

A Work Project, presented as a part of the requirement for the award of a Master Degree in Management from the NOVA– School of Business and Economics and INSPER – Instituto de Ensino de Pesquisa

IMPACTS OBSERVED ON PRIVATE LABEL CARDHOLDERS OF A LOCAL COMPANY WHEN PURCHASED BY A MULTINATIONAL COMPANY

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Abstract

Nowadays, businesses are paid through electronic devices such as credit cards. Since its introduction in 1950, the whole payment system has evolved and became standard. However, some countries still have private label companies for which worldwide leading companies see as an opportunity of acquirement to conquer new markets and to increase profits. This study analyzes the evolution of a private label cardholder base, which has had its instrument changed to a worldwide brand of acceptance. The results show an increase in the card usage after the acquirement of a private label by a multinational company.

1. Introduction

In the modern world, financial transactions are regulated by international/local mechanisms and institutions in order to obtain credibility and protection for the participants of this system. In the present day, the payment system has evolved. New mechanisms were created and the vast majority of them were regulated in order to guarantee the safety, legality and interoperability of all users of this system. Banks have evolved the individual concept of financial company and have created networks, products and services to ensure the operation of global financial settlement purposes. The credit card was created in the middle of the 20th century and with the advent of online technology, it was possible to evolve the concept of credit for debit card, prepaid card, food voucher, fleet card among so many other forms. In this way, the credit card that was created inside banks evolved and reached other economic sectors, yet maintaining its main purpose of guaranteeing the financial settlement for those who receive it. Since credit card brands were created, they reached a global scale in a short period of time and, despite the initiative of some countries, the current brands are still almost an American oligopoly (MasterCard, Visa and Amex). In emerging markets, like Brazil, banks were the first to adopt these companies and complied with the international rules offering national and

international products to their clients. However, over the years, the chain of suppliers for this type of card, until then limited to banks, started to offer its services to other sectors of the economy. In addition, there was the phenomenon of bank concentration that occurred over several cycles in emerging economies. The consequent adaptation of the system to new incoming concepts, such as credit cooperatives, microcredits and private labels as well as trade networks, realized that they could offer products to finance their sales through available technology by deregulating the financial system. The credit, direct consumer credit or notification of payment, are now obtained through electronic transactions. Legislation has been changing over time. Direct debit was allowed in the payment of purchase wages, of financial transactions since these operations were much cheaper and more beneficial to workers or users. At the same time, incentive products and social benefits have been created, such as food, meal, pharmacy, fuel and cultural vouchers. Companies that did not belong to the financial system, regional card companies, benefit companies, prepaid card companies, have become so large and so promising that the ultimate regulatory authority has decided to regulate and discipline this market, creating a specific legislation for the issuance of electronic money (especially private labels companies) in 2013 with practical effects from 2015 until 2022. Nowadays, there are several examples like in Argentina (Cabal), China (Union Pay), India (RuPay) and in Brazil it has been estimated more than 100 companies (Policard, ValeCard, Unik, CooperCard, MinasCred, ExtraCard, Brasil Cartões and others). These companies have not been studied yet despite their regional importance. In this study, we observed a multinational company, Wright Express – WEX Inc., one of the largest companies in the world issuing MasterCard cards, to acquire Unik, a Brazilian regional company, with its own brand, its own issuance, its own acquiring with the establishments in 2012. The aim is to observe what happens to users of the Private Labels credit card, Unik, with direct payment from their salary (“Cartão Benefício”) when cards change to an international branded card with a larger network of establishments

(MasterCard), a greater range of benefits and a greater exposure to marketing. What happens to the general behavior of expenses, the bucket of products and what impacts can we conclude from this observation? To define the scope of this study, the significant changes that we observe are the ones initially related to the degree of consumption of both goods and services measured by the total spending of the observed months. Next, the study looks to identify whether there are significant changes in total consumption, in the acquisition of bucket of products, that is to say, if one bucket becomes preferred to another, or if the choice of bucket of products remains unchanged or shows significant variations. The importance of this study is to verify that customers who have now access to a larger network, that allows them to have higher expenses with a brand of greater acceptance and greater disclosure, can react favorably to this stimulus and incentive or can maintain their previous behavior or can notice this incentive is too much to the point that their behaviors become more restricted or even null.

2. Introduction to the payment system in Brazil

In the case of Brazil, the banking concentration tends to aggravate even more, because the issue of the card is not the responsibility of the brand, but rather of these financial corporations that act as credit card issuer and which are increasingly concentrated here in five financial institutions: Banco do Brasil, Caixa Econômica Federal, Itaú-Unibanco, Bradesco and Santander. Therefore, the population listed in classes C, D and E is now in a more rigorous scenario for the granting of credit and even to become a population with access to banking products and services (Foreman, 2014). In addition to the (i) regulatory legislation of the electronic money issuance, (ii) the end of the duopoly (2010) between the main acquires companies (Visanet / Cielo e Redecard / Rede), the Private Label credit card market is undergoing continuous transformations, triggered by (iii) entry of new players into the transaction capture market (acquiring), (iv) the rise of the prepaid card mode, (v) the entry of a

new player not yet regulated, which are the payment gateways or sub-acquirers such as Paypal, Moip, PagSeguro among others and (vi) the advance of disruptive technology via apps (applications), mobile telephony replacing the plastic card. It is also important to note that private label cards and their companies can quickly have been adapted to the needs of customers in each region much faster than traditional bank cards can. Thus, it is not uncommon to find completely innovative types, nomenclatures and rules of operation in private label than in conventional banking credit and debit cards. This versatility is typical of private label companies and is one of the greatest assets in the Brazilian payment market.

The “Cartão Benefício” (a payroll card), from the WEX Inc. Unik company, is an example of this versatility and therefore were chosen to carry out this study. WEX-Inc. sold the entirety of UNIK in 2012. Unik is a card company. It is neither bank nor financial, but for many years it was the only non-financial company associated with Banco 24Horas (like Multibanco in Europe).

Picture 1 - “Cartão Benefício Unik” and “Cartão Benefício Unik MasterCard”



Source: Wex-Inc. Unik Company

The choice of “Cartão Benefício” is determined by the intrinsic and unique characteristics of this product. This card, does not have the nomenclature "credit", nor in the plastic, nor in its approach of sale or operational (call center and site). Also, it does not have any financial charge for its users since all purchases made within the established credit limit

are deducted directly from each user's payroll by the employer and contractor of this card. Indeed, this card is not acquired by the user but through an agreement between Unik and the contracting companies.

In addition to being a shopping card, it allows to pay bill online and makes cash withdrawals in the automated teller machine (ATM) network of Banco 24Horas, and in these two cases, these services are performed through the payment of service charges and charges that are informed at the time of the transaction. Therefore, this card has a very large acceptance in low income social classes. In this way, the arrival of a card sponsored by the employer, is generally a reason for joy, because the employee has a sense of social inclusion with the new tool. Many employees will use it even if they do not understand the card for either reasons averse to technologies or for reasons like not being able to keep track of the ratio of spending to salary. There is always a concern for not receiving the salary at the end of the month because the card "eats everything", although insistently the company's Human Resources provides explanatory training about the use of the card with its operation and its established limits. Many human resources consider this card as a salary advance card, meaning that the employee does not have to feel embarrassed every month by asking for the "voucher". There is salary installment that can be anticipated up to forty percent (40%) of his total salary Gross and which must be paid on the 20th day of the month by the employer to the employee. The first perception of Unik by users is a service to help the Human Resources of a company to monitor the employees, therefore it is seen as a beneficial card. Indeed, the "Cartão Benefício" Unik has a "controlled" acceptance network. You cannot spend money shopping or at any trade but only in supermarket, pharmacies, fuel station and other merchants that HRs requests and approves to be part of the payment system of Unik. Therefore, this is a shopping card with a limit fixed that is determined by the company and that does not exceed 30% (thirty percent) for all employees regardless of the salary of everyone. The main advantage of this card is that the card user does not pay fees

or financial charges. The payment is deducted in full, from the salary in the month following the use. It obeys the cycle of the 20th of the previous month until the 19th of the current month.

Through the acquirement by Wex Inc., the business model was rearranged and the network increased. Firstly, the Unik / MasterCard (“Cartão Benefício”) has now a network of 1.8 million establishments in Brazil and this card can be purchased at any e-commerce. In this way, human resources cannot any longer "manage" the consumption of its collaborator. Indeed, it remains a shopping card keeping the flow and routine up cycles but has now a monthly fee of 2,50 reais every time the “Cartão Benefício” is used even though this could be a major inhibitor in card usage. Consequently, regardless of the number of transactions in the month, there will be a charge imposed. Regarding the rules for collection of events, withdrawal and payment of bills (fees and rates), no changes occurred. Also, the previous credit offer remains the same with no changes in the setting of loan rates. In addition to the increase in the network of merchants and the ability to purchase at any e-commerce site, this card has now a loyalty/reward program for the MasterCard banner called “Surpreenda”. The users can earn points, exchange for gifts and participate in promotions. Being the focus of the 'Cartão Benefício' to grant the company's employees, its use and its activation are concentrated in the base of the salary structure. Employees who have low salaries are the largest and regular clients, once they find this product a practical and useful way to get wage advance without payment of fees or interest. Many of them are simple people that have never had the opportunity to have a bank account, and this card is their first chance to have one and access the financial system, with all the facilities it offers. With the arrival of the WEX Inc. and the MasterCard brand, the product got a new and more an interesting packaging for this population that has now not only a Private Label card but an international brand card, a known one with extensive media exposure. These characteristics make the card more attractive by combining social inclusion with low cost to the company and/or employee and making the product more valuable (features and brand).

3. Review of literature and theoretical foundation

In this study, Unik is an example of a closed loop network as it is a small company that provides companies with the control to choose specific merchants the cardholders have access to. Even though Unik has more control, it has the disadvantage of having a merchant network size that is not comparable to the one of an open loop network. Also, these networks have non-network related to sources of revenue. The companies pay the private label to use its service. On the other hand, MasterCard is an open loop network that includes customers, issuers, merchants, acquirers, and gateways as described in the Henry Fund Report (2016) and their revenues are directly linked to the financial market as they make money with transaction fees, processing fees, and cross-border fees every time someone uses a card such as MasterCard or Visa as explained by the report of 2015 by MasterCard.

There are four main players controlling the global market share with an open loop network: Visa (44.1%), MasterCard (29%), UnionPay (15%), and American Express (7.1%) (Nilson Report 2017). In Brazil, both Visa and MasterCard combined represented a value share of 89% in 2015 (Euromonitor, 2016). These brands create an oligopolistic structure in which only few big players invest money in R&D and set either low prices to attract new customers or high prices to exploit old customers. As the competition is important among these few players, companies may come to collusive agreements and reduce even more the competition with a tendency towards a monopolistic market structure occurs (Wang, 2007). However, as Baxter (1983) demonstrated, these collusions often lead to a decrease in bargaining costs between issuers and acquirers.

A two-sided network is a platform satisfying two different end-users by setting the price for each of them (Chakravorti & Roson, 2006). Both consumers' and merchants' benefits result from two independent demands that need to be satisfied at the same time. From the merchants' perspective, they will accept credit cards only if there are enough active cardholders while,

from the cardholder's perspective, they will use a card only if there are enough merchants accepting the card. (Chakravorti, 2003). In more recent studies, Hagi (2014) called Visa a multisided platform which put in direct several participants. Rochet & Tirole (2002) and Wright (2002) explain through their studies that merchants started to accept credit cards for two main reasons: to attract more customers and to increase their profit. As not every merchant was accepting credit cards, merchants who accepted cards had a competitive advantage on others. From the financial perspective, Chakravorti & To (2007) stated an additional important point about the discount fees for merchants. These fees are established according to the number of customers who use a credit card and these fees can be absorbed in the price paid by the consumers. From the consumers' perspective, there is a trade off as using credit cards as they would pay the same price than someone who pays in cash anyway and they benefit from a reward card program. (Schuh, Shy, Stavins, 2010). Lastly, the interactions between both consumers and merchants create a "positive network effect" (Rochet and Tirole, 2003).

Until recent times, many debates occurred regarding the credit cards as being beneficial or harmful for consumers. In his study, Brown (2006) asserts that cardholders still make a rational and wise decision when using the credit cards. On the other hand, it has been demonstrated that the possession of credit cards influences the consumers' spending. Feinberg (1986) suggested that the presence of a strong association between spending and credit card stimuli which results in a shorter time decision in spending, a bigger amount of money spent, and an increased motivation of spending. Khan (2011) emphasizes these findings by proving that people are more likely to spend a bigger amount of money with credit cards than if they were paying by cash where they will be limited with physical money. In addition, Prelec and Simester (2001) assert that the willingness of consumers to pay is increasing if the payment method chosen is a credit card. Fishbein and Ajzen (1975), Festinger (1975) and Krugman (1965) explain this relationship through respectively three theories: theory of reasoned action,

cognitive dissonance and the hierarchy of effects. In addition, it appears that the credit attitude depends also on the demographic and economic factors. According to the family resource management model of Lown and Ju (1992) and to Kaynak and Harcar (2001), the financial satisfaction would be influenced by demographic, economics and credit attitude. Mathews and Slocum (1972) assert that the income influences the credit attitude in such way that the higher the income, the more favorable the attitude toward credit cards. Lastly, Awh and Waters (1974) describe the same difference in attitude between younger with a favorable attitude and older consumers with a less favorable attitude.

Focusing on the different social classes, Lucinda and Vieira (2010) analysed the interest sensibility of Brazilian consumers of one of the largest credit card issuers in the country. During the experiments, Vieira and Lucinda created two groups of participants which had different median incomes. Among these groups, participants were attributed random interest rates and were observed during the following year. The findings of his studies were that the most sensitive group to interest rate were the higher income population whereas the lower income group was not as sensitive. Indeed, Ausubel (1991) studied the elasticity of the interest rate for issuers and consumers in North America and the results were similar to Vieira's findings. In their mind, consumers will pay their credit balance on time and therefore will not pay interests. Therefore, they are not sensitive to the interest rates even though most of them end up by paying interests which increased the margin of issuers. However, another study by Stavins (2006) shows the reversed results showing that consumers choose their credit card loans based on the interested rates proposed by the issuers. In parallel of Viera and Lucinda's study, Neri (2010) explained the evolution of the Brazilian population with the introduction of a new Brazilian middle class composed of younger, more educated and consumer individuals. In other words, the Brazilian social class stratification changed along with a rise in the standards of living associated to a change in the way Brazilians spend their income. Despite his studies, he found

out that the higher the credit of Brazilians, the higher the consumption per capita. In addition, he observed a change in the financial management of households as more families were using their saving to consume more. Regarding the consumption, Hall (1978) developed a study based on the certainty equivalent model developed by Euler (Euler equation). He found out that the change in consumption is not related to the information that the consumers previously hold. In addition, predictable change in income is unrelated to the change in consumption. Therefore, that consumption is random.

Therefore, this literature review has different outcomes when it comes to understand the credit card network among Private Label and multinational brands and the consumer behavior toward credit. Yet, it has been difficult for companies to measure the impact of the changes occurring when a regional company like Unik is acquired by a multinational brand, and how the consumers react to these new conditions through their spending. Consequently, the following empirical study aims to the understanding of this gap with the following hypothesis:

When a multinational brand acquires a private label, the cardholders increase and diversify their spending as the network becomes bigger.

4. Research Methodology

4.1. Data Collection

In order to accomplish the empirical hypothesis test, Unik was asked a random sample from its base that has more than 2 million active clients. The first base had more than 500 thousand registrations, but the majority was excluded because they did not have any relevant information or they showed inconsistencies not easy to identify and resolve. For your knowledge, this study ascertained that:

- a. Most clients do not have a complete register data with relevant information like hiring date of employee, date of birth, education, position or function, wage or salary range.
- b. Some transactions did not have the information about the limit of the card at the time of purchase due to particularities established by the agreement or even due to timely requests of the company.
- c. Most transactions occurred in Unik brand. Some users frequently use Unik brand but with observations less than 12 (twelve), 10 (ten) and even 8 (eight) in MasterCard brand.
- d. Some users did not present observations in sequential months nor in a brand nor in both. It was not possible to conclude with highly accuracy that the lack of observation might mean the user had not used the product. It could mean the card was lost, the user gave up using it or also it could mean another event.

So, the random base was reduced to 5.376 observations corresponding to 336 users identified by a registration number (CPF - Social Security Number) each one with 16 observations in Unik brand and 8 in MasterCard brand, regardless of the exchange date of brands. Thus, there are two brands that appeared during the period of study, Unik and MasterCard.

In the first eight months, what is considered it is the use of Unik brand and for the last eight months, MasterCard brand, considering all individuals of the sample. 5.376 observations were used. The users of Unik brand could use three kinds of services such as employee loan, shopping and debit, on the other hand, the users of MasterCard brand could use four kinds of services, adding the online purchase to the three mentioned before.

Therefore, the variable elements that were considered for the study were total use of the card, its limit, and its brand. In table 1, there are the descriptions of the variable elements.

Table 1: Descriptions of the variable elements

Vtotal	Dependent variable corresponding to total amount of the card in reais during a determined month.
Cash	Independent variable element corresponding to withdraw in ATM machine for each period.
Master	Independent variable element is a dummy one, where the value in number 1 indicates the client owns a MasterCard and number 0 means it is a Unik client.
U	Independent variable element corresponding to Unik brand, it is a dummy one, where the value 1 is a Unik client and value 0 is for MasterCard client.

For analysing the data, a multiple regression analysis was necessary and the statistical software Stata, version 13.1 was used. The results are in following table 2.

$$V_{total} = \beta_0 + \beta_1 \text{Cash} + \beta \text{Master} + \beta U + \varepsilon$$

Table 2: Results of the multiple regression

. reg vtotal saque master u , noconst						
Source	SS	df	MS	Number of obs = 5376		
Model	4.1782e+10	3	1.3927e+10	F(3, 5373) =48372.26		
Residual	1.5470e+09	5373	287922.839	Prob > F = 0.0000		
Total	4.3329e+10	5376	8059791.78	R-squared = 0.9643		
				Adj R-squared = 0.9643		
				Root MSE = 536.58		
vtotal	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
saque	.9992806	.0026528	376.69	0.000	.99408	1.004481
master	125.9204	10.40849	12.10	0.000	105.5155	146.3253
u	95.93282	10.35529	9.26	0.000	75.63225	116.2334

4.2. Data Organization and regression model chosen

The data gathering was done through a random way and filtered using the following selection criteria. To be an active client at the time of the selection (February 2017), own a 'Cartão Benefício', have eight 8 consecutive transactions in Unit event (0) and MasterCard event (1), have a valid limit. This sample was organized in a format of panel allowing the capture of observed effects during a determined period.

4.3. Limitations

This study is restricted to some relevant factors. First, the extraction of data to accomplish the research was a new event for the WEX - Inc. This led to a need for adaptation of the internal processes, as well as the utilization of unexpected resources to accomplish the extraction. Second, even after meetings with the technology teams, the first available data for this study had many inconsistencies, and some were clearly a problem from the registration data and not from the extraction nor from its manipulation. As discussed in the study, Unik provides services to Human Resource that does not require the employees to give any personal details (salary, date of emission, address, function, position, civil status) that could allow a credit analysis. Thus, the data required is minimal which fits with the willingness of the companies to protect their employees registered data. Therefore, the few data collected from the user register of the company could not allow a solid analysis or an analysis with more independent variable elements. After setting some points, the quality of the extraction was improved but it will take time and some investment from WEX-Inc. Unik to solve the relevant gaps. However, even identifying specific issues with understandings that were solved during the organization of the data, the data used for the study was finally available at the end of May 2017, which limited even more the period of time to accomplish this study.

As mentioned, in spite of the company's efforts to extract the best data quality, a database with 52,104 observations of customers with a limit of 10 to 100 reais was subsequently made available for the conclusion of this work. It was on this basis of a final sample of 5.376.

5. Analysis of Results

An analysis of the table 2 shows the amount of observations, 5376 and the value of R^2 , that is 96,43%, which means that the independent variable elements explain 96,43% of the dependent variable behavior.

Considering the independent variable elements, they are all relevant statistics for test t and for test P-value. The coefficient of withdraw variable indicates how much the variation of value can influence on the total use of the card. So, as the coefficient value is 0,9993 it indicates that an increase of value will cause an increase of 0,993 reais on the use of the card.

The coefficients of the MasterCard variables and “u” show the average withdraw in these brands. Therefore, the average withdraw with “u” brand corresponds to 95,93 reais, while the average consumption with MasterCard brand corresponds to 125,92 reais. Therefore it has to be concluded that the brand change for clients with a limit between 10 to 100 reais, considering the previous eight months before the change, led to an increase use of the card of approximately 31%.

It is relevant to mention that the level of correlation between the chosen variables (values are in the Correlation Matrix of appendix 5) show a high correlation between the variables “saque” and “vtotal”. With respect to the “MasterCard” and “U” variables this value is low since they are dummy variables. But these variables are important for a qualitative analysis. As the proposal is to perform an analysis of the change in the behavior of the user of the card with the change of the brand.

The Hausman test was used to evaluate if the elaboration of the multiple regression should be done considering the established or floating effect. The result (see appendix) shows that it is an established and constant effect.

The aim of this study is to consider the hypothesis represented here: “When a multinational brand acquires a private label, the cardholders increase and diversify their spending as the network becomes bigger”. As the results show, we come to a conclusion that the change from Unik to MasterCard brand has a direct influence in the increase of the average amount pended by each user. However, we can observe that the growth is concentrated only in one basket of products, the Withdraw, that is the product called loan in the Unik. Although the brand has more exposure in marketing (MasterCard) and despite it has the major establishment chain (1.8 million), the increase was concentrated in other product. It is Aldo worth to highlight that there were no changes in other basket of products, Automatic Products and Online Purchase. Thus, this study will be helpful to the company when targeting the future strategic direction and its tools and resources of marketing, communication and incentive.

6. Future research fields

This study shows that in the future it will be possible to get a base with a great number of balanced observations in both events (0 - Unik) and (1 - MasterCard) to (re)confirm these results. We can also have a more qualified analysis, when the users will be enrolled in the relisting process. In addition, we can continue the study to understand which variable elements could affect the relationship and the behavior of the users with this card. Furthermore, this study will help future studies in the understanding of themes such as:

1. Cardholders loyalty
2. Consumption of product bases by cardholder (volume or mix)
3. The Business Model for the company and for the companies-customers

4. The acceptance network of merchants
5. Evaluation of the results of the Corporate Strategy of a multinational company in the acquisition of a payment company in another country
6. Evaluation of cardholders decision-making process
7. Evaluation (or not) about the Corporate Social Responsibility policies

1.3 T-test

```
. xttest0
```

Breusch and Pagan Lagrangian multiplier test for random effects

```
vtotal[id,t] = Xb + u[id] + e[id,t]
```

Estimated results:

	Var	sd = sqrt(Var)
vtotal	7913927	2813.17
e	284348.4	533.2433
u	3638.462	60.31967

Test: Var(u) = 0

```
chibar2(01) = 6.05
Prob > chibar2 = 0.0069
```

1.4 Hausman Test

```
. qui xtreg vtotal saque master , fe
```

```
. estimates store fe
```

```
. qui xtreg vtotal saque master , re
```

```
. estimates store re
```

```
. hausman fe re
```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fe	(B) re		
saque	.9996006	.9993311	.0002695	.0007338
master	29.8956	29.97306	-.0774569	.2802219

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

```
chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 0.13
Prob>chi2 = 0.9348
```

Appendix 2 – Robustness test

```
. xtreg vtotal saque master , fe rob
```

Fixed-effects (within) regression Number of obs = 5376
Group variable: id Number of groups = 336

R-sq: within = 0.9633 Obs per group: min = 16
 between = 0.9676 avg = 16.0
 overall = 0.9636 max = 16

 F(2,335) = 385475.36
corr(u_i, Xb) = -0.0060 Prob > F = 0.0000

(Std. Err. adjusted for 336 clusters in id)

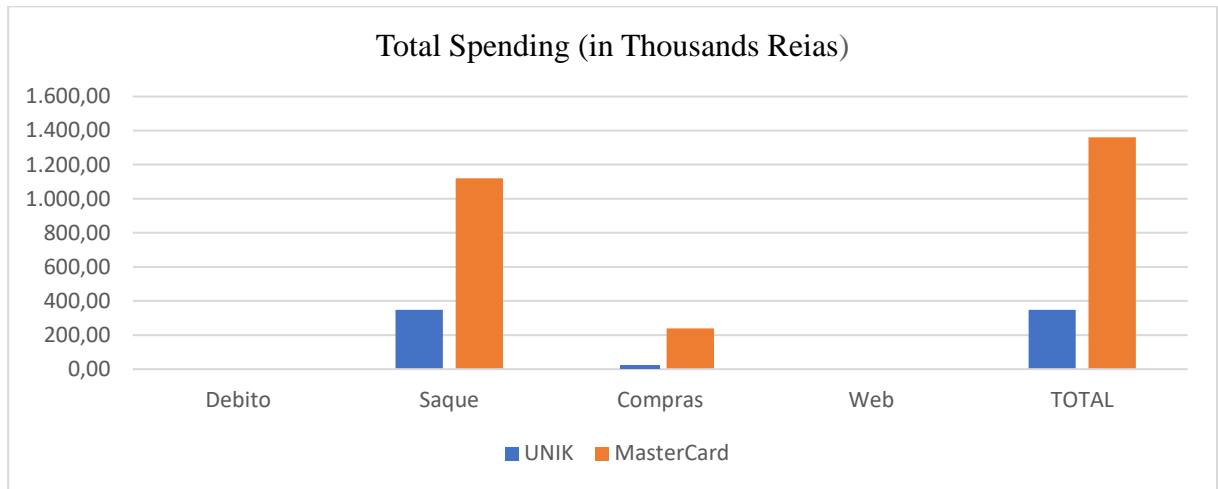
vtotal	Robust		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
saque	.9996006	.0011555	865.09	0.000	.9973277	1.001874
master	29.8956	14.82657	2.02	0.045	.7306884	59.06051
_cons	95.8914	7.366583	13.02	0.000	81.40081	110.382
sigma_u	146.13565					
sigma_e	533.24332					
rho	.06985719 (fraction of variance due to u_i)					

Appendix 3 – Summary of the variable

```
. sum vtotal saque master u
```

Variable	Obs	Mean	Std. Dev.	Min	Max
vtotal	5376	383.845	2813.17	-900	124503.8
saque	5376	273.1149	2762.708	0	124263.4
master	5376	.5	.5000465	0	1
u	5376	.5	.5000465	0	1

Appendix 4 – Histogram of the total spending with Unik and MasterCard



Appendix 5 – Correlation Matrix

```
. correl vttotal saque master u
(obs=5376)
```

	vttotal	saque	master	u
vttotal	1.0000			
saque	0.9816	1.0000		
master	0.0564	0.0520	1.0000	
u	-0.0564	-0.0520	-1.0000	1.0000

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