

Knowledge about Cryptocurrencies: Consumer Behavior Survey

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Abstract

Although the cryptocurrency market has grown significantly in recent years, few studies have been done on socio-demographic features and not influencing the degree of consumer knowledge about cryptocurrencies. Based on a survey submitted to 774 subjects representative of the Italian population, we find that 89% of Italians know cryptocurrencies and 39% of them have a good or thorough knowledge. The aptitude for knowledge and use of cryptocurrencies is greater for male and well-educated subjects and also increases as the propensity to invest in cryptocurrencies increases. 41% invest or want to invest in cryptocurrencies and the investment is particularly attractive for those who mainly aim at portfolio diversification and obtaining high returns. The findings have important implications for regulators and supervisors who are interested in understanding the social relevance of the phenomenon.

Keywords: cryptocurrency, knowledge, consumer behaviour, financial activity, retail consumer, internet banking, technological innovation.

1. Introduction and literature

The issue of cryptocurrencies has been increasingly addressed by the media and regulators, and attention among consumers has grown considerably, particularly during the pandemic crisis.

In 31 December 2021, the market capitalization of cryptocurrencies exceeded 2.36 trillion dollars, demonstrating, without any doubt, the great importance of this instrument (CoinGecko, 2021). To date, cryptocurrencies are not only used as a highly speculative financial instrument (Yermack, 2015) but also as digital cash, as a medium of exchange and as a store of value (Corbet, et al. 2018; Hazlett and Luther, 2020). It is certain that cryptocurrencies are characterized by high volatility and high risk (Aalborg et al. 2019) and in addition, current research, highlight that due to the current low levels of regulation is highly likely to occur market manipulation operations (Ante, 2019) as recently happened for the case "Moon Earth".

Despite the importance and success of this market, few academic studies and do not provide results on the level of knowledge that consumers have about cryptocurrencies and the socio-demographic characteristics of the subjects that document on the subject. In addition, the current studies, focus mostly on countries such as Germany, England, America and Russia, we have little on the Italian territory.

In America, Crowder (2019), in a survey of 1,000 pensioners over the age of 55, reports that 32.9% of respondents have never heard of cryptocurrencies or Bitcoin. In Russia, through a telephone survey of 1,600 subjects, Wciom (2019) finds that only 9% of respondents claim to have a good knowledge of cryptocurrencies. A geographically broader study was conducted by Exton and Doidge (2018) who interviewed 14,828 subjects in 15 European countries but also including the United States. The results show that 66% of respondents in European countries have heard of cryptocurrencies, higher than in the United States.

According to Deutsche Postbank (2018) in Germany, out of a sample of 3100 respondents, only



4% consider their knowledge of cryptocurrencies very good and 16% consider them good. The remaining 80% showed that they had few if any knowledge. Moreover, among the most junior subjects between the ages of 18 and 34, only 29% consider their knowledge good or very good. In 2019, again through a survey conducted in Germany on a sample of 2020 respondents, Bearingpoint (2019) finds that only 6% of the population have good knowledge about cryptocurrencies while 43% have simply heard about them and the remaining 20% do not know the sector at all. Frenzel et al (2019), out of a sample of 2,500 adults surveyed, show that 66% of respondents know cryptocurrencies. Similar result was found by Bitkom (2019) on a sample of 1,004 Germans aged over 16. More recently, Steinmetz et al (2021a), based on an online survey of 3,864 Germans, found that 83% of respondents are aware of the phenomenon, but the self-assessment of respondents about cryptocurrencies is limited. Also, those who own cryptocurrencies tend to be young, male, well-educated and wealthy.

In general, in fact, the literature notes that knowledge about cryptocurrencies is generally higher in men and young people. Bearingpoint (2018), out of a sample of 1,000 subjects surveyed in Germany and representative of the population, finds that men tend to have more interest in cryptocurrencies and generally, the level of knowledge and the use increases in inverse way regarding the increase of the age of the subjects. Wciom (2019) finds that in Russia 67% of people who know cryptocurrencies are aged between 18 and 24 and have a secondary education level (71%). The results have also been confirmed by Exton and Doidge (2018) who find that in Europe, among the subjects who know cryptocurrencies 77% are men while in the United States 69%. Laboure and Reid (2020) interviewed 3,600 subjects in various countries and found that the subjects with the highest knowledge and who bought cryptocurrencies in the last are between the ages of 18 and 34 (Italy 14%, France 14%, Germany 12%, United Kingdom 8%, USA 11% and China 29%). In the UK, English et al (2020) show that 79% of cryptocurrency users are men and 69% are over 35 years old. FCA (2019), also in the UK, shows that most people who know cryptocurrencies are between 20 and 44 years old and have a high level of education. Henry et al (2019), via a Canadian survey, show that young individuals and mostly men know and possess Bitcoin. Moreover, subjects with a high level of education and a low degree of financial education measured, as in our case, through the Big 3 questions of Lusardi and Mitchell (2014) are the ones who most possess cryptocurrencies.

In contrast to the latter result, Kawamura et al. (2019; Stix, 2019), on Japanese data, show that investors who tend to own cryptocurrencies generally have a higher level of financial education.

According to data taken by Statista in 2021, the four countries with the highest use of cryptocurrencies were: Nigeria (42%), Thailand (31%), the Philippines (28%) and Vietnam (27%). For the same countries, the highest use of cryptocurrencies was recorded also in the years 2019 and 2020. In Italy, only in 2021, 8% of the population uses cryptocurrencies. Blandin et al. (2020) estimate that the global number of cryptocurrency users is 101 million in September 2020, an 189% increase over 2019. Brandt (2019), based on 1,000 users surveyed in various European countries, shows that the percentages of cryptocurrency users are; in Germany and France 4%, in Italy 6%, in Denmark 8%, in Spain 10% and in Turkey 20%. However, the percentage of people who are investing in cryptocurrencies has been increasing, in fact, since the beginning of the global health crisis, the demand and therefore the value of cryptocurrencies has recorded a consistent growth that has led the major platforms to duplicate the number of users. Understanding who are the subjects that most document about cryptocurrencies and what their characteristics, helps the Authorities to better regulate the sector itself very speculative and highly risky.

The objective of the research, carried out in collaboration with the OAM, is now required to establish a special register to monitor the activity of Exchanges in the Italian territory, is to understand how Italians know cryptocurrencies and what are the main characteristics of the subjects that know and use them. Therefore, the research questions you want to answer are:

H1: How much do Italians know about cryptocurrencies and what are their characteristics?

H2: Which factors influence the level of knowledge about Italian cryptocurrencies the most?

In the following paragraphs, the descriptive analyses that characterize the whole sample are first presented, which is then segmented according to the method of clustering to trace profiles of consumers with homogeneous characteristics, grouped according to certain parameters. Finally, the results of the regression analysis are presented, which allows to identify how and which variables have the greatest influence on the ability of subjects to have a good degree of knowledge about cryptocurrencies.

2. The survey and the sample

To answer the questions asked, we carried out a quantitative survey based on a questionnaire consisting of 12 questions divided into 4 sections. The total sample consists of 774 Italian subjects invited to participate in the online survey that was administered through the surveymonkey platform on November 18, 2021.

The first section includes 3 multiple choice questions to trace the socio-demographic profile of the respondents with respect to gender, age and education in order to understand the general characteristics of the population and to carry out a precise segmentation of the sample. In particular, the level of education was assessed by assigning a scale of rising scores as the degree gained increased.

The second section provides 3 multiple choice questions and allows you to observe the level of financial education of the subjects interviewed. The variable was calculated by assigning the score of 0.33 to each correct answer given by the respondent to the three questions. In addition, the section includes two questions aimed at identifying the most incentive factors and not an investment for the respondent.

Table 1 shows the descriptive statistics of the sample on the first two survey areas.

The total sample is equally distributed between men and women; 45% of the sample focuses on the age range between 45 and 60; while only 9% of the sample is older than 60 years. In addition, most of the participants (51%) have a second-level education, 33% a university education, 9% have a master's degree. More than half of the sample has an excellent (28%) or a good level of financial education (34%).

For these entities, an investment must generate high returns in order to be attractive, but they also put a lot of attention on tools that allow to diversify their portfolio to the fullest. They are also subjects that would not value an investment with high financial risk especially if they are not include the asset on which they are investing.

The number of respondents who reported knowledge of cryptocurrencies corresponds to 89% of the total sample (692 respondents). The sub-sample is fairly evenly distributed on the basis of gender and 46% focuses on an age range between 45 and 60. In terms of their level of education, their level of financial education and their motivation to invest in a particular asset, the results are almost the same as those of the overall sample.

The sub-sample of subjects who have no knowledge on the topic of cryptocurrencies is



composed of 82 subjects (11% of the total sample) of which 67% is represented by women and 33% by men. 50% of the total are aged between 45 and 60, 32% are aged between 30 and 44, and 56% have secondary education. 56% show little financial knowledge. For these subjects, an investment to be interesting must generate high returns (57%); all the other characteristics are not relevant. They are also subjects that would not evaluate an investment with high financial risk (60%).

Table 1. Descriptive statistics

Sections	Research Area	Variables	Total samples	Subjects who know crypto	Subjects who do not know crypto
Section 1	Socio-demographic	Numerosity	774	692	82
		Man	50%	52%	32%
		Woman	50%	48%	68%
		Age (average)	44.29	44.15	45.52
		Education (average)	0.69	0.69	0.63
Section 2	Financial Literacy	F.L. (average)	0.59	0.60	0.47
	Which of the following would lead you not to invest in a particular financial sector/asset?	High financial risk	65%	66%	60%
		Poor knowledge of the asset	44%	44%	39%
		Risk of financial fraud	37%	38%	28%
		Difficulty and complexity in investing	26%	26%	23%
		Lack of regulation	24%	25%	18%
		Negative image of the asset	15%	15%	16%
		Purely virtual nature of the	9%	9%	10%



		investment		
Which of the following features would make a financial investment interesting?	Diversification of investment portfolio	48%	52%	22%
	High performance	59%	60%	57%
	Anonymity	13%	12%	15%
	High speculative and earning potential	21%	21%	18%
	Avoid "missing a great investment"	10%	10%	15%

The third section aims to detect the level of knowledge of cryptocurrency subjects through two questions. Consumers were first asked if they had ever heard of cryptocurrencies. The second question instead focused on how they would evaluate their knowledge of cryptocurrencies on a 3-level scale, where the first level corresponds to minimal knowledge of the topic and the third level to accurate knowledge.

The fourth section, including two questions, aims to include the ability of the sample under analysis to invest in cryptocurrencies and the level of past or future investments. In particular, we asked about possible plans to invest in cryptocurrencies (whether they have bought in the past or whether they believe they will buy cryptocurrencies in the future) and to what amount or would amount their past and/or future investments by proposing 8 different ranges of amounts: 0k; 0 - 9.9k; 10k - 24.9k; 25k - 39k; 40k - 69k; 70k - 99k; >100k; I prefer not to answer.

From Table 2 we note that most of the sample has heard a few times about cryptocurrencies (61%) while the remaining 39% evaluates their knowledge good (33%) and thorough (6%). It also highlights a heterogeneity on investment choices, in fact, 59% said they have never bought them and have no intention of buying in the future; 16% instead revealed that they have purchased cryptocurrencies in the past but will not in the future; 20% intend to buy them for the first time in the future; 5% have expressed their intention to continue their past investments in cryptocurrencies in the future. Finally, you can see that 39% are inclined to invest between 0 and over 100k euros while the remaining 61% say they do not want to invest (59%) or prefer not to respond (2%).

Table 2: Descriptive statistics

Sections	Research area	Variables	Subjects who know crypto
Section 3	How would you rate your knowledge of cryptocurrencies (e.g. Bitcoin, Ethereum, Ripple XRP, Litecoin, etc.)?	I've heard of cryptocurrencies a few times	61%
		I have a good knowledge of cryptocurrencies	33%
		I have thoroughly deepened my knowledge about cryptocurrencies	6%
Section 4	Which of the following options are/are part of your future/past investment plans?	I have purchased cryptocurrencies in the past/I believe to buy cryptocurrencies in the future	5%
		I think I will buy cryptocurrencies in the future/I have never bought cryptocurrencies in the past	20%
		I bought cryptocurrencies in the past/I don't think I buy cryptocurrencies in the future	16%
		I never bought cryptocurrencies in the past/I don't think I buy cryptocurrencies in the future	59%
	How much will your past/future investments in cryptocurrencies amount to/amount to?	0	59%
		0€ - 9.999€	24%
		10.000€ – 24.999€	7%
		25.000€ – 39.999€	5%
		40.000€ – 69.999€	1%
		70.000€ – 99.999€	1%
		Più di 100.000€	1%
		Preferisco non rispondere	2%

3. The methodology

3.1 The cluster analysis

The data were processed primarily through the clustering approach with a hierarchical

procedure relating to socio-demographic variables, and variables related to education; financial education; investments in cryptocurrencies.

The level of education has been assessed by assigning a scale of scores increasing as the degree obtained increases:

- score 0 - other;
- score 0.2 - primary school;
- score 0.4 - secondary first degree;
- score 0.6 - secondary second grade ;
- score 0,8 - university;
- score 1 - master.

The level of financial education was calculated by assigning the score of 0.33 to each correct answer given by the respondent to the three questions used to evaluate the financial knowledge of the subject. Therefore:

- score 1 for those who provided all correct answers
- score 0.66 for those who provided 2 correct answers and 1 wrong
- score 0.33 for those who provided 1 correct answer and 2 wrong
- score 0 for those who provided all wrong answers.

The cryptocurrency investment level variable was constructed by assigning weights from 0 to 0.75 to each respondent's cryptocurrency investment attitude question:

- High investment level - entities that have invested in the past and that intend to do so in the future;
- Medium investment level - entities that intend to do so in the future;
- Discrete investment level - entities that have invested in the past;
- 4. Low investment level - entities that have not invested in the past and that have no intention of doing so in the future.

Considering that the variables extracted from the survey are categorical or ordinal, Gower's methodology has been adopted. For the identification of three clusters against the characteristics of the sample, appropriate statistical tests were used to establish statistically significant differences between clusters. Chi Square and ANOVA tests were used by setting the level of statistical significance with a p-value below 0.05. The combined use of the two approaches made it possible to define three different customer profiles.

Cluster 1: "The Educated"

The first profile emerged from the analysis is associated with a consumer figure with a high level of education and low level of investments in cryptocurrencies. 13% invested between 0 and 9k, 75% invested 0k and the remaining 12% invested between 10k and over 100k. Cluster 1 is composed mainly of women with an average age of 41.72 years. These entities have a low tolerance to financial risk as 69% identify that they do not want to invest in risky financial instruments but show preference for investments that generate high returns. This contradiction can be explained by the fact that the members of this cluster show a medium/low level of financial literacy.

Cluster 2: "Cryptocurrencies"

The second profile identified is associated with a category of entities that make important investments in cryptocurrencies (58% invests between 0k and 9.9; 17% invests between 10k -



24k, 12% between 25k - 39k; 1% >100k) and that, in the choice of the investment to be made, is encouraged to focus on instruments that allow a good diversification of the portfolio while the characteristic that drives these subjects not to make an investment is the lack of knowledge of the asset. They have a high level of financial knowledge and a medium/high level of education. They are mostly men (57%) with an average age of 41.38 years.

Cluster 3: "The Senior"

Individuals in cluster number 3 are characterized by higher average age (47.43 years) and lower levels of investment in cryptocurrencies than the other two clusters. In fact 80% never made investments in cryptocurrencies while 13% invested an amount between 0k - 9k. The low degree of investment in digital assets is associated with a lower level of financial education and education than the average recorded on the whole sample (0.57). 38% of these entities would not invest in an asset with a high risk of financial fraud while they are mostly incentivised to build a diversified and high-yield portfolio. As for cluster number 2, cluster number 3 is composed mainly of men (56%).

Table 3. Descriptive statistics on clusters

Variables	Cluster 1 The Educated	Cluster 2 The Cryptocurrencies	Cluster 3 The Senior
n.	220	168	304
Man	45%	57%	56%
Woman	55%	43%	44%
Age (Avarage)	41.72	41.38	47.43
Education (Avarage)	0.84	0.72	0.57
Financial Literacy (Avarage)	0.61	0.66	0.57
Crypto investment (Avarage)	0.06	0.80	0.06

3.2 The regression analysis

A multiple regression analysis was also performed to observe the influence on the subject's level of knowledge about cryptocurrencies versus socio-demographic variables such as age, sex and education, financial literacy and the aptitude to invest in cryptocurrencies.

The correlation test was performed to exclude the existence of a possible linear relationship between the independent variables and the dependent variable. All relationships have values that show independence between variables (Table 4).

Table 4. Correlation analysis

Degree of knowledge	Sex	Age	Education	Financial Literacy	Ability to invest
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Degree of knowledge	1.0000					
Sex	0.1473	1.0000				
Age	-0.0742	0.0648	1.0000			
Education	0.1148	-0.0741	-0.2029	1.0000		
Financial Literacy	0.0943	0.1998	0.1316	0.0818	1.0000	
Ability to invest	0.3926	0.0568	-0.1500	0.0798	0.0713	1.0000

The results of the regression analysis are given below.

Table 5. Regression analysis

Variables	Coef.
Sex	0.075***
Age	0.003
Education	0.154***
Financial Literacy	0.033
Ability to invest	0.333***
R ²	0.474
N. obs	692

The results shown in Table 5 show that demographic, sex and education have a positive and statistically significant impact on the propensity of individuals to increase their level of knowledge about cryptocurrencies, revealing that men with higher education are usually more likely to have a good knowledge of cryptocurrencies, probably because more education allows us to better understand the complexity but also the potential of these new payment instruments. A positive and statistically significant impact on individuals' propensity to learn about cryptocurrencies is also linked to respondents' ability to invest in cryptocurrencies. Subjects attracted by financial investments are also more likely to know better the asset on which they want to invest. However, no statistically significant influence of the age and financial literacy variables on the level of knowledge about cryptocurrencies is observed.

4. Conclusions

Although consumer investments in cryptocurrencies have increased significantly in recent years, few studies have analysed how much Italian consumers really know about this tool (Steinmetz et al., 2021b). The objective of this study is precisely to understand the level of

knowledge of Italians on cryptocurrencies and by what factors it is influenced. To this end we conducted a survey on a sample of 772 respondents, representative of the Italian population.

Important results emerge from this work. First of all, 89% of Italians know cryptocurrencies, 39% have a good or thorough knowledge of cryptocurrencies, 41% invest or will want to invest in cryptocurrencies.

Through the analysis of the clusters we find that people who know the cryptocurrencies have more confidence and greater chances to buy them and in general the investment in cryptocurrencies is more attractive for those who mainly aim at portfolio diversification and the achievement of high yields. This means that knowledge is also the key to wider cryptocurrency adoption, and regulation can play a key role both in protecting investors and in valuing cryptocurrency itself.

In addition, research shows that the level of knowledge is positively influenced both by higher levels of education, and by the increased aptitude to invest in cryptocurrencies. Surely, being this a complex asset and working on platforms not at all intuitive, those who have a high level of education are more easily able to grasp the operation of this new technology.

For the regulatory authorities, the assessment of knowledge and awareness on cryptocurrencies can provide a good starting point to identify the relevance of the phenomenon and guide the regulatory measures to be taken, especially to protect retail investors.

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