buy the product on credit and get it now. The credit alternatives were arranged as a psychophysical up-down titration procedure after Raineri and Rachlin [29] in the following proportions: 1.0, 0.99, 0.98,

0.96, 0.94, 0.92, 0.90, 0.85, 0.80, 0.75, 0.70, 0.65, 0.60, 0.55, 0.50, 0.45, 0.40, 0.35, 0.30, 0.25, 0.20, 0.15, 0.10, 0.08, 0.06, 0.04, 0.02, 0.01, 0.005, 0.001, 0.0005, 0.0001, presented as values in NOK [e.g., save in three weeks and buy the gaming console with cash for 4,430.50 NOK, or buy the product on credit, get it today, and pay 6,978.04 NOK (cash price + credit interest)]. When participants stopped choosing the saving alternative and started choosing the credit alternative, titration up was started using proportions in reverse. When the participants switched again from buying on credit to the saving alternative (the switching point), the experiment moved to the next condition.

A between-group design was arranged to measure the impact of personalized credit information. Participants were randomly divided into two groups. The test group (n=37) was for the credit alternative given information about credit debt that they had accumulated based on previous credit purchases. Information about personalized credit information was added to the utilitarian and hedonic scenarios and was presented like this (translated from Norwegian): "You have accumulated a credit debt of 11,000 NOK from earlier credit purchases." The control group (n=36) were presented with debt information in the utilitarian and hedonic scenario, but was not given accumulated credit debt based on previous credit purchases (personalized credit information) when making choices.

3.4. Analysis

Instead of using mean, Area Under Curve (AUC) [30] was calculated and used to make statistical operations. AUC have earlier been successfully used in combination with discounting research [e.g., 3] as it restricts the discounting value into one value per timeframe, instead of having several separated values. This procedure is usually used for descending discount curves, as seen in the examples of Myerson, Green [30]. Since the datasets contains weeks where the difference is increasing at the end (from two weeks to seven) it was chosen to use AUC instead of mean when doing statistical tests, as AUC represents an average value for a randomly selected time. In this study, the formula AUC is calculated as

$$AUC=(1*((y_0+y_1)/2)+2*((y_1+y_2)/2)+2*((y_2+y_3)/2)+2*((y_3+y_4)/2)+7*((y_4+y_5)/2)7*((y_5+y_6)/2))/21$$

where y_0 is the baseline (in this case "1" which represented the lowest amount (4,430.50)). $y_{1\ldots6}$ is the value in represented week (One, three, five, seven, 14 and 21) divided by 4,430.50. This number

then represents the amount in the same way of y_0 represents the baseline. If y_2 for example is "1.12" it means that this amount is 12% over the baseline.

4. Results

The R-squared value in Table 1 represents the curve fit to the provided data, and should be as close to one as possible. A non-linear least squares-method was used when fitting the curve. The first assumption is supported since the R-squared value is very close to one.

Table 1. Values of the hyperbolic curve

Hyperbolic (k)	
V	0.968275271
k	0.013022654
SS_res	0.004123571
R-squared	0.926532569

Results show that 66 out of 73 participants were willing to buy the utilitarian product on credit, while 48 of 73 were willing to buy the hedonic product on credit. A representation of distributions of mean credit price values for the different groups and product categories is shown in Figures 1 and 2.

A significant difference between willingness to buy on credit was found for the utilitarian versus the hedonic product in both the test group and control group. Two separate Wilcoxon tests on utilitarian versus hedonic values in both groups show a p-value < 0.0001. The second assumption, that consumers will prefer to save rather than spend credit online on the hedonic product and vice versa for the utilitarian product, is therefore, supported.
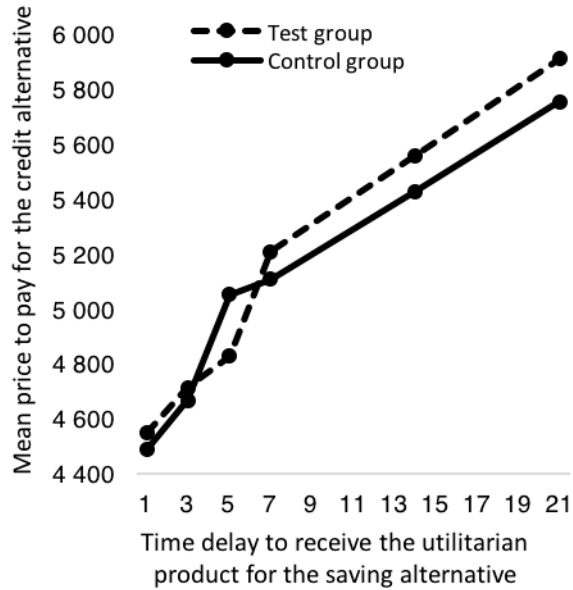
Figure 1. Mean price to pay for the credit alternative as a result of time delay to receive the utilitarian product on the saving alternative.
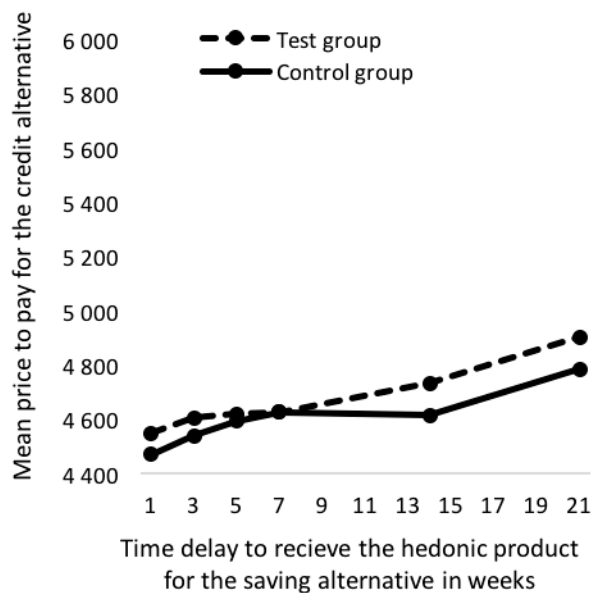
Little difference between the test group and control group was found regarding the impact of personalized credit information. Personalized information of consequence of credit use is found not to not have any significant effect on the participants of this study (see Tables 2 and 3). The third assumption, that personalized information of consequences of credit use online will have a larger impact on hedonic goods than for utilitarian goods, is not supported.

Table 2: Mann-Whitney test on utilitarian AUC in control group versus test group.

U	612.500
Expected value	648.000
Variance (U)	7876.775
p-value (Two-tailed)	0.693
alpha	0.05

Table 3: Mann-Whitney test on hedonic AUC in control group versus test group.

U	618.000
Expected value	648.000
Variance (U)	7554.423
p-value (Two-tailed)	0.734
alpha	0.05

The data distribution of the hedonic product category shows an overrepresentation of the value 1 (see Figure 3), which could point to a need for a lower price point for hedonic products in future research. The same distribution is also present in the control group.
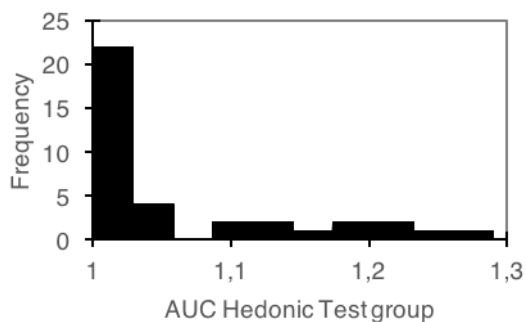

Figure 2. Price to pay for the credit alternative as a result of time delay to receive the hedonic product on the saving alternative.

Figure 3: Histogram of the distribution of AUC values for the hedonic test group.

5. Discussion

The aim of this study was, through the lenses of intertemporal choice, to increase understanding of credit use focusing on the impact of personalized credit information when choosing utilitarian versus hedonic product online. Findings show that consumers discount the saving alternative hyperbolically when the saving alternative was delayed in time. A significant difference in how young adults shop for utilitarian and hedonic products online on credit was also demonstrated. Personalized information about credit debt has, however, little influence on credit use online for both the utilitarian product group as well as the hedonic. However, some indications in the hedonic product category call for further research.

Including the two variables time and value typically presents in an intertemporal choice; presenting the consequences of credit debt is also a variable possibly affecting the participant's decision. Berns, Laibson [31] would categorize this as a "self-control" dimension, as the credit debt is intended to increase the participant's willingness to wait, thereby limiting the immediate temptation of the credit option. These kinds of decisions can lead to "preference reversals" where an initial idea of approach is lost as the participant subsequently succumbs to temptation [31]. In other words, the participant can start out according to plan, but eventually he or she is not able to resist spending money on the product—either because of the feeling of really wanting the product, too long a waiting time, or the credit price being so low that the participant feels like it is a steal.

The representation dimension suggested by Berns, Laibson [31] demonstrates that how the intertemporal choice scenario is formulated may have an impact on the results. If for example, the waiting time is

presented with an emphasis on the "need to wait" variable, this can lead to less willingness to delay the potential reward. Emphasizing date rather than time spent waiting, on the other hand, can provide opposite results [31]. Also, when people are presented with multiple decision possibilities, they also, for example, tend to choose the same answer over and over, or the same as everybody else [31]. Observing the individual results of the experiment, it can sometimes seem that participants specifically choose the same price (or button) over and over, instead of spending time familiarizing themselves in each scenario. Although the experiment was not very complex in terms of choices, nor unnecessarily long (15 minutes), it did include several repeated scenarios that could increase impatience in participants, possibly leading to some non-representative or faulty decisions.

In accordance with theory, this study differentiates between hedonic and utilitarian shopping on credit as differences are found in earlier research [16, 17, 24]. The findings support earlier theory by confirming the second assumption. The difference in preference for the utilitarian and hedonic product is found statistically significant with a p-value lower than 0.0001. The participants prefer to save rather than spend credit on the hedonic product, and spend credit rather than save on the utilitarian.

Personalized information about accumulated credit debt is found not to influence buying on credit online in this study. This means that the assumption about difference of effect on different product categories is rejected. Navarro-Martinez, Salisbury [32] did similar research on factors influencing debt repayment decisions in 2011. They looked at the choice between decreasing current utility and decreasing future utility, and whether minimum-required-payment policy and loan information influenced consumers' repayment decisions. As they assumed, presenting only the minimum amount had a negative impact on payment decisions, and presenting an increased level of minimum payment had a positive impact. However, surprisingly, presented supplemental information, such as future interest costs and time needed to repay the loan, did not reduce the negative effects of including minimum payment information and had no substantial positive effects on repayment. These findings can possibly mirror the findings of this study, as the personalized information about consumer debt was found to have little effect on consumer credit choice when shopping online. The research of Navarro-Martinez, Salisbury [32], as well as the findings of this study, could indicate that a nudge containing personalized

information about consumer debt should focus on the possible amount to save rather than the possible costs of the loan, or that other options to reduce consumer debt should be evaluated.

Also, there may be other variables for the hedonic product that is not controlled for in the experiment which is affecting the results, for example, the "typical diffusion pattern" [16]. This could have affected the time aspect of the experiment as it shows that hedonic products typically have a decreasing value after launch. Clement, Fabel [16] presented these diffusion patterns in connection with hedonic goods such as movies and music. This variable was not considered as relevant in this study, as a gaming console is a different kind of hedonic good than movies and music. However, it is possible that a gaming console also might show signs of a decreasing value as newer improved version are introduced to the market constantly and the value, therefore, would decrease over time.

The price difference is not found big enough to conclude that a gaming console has similar diffusion patterns as other hedonic goods such as music and movies, which was the initial reason for not including them in this study. However, it is possible that some of the participants in the experiment had difficulty imagining wanting to spend that amount of money on a gaming console, versus a washing machine, which is a product with which most people have an established relationship. Hedonic products are, as mentioned, often symbolic and can have different values for different people [16]. A hedonic product can also, in theory, be functional and, therefore, more utilitarian to some, and vice versa. Justifying the purchase, which is found especially important for hedonic products [17], was, therefore, difficult to begin with, resulting in little difference between the two presentations of the decision. It is, therefore, also difficult to conclude that the personalized information about credit debt has no effect on consumer choice when buying hedonic goods on credit until further research has either confirmed or rejected the results in this study, either by testing on different kinds of hedonic goods or including the diffusion pattern as a variable in the research. However, as presented in the findings, the personalized information about credit debt is found to have no significant effect on buying the utilitarian product on credit online in this study. This was predicted to be lower in difference than for the hedonic in the third assumption.

5.1. Implications for practice

The findings of this study show that personalized information about consumer debt might not be enough to make a lasting change on consumers' credit behavior, which makes the topic of measures to reduce consumer credit debt online important to examine further. The need for restrictions for consumers struggling with consumer debt is evident, especially as compulsive buyers seem to be less inclined to react in a positive manner to economic guidance tools as these can possibly evoke negative emotions [33, 34]. Typically, when already struggling with debt [35], the consequences of online credit shopping are much higher for compulsive buyers. Additional measures from the industry, the government, and practitioners are, therefore, needed to secure this groups' interest. Practitioners, and the industry in general, also have a responsibility when it comes to credit prices and offerings, not targeting or marketing for compulsive online shopping. Until further research on the topic can conclude on how to best handle consumers who struggle with making healthy economic decisions, limitations should be present, and consumers should not be offered high credit card limits which they cannot handle.

5.2. Future research

This study did not find significant differences between the test group presented with consumer debt during purchase decision and the control group which was not. One reason for this result could be that the participants were presented with a scenario. A qualitative research design may help to explore the reason for the participants behavior, and shed further light on the effects of personalized information in this specific situation. Further research on how the nudge, with personalized information about credit debt, affects consumer emotions during the purchase decision is needed. The findings of this study as well as the findings of Navarro-Martinez, Salisbury [32], point to changing the formulation of the "nudge" to focus on possible amounts saved rather than cost could yield different results. Another important aspect that could be included is if and how the nudge affects consumer trust with the vendor, which is one of the possible effects on business outcome presented by Kaptein and Parvinen [14] in their research. Finally, products used and the skewed distribution regarding gender may impact the results. Future research should aim for a different sample sets and/or products.

6. Conclusion

The literature review shows an overall lack of research on the topic of online credit shopping. This study attempts to close parts of that gap by providing findings on what influences young adults' online credit shopping, focusing on a possible preventative measure as well as different product categories. Participants in this study were found to discount the future consumption closer to the hyperbolic model, but there are indications that dimensions other than time discounting, such as anticipation, self-control, and representation might have affected the results. The findings also present a significant difference in willingness to buy on credit for utilitarian versus hedonic products online, where saving was preferred for the hedonic product and credit was preferred for the utilitarian. Hedonic products are also found difficult to give a specific value to as the data indicates a lower price preference than what was used in this experiment.

There is still much research left to be done on this topic, and few have ventured into the area of consumer tools that can help private consumers online economic decision-making. Further research is, therefore, needed to be able to conclude if these tools have any effect. Personalized information about consumer debt might be more efficient if the focus were on the possible amount saved, as indicated in the research of Navarro-Martinez, Salisbury [32], rather than cost, as a cost focus had no significant effect in this study. The need for and possibilities of efficient measures for supporting consumers' economic decision-making is evident. Practitioners and researchers interested in this topic need to find the right angle, and it should not necessarily favor the online shopping sites or credit providers, but rather the consumers.

7. References

1. Palan, K.M., et al., *Compulsive Buying Behavior in College Students: The Mediating Role of Credit Card Misuse.* The Journal of Marketing Theory and Practice, 2011. **19**: p. 81-96.
2. Roberts, J.A. and E. Jones, *Money Attitudes, Credit Card Use, and Compulsive Buying among American College Students.* Journal of Consumer Affairs, 2001. **35**: p. 213-240.
3. Fagerstrøm, A. and D.A. Hantula, *Buy It Now and Pay for It Later: An Experimental Study of Student Credit Card Use.* The Psychological Record 2013. **63**(2): p. 323–332.
4. Tokunaga, H., *The use and abuse of consumer credit: Application of psychological theory and research.* Journal of Economic Psychology, 1993. **14**(2): p. 285-316.
5. Limayem, M., M. Khalifa, and A. Frini, *What Makes Consumers Buy from Internet? A Longitudinal Study of Online Shopping.* IEEE Transactions on Systems, MAN, and Cybernetics - Part A: Systems and Humans, 2000. **30**: p. 421-432.
6. Chang, M.K., W. Cheung, and V.S. Lai, *Literature Derived Reference Models for the Adoption of Online Shopping.* Information & Management, 2005. **42**: p. 543-559.
7. Gefen, D., E. Karahanna, and D.W. Straub, *Trust and TAM in Online Shopping: an Integrated Model.* MIS Quarterly, 2003. **27**: p. 51-90.
8. B, K., H. E, and K. E, *Credit use: Psychological perspectives on a multifaceted phenomenon.* International Journal of Psychology, 2012. **47**(1): p. 1-27.
9. Madden, G.J. and W.K. Bickel, eds. *Impulsivity: The behavioral and neurological science of discounting*. 2010, American Psychological Association: Washington, DC, US.
10. Shruti, S., *Inter-Temporal Choice and Its Relevance in Consumer's Credit Behavior*, in *Applied Behavioral Economics Research and Trends*, I. Rodica, Editor. 2017, IGI Global: Hershey, PA, USA. p. 17-38.
11. Fisher, I., *The Theory of Interest*. 1930, New York: The Macmillan Company.
12. Goes, P.B., *Editor's Comments: Information Systems Research and Behavioral Economics.* MIS Quarterly, 2013. **37**: p. iii-viii.
13. Hellström, V., *PSD2: the directive that will change banking as we know it.* Evry.com, 2017.
14. Kaptein, M. and P. Parvinen, *Advancing e-commerce personalization: Process framework and case study.* International Journal of Electronic Commerce, 2015. **19**: p. 7-33.
15. Lim, W.M., et al., *Understanding Young Consumer Perceptions on Credit Card Usage: Implications for Responsible Consumption.* Contemporary Management Research, 2014. **10**(4): p. 287-302.
16. Clement, M., S. Fabel, and C. Schmidt-Stölting, *Diffusion of Hedonic Goods: A Literature Review.* The International Journal on Media Management, 2006. **8**: p. 155-163.
17. Okada, E.M., *Justification Effects on Consumer Choice of Hedonic and Utilitarian Goods.* Journal of Marketing Research, 2005. **42**: p. 43-53.

18. Brown, T. and L. Plache, *Playing with Plastic: Maybe Not So Crazy.* The University of Chicago Law Review, 2006. **73**: p. 63–86.
19. Ariely, D., *Predictably Irrational, Revised and Expanded Edition: The Hidden Forces That Shape Our Decisions.* 2010.
20. Loewenstein, G. and D. Prelec, *Anomalies in intertemporal choices: Evidence and an interpretation.* Quarterly Journal of Economics, 1992. **107**(2): p. 573–597.
21. Frederick, S., G. Loewenstein, and T. O'Donoghue, *Time Discounting and Time Preference: A Critical Review.* Journal of Economic Literature, 2002. **40**(2): p. 351-401.
22. Angeletos, G.-M., et al., *The Hyperbolic Consumption Model: Calibration, Simulation, and Empirical Evaluation.* Journal of Economic Perspectives, 2001. **15**(3): p. 47-68.
23. Wolfinbarger, M. and M. Gilly, *Shopping Online for Freedom, Control, and Fun.* California Management Review, 2001. **43**: p. 34-55.
24. Babin, B.J., W.R. Darden, and M. Griffin, *Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value.* Journal of Consumer Research, 1994. **20**.
25. Mulvenna, M.D., S.S. Anand, and A.G. Büchner, *Personalization on the Net using Web Mining.* Communications of the ACM, 2000. **43**: p. 123-125.
26. Linden, G., B. Smith, and J. York, *Amazon.com recommendations: item-to-item collaborative filtering.* IEEE Internet Computing, 2003. **7**: p. 76-80.
27. DiFonzo, N., D.A. Hantula, and P. Bordia, *Microworlds for experimental research: Having your (control and collection) cake, and realism too.* Behavior Research Methods, Instruments & Computers, 1998. **30**(2): p. 278–286.
28. Rachlin, H., A. Raineri, and D. Cross, *Subjective Probability and Delay.* Journal of the Experimental Analysis of Behavior, 1991. **55**(2): p. 233–244.
29. Raineri, A. and H. Rachlin, *The Effect of Temporal Constraints on the Value of Money and Other Commodeties.* Journal of Behavioral Decision Making, 1993. **6**: p. 77-94.
30. Myerson, J., L. Green, and M. Warusawitharana, *Area Under the Curve as a Measure of Discounting.* Journal of The Experimental Analysis of Behavior, 2001. **76**: p. 235–243.
31. Berns, G.S., D. Laibson, and G. Loewenstein, *Intertemporal choice - toward and integrative framework.* Trends in Cognitive Sciences, 2007. **11**: p. 482-488.
32. Navarro-Martinez, D., et al., *Minimum Required Payment and Supplemental Information Disclosure Effects on Consumer Debt Repayment Decisions.* Journal of Marketing Research, 2011. **XLVIII**: p. 60-77.
33. Flight, R.L., M.M. Rountree, and S.E. Beatty, *Feeling The Urge: Affect in Impulsive and Compulsive Buying.* The Journal of Marketing Theory and Practice, 2012. **20**: p. 453-466.
34. Dittmar, H., K. Long, and R. Bond, *When a Better Self is Only a Button Click Away: Associations Between Materialistic Values, Emotional and Identity-Related Buying Motives, and Compulsive Buying Tendency Online.* Journal of Social and Clinical Psychology, 2007. **26**: p. 334-361.
35. Lo, H.-Y. and N. Harvey, *Shopping without pain: Compulsive buying and the effects of credit card availability in Europe and the Far East.* Journal of Economic Psychology, 2011. **32**: p. 79-92.