CONSUMER PERCEPTIONS TOWARDS CRYPTO CURRENCIES

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Abstract: *Crypto currencies have recently become an important investment tool. The lack of central authority behind it, being referred as a means for laundering illicit money, the lack of legal regulations and the hacking of some stock exchanges have raised question about the perceived trust and risk toward crypto currencies. In this study, an online survey was prepared and shared on social media. The total of 767 people participated in the online survey; and factor analysis, correlation analysis and linear regression analysis have been conducted. As a result, it has been concluded that there is a negative correlation between the risk perception of consumers and the perceived trust towards crypto currencies; and as the trust towards crypto currencies increases, the level of perceived risk declines. Additionally, it can be stated that, the trust toward crypto currencies develops and strengthens over time, the level of trust noticeably increases with the initial investment, and it continues to increase over time.*

Key words: *Consumer Behavior, Crypto Currency, Perceived Risk, Bitcoin, Perceived Trust*

1. INTRODUCTION

In recent years, a new type of commercial enterprise has come into being which is known as crypto currency. The most prevalent among crypto currencies is bitcoin (Bariviera et al., 2017: p.82). Bitcoin, which was launched into the market by a group of programmers who used the pseudonym of Satoshi Nakamoto is a crypto and virtual currency which is produced of mathematical algorithms and codes and perceived as an alternative to state-subsidized currencies (Cheah and Fry, 2015: p.32).

According to the Coinmarketcap data, the market volume of 1550 crypto currencies has reached an amount of 387,5 billion US dollars by 12 March 2018. While Bitcoin has been the most popular crypto money with the biggest volume of market (%41,5) with 163,2 US dollars, the alternative crypto currencies which are known as altcoins Ethereum has a market volume of 71,2 US dollars while Ripple has 32 billion, Bitcoin Cash (BCH) has 18,8 billion and Litecoin has 10,3 billion US dollars.

The lack of central authority behind it, being referred as a means for laundering illicit money, the lack of legal regulations and the hacking of some stock exchanges have raised question about the perceived trust and risk toward crypto currencies. Therefore, the perceived risk factors which effect the crypto currency buying and selling in online platform has been interpreted as a problem in consumer behaviours and the study was decided to be executed.

To begin with, "risk" is defined as "the danger of being harmed" by the Turkish Language Institute (TDK, 2018, p.1). Additionally, it is expressed as "the possibility of confronting a bad

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result" (Küçükbay, 2016: p.27). "Perceived risk", on the other hand, involves the damages that the consumers expect in relation to the products they are about to buy (Karamustafa and Erbaş, 2011: p.103). The concept of perceived risk has first been suggested in Harvard scholar Bauer's research concerning consumer behaviour. In this study, Bauer defined perceived risk as uncertainty plus the seriousness of the result combination (Yang et al., 2015: p11).

Online trust factor, on the other hand, is the success factor for online entrepreneurship, electronic services and electronic communication and additionally increased perceived risk causes people to avoid operation (Hansen et al., 2018: s.199). In this context, trust is the leading one among the most important problems in online shopping (Altuğ and Özkan, 2012: p.3). Crypto currencies and processing stock markets involve trust problem and risk. This situation may affect the consumer behaviour in the developing crypto currency market. Therefore, a comprehensive model defining trust and perceived risk will procure the use of crypto currency by consumers and help scholars and practitioners.

2. LITERATURE REVIEW

Yelowitz and Wilson (2015) have questioned the determiners of the interest for Bitcoin by collecting data from Google Trends and they have formed four types of customers. These are computer programme addictives, speculative investors, liberalists and criminals. While the way of computer programming and illegal activity research are related to Bitcoin interest, liberalists and the way of investment have found out to be unrelated to it.

Tsanidis and his friends (2015), who have concentrated on non-users and impediments, have investigated the awareness, usage and trust level of Bitcoin in Greek society. As a result, they have found out that the success and future of Bitcoin is uncertain, that potential users have no knowledge concerning the easy use of Bitcoin and money and time saving.

Presthus and O'Malley (2017) have investigated the motivations and impediments of the last users who use Bitcoin as a digital money. They have collected data from 135 users via questionnaire method and demonstrated that the last users adopt because of individual interest. They have expressed that a big group of people do not use Bitcoin since they wait for others to use it, and have hesitations about value and security.

Ciaian and his friends (2018) have tested daily datum of 17 crypto currency units of 2013-2016 with time series analysis test in their study in which scrutinized the counter-dependencies of bitcoin and altcoin markets. They have attained the result that they are dependent on each other. Additionally they have found out that short term price relation between bitcoin and altcoin is stronger when compared to the short-term relation.

Dulupçu and his friends (2017) have tested the thesis that "the price increases in bitcoin occur in direct proportion to its popularity rather than its real value" via the Granger causality test and Variance Decomposition Analysis test which is based on the VAR model. Consequently, it was found out that the price of bitcoin increased in parallel with the increase of its awareness and that the current price of bitcoin is a result of speculative movements rather than its real value.

National and international studies in literature have solely concentrated on Bitcoin among all crypto currencies and they failed to move beyond theoretical knowledge. In this scope, a need for a comprehensive study concerning crypto currencies was felt in marketing literature. Especially Jarvenpaa and Teigland have stated in their study that the trust towards digital

environments and crypto currencies can be scrutinized in very different dimensions and that their study can constitute an example for the following studies. This study is also realized with this aim.

3. THEORETICAL FRAMEWORK AND RESEARCH HYPHOTHESES

3.1 Risk Perception and Trust

Perceived risk which occurs in many different shapes such as financial, product performance, social, psychological, physical and time, is defined as the belief of the consumer regarding the potential, uncertain and negative consequences (Chang and Chen, 2008, p.283). Although many detailed researches were executed concerning the risk perception, these factors remain attractive in the field of marketing. When the literature is scrutinized, it will be seen that it is associated with many consumer behaviours such as the concept of risk, store choice, advertisement activity, innovation and brand loyalty (Peter and Ryan, 1976, p.184).

Although there are many reasons which can explain the interest of researchers on this subject; the fact that the consumers focus on avoiding making mistakes rather than focusing on the utility-maximizing has an important role in the use of risk perception in understanding the consumer behaviours (Mitchell, 1999, p.163). While evaluating the decision-making process of consumers; it is important to note the reality that consumers handle the situation considering both the positive and negative aspects of it and that they decide by calculating the net value they will obtain (Kim, Ferrin and Rao, 2008, p.546). Thinking in this framework, it is possible to say that the increase in the risk perception of the consumer is a significant impediment, which influence the consumer decisions.

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While explaining the relation between risk perception and trust, researches have evaluated the subject in different ways and there are studies stating that the risk is trust driven, that trust is equal to risk and that trust is risk driven (Kim, Ferrin and Rao, 2008, p.547). In this study, similar to some e-trade and technological adaptation studies, it is accepted that perceived risk has a negative impact on the trust (Chang and Chen, 2008, p.823). Moving from this point, H_1 Hypothesis is formed:

H_1: As the perceived risk increases, the trust felt towards crypto currencies decreases.

3.2 Duration and Trust

Researchers agree on the idea that the trust develops and strengthens in time. The time spent in a relationship at the same time corresponds to the investment done by both sides to this relationship (Doney and Cannon, 1997, p.39). The more frequently the consumers meet with the individual/company that provides products or services to them, the more knowledge they acquire about the industry. As the time of the relationship and the knowledge level increases, the uncertainty at the beginning of the service and risk decreases (Coulter and Coulter, 2002, p.43). In Pruitt's view, as the duration of the relationship increases the possibility of critical shocks will decrease, the trust will increase along with the time and a better relationship will occur (Armstrong and Yee, 2001, s.70; Mitchell, 1999, p.174). Hence:

H$_2$: As the duration of the relationship with the crypto currencies is prolonged, the trust felt towards crypto currencies will increase.

4. METHOD

An online survey study was prepared for data collection. The snowball sampling method was selected and the online questionnaire was shared via social media. The survey was sent to social media pages and individuals which focus on finance, crypto money, stock markets, and as a result a total of 767 people participated in the survey.

4.1 Scales

Even though the limited number of studies on crypto currencies in the literature enhances the importance of the current study, the lack of marketing scales related to crypto currencies necessitated the adaptation of risk and trust scales from other marketing studies.

The perceived financial risk scales was developed by DelVecchio and Smith (2005), and consists of six items with a cronbach's alpha of 0.827. The scale was translated to Turkish with back translation method with the help of professors from English department. After the translation, irrelevant and/or repetitive items were removed and the final version consisted of four items.

The perceived trust scales was developed by Aiken (2001) and have already been translated to Turkish by Aksoy (2006). The Turkish version had eleven items and was measuring the consumers' trust towards internet, therefore while adapting the scale to current study, irrelevant items were removed. The final version of the scale consists of seven items.

Duration of the relationship with the crypto currencies was measured with five responses which were; no investment, 0-3 months, 3-6 months, 6-12 months and More than 1 year.

4.1.1 Factor Analysis

A factor analysis, was conducted and the loadings of the financial risk and perceived trust scale were measured. Kaiser-Meyer-Olkin measure of sampling adequacy test revealed that the data is factorable (KMO=0.889) with a significant Bartlett's Test of Sphericity (KMO>0.6 and Bartlett sig<0.05). These results indicate that the sample size is adequate. The values on the communalities table are expected to be over 0.30. The results reveal that lowest value is 0.450 and therefore all items are above the cutout value. In order to assess the number of factor in the

data, total variance explained table was examined. By employing Horn parallel analysis method (N=767; Item=11; Factor1 > 1,1903; Factor2> 1,1391; Factor3> 1,0980) two factors were retained, where those two factors explained the %55 of the total variance, which is acceptable.

A second factor analysis was conducted with varimax rotation, and results revealed that risk1, risk2, risk3 and risk4 loaded on the first factor, trust1, trust2, trust3, trust4, trsut5 and trust7 loaded on the second factor. Trust6 did not load on any factor and therefore removed from the analysis.

4.1.2 Reliability Analysis

Reliability analysis results Show that financial risk scale has a Cronbach's' alpha of 0.629. Even though this value is expected to be over 0.7, Helmstadter (1964) stated that, a value of 0.5 and above is generally acceptable. Deletion of any items did not significantly improved the overall reliability of the scale therefore all the items are retained for further analysis.

Reliability analysis of the perceived trust scales revealed a Cronbach's' alpha of 0.897 and demonstrated a high reliability; therefore it is also acceptable for further analysis.

4.2 Demographic Characteristics

The sample consists of 767 participants, with a 14% female and 86% male. The details can be seen on Table 1, Table 2 and Table 3.

Table 1. Gender

	Frequency	Percent
Female	107	14,0
Male	660	86,0
Total	767	100,0

Most of the participants (76%) see themselves in the middle income group, and the number of participants in high income (13%) and low income (11%) groups are very close.

Table 2. Income Level

	Frequency	Percent
Low	82	10,7
Medium	582	75,9
High	103	13,4
Total	767	100,0

In terms of education, even though majority of the participants have an undergraduate and graduate degree (87%), it can be seen that the sample consists of participants with a varying level of education.

Table 3. Education

	Frequency	Percent
Middle School	5	,7
High School	58	7,6
Associate Degree	38	5,0
Undergraduate Degree	518	67,5
Graduate Degree	148	19,3
Total	767	100,0

4.3 Analysis Method

In order to test the hypotheses, first correlations among the variables were investigated. A correlation coefficient above 0.30 with a significance value of $p = <.001$ indicates that there is a relationship between variables. Additionally, a correlation above 0.70 is not desired since it indicates multicollinearity. After the correlation tests, linear regression analysis will be employed in order to see the effect of independent variables on dependent variables.

5. FINDINGS

5.1 Correlation Analysis

Correlation analysis revealed that, there is a significant negative relationship between trust and risk ($r = -.525$, $p = < .001$); and there is a significant positive relationship between trust and time ($r = .485$, $p = < .001$). Additionally, there is a significant negative relationship between the two independent variables (risk and time), and this relationship posits no multicollinearity since it is less than 0.70 ($r = -.402$, $p = < .001$) (See Table 4).

Table 4. Correlation Analysis

		Trust	Risk	Time
Trust	Pearson Correlation	1	-,525[**]	,485[**]
	Sig. (2-tailed)		,000	,000
	N	767	767	767
Risk	Pearson Correlation	-,525[**]	1	-,402[**]
	Sig. (2-tailed)	,000		,000
	N	767	767	767
Time	Pearson Correlation	,485[**]	-,402[**]	1
	Sig. (2-tailed)	,000	,000	
	N	767	767	767

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

5.2 Linear Regression Analysis

In order to see that there is not multicollinearity, tolerance and VIF values were examined. Coefficients table revealed that (Table 5), tolerance values are greater than 0.10 and VIF values are smaller than 10 for both risk and time. (Risk, Tolerance = .839, VIF = 1.192; Time,

Tolerance = .839, VIF = 1.192). Therefore, it can be concluded that there isn't multicollinearity between the independent variables.

Table 5. Coefficients [a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	4,066	,135		30,096	,000					
1 Risk	-,406	,033	-,393	-12,494	,000	-,525	-,412	-,360	,839	1,192
Time	,251	,024	,327	10,403	,000	,485	,352	,300	,839	1,192

a. Dependent Variable: Trust

Secondly; normality, linearity and outliers were examined. PP Graph shows that the data was approximately normally distributed (See Figure 1). In order to see the outliers, Mahalanobis' Distance (MD) was inspected where any cases greater than critical value of 13.82 (for two independent variables) should be removed. Results revealed that there are not any outliers in the dataset. Additionally, Cook's Distances were smaller than the critical value of 1; and it can be concluded that the data is suitable for linear regression.
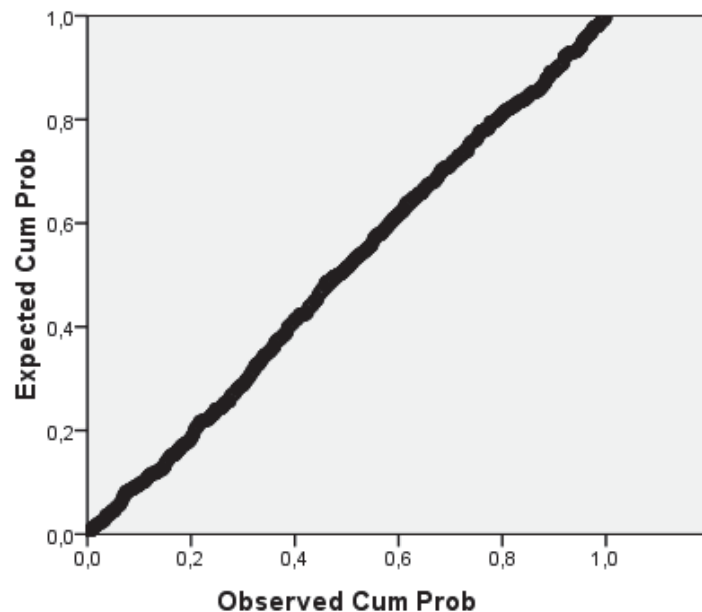

Figure 1: PP Graph (Dependent Variable: Trust)

Regression analysis was employed in order to test the model, which assumes that consumer trust was predicted by the perceived risk and time elapsed. R denotes the correlation between the independent variables (time and risk) and dependent variable (perceived trust). In this case, R = 0.601, which indicates a strong relationship. R^2 = .365 indicates the proportion of variance in perceived trust that can be explained by the two independent variables. The adjusted R^2 = .364 estimates the generalizability of the model, which in this case this model is generalizable.

Table 6. Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,604[a]	,365	,364	,80249	,365	219,821	2	764	,000

a. Predictors: (Constant), Time, Risk

b. Dependent Variable: Trust

Linear regression analysis shows that two independent variables explain the 37% of the variance (R^2=.36, F (2,764) = 219.821, p<.001). In order to assess the separate effects of independent variables, coefficients table (Table 5) was examined. Results show that both time and risk significantly affect perceived trust, but the effect of risk on perceived trust is higher than the time elapsed.

According to these results, consumer trust toward crypto currencies can be predicted by perceived risk and time elapsed. As the perceived risk decreases and elapsed time increases, consumer trust towards crypto currencies is positively affected. Standardized Beta coefficients show that, one unit decrease in perceived risk causes a 0.39 unit increase in trust towards crypto currencies, and one unit increase in elapsed time causes a 0.32 increase in trust towards crypto currencies. According to these results both H1 and H2 hypotheses are accepted. The relationship between the independent and dependent variables can be formulated as follows:

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Trust towards crypto currencies = 4.066 + ((-0,406 x Perceived Risk) + (0.251 x Time elapsed))

6. CONCLUSION AND SUGGESTIONS

Conducted researches have demonstrated the fact that marketers should comprehend the risk factor in a detailed way because it is an important factor which effects the consumer choices (Bettman, 1973, p.189). It is clear that the trust problem occurs because of the risk which is present in the nature of the economic transactions. This situation becomes more apparent when two opponents are away from each other physically when it is difficult to guess the unexpected events beforehand and include them in the agreements and when cyber laws are not clearly defined (Mukherjee and Nath, 2003, p.7). Therefore, it is possible to accept that the consumer's risk perception is an important factor in depicting the feeling of trust towards crypto currencies.

The results attained in this study are supportive of this judgement and demonstrate the fact that there is a negative correlation between the risk perception of consumers and the trust felt towards crypto currencies and the fact that trust increases as the risk decreases. Additionally, it is demonstrated that the trust towards crypto currencies develop and strengthen in time, that it apparently increases in case of an investment and that it continues increasing along with the time.

In the literature, the number of the studies concerning the crypto currencies is limited. Therefore, there is an apparent need for studies of forming and developing scales. In addition, subjects such as the relation between national culture and the trust felt towards crypto currencies and technology, the legal regulation of crypto money market, the development and management of consumer trust can be studied in the following studies.

Although the interest towards crypto currencies has increased especially after the last months of 2017, the presence of uninterested consumers is also still known. In this study the perception of those consumers who invest or interested in crypto currencies and who are active in internet and social media has been tried to be measured. The application of a similar study to a larger mass along Turkey will lead to more generalizable results.

While this study is one of the pioneers in Turkey in the field of marketing, it is expected to make a contribution to the literature in terms of understanding the relation between consumer perception and crypto currencies. The importance of risk perception has been emphasized within the study. The increasing of the trust crypto currencies is possible with the changing of the risk perception.

Managers who target the adaptation of crypto currencies and the technology behind it may primarily make image-making studies concerning crypto currencies in order to increase the trust of the consumer and they can compare the risk with the traditional investment tools such as stock market, gold and foreign exchanges. Additionally, in comparison to traditional investment tools which are central-authorized; the blockchain system's independency from a central authority can be emphasized so as to decrease the risk perception and develop the trust perception in a positive way.

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