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## FACTORS AFFECTING CREDIT CARD OWNERSHIP OF STUDENTS

Ebru ONURLUBAŞ\*

Neslihan YILMAZ\*\*

Selma KARABAŞ\*\*\*

Uğur TAŞKAN\*\*\*\*

Hasan Gökhan DOĞAN\*\*\*\*\*

### Abstract

This study is conducted for the purpose of determining the effects of some socio-economical and demographic factors on the credit card ownership of Students of Trakya University-Keşan Yusuf Çapraz School of Applied Sciences. Method: 218 students were subjected to a survey using a questionnaire and the data obtained was evaluated by using the Logit model. Result and Conclusion: According to the Logit model results among various variables used, the student's age, mother's, father's and brother's / sister's occupational status, the monthly income of family, the monthly amount of money passing in the hands of student were found statistically significant variables on determining the ownership of a credit card. Also, Chi Square analysis are used to search credit card ownership according to the regions where students' families live and it is found that the regions where students' families live don't affect credit card ownership situation.

**Keywords:** University Students, Credit Card Ownership, Logit Model, Chi Square, Keşan County.

### 1. Introduction

The credit card, referred to as "plastic money" represents a contemporary payment system in the modern world; and it can be defined as a payment tool that, thanks to the credit granted from the card-issuing bank or credit institution, provides to the people the possibility of purchasing needed goods or services, without making any payment at that moment of purchase, by allowing them to make such payment at a later time, without charging any additional financial burden (Çavuş, 2006).

Fast, easy and safe way of making payment by use of banking and credit cards increased consumers and businesses to use these cards. These cards have saved holders' obligation of carrying cash and being stolen and lost etc. probable dangers. In addition, credit cards play an important role on matters such as controlling and minimizing unrecorded and off the records economy as long as the legal foundation that is going to enable an effective way for credit cards to be used as such in developed economies (Cengiz, 2009).

Credit card as payment tool, due to the intense interest drawn in the market and their high profitability, credit cards introduced in Turkey in the 1970's, entered the agenda of the banks started from 1980's (Kirdaban, 2005).

Credit card sector, growing rapidly in Turkey, aims to include university students in its customers portfolio. There are also some banks in Turkey, which are applying some practices on credit cards for university students. (Keskin ve Koparan, 2010).

In this context, the aim of this research consists in revealing the factors affecting on Credit Card Ownership of Students of Trakya University-Keşan Yusuf Çapraz School of Applied Sciences.

Many studies on the students' usage of credit card and the factors affecting such usage were conducted in national and international level. (Davies and Lea, 1995 ; Stanford., 1999; Warwick and

\* Trakya University, Keşan Yusuf Çapraz School of Applied Sciences, Department of International Trade, Edirne/Keşan, Turkey. (Corresponding Author e-mail: ebruonurlubas@hotmail.com.tr)

\*\* Republic of Food, Agriculture and Livestock, General Directorate Union of foreign Affairs, Ankara, Turkey.

\*\*\* Çankırı Karatekin University, Faculty of Economy, Department of Business, Çankırı, Turkey.

\*\*\*\* Trakya University, Keşan Yusuf Çapraz School of Applied Sciences, Department of Business Information Management, Edirne/Keşan, Turkey.

\*\*\*\*\* Ahi Evran University, Faculty of Agriculture, Department of Agricultural Economy, Kırşehir, Turkey.

Mansfield 2000; Hayhoe, 2002; Mae, 2002; Joo et al., 2003; Lyons, A., 2003; Gnizak et al. 2004; Hayhoe et al., 2005; Pinto et al. 2001; Norvilitis et al., 2006; Çelik et al., 2010; Girginer et al., 2011). However, there is not any previous study on credit card use and ownership of university students in Keşan township of Edirne. Therefore this study represents an original and important research.

### 1.1. Credit Card

Credit card is the type of card owned and issued by banks and financial institutions at pre-determined limits for their clients so that those clients can purchase goods and services from contracted businesses within and outside of country and use for the purposes of withdrawing cash from cash payment units or ATMs Yılmaz (2000). In a society, credit cards are being used by all types and ages of people from students to retired people from poor to wealthy people Evans (2004).

The idea of making a payment through a card was introduced for the very first time in 1887 in a science fiction novel named "Looking Backward or Life In The Year 2000" written by Edward Bellamy. In the novel, the idea of being able to make payments for the purchases done in 2000s through pieces of papers ripped out of a card and continuing to do so until the card is finished had been introduced (Fachwissen, 2013).

The first credit card in world was used in 1920s in America. In the same period, automobile owners in America started searching for solutions when their fuel expenses increased and by creating various cards, a few fuel oil companies allowed the users of those cards to purchase fuel oil under better conditions. Among the card manufacturing companies, "Western Union" became prominent to distribute cards to its customers at no cost in 1921 (Anonymous, 2014). When it comes to Turkey, credit cards began being used in 1970s. Actual credit card phenomenon began forming in Turkey in 1980s and it gained activity towards the end of year 1983 along with the development of the necessary system. The number of credit cards and credit card users are rather small due to number of banks and bank branches found in the credit card system being small between the years of 1983-1988 (Çavuş, 2006).

In year 1999, second stage of the Interbank Card Center (ICC) switch system's new technology product was initiated and new improvements were experienced in the area of credit cards. Among those improvements and changes was the introduction of co-card owners in year 1999. In year 2000, ICC and its member companies, made the decision of switching over to chip&pin practice. In year 2006, Europe's first contactless credit card began being used in Turkey. It attracted notice by being used in purchasing to be made with credit cards for the first time in world after the banking transactions of mobile signature came about in year 2008 (Kaya, 2009).

### 2. Materials and Methods

The data provided from the survey made with the students of Edirne Keşan Yusuf Çapraz School of Applied Sciences in 2012 represents the main material of the study. The total number of university students is 1098. In the determination of the sample volume of the students subjected to the survey is worked with a margin of error of 5 %, within 90% confidence limits. As the result of the calculation made, the sample volume is determined as 218.

This population was determined using the formul sample number (Baş, 2008):

$$n = \frac{N \cdot t^2 \cdot p \cdot q}{d^2 \cdot (N - 1) + t^2 \cdot p \cdot q}$$

Where in;

n; is the number of individuals to be sampling,

N; is the individual in the target group (1098),

p; is the event's probability of occurrence (0,50),

q; is the event's probability of nonoccurrence (0,50),

t; Standard normal distribution value (1,65),

d; Sampling error (0,05).

Logit model was used to determine the factors affecting the credit card ownership of the students of Keşan Yusuf Çapraz Uygulamalı Bilimler Yüksekokulu (Keşan Yusuf Cross Application Sciences College) in the study.

In the study logit model was used to determine the factors affecting the credit card ownership of the students of Keşan Yusuf Çapraz Uygulamalı Bilimler Yüksekokulu (Keşan Yusuf Cross Application Sciences College).

In the Logit regression analysis method, social and economical aspects have also been approached on the consumer profile such as consumer attitude and behavior (Akyıldız and Marangoz, 2008; Özer and Lebe, 2008; Inal et al., 2006).

Logit model is formed of a statistical method that analysis tabulated or raw data sets which provides opportunity to make classification appropriate to rules of likelihood by calculating the estimated values of a dependent variable as likelihood (Özdamar, 1999).

Maximum Likelihood (ML), Reweighted Iterative Least Square (RILS) and in case of iterative data Minimum Logit Chi Square (MLCS) methods are used in parameter estimation of logistic regression model (Murat and Işığışık, 2007). The most often used method among these methods is likelihood method.

Logit regression model is a nonlinear regression model that has been designed for at least two dependent variables. In other words, it is a nonlinear model that can be linearize with appropriate conversions (Stok and Watson, 2007).

Also in this study, the factors affecting the credit card ownership were analyzed with binary logit regression analysis.

General functional indication of logit matters are as follow (Gujarati, 1992);

Credit card ownership of  $\hat{I}$  observed for family index function;

For student without a credit card ownership  $\hat{I}=0$  and for student with a credit card ownership  $\hat{I}=1$  are used in this study.

$B$ = Coefficient vector of explanatory variables

$X_i$ = Explanatory variables representing the family characteristics

$\varepsilon_i$ = Indicates error term.

Students credit card ownership;

$P_i$  = Likelihood of dependent variable

$e = 10$  based natural logarithm and approximately 2.7182.

$$Z_i = B_0 + B_i X_i$$

Credit card ownership's odds ration  $P_i$

$$P_i = \frac{P_i}{1 - P_i} + \frac{1 + e^x}{1 + e^x}$$

If natural logarithm of the formula that is the odds ratio of credit card ownership is taken, we reach the result below.

$$\frac{\ln P_i}{1 - P_i} = Z_i$$

$$Z_i = B_0 + B_i X_i$$

$B$ : Represents the parameters to be estimated for each explanatory variable,

$X_i$ : Represents  $i$ . independent variable.

In this study, the factors used as explanatory variables to form binary logit analysis of students' credit card ownership concept are;

$$Y = B_0 + B_1 \text{cinsiyet} + B_2 \text{yaş} + B_3 \text{AÇLŞMD} + B_4 \text{BÇŞMD} + B_5 \text{KÇLŞMD} + B_6 \text{ÖEGP} + B_7 \text{YB} + B_8 \text{ÖB} + B_9 \text{G' dir.}$$

The study also consists of a Chi Square formula analysis to research the credit card ownership according to the area of the students families live in. Chi Square formula is as follows (Gujarati, 1995; Mirer, 1995);

$$\chi^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i}$$

In the formula;

$\chi^2$ = Chi-square value,

$O_i$ = Observed frequency value,

$E_i$ = Estimated / anticipated frequency value.

### 3. Research and Findings

51,8 % of the university students participating in the surveys are women and 48,2% are men. The average age of the students is 20,11. 1,8% of the students are married and 98,2 % are single. Considering the distribution of the college students participating in the study, according to the branches of education, it is seen that 22,9 % are studying in Computer Technology Department, 14,3 % in Business Information Management, 22,5 % in International Trade Department, 20,6 % in Customs Management Department and 19,7 % in Banking and Insurance Department. Considering the regional provenience of the students it is seen that 64,7 % are coming from Marmara region, 11,5 % from Aegean, 4,6 % from Mediterranean, 8,3 % from Black Sea, 6,9% from Central Anatolia, 3,1 % from Eastern Anatolia and 0,9 % from South-eastern region of the country. 44,0 % of the students' families are residing in metropolitan, 31,7 % in provinces, 17,4 % in

townships, 3,7% in villages and 3,2 % in small towns. There are 4,50 people as a mean value in the families of students who took place in the research.

Considering the monthly incomes of students' families, it is seen that 14,2 % of such incomes are between 0-1000 TL (Turkish Liras), 24,8 % are between 1001-1500 TL, 27,1 % are between 1501-2000 TL, 19,3 % are between 2001-2500 TL, 8,6 % are between 2501-3500 TL and 6,0 % are 3501 TL and over.

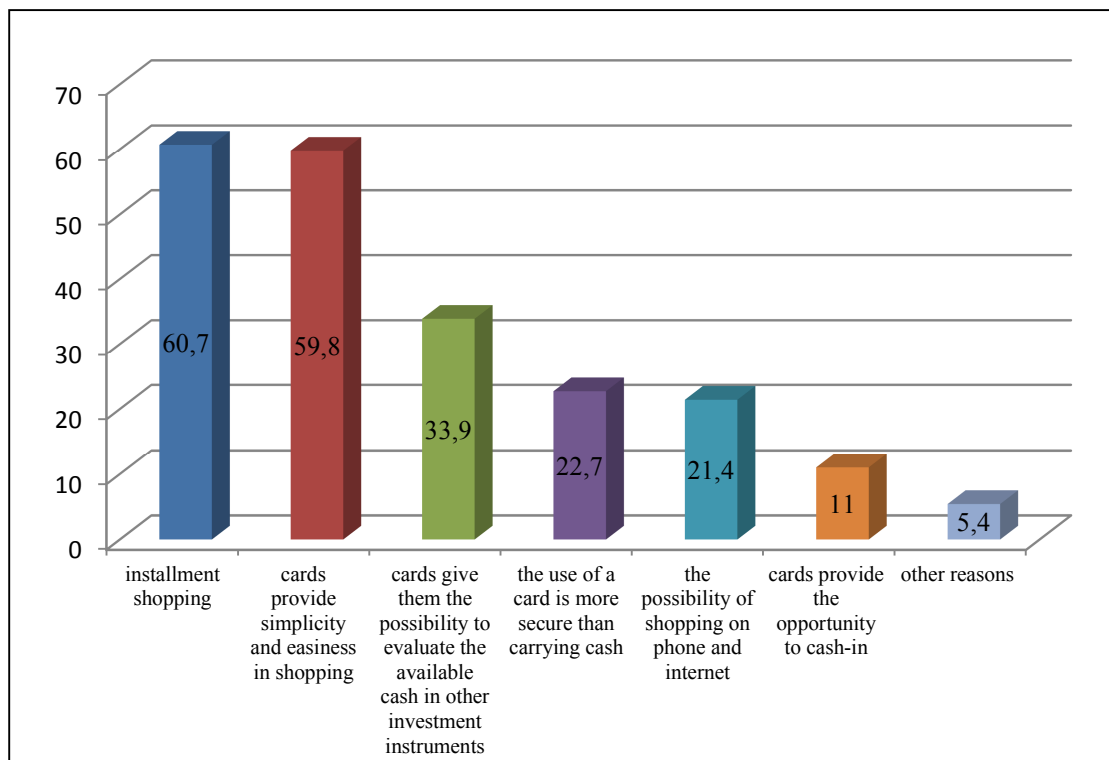
18,8 % of the students have a monthly income of 250 TL or less. 40,8 % of them have a monthly income between 251-500 TL , 29,4 % have a monthly income between 501-750 TL , 8,7 % have a monthly income between 751-1001 TL and 2,3 % have a monthly income between 1001-2000 TL.

It was seen that the rate of students' families where the father works is 89,5 %, the rate of those where the mother works is 33,3 % and the rate of those where the brothers/sisters work is 23,3 %. The rate of the families where other family members such as grandfather or aunt works is revealed to be 1,4 % . 50,5 % of the students participating in the survey reside in rented houses, 9,2 % of them in fully furnished rented houses, 10,1% in pensions, 2,8 % in guesthouses and 27,4 % in dorms.

In the study, it has been determined that 51.8% of students have their own credit card and 48.2% of the students do not own a credit card. Jones indicates that 62% of students own a credit card in his study that he conducted in (2005) over 216 students who are receiving a first class education in USA. Keskin and Koparan indicate in their research that they have made in (2010) 26.52% of the university students studying at Amasya University, Bitlis Eren University, Pamukkale University, Istanbul Aydın University, Ondokuz Mayıs University and different programs of MYO(Vocational School Of Higher Education) connected to Karadeniz Technical University and who have participated in the survey own their credit cards. In a research conducted on total of 419 students, 183 of them being male and 236 of them being female, in a university in USA in (1999) by Hayhoe and others; it has been indicated that 80% of students own one or more credit cards. Norvilitis and Santa Maria (2002) determined that 93% of students become credit card owners until the last year of their education. Pinto and others (2004) have established that 70% of university students own at least one credit card and Norvilitis and Santa Maria (2002) have established 93% of students were card owners in the last year of their education period even if it is less at the beginning.

Regarding the reason of not owning a credit card, the students who do not own any card explained that this reason consist in the fact that they do not feel the necessity of using cards (76,2%), that they prefer using cash ( 12,4 % ) and that they are feared of failure to pay the card's debt (11,4%).

Figure 1. Regarding the reason owning a credit card (%)



In figure 1, regarding the reason of owning a credit card, 60,7 % of the students who own a card, explained that this reason consist in the fact that the card provides the possibility of installment shopping, 59,8 % of them stated that cards provide simplicity and easiness in shopping, 33,9% of them stated that cards give them the possibility to evaluate the available cash in other investment instruments, 22,7% stated

that the use of a card is more secure than carrying cash, 21,4% of them stated the possibility of shopping on phone and internet, 11% stated the fact that cards provide the opportunity to cash-in and 5,4% indicated other reasons which affected their preferences and choices relating to the use of credit cards. In the research conducted by Durakan et al., (2005), over 826 individuals found in a large shopping center selling durable and nondurable goods in city of Kırıkkale; it was determined that the most important factor of purchase preferences of consumers was the opportunity of purchasing from wide variety and good quality of products with credit cards and having the option to repay in installments. Çeker, (1997) in a study he conducted on the other hand lists avoiding carrying cash, easy shopping, use of interest free credit for a designated term of time, guaranteed withdrawal limit, cash withdrawal in overseas countries and improved credit as opportunities to have with the use of credit card.

It was revealed that among the students owning a credit card, 34,8 % of them have been using it for a period of 1 year, 60,7% for 2-3 years, 4,5% for 4-5 years. Considering the credit card limits , it is seen that 64,3% of the limits are at the level of 500 TL or less, 21,4 % of the them are between 501-750 TL, 8 % are between 751-1000 TL, 2,7 % are between 1001-1500TL and 3,6% are between 1501-2500TL.

Considering the manner of becoming owner of a credit card, it is seen that 77,7% of the students have obtain their cards by applying directly to banks, 15,2% stated that the bank officials have get in contact with them and 7,1 % stated that the cards have been offered to them while going to banks for other reasons.

The study conducted by Keskin and Koparan (2010) reported that 24% of the college students have become owners of credit cards as the result of presentations or advertisements made in their campuses.

The study conducted by Çelik et al. (2010) reported that 63,2 % of the students have become owners of credit cards by applying directly to banks, 13,8 % of them have receive the cards send from banks out of their request and 12,6% of them have become owners of cards by filling application forms in places different from banks ( such as: street , shop , etc.). In a study conducted by Pinto and others they evaluated the relationship between the credit card use attitudes of college students and societal factors and they indicated that the information received from family about the credit is significantly larger that the information amount received from the other three sources (friends, school and media) also indicated that although not as much as the family, school is another important factor (Pinto et al., 2005).

Considering the students' annual expenditures made by using credit card, it is seen that 42,9 % of such amounts are at the level of 500 TL or less, 16,1 % of the them are between 501-750 TL , 21,4 % are between 751-1000 TL , 8 % are between 1001-1500 TL, 7,1% are between 1501-2500 TL and 4,5 % are between 2501-3500 TL. The students' monthly expenditure amount is found to be 475,44 TL.

The credit card ownership is considered as the dependent variable of the Logit model created to determine the factors affecting on Credit Card Ownership of Students of Keşan Yusuf Çapraz School of Applied Sciences located in Keşan township of Edirne province.

In this context, in order to analyze and explain the ownership of the credit card, those who do not have a credit card are indicated with = "0" , those who have a credit card are indicated with = "1".

### 3.1. Conclusions of Logit Regression Model

First a starter model was formed with the purpose of designating an appropriate model. Afterwards, number of variables were added and subtracted according to the statistical level of significance results of the variables found in the starter model to determine the best model.

Table 1. Starter Model Variables

Brief affirmation of variable	Scale	Descriptions of variable
KKS(Credit Card Ownership)	Discontinuous	Yes=1, No=0
CNS(Gender)	Discontinuous	1=boy, 0=girl
YŞ(Age)	Continuous	Student of age
AÇLŞMD (Working Situation of Mother)	Discontinuous	Yes=1, No=0
BÇLŞMD (Working Situation of Father)	Discontinuous	Yes=1, No=0
KÇLŞMD (Working Situation of Brother or Sister)	Discontinuous	Yes=1, No=0
ÖEGP (Obtained Money Amount by Student)	Continuous	Obtained Money Amount by Student (TL/month)
YB (Settlement Unit)	Discontinuous	1= Metropolitan, 2=Province 3=Townships, 4=Small town 5=Village
ÖB (Department of Student)	Discontinuous	1=Computer Technology Department, 2=Business Information Management, 3= International Trade Department,4=Customs Management Department, 5= Banking and Insurance Department

G(Montly Annual Income of Family)	Continuous	Montly Annual Income of Family (TL/ month)
ÖKY (Students Stay in Place)	Discontinuous	1= Fully furnished rented houses 2=Rented houses, 3=Pensions 4= Guesthouses, 5= Dorms
MH (Marital Status)	Discontinuous	1= Married, 2= Single
AB (People number in family)	Continuous	People as a mean value in the families of students

In table 1, 13 variables in total were used in starter model in this research. Best model was determined and formed of variables found statistically significant as the result of test models. In order to obtain the best model, tests were applied from variables with statistic significance levels near 10% towards the variables moving further away from the 10% (Tüzüntürk, 2007). The best model was decided upon looking at Hosmer and Lemeshow test showing the chi - square values and distribution. In Table 2, the best binary logit regression model estimation conclusions have been displayed. Statistical significance levels belonging to 9 independent variables were determined by the analysis of the binary multi regression model estimation results in Table 2.

Table 2. The results of Logit model

	B(Coefficient of explanatory variables)	Standard Error	Severity Rating	Betting Odds
CNS (Gender )	-0,077	0,354	0,827	0,926
YŞ (Age )	0,323	0,156	0,039**	1,381
AÇLŞMD (Working Situation of Mother)	0,988	0,375	0,008*	2,685
BÇLŞMD (Working Situation of Father)	2,007	0,662	0,002*	7,439
KÇLŞMD (Working Situation of Brother or Sister)	1,31	0,484	0,007*	3,706
ÖEGP (Obtained Money Amount by Student)	0,691	0,236	0,003*	1,996
YB(Settlement Unit)	-0,085	0,186	0,648	0,919
ÖB(Department of Student)	0,197	0,124	0,114	1,217
G(Montly Annual Income of Family)	0,537	0,163	0,001*	1,71

\* statistically significant at level of 1%. \*\* statistically significant at level of 5%

McFadden R<sup>2</sup> value representing the explanatory capacity of the model is determined as 0,445, likelihood value is determined as 213,344 .

According to the results of Logit model shown in Table 2, variables such as **AÇLŞMD**, **BÇLŞMD**, **KÇLŞMD**, **ÖEGP**, **G** are found to be statistically significant at significance level of 1%. Gender, settlement unit and department of the student have not been found statistically significant. In this study, the **YŞ** variable is found to be statistically significant at significance level of 5%. The coefficient of age has a positive value. If the **YŞ** variable is increased by one unit, the credit card usage probability will be increased 1,381 times.

In the research, it has been determined that the credit card ownership do not vary according to gender. While Armstrong and Craven (1993) claim, female students obtain more credit cards than the male students therefore gender is a determinant factor in obtaining a credit card however there is no significant difference on the amount spent, in the study that they have conducted in (1993); McCall and Eckrich (2006) indicate in the research that they have conducted that women own more credit cards than men however use, in comparison to men, their cards more frequently. Girginer et al., (2008), in their study conducted on bachelor's degree students, determined that there is no significant relationship between credit card usage and gender.

Mother's and father's occupational status variable coefficient has a positive value and it is found to be statistically significant at significance level of 1%

In Table 2, The increase in **AÇLŞMD** variable, results in an increase of student's credit card ownership probability of 2,685 times. The increase in **BÇLŞMD** variable, results in an increase of student's credit card ownership probability of 7,439 times. **KÇLŞMD** variable coefficient has a positive value and it is found to be statistically significant at significance level of 1%. **KÇLŞMD** increases the probability of students' credit card ownership. The increase in **KÇLŞMD** variable, results in an increase of student's credit card ownership probability of 3,706 times.

In Table 2, The **ÖEGP** variable coefficient has a positive value and it is found to be statistically significant at significance level of 1%. If the student's monthly income variable is increased by one unit, the credit card usage probability will be increased 1,996 times.

In Table 2, The **G** variable coefficient has a positive value and it is found to be statistically significant at significance level of 1%. The incensement in the family's monthly income results in the increase of credit card usage probability. If the family's monthly income variable is increased by one unit, the credit card usage probability will be increased 1,710 times.

It has been determined that there is no significant relationship between **ÖB** and credit card ownership. In a study conducted by Joo et al., they placed emphasis on the factor that affect the college students' credit card use (demographic, socio-economic, past experiences and psychological characteristics) and as result they determined that among variables, socio-economic variable showed that there is a significant relationship between students' year of education and credit card usage and there is no significant relationship between income, employment status, housing, department of education and credit card usage.

### 3.2. Conclusions of Chi Square Analyze

Regions		Credit Card Ownership		Total
		No	Yes	
Marmara	Sayı	68	73	141
	%	48,20	51,80	100
Black Sea	Sayı	10	8	18
	%	55,60	44,40	100
Southeastern Anatolia	Sayı	1	1	2
	%	50,00	50,00	100
Aegean	Sayı	9	16	25
	%	36,00	64,00	100
Central Anatolia	Sayı	8	7	15
	%	53,30	46,70	100
Abroad	Sayı	0	1	1
	%	0	100	100
Mediterranean	Sayı	5	5	10
	%	50	50	100
Eastern Anatolia	Sayı	4	2	6
	%	66,70	33,30	100
TOTAL	Sayı	105	113	218
	%	48,20	51,80	100
<b>P Değeri: 0,802</b>		<b><math>\chi^2</math>: 3,804</b>	<b>SD: 7</b>	

H<sub>0</sub> = There is no relationship between credit card ownership and area living in.

H<sub>1</sub> = There is a relationship between credit card ownership and area living in.

In the research, P, the level of significance has been found as 0,802. Since 0,802 > 0,05, H<sub>0</sub> hypothesis was accepted. In other words, it has been determined that there is no relationship between credit card ownership and place living in.

### Conclusions

The conducted study aimed the definition of the factors affecting the university Students' Credit Card Ownership. By the study is revealed that 51,8% of the students are owners of credit cards , while 48,2% of them are not.

In the study, university students' credit card usage circumstances were examined and the factors affecting the credit card usage were analyzed by Logit model. According to the model results, the statistically significant variables affecting the credit card usage are found to be the student's age, the monthly income of family, the monthly amount of money passing in the hands of student, the mother's , father's and brother's / sister's occupational status. The increase in student's age results in the increase of credit card usage probability. It was also found that the higher family's income and the amount of money passing in the hands of student are, the higher probability of students' credit card usage is. Mother's, father's and brother's / sister's occupational status is found to be a factor affecting positively the student's credit card ownership.

In the study, the relationship between the students' credit card ownership and area living in was examined with chi-square analysis. According to the conclusion of the analysis, it was determined that credit card ownership doesn't vary according to area.

The installment shopping opportunity is found to be the most important factor affecting the university students' credit cards usage. Considering the density of the university students in Keşan

township, the installment shopping opportunity should be increased by providing the possibility of credit card usage in shopping stores and centers mostly frequented by the students.

It was also found that the vast majority of university students have become owner of a credit card by applying directly to banks.

Companies showing activities related to credit cards should organize their product planning by taking into account the students' socio-economic and demographic situations. This study may help in orientating the institutions involved in issuing credit card for university students.

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